BOOK 110

Notes:
“U F 1973, 74” on spine

Blank pages: inside front cover, 56, 57, 123-165, inside back cover.

pages 4, 8 has drawing taped to each
pages 6, 9, 25 has table taped to each
page 7 has small drawing taped to it
pages 10, 12, 15, 29, 32, 36, 38, 40, 42, 49, 50, 54, 58, 62, 64, 72, 84, 106 has picture taped to each
page 26 has drawing taped and 1 8.5x11" sheet taped to it
pages 34, 39, 99 has small graph sheet taped to each
pages 43, 111 has 2 small graph sheets taped to each
page 48 has picture and notebook sheet covering picture taped to it
pages 68, 121 has 8.5x11" sheet taped to each
pages 86, 95, 101, 120, have 2 pictures taped to each
page 122 has picture and table taped to it

There are 9 8.5x11" sheets stapled together folded in back of logbook.

Scanned by:
Sheila Finch
RSICC / Oak Ridge National Lab.
January 9, 2001
This is log for Report # Y-DR-128

10-9-23
<table>
<thead>
<tr>
<th>CYLINDER LISTINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>CYLINDER - PAULKOWSKI ADVICE</td>
</tr>
<tr>
<td>TOTAL GUIDE ROLLERS DRAWING TMAIDE</td>
</tr>
<tr>
<td>BEGIN EXP. E-11.5-12 IN SOUTH EXP. AREA</td>
</tr>
<tr>
<td>2 X 1 BARE</td>
</tr>
<tr>
<td>2 X 4 BARE</td>
</tr>
<tr>
<td>2 X 8 BARE</td>
</tr>
<tr>
<td>3 X 3 BARE</td>
</tr>
<tr>
<td>3 X 4 HIGH LEVEL RUNS CHECKING AM &amp; SATURATION LEVELS</td>
</tr>
<tr>
<td>3 X 4 BARE</td>
</tr>
<tr>
<td>MAX. VS MIN. CYLINDER MASS CHECK</td>
</tr>
<tr>
<td>4 X 4 BARE</td>
</tr>
<tr>
<td>1/4&quot; STEEL PLATE EVALUATION (TABLE)</td>
</tr>
<tr>
<td>1 X 12 POLY. REFL. (BOTTOM ONLY)</td>
</tr>
<tr>
<td>1 X 13 POLY. REFL. (BOTTOM &amp; ONE SIDE)</td>
</tr>
<tr>
<td>1 X 13 POLY. REFL. (BOTTOM &amp; TWO SIDES)</td>
</tr>
<tr>
<td>2 X 2 &quot; &quot; , 5 SIDES</td>
</tr>
<tr>
<td>2 X 2 &quot; &quot; , 5 SIDES + MODERATION</td>
</tr>
<tr>
<td>3 X 3 POLY. REFL. 5 SIDES</td>
</tr>
<tr>
<td>4 X 4 POLY. REFL. 5 SIDES</td>
</tr>
<tr>
<td>4 X 4 EVAL. SEGMENT OF SIDE REFL</td>
</tr>
<tr>
<td>4 X 4 EVAL. 1/2 FULL TOP REFL</td>
</tr>
<tr>
<td>4 X 4 EVAL. 10&quot; OF TOP OF CEMENT ON NORTH SIDE</td>
</tr>
<tr>
<td>4 X 4 POLY REFL. 6.5 SIDES</td>
</tr>
<tr>
<td>2 X 2 CONCRETE REFL. 6.5 SIDES (BASE)</td>
</tr>
<tr>
<td>8&quot; (BASE) + 4&quot; in guides</td>
</tr>
<tr>
<td>2 X 4&quot; added to 3 sides of 2</td>
</tr>
<tr>
<td>4 X 4 &quot;top to 5&quot;</td>
</tr>
<tr>
<td>Removed in steps the cement</td>
</tr>
<tr>
<td>2 X 2 &quot;Guides conc. refl. 5&quot;</td>
</tr>
<tr>
<td>2 X 2 &quot;Guides conc. refl. 5&quot;</td>
</tr>
</tbody>
</table>
OTHER ITEMS

CYLINDER O.D., M.E.T., MASSES EST., RADIOQ. HTS., SHEET
DRAWING OF CYL + INFO (FROM ORD-651, Rev. 3)
also CONTRACT NO. 13-3517,_page 1
2. P. Survey of the 2 baird repl. with concrete

25 26 26 66
23 Aug 73

As per memorandum dated 25 Aug 73, eight 1F6 cylinders will leave Portsmouth on Thursday 30 Aug 73 and are expected to arrive at Bldg 9223 on Fri 31 Aug 73. 

Operating Party is Bill Bergov. 

These cylinders should be removed from their protective shipping packages and stored on 3 Y 100 centile. 

Ed O'Brien will handle any special instructions with respect to the shipment.

27 Aug 73

Wilkinson will have Bill Mee go to 9213 tomorrow to discuss storage situation, i.e., the 1st 8 cylinders as well as the remaining 29 cylinders.

28 Aug 73

Bill Mee thinks he can find some suitable cylinder holders for storage at K-25.

29 Aug 73

Holders were found and 38 are expected to be delivered to 9213 on the 30 Aug 73.

30 Aug 73

Instrumentation for East Facility is being checked by Koster.

25 - not 38 holders were delivered and were checked for contamination. They are pretty short but are oily and will be cleaned tomorrow.

These holders are made of Al and are very sturdy. The base (with legs) is constructed from 1/4" Al. The 7/8" thick Al plate is fastened flat onto the base with 4 bolts. The 1/16" I.D. Al pipe is welded to the 3/4" thick Al plate.

See pg 4 for sketch of holder.
Received 8 cylinders of UF6 as follows:

<table>
<thead>
<tr>
<th>PSP NUMBER</th>
<th>GROSS WT. INCL. PSp (POUNDS)</th>
<th>SEAL NUMBER</th>
<th>CONTAINER NUMBER</th>
<th>UNIT OF MEASURE CONTAINER</th>
<th>% URANIUM ANALYSIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>FR8-007</td>
<td>12</td>
<td>GAT-1203</td>
<td>08-0351</td>
<td>345.85</td>
<td>97.66</td>
</tr>
<tr>
<td>FR8-004</td>
<td>10</td>
<td>GAT-2122</td>
<td>08-0451</td>
<td>341.73</td>
<td>97.65</td>
</tr>
<tr>
<td>FR8-005</td>
<td>13</td>
<td>GAT-1669</td>
<td>08-0453</td>
<td>345.40</td>
<td>97.66</td>
</tr>
<tr>
<td>FR8-008</td>
<td>1</td>
<td>GAT-1003</td>
<td>08-0460</td>
<td>340.43</td>
<td>97.67</td>
</tr>
<tr>
<td>FR8-020</td>
<td>3</td>
<td>GAT-1666</td>
<td>08-0462</td>
<td>340.90</td>
<td>97.67</td>
</tr>
<tr>
<td>FR8-003</td>
<td>11</td>
<td>GAT-2758</td>
<td>08-0475</td>
<td>346.10</td>
<td>97.66</td>
</tr>
<tr>
<td>FR8-009</td>
<td>6</td>
<td>GAT-2797</td>
<td>08-0491</td>
<td>344.45</td>
<td>97.67</td>
</tr>
<tr>
<td>FR8-006</td>
<td>5</td>
<td>GAT-2551</td>
<td>08-0494</td>
<td>342.65</td>
<td>97.66</td>
</tr>
</tbody>
</table>

Removed from their shipping containers and stored in bin # 108. The containers were returned @ about 14:15 hrs.

SEP 29 1973 M. J. Leggins (3-7267) looked at tables will replace load case.

With no load on the table, the following observations of the vertical space between the roll and the rail were made of the #12 #9 roller:

<table>
<thead>
<tr>
<th>Distance from Closure (in)</th>
<th>Roller #9 (in)</th>
<th>Roller #12 (in)</th>
</tr>
</thead>
<tbody>
<tr>
<td>.5216</td>
<td>.035</td>
<td>.0065</td>
</tr>
<tr>
<td>.040</td>
<td>.023</td>
<td>.007</td>
</tr>
<tr>
<td>.014</td>
<td>.020</td>
<td>.010</td>
</tr>
<tr>
<td>.014</td>
<td>.014</td>
<td>.010</td>
</tr>
<tr>
<td>.010</td>
<td>.009</td>
<td>.009</td>
</tr>
<tr>
<td>.007</td>
<td>.009</td>
<td>.009</td>
</tr>
<tr>
<td>.007</td>
<td>.007</td>
<td>.009</td>
</tr>
</tbody>
</table>
SEP 11 1973

Lead seating of table indicates a problem of alignment at #5, above 3,500 Lbs. - Injections get up thru this weight. Higher weights cause improper motion also noting that the pin rollers are riding slightly into the inside of the track in some places.

See pp. FFE 3011 (Inst. Lift) for complete details of the measurements.

SEP 13 1973

Mail 3G #3, 3G #3 7233-1

Dan. Paskowski (3-776) from Engineering gave and rendered advice for the remedy of the problem (mostly a denigration of his own conclusions).

1. Cut a slight angle on the roller guides.
2. Create a small radii on the inside edge of the track.
3. Use only the 4 front rollers as guides allowing all other rollers to only carry weight.
4. Slot the roller wheel frame screw holes to allow adjustment.
5. Grease track well to reduce friction.

Removed the rollers on the east # west sides and marked all positions of same.

It has been decided to replace rollers 4 & 5 with mini ones we bought and the center position guides will be side rollers to be used at #9 & #12 only. See pg 8 for sketch of side rollers.
SEP 24 1973 Made transmitter vertically on each of the 8 original UF6 cylinders, i.e. I need a 4 N/31
37 kBq source on one side of a cylinder and a
CDV-780 detector on the other (appropriately
configured) and observed with plate this
shielding effect over the range of interest.
- what is the shape of the top of the material
and where is it?"

SEP 28 1973 Received 16 rollers (cf bottom pg 9)

OCT 1 1973 Received 8 more cylinders of UF6 and
stored in RM #113 185 087042 3 437
438 439 468 485 483 492. The empty shipping
containers were returned about 12:30.
See listing top pg 9.
### Enriched UF₆

<table>
<thead>
<tr>
<th>PD# Number</th>
<th>Gross wt, incl. PSp (Pounds)</th>
<th>Seal Number</th>
<th>Container Number</th>
<th>Unit of Measure - Container</th>
<th>% Uranium Analysis</th>
<th>Wt. % U-235</th>
</tr>
</thead>
<tbody>
<tr>
<td>FR8-003</td>
<td>16</td>
<td>GAT-2735</td>
<td>08-0423</td>
<td>350.45</td>
<td>100.55</td>
<td>249.90</td>
</tr>
<tr>
<td>FR8-004</td>
<td>8</td>
<td>GAT-2568</td>
<td>08-0433</td>
<td>346.05</td>
<td>102.20</td>
<td>243.85</td>
</tr>
<tr>
<td>FR8-005</td>
<td>14</td>
<td>GAT-2566</td>
<td>08-0433</td>
<td>345.20</td>
<td>98.40</td>
<td>246.90</td>
</tr>
<tr>
<td>FR8-006</td>
<td>9</td>
<td>GAT-2599</td>
<td>08-0439</td>
<td>345.30</td>
<td>100.80</td>
<td>244.50</td>
</tr>
<tr>
<td>FR8-007</td>
<td>15</td>
<td>GAT-2855</td>
<td>08-0468</td>
<td>346.20</td>
<td>98.75</td>
<td>247.45</td>
</tr>
<tr>
<td>FR8-008</td>
<td>4</td>
<td>GAT-2859</td>
<td>08-0483</td>
<td>341.15</td>
<td>98.55</td>
<td>242.60</td>
</tr>
<tr>
<td>FR8-009</td>
<td>7</td>
<td>GAT-2964</td>
<td>08-0485</td>
<td>341.90</td>
<td>98.40</td>
<td>243.50</td>
</tr>
<tr>
<td>FR8-020</td>
<td>2</td>
<td>GAT-1089</td>
<td>08-0492</td>
<td>342.40</td>
<td>100.80</td>
<td>241.60</td>
</tr>
</tbody>
</table>

**November 7, 1973**

As of today, all 16 cylinders have been radio graphed. Results are not too significant, but do show to some degree the height of the material in the cylinder and a shadow is lost the shape of the top of the material.

**November 1973**

Magnussen gave John and Lynn a dissertation on the steps of procedure concerning the U-235. Steps which may be taken once the exp. plan is approved.
Instrument Check on 14 Nov 73

Source: 6° 6 #20 (± 29 mc)

EM-1 875 V, Low Trip, OK (12")

IC-1 3210-10 Motor Trip, OK contact, Fast Trip, OK

IC-2 3416-10 Motor Trip, OK contact

IC-3 8410-10 Calibration, A contact

IC-4 2.5413-10 Calibration, 75 contact

Made check of instrumentation—Very good.

Made initial setting of first configuration to be run. #2364 cylinder on each table.

#432 on movable table, #438 on stationary table.

Rizer installed 2 BF3 counters
NOTE: Spacing of cylinders was 0.415" when the "footing" line hit contact.

**EXPERIMENT #1**

- Cylinder #492 on movable #438 on stationary i.e. 1 x 2

SUB

- No initial response at closure. \( \omega = 400 \text{ rpm} \)
- \( BF_3 \#1 = 4773 \text{ rpm} \)
- \( BF_3 \#2 = 1232 \text{ rpm} \)

**Exp #2**

- Add 30" high x 12" I 6" poly well at contact on west side of #492.
- No initial response i.e. increase @ closure
- \( BF_3 \#1 = 4675 \text{ rpm} \)
- \( BF_3 \#2 = 1299 \text{ rpm} \)
Exp. #3

Add 2 cylinders i.e. 2 x 2 array

BF$_3$ #1 = 5745 cmp
BF$_3$ #2 = 13240 cmp @ 16" separation

Sub

Some multiplication observed @ closer on all detectors.

BF$_3$ #1 = 9207 cmp
BF$_3$ #2 = 2417 cmp
digibin = same

0.00109
0.00041
**Exp #4**
Add one cylinder

483
468
492
437
438

**Exp #5**
Add one cylinder. *i.e.* #439 added to above "blank"

$BF_3^\#1 = 16546$ cpm
$BF_5^\#2 = 4362$ cpm

**Exp #6**
Add 2 cylinders to 2x3 array

493 439
468 437
492 438
423 485

$BF_3^\#1 = 26802$ cpm
$BF_5^\#2 = 7031$ cpm

See picture bottom Pg 12.
Instrument Check on November 1-9, 1973

Disk 1 875 V Low Trip 6" & Touch Trip OK

IC-1 3 x 10^-10 Motor Trip OK Fast Trip SCRAM OK
IC-2 3 x 10^-10 Motor Trip OK
IC-3 3 x 10^-4 Calibration OK
IC-4 6 x 10^-10 Calibration OK

O/L #1 OK O/L #2 OK

Pm113 = neg. Area Cleaned

EXP #7

Add 4 cylinders array = 2 x 6

\[
\begin{array}{c|c|c}
\text{Sub} & \text{C} & \text{Clearance} \\
\hline
493 & 493 & 493 \\
493 & 493 & 493 \\
493 & 493 & 493 \\
493 & 493 & 493 \\
493 & 493 & 493 \\
493 & 493 & 493 \\
\end{array}
\]

DC #1

\[
\begin{array}{c|c|c|c|c}
& & & & \\
& 9 & 0.02 & 0.06 & \\
& 3 & .0038 & .018 & \\
& 4 & 15.4 & 15.773 & \\
& 151 & 4590 & 455378 & \\
& 2 & 14569 & 14507 & \\
\end{array}
\]

\[\theta = 0^\circ\]
Exp #8
Add 4 cylinders array = 2 x 8

Close digits: West: 101; East: 102

IC#1 1030
IC#2 1030
IC#3 0.026
IC#4 0.007
AFB#1 = 8653
AFB#2 = 6076

Scale
IC#1 1030 61 34 6.0
IC#2 3810 61 31 6.0

54"
**Instrument Check on**

- **Source**: 60°Co²⁰ & Pb²⁵²
- **Trip Hi**: (SEC/MIN)
- **Trip Lo**: 0K

<table>
<thead>
<tr>
<th>Item</th>
<th>Value</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>RM-1</td>
<td>875 V</td>
<td>OK</td>
</tr>
<tr>
<td>IC-1</td>
<td>3x10⁻¹⁴</td>
<td>OK</td>
</tr>
<tr>
<td>IC-2</td>
<td>2x10⁻¹⁰</td>
<td>OK</td>
</tr>
<tr>
<td>IC-3</td>
<td>2.1x10⁻⁹</td>
<td>OK</td>
</tr>
<tr>
<td>IC-4</td>
<td>2x10⁻⁸</td>
<td>OK</td>
</tr>
<tr>
<td>RM #113</td>
<td>Neg Rese</td>
<td></td>
</tr>
</tbody>
</table>

**Exp #9**

Array = 3x3

<table>
<thead>
<tr>
<th>Det.</th>
<th>Ne Source</th>
<th>54&quot;</th>
<th>54&quot;</th>
<th>0&quot;</th>
<th>0&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>BF₁</td>
<td>10338 CPM</td>
<td>16235 CPM</td>
<td>76800 CPM</td>
<td>35066 CPM</td>
<td></td>
</tr>
<tr>
<td>BF₂</td>
<td>2865</td>
<td>2911</td>
<td>15610</td>
<td>6767</td>
<td></td>
</tr>
<tr>
<td>IC</td>
<td>10³x10⁻¹²</td>
<td>6.7</td>
<td>3.25</td>
<td>10.35</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10⁻⁷.5</td>
<td>27.5</td>
<td>10⁻⁷.5</td>
<td>4.18</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>1.2x10⁻⁹</td>
<td>1.9x10⁻¹²</td>
<td>1.1x10⁻¹²</td>
<td>9.5x10⁻¹²</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>3.4x10⁻¹²</td>
<td>5.4x10⁻¹²</td>
<td>2.1x10⁻¹²</td>
<td>9.5x10⁻¹²</td>
<td></td>
</tr>
</tbody>
</table>

**Exp #10**

Add #475 on east side of #437. (See Exp #9)

Sub.

<table>
<thead>
<tr>
<th>Chn</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>BF₁</td>
<td>130593 CPM</td>
</tr>
<tr>
<td>BF₂</td>
<td>26305</td>
</tr>
<tr>
<td>IC</td>
<td>1.5 x 10⁻¹⁰</td>
</tr>
<tr>
<td>IC₂</td>
<td>3.3 x 10⁻¹¹</td>
</tr>
</tbody>
</table>

**Exp #11**

Super-Cut Sel: Est H 1.79 West 4.73

- IC 3: +259 Acc. +4.34#
- IC 4: +267 Acc. +4.20#

DC = 0.00

Est: 1.192 West 1.186

Spacings: 13 miles, 3.28 pm in

Av. Pos. Period = 4.27#

@ 1.689 separation
Due to need to overrule the fuel trim, mentions it is necessary to move all detectors away in order to achieve non-saturation.

Exp #12

Repeat of #11

Super

Positive Period @ Delay W: 1.097 E-11.02
IC 3 = +366 sec 3.184
IC 4 = +319 sec 3.154

DC (\infty) @ Delay W: 1.107 E-11.12

+ and \( \infty \) = 10 mb or 3174 or \# 3.17 per in

\[ k > 1 (4.27) \times 10^{-25} \]

\[ k = \frac{c}{10.75} \]

\[ k = \frac{c}{10.75} \]
Repeat Exp #14 but using 1 1/4" dia x 1/4" thick polyurethane seal at E of cylinder. Glue on earth side of configuration for shim. Also made 1 1/8" opening at top of cylinder giving edge of table which had not been made before.

#15 is more than 1/4" and the shim is insufficient to get enough power so that a negative period might be measured.

Cd was added to one side of T2

\[ R > 1 \ (9.56\%) @ 0.256'' \]

\[ R < 1 \ (0.39\%) @ 0.396'' \]

\[ R < 1 \ (0.37\%) @ 0.317'' \]

\[ R > 1 \ (8.75\%) @ 0.256'' \]

\[ R < 1 \ (0.47\%) @ 0.290'' \]
**Exp. #16**

IC-3 is now surrounded with a sheet of Al.

IC-4 is horizontal on floor & top is cooled with Al.

Made 1/4" (.3125 in) spacing theorem.

The 3x4 array: Xcel cylinder numbers to 4.

**Exp. #17**

Repeat Exp. #16 at "high" level.

To ascertain CN & saturation levels.

of IC-3 & 4.

\[
\begin{align*}
\text{IC-3:} & \quad 354 & \quad 386 & \quad 1.396 & \quad \ldots \\
\text{IC-4:} & \quad 386 & \quad 396 & \quad -46 & \quad -266,820,300.
\end{align*}
\]

From + to - = 34 miles or 9.22 ft. = 2.71 per inch.

Other high level recordings:

\[
\begin{align*}
\text{IC-3:} & \quad 12.0 \text{ C} \quad \text{V} \quad 1.2 \times 10^{-8} \\
\text{IC-4:} & \quad (\text{C} \text{C} \text{C}) \quad 6 \times 10^{-8} \\
\text{PM @ min. voltage:} & \quad 4.25 \text{ V} \\
\text{Resistors:} & \quad 10 \text{ m}\Omega / \text{cm} \quad \text{R}
\end{align*}
\]

\[
\begin{align*}
\text{Bldg A:} & \quad 5 \text{K} \quad 0 \text{ K} \quad 7 \text{ K} \\
\text{Conf.} & \quad 3/2 \text{ K} / \text{hr} \quad \text{one min after separation.}
\end{align*}
\]
Instrument Check on Nov. 28 1973 Source: $O^2$ C20

High Voltage: 775 V Low Trip: OK

- IC-4: 3 x 10^-10 Meter Trip: OK, Fast Trip: SCRAM OK
- IC-2: 3 x 10^-10 Meter Trip: OK
- IC-3: 1 x 10^-9 Calibration: OK
- IC-4: 1 x 10^-9 Calibration: OK

Rm*: 113 neg. press. B
A06 Aiform A

A small amount measured has been added to IC 3.54.

**Exp #18**

Change spacing to 8.2 miles.

West: 338, 381, 10.99 ft (±0.02 in)
East: 294, 230, 11.56 ft (±0.02 in)

\[ \frac{338}{294} = 1.142 \]

\[ \frac{1.142}{100} = 0.114 \text{ in} \]

\[ \frac{10.99}{11.56} = 0.947 \]

\[ \frac{0.947}{100} = 0.009 \text{ in} \]

**Exp #19**

Change spacing to 113 miles.

Did not run together, due to deciding to make a better alignment. Went to about 100 miles separation with substantial multiplication.

\[ k > 1 (26.3 \text{ ft}) @ 0.002'' \]
\[ k < 1 (0.075'') \]
\[ k > 1 (8.59') @ 0.098'' \]
Instrument Check on Nov. 27th 1973

TEL & TL

GCF-1 875 V too trip.  Still OK.  Trip OK.

- 3x10^-10
- 3x10^-10
- 1x10^-9
- 1x10^-9

BF5 = 1OK
BF5 = 2OK
Run #13 - all OK

Exp #20
Spring still 113 mile.
West  EAST  IC #3
1.34  1.39  +32.68cc + 21.08°

Though the table lacks 32 mile being closed,
the cylinders appear to be "closed."

Exp #21
Make slight alignment.
West  EAST  IC #3
closed (+) .102  .102  +57.2cc + 14.75°
2x08.04°  ± 00°  1.145  1.149
Neg (-) .166  .170  -19.22  -8.46°
1.181 (5.46°) @ 0.067°

From 10 to - = 21 mile = -8.46° or 34.03 per inch
From + to - = 45 mile = 14.75° or 3.28 per inch

Exp #22
Repeat exp #21.  Tighten up some more.

closed (+) .102  .105  123.16 cc + 26.32°
± 00°  1.174  1.180
Neg (-) .197  .203  -190.0 sec - 8.59°

From + to 0 = 73.5 mile = 26.32° or 0.358°/mile
From 0 to - = 23 mile = 8.59° or 0.373°/mile.
Instrument Check on NOV. 28, 1973
Source: 60Co #20

<table>
<thead>
<tr>
<th>PN-1</th>
<th>875</th>
<th>Low Trip: Ok</th>
<th>Trip: Ok</th>
</tr>
</thead>
</table>

IC-1 $3 \times 10^{-6}$
- Meter Trip: Ok
- Fast Trip: Ok

IC-2 $2 \times 10^{-6}$
- Meter Trip: Ok

IC-3 $6 \times 10^{-7}$
- Calibration: Ok

IC-4 $9 \times 10^{-7}$
- Calibration: Ok

Air pres.: Ok
Bag 1: Ok

Exp #23

- Exchange cyl #460 (238.15 lbs) for #423 (249.90)

To see if reactivity difference can be measured,
found base of cylinders to be different sizes.

- Reactivity differences will be in question.

See p. 17 for cylinder locations.

On positive period:

- $W = 4.26$
- $E = 4.32$
- $T = 23.16\mu s$
- $W = 1.497$
- $E = 1.504$
- $L = 25$

- $\Delta S = 71.5$ mil
- $\Delta C = 0.278$ $\mu$ mil

$H = 0.317''$

$C = 25.93'' \times 0.327''$
Instrument Check on DEC 3 1975

Table:

<table>
<thead>
<tr>
<th>Source</th>
<th>60 # 20</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>FM-1</th>
<th>975</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Trip</td>
<td>OK</td>
</tr>
<tr>
<td>Trip</td>
<td>OK</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IC-1</th>
<th>3 x 10^-10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meter Trip</td>
<td>SCRIM OK</td>
</tr>
<tr>
<td>Fast Trip</td>
<td>OK</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IC-2</th>
<th>3 x 10^-10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meter Trip</td>
<td>OK</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IC-3</th>
<th>1.3 x 10^-9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calibration</td>
<td>OK</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IC-4</th>
<th>1.3 x 10^-9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calibration</td>
<td>OK</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IC-5</th>
<th>air pres(-2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>OK</td>
<td></td>
</tr>
</tbody>
</table>

482 | 475 | 494 |
468 | 431 | 439 |
492 | 423 | 451 |
438 | 485 | 351 |

T = 19.4°C

EXP # 24

closed (+): W 0.101, E 0.102

IC# 3

47.4 sec + 16.99°

DC (m) 0.151, 0.158

outside total length EW from 495 -> 475
351 -> 494
433 -> 482
NS from 475 -> 394
475 -> 351

C.D. measurements

<table>
<thead>
<tr>
<th>#</th>
<th>Bottom Flange</th>
<th>Δ VE</th>
<th>2 VE</th>
</tr>
</thead>
<tbody>
<tr>
<td>485</td>
<td>5.460 in.</td>
<td>8.397 in.</td>
<td>8.407</td>
</tr>
<tr>
<td>475</td>
<td>8.950</td>
<td>8.100</td>
<td>8.126</td>
</tr>
<tr>
<td>494</td>
<td>8.857</td>
<td>8.365</td>
<td>8.485</td>
</tr>
<tr>
<td>439</td>
<td>8.850</td>
<td>8.365</td>
<td>8.485</td>
</tr>
<tr>
<td>433</td>
<td>8.930</td>
<td>8.365</td>
<td>8.485</td>
</tr>
<tr>
<td>483</td>
<td>8.390</td>
<td>8.417</td>
<td></td>
</tr>
<tr>
<td>Ave</td>
<td>8.898</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Avg E to E = 8.951” or 22.736 cm
Exp. 25

472 \cdot 475 \cdot 494
468 \cdot 437 \cdot 159
452 \cdot 438 \cdot 451
42 \cdot 485 \cdot 351

Post #423 on column and #438 in its place. See "4A." Space between 42.423 = 53.2 mils @ 1/2 UF6

(+) west 0.072 0.058 +55.73 sec; +18.86°

IC (2) 0.593 0.600

41.5 mils = 18.86° \Delta P = 0.15% mil

kco @ 0.495"

k' > 10 \cdot (18.86° \cdot 0.452"

Exp. 26

Remove #423 from configuration. 249.90 V to UF6, 238.15 V to UF6.

Positive (+) 0.617 3.623

IC (2) 0.680 0.626

62.5 mils = 22.47° \Delta P = 0.360% mil

kco @ 0.581"

k' > 10 \cdot (22.47° \cdot 0.519"

Exp. 27

Remove #460, replace with #462.

242.25 V to UF6

Positive (+) 75 (2)

k' > 10 \cdot (7.77\% \cdot 0.452"

kco @ 0.475"

IC 3 = 1.25 \cdot 10^{-8} ~

PM 635 Vtolta = made 304.5°

Column A

<table>
<thead>
<tr>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.6 K</td>
</tr>
</tbody>
</table>

Column B

<table>
<thead>
<tr>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1 K</td>
</tr>
</tbody>
</table>

Column C

<table>
<thead>
<tr>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.3 K</td>
</tr>
</tbody>
</table>
The radiographs were used to estimate the height of the UPE in each cylinder. From the rough number a density was calculated. Column C shows substantial differences of all cylinders, i.e., for example why #42B vs #460 show the data as in EXP# 25 vs EXP# 26.

<table>
<thead>
<tr>
<th>From Low Mass Cylinder Number</th>
<th>From Low to High</th>
<th>20 in. from floor @ number</th>
<th>Flangea Bot Diam (in.)</th>
<th>Flangea Top Diam (in.)</th>
<th>Diam (in.)</th>
<th>C</th>
<th>(a_0 + b_c^x)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4</td>
<td>1</td>
<td></td>
<td>8.920 8.808</td>
<td>8.911 8.809</td>
<td>8.448 4.412</td>
<td>50.0</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>2</td>
<td></td>
<td>8.950 8.810</td>
<td>8.871 8.845</td>
<td>8.457 3.937</td>
<td>34.5</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>3</td>
<td></td>
<td>8.974 8.847</td>
<td>8.872 8.830</td>
<td>8.448 3.303</td>
<td>40.5</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td></td>
<td>8.891 8.829</td>
<td>8.913 8.906</td>
<td>8.430 4.043</td>
<td>33.5</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>7</td>
<td></td>
<td>8.976 8.762</td>
<td>8.899 8.867</td>
<td>8.394 3.303</td>
<td>40.5</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>8</td>
<td></td>
<td>8.957 8.795</td>
<td>8.917 8.763</td>
<td>8.405 4.254</td>
<td>31.5</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>9</td>
<td></td>
<td>8.981 8.798</td>
<td>8.908 8.806</td>
<td>8.427 4.149</td>
<td>32.5</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>10</td>
<td></td>
<td>8.967 8.792</td>
<td>8.887 8.913</td>
<td>8.380 4.043</td>
<td>30.5</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>11</td>
<td></td>
<td>8.965 8.838</td>
<td>8.862 8.870</td>
<td>8.441 4.043</td>
<td>33.5</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>12</td>
<td></td>
<td>8.754 8.861</td>
<td>8.769 8.932</td>
<td>8.290 4.043</td>
<td>33.5</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>14</td>
<td></td>
<td>8.940 8.803</td>
<td>8.904 8.778</td>
<td>8.436 4.043</td>
<td>33.5</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>16</td>
<td></td>
<td>8.894 8.866</td>
<td>8.907 8.800</td>
<td>8.459 3.514</td>
<td>38.5</td>
<td></td>
</tr>
</tbody>
</table>

\[\text{Avg} = 8.978\]  
\[\text{Avg} = 5.962\]

G. avg. = 5.863 in. with 0.008 in. D.  
\[\text{Avg} = 8.875\]  

* Estimated height (excluding 1/2" @ bottom of cyl) of material in the cyl, as read from radiographs.

\[8.978\]
Figure 16
PROTECTIVE OUTER PACKAGE
FOR UF₆ CYLINDER MODEL 8A
UF$_6$ CYLINDER MODEL 12A

GENERAL DATA

Other Descriptive Terminology Used - 12-inch, MD

<table>
<thead>
<tr>
<th>ENGINEERING DRAWING</th>
<th>UNION CARBIDE CORPORATION, ORGDP: D-P 35721-C, REV. 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Diameter</td>
<td>12 in.</td>
</tr>
<tr>
<td>Nominal Length</td>
<td>54 in.</td>
</tr>
<tr>
<td>Wall Thickness</td>
<td>0.200 in.</td>
</tr>
<tr>
<td>Nominal Tare Weight</td>
<td>185 lb</td>
</tr>
<tr>
<td>Maximum Net Weight</td>
<td>460 lb</td>
</tr>
<tr>
<td>Nominal Gross Weight</td>
<td>645 lb (without cap)</td>
</tr>
<tr>
<td>Minimum Volume</td>
<td>2.38 cu ft</td>
</tr>
<tr>
<td>Basic Material of Construction</td>
<td>Nickel</td>
</tr>
<tr>
<td>Service Pressure</td>
<td>200 psig</td>
</tr>
<tr>
<td>Hydrostatic Test Pressure</td>
<td>400 psig</td>
</tr>
<tr>
<td>Isotopic Content Limit</td>
<td>5.0% 235U max</td>
</tr>
</tbody>
</table>

Valve Used - Superior No. 5665, or equal.
Exp #28
4x4 (less one cylinder)
Spacing = 3/4" 

WP = (17.69) @ 0.030" 

Exp #5
wet = 317
Positive (+) 130, 131, +37.17 sec. +19.89°C
DC = 233, 225
Table gap @ oo = 12.4 miles
Note: TOPS wire @ "closed"
and bottom was not
in + to oo in just
literally accurate.
AP = 0.218 mil on closure
would have been > + 26% (est.)

Exp #29
Add #423 to blank above = full 4x4 array
one other change.

WP = 1.642, 1.648
DC = 1.711, 1.717

AP = 0.218 mil on closure
would have been > + 26% (est.)
Instrument Check on DEC 10 1973

**EM-1**
875 V Low Trip Screen OK  Trip O/C

**IC-1**
3x10^-10 Motor Trip OK  Fast Trip OK

**IC-2**
3x10^-10 Motor Trip OK

**IC-3**
10^-9 Calibration OK

**IC-4**
10^-9 Calibration OK

Area Cleared

---

**Exp #30**
(12)

Same 4x4 array but with 894 mile actual space

\[
\begin{align*}
&\text{West East} \\
&0.555 \text{, } 0.561 \\
&+ 52.1 \text{ sec} = +15.56 ^\circ
\end{align*}
\]

\[
\begin{align*}
1x4 \text{ perimeter } & = 216.5 \text{ cm} = 24.89 \text{ in (wtd)} \\
3x4 \text{ perimeter } & = 315.4 \text{ cm} = 24.35 \text{ in (wtd)}
\end{align*}
\]

**Exp #31**
(18)

Add 20 miles additional to above space

\[
\begin{align*}
&\text{West East} \\
&0.387 \text{, } 0.394 \\
+ 83.6 \text{ sec} = +10.98 ^\circ
\end{align*}
\]

\[
\begin{align*}
1x4 \text{ perimeter } & = 216.5 = 24.89 \text{ cm} \\
3x4 \text{ perimeter } & = 315.4 = 24.91 \text{ cm}
\end{align*}
\]

56.5 miles = 10.98° or .178°/mile
Instrument Check on 11.1.1973 Source 600 kW

- Voltage: 675 V Low Trip: OK Trip: SPARK

IC-1 9.110-10 Motor Trip: OK Fast Trip
IC-8 9.110-10 Motor Trip: OK
IC-5 10° Calibration: OK
IC-4 10° Calibration: OK

Km 13 = 1175

Actual spacing = 946 miles between phase

1.4 perimeter: 217.1 cm = 24.978
3.4 perimeter: 316.8 cm = 24.962 ± 0.5

Positive (+) West East
103 107 (closed) + 22.8 sec; - 25.96$

Negative (-) 1234 240
1268 275

From + to - = 132 miles; 25.96 → 0.197$ per mile
From - to + = 36.5 miles; 6.64 → 0.192$ per mile

4° 0.132
4° 16.64/0.167°

# 32
Evaluate \( \frac{1}{4} \) steel

**Exp. 33**

1. Add \( \frac{1}{4} \) of steel to top of table (i.e., under the cylinder). Table is 12" wide and 23" long on each side.
2. Conf. as near identical to Exp. 32 as possible.

<table>
<thead>
<tr>
<th>Exp. 43</th>
<th>West</th>
<th>East</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part 1</td>
<td>0.436</td>
<td>0.444</td>
</tr>
<tr>
<td>Part 2</td>
<td>0.547</td>
<td>0.537</td>
</tr>
<tr>
<td>Part 3</td>
<td>0.599</td>
<td>0.604</td>
</tr>
</tbody>
</table>

\[ \text{IC #2} \]

\[ + 31.85 \text{ sec } + 21.37 \]

-171 sec; -9.91 ex

\[ \text{from } t \text{ to } \omega = 112 \text{ miles} \]
\[ \text{from } \omega \text{ to } t = 92 \text{ miles} \]

\[ 1 \times 4 \text{ perimeter } = 2.171 \]
\[ 3 \times 4 \text{ perimeter } = 3.168 \]

\[ \text{WTD avg } = 24.960 \text{ cm ft } \]

\[ \text{from Exp. 32 (237) to Exp. 33 (54) } = 0.315 \]

\[ 3.15 \text{ miles } \times \frac{0.191}{\text{mi}d} = 0.602 \text{ value of } \frac{1}{4} \text{" steel} \]

\[ L \geq 1 (21.37^\circ) \leq 0.337" \]

\[ k_{\infty} \leq 0.444" \]

\[ L < 1 (9.91^\circ) \leq 0.561" \]
Exp. 34

(6) Remove the \( \frac{1}{4} \) steel (Ref Exp. #33)

| Position (°) | 30.1° | 30.3° | 32.2° 1sec | +3.12°
|-------------|------|-------|--------|------
| \( \frac{1}{4} \) | 228° | 236° 53' 206.3 sec | 7.71° |

From \( \frac{1}{4} \) to 0.162/gal, 0.188/gal

Summary: Exp. 34 = 33 - 34

Grand Avg. $/gal = 0.1872 (of table separation)

Avg. Value of \( \frac{1}{4} \) plate in miles = 317.5

% Calc. Worth of \( \frac{1}{4} \) plate = +5.5%
Exp#35a

(2 cyl)

Start

Exp#35b

3 cylinders (bottom reflector only; no side poly)

Sub

[433 468 492]

Exp#35c

add #475 north of #33 = 4 cylinders

Sub

closed BF3\#1 = 206.3 rpm; BF3\#2 = 801 rpm

Exp#35d

6 cylinders 433-475-483 468-492-351

Sub

closed BF3\#1 = 207 rpm  BF3\#2 = 777
<table>
<thead>
<tr>
<th>Exp# 35 ½</th>
<th>Add 2 cylinders (94.44, 60)</th>
<th>Total = 12 cylinders</th>
</tr>
</thead>
</table>

Set table cloud west east
102° 100°
No multiplication

South perimeter = 339.2 cm
Width "" = 248.2 cm

See picture pg 32

---

**Bottom #1 Side (Linear)**

<table>
<thead>
<tr>
<th>Exp# 36a</th>
<th>Begin linear &quot;close pack&quot; with 6&quot; + of poly. on one side, reflected with 6&quot; + of poly. on other side</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 cyl.</td>
<td>468</td>
</tr>
<tr>
<td>Sub</td>
<td>North Table</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Exp# 36b</th>
<th>4 cyl</th>
<th>475 - 483 - 468 - 492</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub.</td>
<td></td>
<td>Table closed = Sub.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Exp# 36c</th>
<th>6 cyl</th>
<th>468 - 475 - 483</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub.</td>
<td></td>
<td>Table closed = Sub.</td>
</tr>
</tbody>
</table>

| BF3+1 | 5545 CPM |
| BF3+2 | 1912 CPM |
| Table closed: Sub |

| BF3 #1: 56220 CPM |
| BF3 #2: 1558 CPM |
| Table closed: Sub |
Instrument Check on DEC 18 1973 Source 6AG*20

<table>
<thead>
<tr>
<th>BF3</th>
<th>3x10^-10</th>
<th>10^-9</th>
<th>10^-9</th>
</tr>
</thead>
<tbody>
<tr>
<td>11-1</td>
<td>Motor Trip</td>
<td>OK</td>
<td>Faint Trip</td>
</tr>
<tr>
<td>11-2</td>
<td>Motor Trip</td>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>11-3</td>
<td>Calibration</td>
<td>O.K</td>
<td>Calibration</td>
</tr>
<tr>
<td>11-4</td>
<td>Calibration</td>
<td>O.K</td>
<td>Calibration</td>
</tr>
</tbody>
</table>

R**13 = 351 - t = 15°C

Exp#36d

9 cylinders
438-475-483 468-492-351-437-451-439-491-460
Sat table closed BF3#1: 5816; #2: 1418

Exp#36e

13 cylinders
413 494 438-475-483 468-492-351-437-451-439-491-460
Sat table closed BF3#1: 5763; #2: 1720; 313
Same to & as pg 85 (exp. 35F) 22.673 cm
**Bottom & 2 Sides (Linear)**

| Exp #37a | Begin linear "clay pack" with 6" or more of pvc on bottom and 2 sides (east & west). |
| 2 cylinders | 483 | 443 | Standard 211 E, 100 |
| BF/S: 4705 | #2: 16740MP |

| Exp #37b | 4 cylinders | 475 - 483 | 468 - 492 | BF/S: 5400 rpm |
|  |  |  |  | #2: 1200 |

| Exp #37c | 7 cylinders: 433 - 475 - 493 | 461 - 492 - 351 - 437 |
|  | **Table closed: "Dial."** |
Instrument Check DEC 19, 1973 Source CO2

PM-1 875 V New Trip OK

IC-1 3 x 10^-10 Motor Bldg. Stab. OK Test Trip OK

IC-2 3 x 10^-10 Motor Bldg. OK

IC-3 10^-9 Calibration OK

IC-4 10^-9 Calibration OK

Rept 113 = 135 K, 18.2°C Area Cleared.

37d


11 cylinders Table closed Sub Dead

37e


13 cylinders Table closed Sub Dead

Lat & Ltr name = 2.245 cm
**Instrument Check on**

**Jan 7 1974**

<table>
<thead>
<tr>
<th>Device</th>
<th>Check</th>
<th>Trip</th>
</tr>
</thead>
<tbody>
<tr>
<td>PM-1</td>
<td>75 V</td>
<td>OK</td>
</tr>
<tr>
<td>Trip</td>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>3.1</td>
<td>Meter</td>
<td>OK</td>
</tr>
<tr>
<td>Trip</td>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>3.1</td>
<td>Meter</td>
<td>OK</td>
</tr>
<tr>
<td>Trip</td>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>10-6</td>
<td>Calibration</td>
<td>OK</td>
</tr>
<tr>
<td>10-6</td>
<td>Calibration</td>
<td>OK</td>
</tr>
<tr>
<td>10-8</td>
<td>Calibration</td>
<td>OK</td>
</tr>
<tr>
<td>10-8</td>
<td>Calibration</td>
<td>OK</td>
</tr>
</tbody>
</table>

*Note: PM-1 reading 75 V, OK trip.*

**Readings**

1. PM-1 reading 75 V, OK trip.
2. PM-1 reading 75 V, OK trip.
3. PM-1 reading 75 V, OK trip.
4. PM-1 reading 75 V, OK trip.

**Note:**

- PM-1 reading 75 V, OK trip.
- PM-1 reading 75 V, OK trip.
- PM-1 reading 75 V, OK trip.
- PM-1 reading 75 V, OK trip.

**Temperature:**

- **38°C**

**2x2 array with B**

**Table (boardlight):**

- IC2 increased from 10 to 20.
- Slightly more stable than IC2, but still quite subtle.

**38d**

- Same but with ~9.50" between cylinders.
- Positive Period @ West: 538 (26 min of polygon 5 sides)
- East: 537
- IC2: 13.35 in due to PM voltage being too high.
- IC3 read 110% trip.

**Note:**

- 2x2 array with B
- **38°C**
- 0.450"
- Slightly more stable than IC2, but still quite subtle.

**Diagram:**

- 2x2 array with B
- 0.450"
Report: 38d

Positive (+) 5.38 5.37 3.76 4.27 19.27
Negative (-) 5.85 5.85 6.06 6.06 -18.72 5.72
1.67

@ 7 divider after 20 mm shutdown
Critical: 1.67 M. F.

Molecular thickness measured avg. E.U.: 1010"

Avg. F.S.: 0.9700
Grand Avg.: 0.9700"

@ to divider: 25.052 cm

\[ K > 1 (19.27) @ 0.435 \]

\[ K = 0 @ 0.42 \]

\[ D = 1 (8.72) @ 0.503 \]
JAN 8 1974

Instrument Check on 60 #20

IC-1 3V10-5 Trip OK  
IC-2 3V10-5 Trip OK  
IC-3 10-5 Calibration OK  
IC-4 55-8 Calibration OK  

Area Cleaned  

387 2 x 2

Make 1/8" spacing at all contact points. Cut separate the cylinder from all component radiators by reflector 1/8". See X5 pg 41 for spacing. Table closed digital 0.001 or less. Sub-critical slight indication on instrument.

Max Mod. Moderator thickness (Plexiglas) EN = 0.961"  
NS = 0.970  
Grand Avg = 0.966

Avg. to & cylinder = 25.613 cm  
Avg. Enrich. of Hi. "Boy" = 48.773 cm  
Avg. Moderator thickness = 2.754 cm  
Thickness of reflector = 15.24 cm or more

Add 1/4" plexiglass to moderator at -18.5°C

Avg. med. thickness = 3.09 cm  
& to & = 26.248 cm

More sub than 38F
Instrument Check on JAN 9 1970 from 9-20

EM-1 875 V Low Trip OK

EM-2 3x10^-10 Motor Trip OK Past Trip e/c

EM-4 10^7 Calibration 0 IC

EM-4 184 Calibration OK

Rin #13 = Dgt Price, f = 180°C Area CLOSED

38h 213 Back to Physic's models = 0.966" But make spacing = 0.06"

Super 25

west 6.4 IC #3 IC #4

506 (5) 2.77 2.77 140.90 acc+8.15" 32.90-19.23

506 (5) 3.33 3.34 -4.68 -6.01 -2.52 -1.6

From Position 1 to 2 = 56.5 mile @ 18.76" = 0.332"/mil = 0.3285/mil
From 2 to 3 = 18.5 mile @ 6.01" = 0.3254/mil

Closure = 0.101
DC = 0.3335

0.2325 mile @ 0.3285/mil = 76.28° more to go
to closure

chink 25.137 OK

38h | 1.0 (18.76") @ 0.175"

| L<1.0 0.231 |

| L<1.0 0.250 |
Instrument Check on JAN 10 1974 Source 60 C. No. 20

Taiwan 70 Ym

| IC-1 | 3 x 10^-10 | Motor Trip | SHMOK | Fast Trip | OK |
| IC-2 | 3 x 10^-10 | Motor Trip | OK     | Pip/Okan A / V |
| IC-3 | 10^7 | Calibration | OK | B V |
| IC-4 | 10^7 | Calibration | OK | C V |

39a.

\[ 3 \times 3 \text{ loop 2} \]

\[ \frac{1}{2} \text{ spacing between cylinders} \]

\[ \frac{1}{2} \text{ diameter between 4th and 4th cyl.} \]

5 skid interference.

4 to E = 23.566 cm

Table lacks 315 being closed due to the alignment gap was together.

39b. 23

Some left and cylinder #475 to S-E corner of box.

\[ 3 \times 3 \text{ loop 1 @ center east, IC #3} \]

West East

<table>
<thead>
<tr>
<th>Center</th>
<th>Dc</th>
<th>1.320</th>
<th>1.320</th>
</tr>
</thead>
<tbody>
<tr>
<td>West</td>
<td>2.64</td>
<td>+70.57 arc; +12.56 arc</td>
<td></td>
</tr>
</tbody>
</table>

1.58 miles = 12.56 ft or 0.217 ft/mil

220 miles to close in from DC = 0.48 ft

\( h > 1 \times 12.56 \) @ 0.162"

\( h < c @ 0.226" \)
Instrument Check on JAN 11 1974

Ph-I 87.5 V Low Trip OK

IC-1 51.0 -10 Motor Trip OK Fast Trip OK

IC-2 3410 -10 Motor Trip SCRAM OK

IC-3 160 Calibration OK

IC-4 16 Calibration OK

L1 45°3.3 Degrees 7.94°C Open Close

3X3 array

Spacers = 650 mile from eqn.

Spans = 325 mile from eqn.

L1 = 5 side = 6.07 m

#483 was added to remaining position

39d

Same but new spacing = 913 m eqn. eqn.

Inside Bay dim = 24.85 inches

451 483 475

491 351 437

423 439 460

4.71 (24.45°) @ 0.19" <

L4 @ 0.150"

L < 1.84 (8.94°) @ 0.195"
**Instrument Check**

JAN 14 1974

**PH-1**
- 875 V Low Trip: 24/110 OK
  - OK
- Trip: OK

**PH-2**
- 3x10^-10 Meter Trip: OK
- Fast Trip: OK

**PH-3**
- 3x10^-10 Meter Trip: OK
- OK

**PH-4**
- 0.74 Calibration: OK

**PH-5**
- 0.74 Calibration: OK

**PH-3**
- 17.9°C

**Area Closed**

---

**39c**

3X 5 array

Avg spacing: 1.466 miles

Lily: 5 x 10^-6 to 10^-5

**39d**

Made slight adjustment of Lily alignment.

at closed → still only slight multi.

---

**39e**

3X 3 array

New spacing: 1.405 miles

6.700 miles cyg > nee

**39f**

Slight alignment problem at 70 miles from closure

Had a small positive period > 10°

**39g**

Make alignment adjustment and repeat [39g].

---

**39h**

West: 115
East: 125

- 125.7 ± 0.001
- 123.5 ± 0.001
- 1.246
- 1.746
- 3.00 ± 0.001

From (e) to (i): 45 miles: 8.94 ft or 0.199 ft/mile

---

**Note:** a small alignment at this position. Closed = 101
Instrument Check on JAN 15 1974
Source

**875 V** Low Trip **OK**

**Programmer Trip** **OK**

**IC-1** $3 \times 10^{-10}$ Meter Trip **OK**

**IC-2** $3 \times 10^{-10}$ Meter Supply **OK**

**IC-3** $3 \times 10^{-9}$ Calibration **OK**

**IC-4** $3 \times 10^{-9}$ Calibration **OK**

Pressure 0.109

Pressure 0.123

Pressure 0.129

$+3^\circ$C

$+20^\circ$C

$+20^\circ$C

Temperature 18.3°C

Repeat Run #39 b for K-25 personnel.

West

East

IC #3

$+3^\circ$C

$+20^\circ$C

$+20^\circ$C

Temperature 18.7°F

Cylinders 39a

Cylinders 39b

Cylinders 39c

Cylinders 39d

Cylinders 39e

109 mV 60.41 V 0.015
### Instrument Check on JAN 1 5 1974

<table>
<thead>
<tr>
<th>Component</th>
<th>Measurement</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>EM-1</td>
<td>875 V</td>
<td>Low Trip: 0.1 C Trip: SCRAM (OK)</td>
</tr>
<tr>
<td>IC-1</td>
<td>3 x 10^-10</td>
<td>Motor Trip: 0.1 C Fast Trip: 0.1 C</td>
</tr>
<tr>
<td>IC-2</td>
<td>3 x 10^-10</td>
<td>Motor Trip: 0.1 C</td>
</tr>
<tr>
<td>IC-3</td>
<td>10^9</td>
<td>Calibration: 0.1 C</td>
</tr>
<tr>
<td>IC-4</td>
<td>10^9</td>
<td>Calibration: OK</td>
</tr>
</tbody>
</table>

- $P_m = 113$ $\text{deg}$ $\text{psi}$, $t = 18.3^\circ \text{C}$
- Billy Channels
- C:
- Auto Channels

---

**Repeat Run # 39 h for K-25 personnel.**

**West**

<table>
<thead>
<tr>
<th>Mass</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.9</td>
<td>1.0 g</td>
</tr>
<tr>
<td>220</td>
<td>1.02</td>
</tr>
</tbody>
</table>

**East**

<table>
<thead>
<tr>
<th>Mass</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.3</td>
<td>1.02</td>
</tr>
<tr>
<td>229</td>
<td>1.02</td>
</tr>
</tbody>
</table>

**Tc # 3**

109 miles = 20,142,187 fps

---

**Dimensions same as Cylinder Ref # 39**

- Ref # 39
- Ref # 47
- Ref # 46
**4 X 4 ARRAY**

Instrument Check on **JAN 1 6 1974**

<table>
<thead>
<tr>
<th>IC-1</th>
<th>5 x 10^-10</th>
<th>Motor Trip</th>
<th>SCRAM OK</th>
<th>Post Trip</th>
<th>OK</th>
</tr>
</thead>
<tbody>
<tr>
<td>IC-2</td>
<td>3 x 10^-10</td>
<td>Motor Trip</td>
<td>OK</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IC-3</td>
<td>10^-9</td>
<td>Calibration</td>
<td>OK</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IC-4</td>
<td>10^-9</td>
<td>Calibration</td>
<td>OK</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E/1</td>
<td>1.2 x 10^-13</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Trip OK**

**6°C # 20**

**40a 4 X 4 Array**

462 451 468 492
485 491 483 475
438 423 351 437
453 494 431 460

3125 mile spacing cyl-cyl
1560 mile spacing cyl-poly
4 to 5 cm = 3.046 cm
Inside cyl = 121.85 cm

**Taylor & Symm**
### Instrument Check on **JAN 17 1974**

<table>
<thead>
<tr>
<th>Device</th>
<th>Function</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>MB-1</td>
<td>875V Low Trip</td>
<td>OK</td>
</tr>
<tr>
<td>IC-1</td>
<td>3x10^-10 Water Trip</td>
<td>OK</td>
</tr>
<tr>
<td>IC-2</td>
<td>3x10^-10 Water Trip</td>
<td>OK</td>
</tr>
<tr>
<td>IC-3</td>
<td>16Ω</td>
<td>OK</td>
</tr>
<tr>
<td>IC-4</td>
<td>16Ω</td>
<td>OK</td>
</tr>
<tr>
<td></td>
<td>Flow</td>
<td>0.18</td>
</tr>
<tr>
<td></td>
<td>Temperature</td>
<td>5°C</td>
</tr>
</tbody>
</table>

### Notes
- **Area Chant**
- **4x8 spacing and bold**
- **Full top reflector to stationary table only**
- **Inside Body (vertical): 5.7° or 146.6°**
- **West = 114° East = 126° @ "closure"**

---

**40b**
Instrument Check on

JAN 18 1974 Source 604-42

40c 4x4

5 SIDES. REFLECTED WITH 6" DEEPEST POLY.

SPACING = 2.625" cyl-cyl

1.3) = 29.192 cm

Evaluate effect of removing 10" of reflector table only.

Table 40d vs 40c

--

40c

40d
Evaluate effect of adding complete top reflector to stationary table only, i.e. 40e vs 40d.

Inside ventile:

\[ L = 57\frac{1}{4}'' \]
\[ t = 19.5^\circ C \]

<table>
<thead>
<tr>
<th>West</th>
<th>East</th>
<th>Area</th>
<th>IC^3</th>
</tr>
</thead>
<tbody>
<tr>
<td>326</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>272</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>335</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total: \[ 89.57 \] mils; \[ +10.51 \] 

\[ 67.5 \text{ mils} = 10.51 \times 0.0156 \text{ mils} \]

Top reflector stationary table: \[ 34.76 \]
875 V Low Trim 20 RPM ok Trip ok

IC-2 5 x 10^-10 Meter Trim ok Fast Trim ok
IC-3 3 x 10^-10 Meter Trim ok BDC=4mm
IC-4 10^9 Calibration ok

P=0.1 at 2.5

Area cleaned

414 array Poly reflected full 6 sides with E''or more
Spacing "hump" = 7.782'' (7.06 cm) cyl to cyl
Spacing = 1.391'' (3.53 cm) cyl to cyl

Inside Boy "vertical" = 57.855'' avg (147.0 cm) Poly to Poly
Inside Boy "horizontal" = 46.60'' avg (118.5 cm) Poly to Poly

"Substantial" melt, but could not get table together due to slight refl. alignment W:111.3, E:149

S. M. S. 5/11
S. M. S.
S. M. S.
S. M. S.
S. M. S.
S. M. S.
S. M. S.
S. M. S.
<table>
<thead>
<tr>
<th>Location</th>
<th>West</th>
<th>East</th>
<th>TC</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>North</td>
<td>116</td>
<td>119</td>
<td>+10.35‰</td>
<td>+9.68‰</td>
</tr>
<tr>
<td>South</td>
<td>188</td>
<td>191</td>
<td>-13.5‰</td>
<td>-12.1‰</td>
</tr>
</tbody>
</table>

$$L > 1(9.64) \times 0.014"$$

40j. Add to 40j one piece on South only. 

- West: 122" x 6" x 16" 
- East: 122" x 6" x 16" 

$$L > 1(28.15) \times 0.010"$$
RF-1 875 V Low Trip OK High Trip CM1 OK

IC-1 3 x 10^-10 Water Trip OK Past Trip OK
IC-2 3 x 10^-10 Water Trip OK Billy Allen
IC-3 10^4 Calibration 0 K A K
IC-4 10^4 Calibration 0 K 8 K

K^2 (1/3) = Degrees, T = 19.2 C

40.2 Remove all masts (ref. 40.2)
Add to each side 2 price 120.16” 16”
2 pieces 0.55” x 5” x 10”

<table>
<thead>
<tr>
<th>East</th>
<th>West</th>
<th>avg</th>
<th>E # 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>112</td>
<td>118</td>
<td>115</td>
<td>+1.92”</td>
</tr>
<tr>
<td>125</td>
<td>129</td>
<td>129</td>
<td>+1.92”</td>
</tr>
</tbody>
</table>

(4) 716 mils = 16.42” = 0.144”/mil
T = 0.124”

40-40
Remove all mast from north table only

<table>
<thead>
<tr>
<th>East</th>
<th>West</th>
<th>avg</th>
<th>E # 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>112</td>
<td>117</td>
<td>115</td>
<td>+2.32”</td>
</tr>
<tr>
<td>132</td>
<td>138</td>
<td>135</td>
<td>+2.32”</td>
</tr>
</tbody>
</table>

(4) T = 0 = 20 mils = 2.32” = 116°/mil
T = 0.10”

E of full of one table @ 1/2 min, after shut down = 2 K
Preceding shut down was to pass true period of
16.42” step to a fig N (E # 3) of 6.0 then level

10.78°
2 x 2  CONCRETE REF.  59

Instrument Check on JAN 30, 1974
Source: O-60 #20

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 C-1</td>
<td>Motor Trip</td>
<td>OK</td>
</tr>
<tr>
<td>2 C-2</td>
<td>Motor Trip</td>
<td>OK</td>
</tr>
<tr>
<td>3 C-3</td>
<td>Calibration</td>
<td>0.1C</td>
</tr>
<tr>
<td>4 C-4</td>
<td>Calibration</td>
<td>0.1C</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Area Cleared.

2 x 2 close pack (0 separation) 8" concrete (5 sides) (No Top)

Pre-tension:

- 435
- 440
- 473
- 481

Tension:

- 70.4
- 70.4
- 70.4
- 70.4

+ $\alpha = 40.5, \beta = 17.21^\circ, \gamma = 0.425^\circ$

Closure:

- 100 on digitizer
- 372 miles

Spacing:

- 372 miles

41b 2 x 2 with .25" separation between cyl and coil

Some multiplication at 50 miles from closure. Make alignment.
Instrument Check on JAN 31 1974
Source: T.J. Mason

**FC-1** 875 – Low Trip O.K., High Trip O.K.

**IC-1** 3×10^-10 Motor Trip O.K., Fast Trip S.C.P.M. O.K., Block Alarm

**IC-2** 3×10^-10 Motor Trip O.K.

**IC-3** 10^9 Calibration O.K., n/a

**FC-4** 10^9 Calibration O.K., n/a

**IC#3**: Neg Post, t = 19.2°C, One failed 13 Ek

---

41c) Same but 30 miles from closer & about same multiplicative

41d) Add plexiglas (1 each same size) to each table symmetrically = 13/8" x 7/8" x 7/8".

### WestEast

**Res (+)**

<table>
<thead>
<tr>
<th>701</th>
<th>703</th>
<th>Cloud table</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>20</td>
<td>10</td>
</tr>
</tbody>
</table>

**Res (-)**

<table>
<thead>
<tr>
<th>701</th>
<th>703</th>
<th>Cloud table</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>-10</td>
<td>10</td>
</tr>
</tbody>
</table>

\[ \text{IC#3} \]

West East

\[ 245.38 \text{mc} = 4.56 \times 0.234 \times 0.016 \]

41e) Replace 41d plexi with 0.475" x 6", with thick edge flush against rear concrete and resting on top edge of bottom flange.

### WestEast

**Res (+)**

<table>
<thead>
<tr>
<th>701</th>
<th>703</th>
<th>Cloud table</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>20</td>
<td>10</td>
</tr>
</tbody>
</table>

**Res (-)**

<table>
<thead>
<tr>
<th>701</th>
<th>703</th>
<th>Cloud table</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>-10</td>
<td>10</td>
</tr>
</tbody>
</table>

\[ \text{IC#3} \]

\[ 2 = 18.85 \text{mc} = 4.24 \times 0.019 \]

\[ K > 1 \text{ (eq 42φ) } @ 0.019 \]

41f) Replace 41e plexi with [0.475" x 12" x 6"], on each table:

### WestEast

**Res (+)**

<table>
<thead>
<tr>
<th>701</th>
<th>703</th>
<th>Cloud table</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>20</td>
<td>10</td>
</tr>
</tbody>
</table>

**Res (-)**

<table>
<thead>
<tr>
<th>701</th>
<th>703</th>
<th>Cloud table</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>-10</td>
<td>10</td>
</tr>
</tbody>
</table>

\[ \text{IC#3} \]

\[ 7.66 \text{mc} = 12.4 \times 0.039 \]

\[ +0.05 = 38.5 \text{mc} = 12.41 \times 0.322 \times 10^{-6} \]

41g) Remove the plexi from West table; @ closure = Sub-Cut with multi: FC3 = .13
**41b** Use plati on each side = 0.355" x 12" x 16" approximately.

<table>
<thead>
<tr>
<th>Material</th>
<th>Weight</th>
<th>East</th>
<th>Lot</th>
<th>FC</th>
<th>% G</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>100</td>
<td>101</td>
<td>3</td>
<td>104</td>
<td>108</td>
</tr>
<tr>
<td>D (60)</td>
<td>174</td>
<td>176</td>
<td>25</td>
<td>22.33 sec; 36.25 sec</td>
<td>21.2 sec; 26.89</td>
</tr>
</tbody>
</table>

+ to ∞: 24.5 mil: 26.42 - 2.387 mil

**41c** Remove all plati from North table.

**41d** Add back 0.240" x 12" x 16" to North table.

<table>
<thead>
<tr>
<th>Material</th>
<th>Weight</th>
<th>East</th>
<th>Lot</th>
<th>FC</th>
<th>% G</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>100</td>
<td>101</td>
<td>3</td>
<td>104</td>
<td>108</td>
</tr>
<tr>
<td>D (60)</td>
<td>119</td>
<td>122</td>
<td>16</td>
<td>185.9 total: 5.72 sec: 184.3 sec; 5.98 sec; Avg: 5.99</td>
<td></td>
</tr>
</tbody>
</table>

+ to ∞: 20.0 mil = 0.109 % detection value

185 mil one side = 20.79 - 0.181 mil plati value.

Calc "plei per mil basis" the 2 x 2 is +98 % negative.

41h vs 41d calc = -10.89 % value of confidence.

**41k** Use plati on both sides = 0.475" x 12" x 16".

<table>
<thead>
<tr>
<th>Material</th>
<th>Weight</th>
<th>East</th>
<th>Lot</th>
<th>FC</th>
<th>% G</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>192</td>
<td>183</td>
<td>3</td>
<td>13.46 sec</td>
<td>31.84 sec</td>
</tr>
</tbody>
</table>

+ to ∞: 90.5 mil = 36.25 sec - 0.401 mil (from above)

R: (36.25) @ 0.081"
L: (0.172"

**41l** Remove all plati from both sides.

Table closed - sub @ FC #3 = 0.05

**41m** Add 0.2375" x 12" x 16" to North.

<table>
<thead>
<tr>
<th>Material</th>
<th>Weight</th>
<th>East</th>
<th>Lot</th>
<th>FC</th>
<th>% G</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>164</td>
<td>167</td>
<td>3</td>
<td>290.9 sec; 23.11 sec</td>
<td>26.4 sec; 84.90</td>
</tr>
</tbody>
</table>

64.5 mil = 23.76 sec & $0.388^2$/mil

41h vs 41m calc = -97.35 % Avg: 41N = -99.62%
Instrument Check on Feb 1, 1974

- PX-1: 875 V - Low Trip: OK, Trip: OK
- IC-1: 3 x 10^-10 A - Motor Trip: OK, Fast Trip: OK
- IC-2: 3 x 10^-10 A - Motor Trip: OK, Slow Trip: OK
- IC-3: 10^9 A - Motor Trip: OK
- IC-4: 10^9 A - Motor Trip: OK

41 mil 2 x 2 - same as 41 mil but old 4" convert on 4 mils

- Bottom = 8" 4 Mil side = 1/2" convert
- Bottom = 4 mil side = 1/2" convert

- Bottom (4 mil) = 64 mil = 64 + 24.75 = 88.75 mil

- Value of 2 (41 mil 12 x 16) = 65"
**FEB 4 1974**

**Instrument Check**

- **DA-1** 875 Volts Low Trip **OK**  
  Trip **- OK**
- **IC-1** 3x10^-10 Motor Trip **OK**  
  Fast Trip **OK**
- **IC-2** 3x10^-10 Motor Trip **OK**  
  Belt Alignment **A OK**
- **IC-3** 10^9 Calibration **OK**  
  **A OK**
- **IC-4** 10^9 Calibration **OK**  
  **A OK**

**Values:**  
- Temperature: **E**: °C  
- Area Closed: **Q OK**

---

**441p**

Add 141p a full 5" top. Bottom of top consists of 58" from top of bottom constant.

- **West**: 835 893 895
- **East**: 837 898 901

**Post 0**: 57 milo = 22.29 in 0.39 ft/mil

Value of adding top 8" = +0.22.29"

**2.732"**

---

**41e**

Remove 4" from 3 sides.  
**CE Bath 410 + 8" top.**

- **BE (E)**: 702 706 335.83 in 19.88"  
  **CE (E)**: 752 758 335.83 in 19.99"  

**+5":** 5,15 mils = 19.79° = 0.384°/mil

**41v = 41e**

Value 8" top = 19.79°

- **2.1 (19.79°) @ 0.599**
  
- **h = 0.651"**
2 x 2 same spacing + ex.

Bottom = 8"
West side = 12"
S & E side = 16"
D.P. = OPEN

<table>
<thead>
<tr>
<th>Pos (+)</th>
<th>West</th>
<th>East</th>
<th>X</th>
<th>EC'</th>
<th>IC'</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>777</td>
<td>777</td>
<td>738.0</td>
<td>22.62</td>
<td>22.63</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>89.1</td>
<td>240.4</td>
<td>22.60</td>
<td>219.6</td>
</tr>
</tbody>
</table>

Total = 58 miles = 22.62 $ = 0.39 $/mil

410 vs 410 = 132 miles (4) x (4) x 0.34 = 44.88 $.

4.71 (22.62 $) @ 0.673
500 @ 0.75

Had some concrete which came from West End smears as OK.
### Instrument Check on

**Date:** FEB 4 1974  
**Source:** 60°C 60°  

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-1</td>
<td>3 x 10^-10 Motor Trip</td>
<td>OK</td>
</tr>
<tr>
<td>10-2</td>
<td>3 x 10^-10 Motor Trip</td>
<td>OK</td>
</tr>
<tr>
<td>10-3</td>
<td>10^-8 Calibration</td>
<td>OK</td>
</tr>
<tr>
<td>10-4</td>
<td>10^-8 Calibration</td>
<td>OK</td>
</tr>
</tbody>
</table>

**Note:**
- **Rev #13:** Dig. Pwr: T = °C; Area Clav = C OK.

---

### Calculations

Add to 41p a full 8” top. Better if top consists in 58” film top of bottom fourth:

<table>
<thead>
<tr>
<th>Code</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dc</td>
<td>0.835</td>
</tr>
<tr>
<td>Dc</td>
<td>0.895</td>
</tr>
</tbody>
</table>

**Post Dc**

- $Dc = 57"$, $DC = 22.29"$ or $0.391"/mil$
- $Dc$ at $0.789"$

### Remaining

**Note:**
- 4” from 3 sides.

**Value:**

- $Dc = 0.702", Dc = 0.706", DC = 3.558", DC = 1.980", DC = 36.3", AV +15.79$

**Post:**

- $DC = 51.5$mile $= 19.79" = 0.384"/mil$

### Comparison

- **41p vs 41r**
- Value 8" top = 19.79"
### Instrument Check on FEB 5, 1974

<table>
<thead>
<tr>
<th>Component</th>
<th>Test Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>EM1</td>
<td>625 V</td>
</tr>
<tr>
<td>IC-1</td>
<td>0 K, OK</td>
</tr>
<tr>
<td>IC-2</td>
<td>0 K, OK</td>
</tr>
<tr>
<td>IC-3</td>
<td>0 K, OK</td>
</tr>
<tr>
<td>IC-4</td>
<td>0 K, OK</td>
</tr>
</tbody>
</table>

**Notes:**
- 2/13: Avg. Resp. 1.93°C
- 2/14: Avg. Chk: 1°C
- 2/15: 2x2 6 sides re-pnt w/ 8" concrete
- Add 2 percs [each: 2375 x 12" x 6" to each]
- \( R_2^2 + \) :
  - .256
  - .260
  - .258
  - .264
  - .300
  - .304
- \( \delta^2 \) :
  - .04
  - .05
  - .12
  - .24

\[ R = 39 \text{ mils} + 16.72^\circ = 0.429 \text{ G/mil} \]

\[ 197 \times (3.74) = 73.58^\circ \]

### Remove 1 piece (123.75") from table

<table>
<thead>
<tr>
<th>Piece</th>
<th>East</th>
<th>West</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.158</td>
<td>.163</td>
</tr>
<tr>
<td>2</td>
<td>.202</td>
<td>.208</td>
</tr>
</tbody>
</table>

\( (\text{+}) \to (\text{-}) = 44.5 \text{ mils} + 17.20^\circ = 0.387 \text{ G/mil} \)

\( (\text{-}) \to (\text{+}) = 36.0 \text{ mils} - 16.28^\circ = 0.427 \text{ G/mil} \)

\( \delta \text{ closer} = 34.27^\circ \)

Values of 1 piece (5):

\( 1.73.69 - 144.76 \text{ (avg. 867)} = -7.218^\circ \)
Instrument Check on FEB 6 1974 
Source 67 # 20

IC-1 375V Test Trip 80mm 0\% Past Trip 0\% OK
IC-2 375V Meter Trip 80mm 0\% Test OK
IC-3 10-9 Calibration 0\% A OK
IC-4 10-9 Calibration 0\% B OK

Hall 113 - Deg 8.58°; T = 19.2°C; Dear Clerk: 0.015

4/1v

Repeat 41v

Press (4) 155 161 123 145.6°C 10.96° 86.3°C 10.16° 96.10°C
Te (0) 288 288 288
Neg (-) 299 305 305 -2.8°C -6.8°C Same

\( +340 \times 3 = 20\text{mils} = +10.86° \)
\( -340 \times 3 = -16\text{mils} = -6.80° \)

\( \frac{+10.86°}{-6.80°} = 1.6 \times \frac{1}{1.6} = 0.3884/mil \)

Remove 1 piece (2.375") from North table

Press (4) 159 163 125.9°C 8.04° 72°C 121.1°C 8.23°C Avg 8.14°
Te (0) 180 186 186
Neg (-) 205 211 211 -173.7°C -9.69° Same

\( +340 \times 2 = 22.5\text{mils} = 8.14° = 0.362\% \text{mil} \)
\( -340 \times 2 = -9.69\text{mils} = 0.385\% \text{mil} \)

\( A_{\text{elena}} = 31.0 \% \)

Value of 1 piece \( \text{(} = 33.52 \) \)
\( \text{Value} = 69.56 - 2(3352) - 2(3.41) \)
\( = -76.30 " \text{ Clean}"

\( \text{AVG (41v + 41v)} = 74.12° \)

\( 41v = 41mv 
\frac{41v + 41v}{2} = 25.38° \)
Jones, Wintzell, Buttfield made a survey of the 4x4 sides vertically with one side given the 'working time' for stacking the complete configuration on one table. Wintzell estimated one man and 15 minutes assigning one man did all the stacking and under the worst conditions, this limitation can be improved immensely by using more people and stacking optimally.

The following basic data was used for above est.

<table>
<thead>
<tr>
<th>Date</th>
<th>BF 3 A</th>
<th>BF 3 B</th>
<th>IC #4 A</th>
<th>IC #4 B</th>
<th>IC #4 C</th>
<th>IC #4 D</th>
<th>IC #4 E</th>
<th>IC #4 F</th>
<th>IC #4 G</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/29/74</td>
<td>53</td>
<td>7495</td>
<td>13478</td>
<td>24983</td>
<td>127806</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2/4/74</td>
<td>53</td>
<td>6850</td>
<td>25620</td>
<td>125000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>53</td>
<td>4843</td>
<td>630</td>
<td>.004</td>
<td>.0046</td>
<td>7/18/74</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>25620</td>
<td>13478</td>
<td>.045</td>
<td>.045</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>125000</td>
<td>53</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

** All full side (but 16" wide) was removed from W300 (Row)  
* IC#4 was located @ 8 ft. east on back side of concrete (away from concrete) on South Table. This is the same position as 1016.5 FN Survey bench readings were taken.
Run 4/14

1. 7-74

2. 13-74

15 Min After Run

3. 14-74

200 mR By

4. 19-74

7 mR By

Approx 35 Min
After Run

All Readings Are Mreus Neutrons Except where indicated by BY.
2x2 8" concrete on 6 sides. 

Wet: 5.5 cu ft 6" high = 0.625 cu ft 6.38 cm 
All 6 to 6.5 cu ft = 0.625 cu ft 159 cm 
2 to 2.5 cyd = 99.824 cm

Stopp at 39" mile table separation with a positive 6' + 2/3. Squat 
the concrete.

Align concrete somewhat and add one piece of 
Dural on each side. 1/2"-thick, 1.2 x 1.5" high 
Bottom horizontal edge even with weld of 
end flange.

Stopp at 39" mile table separation with a 
positive period of 8' + 5/4. 

Make slight alignment 

<table>
<thead>
<tr>
<th>East</th>
<th>West</th>
<th>EC&quot;H</th>
<th>EC&quot;V</th>
</tr>
</thead>
<tbody>
<tr>
<td>101</td>
<td>108</td>
<td>351</td>
<td>354</td>
</tr>
<tr>
<td>111</td>
<td>120</td>
<td>738.5</td>
<td>737.5</td>
</tr>
<tr>
<td>+2.00 = 11 mile + 3.39 0.308 t mil</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

39" mile: 0.031"

Remove 1 piece of dural from north table 

<table>
<thead>
<tr>
<th>East</th>
<th>West</th>
<th>EC&quot;H</th>
<th>EC&quot;V</th>
</tr>
</thead>
<tbody>
<tr>
<td>101</td>
<td>107</td>
<td>474</td>
<td>471</td>
</tr>
<tr>
<td>117</td>
<td>157</td>
<td>50.6</td>
<td>50.6</td>
</tr>
<tr>
<td>+2.00 = 47 mile = 15.93 0.339 t mil</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

39" mile: 0.047"

47 x 39 = 15.93 - 3.39 = 12.54 0.047 per dural piece 

15.93 + 12.54 = 28.47 t clean cheek per dural calculation.
Instrument Check on FEB 8 1974 Source 60C #20

Resistors:
- R1: 975 Vols. - Low Trip SCRAM OK
- IC-1: 3x10^-10 Ohms Trip OK - Fast Trip OK
- IC-2: 3x10^-10 Ohms Trip OK - Calibration OK
- IC-3: 1x10^{-9} Ohms Calibration OK
- IC-4: 1x10^{-9} Ohms Calibration OK

42A: Repeat with no local in ice - clean conf.

66: \( P_{in} = \frac{\text{Eff}}{\text{Eff} + \text{Eff}} \)

76: \( T_{eff} = \frac{\text{Eff}}{\text{Eff} + \text{Eff}} \)

42B: Remote Top (all)

67: \( t_{top} = \frac{\text{Eff}}{\text{Eff} + \text{Eff}} \)

77: \( t_{top} = \frac{\text{Eff}}{\text{Eff} + \text{Eff}} \)

\( t_{top} = \frac{25.5 \pm 0.39}{9.06} \)

\( t_{top} = \frac{9.64}{9.94} \)

\( t_{top} = \frac{0.049}{0.077} \)
Change spacing to flange cyl to cyl = 0.158 cm
cyl to cone = 0.080 cm
$2 \times L = 22.684$

2 X 2.5" side - 8" cone.

\[ \frac{w}{x^2} \frac{k}{c^2} \]
\[ R \times \theta \]
\[ D \times \theta \]
\[ 2.975 \times 2.78 \times 2.5 + 48.59 \times 16.3 \times 4.48 \times 16 \times 16 \]

$+L \times \theta = 37.5 \text{ mile} = 16.29 \text{ ft} = 0.494 \text{ ft/mile}$

Actual CL @ \( \theta = 210 \text{ mils} \) (39): 75.8 @ closure

\[ 43a \times 214 = 163 \text{ mile} \] (42) + 81.5 - 150 = 81.5

\[ 43a \times 216 = 150 - 215 = 251 \times 4 \]

\[ 43a \times 217 = 150 - 215 = 251 \times 4 \]

\[ 43a \times 211 = 150 - 215 = 251 \times 4 \]

$A_{cl} = 81.0$ %

\[ k > 1 (16.29) @ 0.174'' \]

\[ k < 0 @ 0.211'' \]
<table>
<thead>
<tr>
<th>Test</th>
<th>Value</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>R-1</td>
<td>87.5 VDC</td>
<td>Low Trip: OK, Trip: 57 VDC, OK</td>
</tr>
<tr>
<td>R-2</td>
<td>3x10^-10</td>
<td>Motor Trip: OK, Fast Trip: OK</td>
</tr>
<tr>
<td>R-3</td>
<td>6.9 ohm</td>
<td>Calibration: OK</td>
</tr>
<tr>
<td>R-4</td>
<td>10 ohm</td>
<td>Calibration: OK</td>
</tr>
<tr>
<td>R-5</td>
<td>10 ohm</td>
<td>Calibration: OK</td>
</tr>
</tbody>
</table>

Room #113: Avg Press: 10, T = 19.2°C

Area Cleaned

43B

Same as 43A, but add full 8' top. Cured 2hr / 15°C

Post 0°C: 31.5 mls, 13.17°F, 0.4187 mls
43B vs 43A = 13.17°F value of top.

using closure calculation: 43B vs 43A = 13.58°F
diff @ closure: 11°F value.
Instrument Check of Feb 12 1974 (60°C ± 10°C) Trip OK

**IC-1** 875 vars Low Trip OK (5 min) Trip OK

**IC-2** 3 x 10-10 Mixed Trip SUCK OK Post Trip OK

**IC-3** 10-9 Calibration OK

**IC-4** 10-9 Calibration OK

Avg #113 = 7.42 Kue, t = 19.2°C Area Cleaned C, OK

\[ \text{Avg } f = 4.043 \text{ mks ML6 set.} \]

Spacing \( c - c' = 3.175 \text{ cm} \)

\( d = d' = 25.700 \text{ cm} \)

\( h = 85.09 \text{ cm} \)

\[ 2 \times 2 \] (5 sides reflected with 8" outlines)

**Table closed**

1C #4 reads 0.12 (ref pg 68)

1C #2 reads 18.5

1C # A 76070

1C # B 3750

**Add** playforms to each side symmetrically.

16" x 6" x 960° to north table (one piece)

16" x 6" x 960° to south table (3 pieces)

- Positive G) .155 .158 +33.66 cm 20.67° +32.00 cm; 21.31° Avg 20.99

- DC (e) .216 .221

- Deg (c) .243 .248 -184.4 sec 3.07 -189.6 sec; 215.8° 5.5° 8.86

- + to DC = 62 mls; 20.99° = 0.3334°/ml

- x to = -27 mls = -3.251°/ml

**4C** Remove 100 miles ply from south table

- Positive c) .190 .106 +16.01 cm 31.30° Same

- DC (f) .201 .209

- x to DC = 102 miles = 31.30° = 0.313°/ml
Instrument Check on FEB 13 1974

Page 74

Lynn & Case

Source 60-C-20

Page 74

EB-1  8.751/4  Low Trip  OK  Trip "OK"

10-1  3 x 10^-16  Water Trip  OK  Post Trip  Skim  OK
10-2  3 x 10^-16  OK  Post Trip  Skim  OK
10-3  10^-9  Calibration OK  A - OK
10-4  10^-9  Calibration OK  B - OK

Personal  54.9°  +19.2°C

45.4°  Removed jigsaws.

(41)  Added 4" Concrete to 7.26 for (EWW & E)

W  E  N

T-3  T-4

Pos  439  449  +25.84  -24.17  26.58  23.80  23.17

d  508  520  +28.86  -10.61  176.69  108.32  10.72

+ to DC = 3.96 miles  .3427 #/mil

DC to  = 3.1 miles  .3458 #/mil

< 1 (23.99°)  0.341"

< 1 (0.41°)  0.412"

< 1 (10.72°)  0.422"
Instrument Check on FEB 14 1974 Source 6-6 A 720

FM-1 87.5° Low Trip OK Trip OK

IC-1 24V " Water Trip OK Fan Trip OK

IC-3 2.4 x 10⁻¹ Water Trip: 88°C 26°C Cools Normally

IC-4 10⁻³ Calibration 5°C 29°C C = OK β = 0°C

New Cland - 49°C 16" Concrete (3.8 cm)

44 A Added 4" Concrete + 3 miles (5.5 km)

W E 1 IC-1 IC-4
On (+) 0.8 0.8 0.5 0.5 22.58 23.58 25.78 25.78
Rg (-) 0.6 0.6 0.6 0.6 -1.4 1.4 1.4 1.4 Some -1.37

\[ k \approx \begin{cases} 0.558 & \text{if } 0.456'' \\ 0.558 & \text{if } 0.533'' \\ 0.558 & \text{if } 0.565'' \end{cases} \]

\[ + \text{ DC } = 76.5 \text{ miles } \times 0.3388 \text{ /mil} \times 0.388 \text{ /mil} \]

\[ \text{DC to } Rg = 35.5 \text{ miles } \times 0.3371 \text{ /mil} \]

95 A vs 44 A

\[ 0.514 \times 0.355 = 0.125'' \times 121.5 \times 3.464 = 42.09' \]

46 B Added 8" Concrete to top.

Cavity = 58'' ft.

W E 1 IC-1 IC-4
On (+) 0.670 0.670 0.670 45.50 16.34 16.34 16.34
Rg (-) 0.717 0.717 0.717

Bo to DC = 48 miles x 0.3371 /mil

46A vs 46B Value for top

\[ 0.514 \times 0.355 = 0.125'' \times 32.8 \times 16.18 = 28.86' \]

\[ k > 1 (16.18') @ 0.569'' \]

\[ k \approx 0.615'' \]
### Instrument Check on FEB 15 1974

<table>
<thead>
<tr>
<th>Item</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>IC-1</td>
<td>3X10^-10</td>
</tr>
<tr>
<td>IC-2</td>
<td>3X10^-9</td>
</tr>
<tr>
<td>IC-3</td>
<td>1X10^-7</td>
</tr>
<tr>
<td>IC-4</td>
<td>1X10^-6</td>
</tr>
<tr>
<td>Trip</td>
<td>18.2°C</td>
</tr>
</tbody>
</table>

Additional Notes:
- Removed 4" concrete from 3 side (N, S, E)
- 
<table>
<thead>
<tr>
<th>W</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>1604</td>
<td>4114</td>
</tr>
<tr>
<td>1562</td>
<td>4114</td>
</tr>
</tbody>
</table>

\[
\text{46 B vs. 46 C}
\]

- 3264 = 32.64
- 18.00 - .66 = 17.34
- 15.72
- 23.06

\[
\text{21 (18.00) @ 0.449^1}
\]

\[
\text{20 @ 0.497}
\]
Remove 4 from sides 2 x 2 with 6 sides reflected with 8" cone.

Table closed 2 x 2

Remove all plexi (ref 46D)
Add 17.5" x 16" x 6" per south table 3 pieces
.75" x 16" x 16" per north table 1 piece

Weather East

<table>
<thead>
<tr>
<th>Prc</th>
<th>1.10</th>
<th>1.02</th>
<th>closed</th>
<th>93</th>
<th>94</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dc</td>
<td>1.87</td>
<td>1.89</td>
<td></td>
<td>175.39</td>
<td>-9.53</td>
</tr>
</tbody>
</table>

+70 D = 86.5 mls: +357.14 = 0.300/lmld
Dc to = 30.5 mls: -9.74 = 0.321/lmld

0.0087
1.21 (0.05%) @ 0.117
Remove from South title 2.74 mil thickness

2.14 (4.96) use plus 1.27 mile from ech side of the 7.55 thickness

Pos (1) 10.1 10.4 close 12.2y 22.4y 20.4
32.4 112.2y 10.25 38.2 2.14

46F vs 46E +2.14 23.77

274 mile of plex = 33.074 = 0.08434/mil

1208 mile (0.8434/mil) = 104.85 ft of ply

x 2 (4.8 mils) / 8" concrete = +2.14 = 104.85 = 107.91

-1.1 (1.733) @ 0.378"
-120 @ 0.423"

47D vs 47C direct mono (positive)
+17.93° vs -8.64° = 26.57° value of 2.5 mil of ply

Plow: 4 mil = 0.0966°
1208 (0.0966) = -116.69° with all plow out
Value from concrete close = +136.08° = +17.41° clear conf.

Do Not Use
Instrument Check FEB 20 1974 Source (C) #20

RM-1 875 Volts Low Trip OK Trip OK
IC-1 3x10^-10 Water Trip 2.5 cm Post Trip OK
IC-2 5x10^-10 Water Trip OK
IC-3 10^-9 Calibration OK
IC-4 9^-9 Calibration OK
Run #3 Pressure
Area Closed
C. OK

47A
2.92 cyl. are same as Run #44A
8 concrete
Spacing cyl 2.5 cm
3 sides
Cyl to concrete = 1.245 cm
4.14 = 25.014 cm

closed table in sub-critical. \( R^2 = 0.003 \) from 0.0015

47B
Same but reheat concrete to eliminate
an open space at inner corner which was
3.3 cm, a dense and 3.5 cm deep. Note that 8"
also concrete was stacked behind the gap.

47C
Repeat but add plex as described Run #65

\[
\text{West East} \quad \frac{IC}{C} \quad \frac{EC}{C} \quad EC \quad HC \quad HC
\]
\[
\begin{array}{c|c|c|c|c|c|c}
\text{Pos (t)} & \text{70} & \text{181} & \text{12} & \text{17.8} & \text{142.6} & \text{17.79} & \text{17.83} \\
\text{Pos (t)} & \text{63} & \text{157} & \text{2} & \text{2} & \text{2} & \text{2} & \text{2}
\end{array}
\]

+6.2 \rightarrow 45.5 mil = 17.8 \rightarrow 0.392 mil

47D
Remove same plex as described Run #65
Add (from nothing) 3 pieces of ply-
A - each side (1.2375" x 1/8 x 6")

Rec (+)
.224 .231 .235 + .043 sec + .050 sec + .051 sec + .038 sec - .0264 sec.
.264 .273 .283

\[ k>1 \text{ (15.86\%)} @ 0.127" \]
\[ k\approx \text{ at } 0.168" \]

[474] Remove one piece from sand table

Rec (+)
.145 .151 .155 .047 sec + .02.23 sec + .0296 sec + .0297 sec = 22.78\%
.210 .219 .226

66.5 mil = 22.85\% on 0.344$/mil @ 1.78 mil.

\[ 25 \text{ to } \infty = 54$/mil @ 0.365$/mil = 19.71\% \text{ per unit} \]

\[ \text{ defend } = 19.71 \times 3 = 59.13\% \text{ value to be removed} \]

\[ \text{ spacing } = 114.5 \text{ miles (3.4)} = 33.93\% \text{ value by closing} \]

\[ i.e. (34) \text{ is avg$/mil from } \]
\[ \text{ curve between 115 miles & closed.} \]

\[ 43 \text{ miles to closed from the (+) period} \]

\[ 19.71 (3) = 59.13\% \text{ to be removed i.e. ply;} \]

\[ 43 \text{ mil} (0.34) = 14.62\% \text{ to be added by closing table} \]

\[ \text{ period } = 22.85\% \text{ to be added (as per calculation above).} \]

\[ k\approx 0 \text{ (12.85\%)} @ 0.043" \]
\[ k\approx \text{ at } 0.110" \]
<table>
<thead>
<tr>
<th>Item</th>
<th>Check</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>NI-1</td>
<td>875 VOLT, Low Trip</td>
<td>OK</td>
</tr>
<tr>
<td></td>
<td>Trip</td>
<td>OK</td>
</tr>
<tr>
<td>TC-1</td>
<td>3x10^-10</td>
<td>Meter Trip</td>
</tr>
<tr>
<td></td>
<td>Fast Trip</td>
<td>GMCW</td>
</tr>
<tr>
<td>TC-2</td>
<td>3x10^-10</td>
<td>Meter Trip</td>
</tr>
<tr>
<td></td>
<td>Alarm (Alt)</td>
<td>A ok</td>
</tr>
<tr>
<td>TC-3</td>
<td>10^-9</td>
<td>Calibration</td>
</tr>
<tr>
<td></td>
<td>A ok</td>
<td></td>
</tr>
<tr>
<td>TC-4</td>
<td>10^-9</td>
<td>Calibration</td>
</tr>
<tr>
<td></td>
<td>B ok</td>
<td></td>
</tr>
</tbody>
</table>

Ref: 48A | Degree | Area Closed | C ok |

48B | 2x2 | Beides reflected with 8" concrete |
    |     | closed and sub-critical |

48C | Add one piece of plexi to each side (1.23x75"x12"x6") |

West | East |
--- | ---|
1.101 | 1.01 |
1.722 | 1.729 |

\[ \text{Volume} = \text{Area} \times \text{Depth} \]
\[ = 29.86 \text{ cc} \times 22.36 \text{ cc} \]
\[ = 29.86 \text{ cc} \times 22.36 \text{ cc} \]
\[ = 22.264 \text{ cc} - 0.297 \text{ cc/ml} \]

48D | 75 mils = 22.264 - 0.297 \text{ cc/ml} |

48E | Remove one piece from South face |

West | East |
--- | ---|
1.01 | 1.02 |
11600 | 11600 |
1.064 | 1.064 |

\[ \text{Area} = \text{Depth} \times \text{Width} \]
\[ = 1273 \times 0.979 \]
\[ = 1.05 \text{ cc} \]

\[ \text{Volume of one piece plexi} = 21.21 \text{ cc} \]

\[ \text{Value calc} = 21.21 - 1.05 \]
\[ = 20.16 \]
Same as 48B except: top is removed. Sails reflected

\[ \text{West} + \text{East} \]

\[ 1.10 \quad 1.10 \
1.13 \quad 1.13 
1.54 \quad 1.58 \]

\[ TC^4 \quad TC^4 \]

\[ +94.7 \text{sec.}; +10.1^\circ \quad +92.6 \text{sec.}; +10.2^\circ \]

\[ \text{Avg.} 10.1^\circ \]

\[ 48B \text{ vs. } 48D = 22.26 - 10.19 = 12.07 \text{ Value Top} \]

\[ +0.19 = 3.4 \text{ mil.} = 10.19 \times 0.300 \text{ mil.} \quad @ \times 1.17 \text{ mil.} \]

\[ -0.19 = 2.2 \text{ mil.} \quad 2.15 = 0.325 \text{ mil.} \quad @ \times 2.43 \text{ mil.} \]

\[ 10.19 = \text{ add as period} \]

\[ 42.42 = \text{ pulse as plexi} \]

\[ -32.23 \text{ in clean conf.} \]

\[ [\text{Using 48c plexi}] \]

\[ z = 0.34^\circ \]

\[ 2 < 1 (7.15^\circ) < 0.056^\circ \]

\[ 47^\circ \quad \text{Add} 0.124 "12" \times 6" \text{ to fourth table for plexi, evaluate, check.} \]

Value of 0.124 piece: 48D vs 48E = 12.34\]

\[ \text{West} \quad \text{East} \]

\[ 1.09 \quad 1.00 
1.16 \quad 1.75 \]

\[ TC^4 \quad TC^4 \]

\[ -28.7 \text{ sec.; } 23.71^\circ = 49.5^\circ \quad 23.34^\circ \]

\[ \text{Avg. 22.53} \]

\[ 22.53\times \text{ add as period} \]

\[ 52.80 \times \text{ azimuth } (6.97 \times 6.97) \text{ for } 49.5^\circ \text{ mil plexi value} \]

\[ -35.27\text{ in clean conf.} \]

\[ [\text{Using 48E value of plexi}] \]

\[ \text{D+E} = -33.75^\circ \]
$3 \times 3$ Array

Bottom = 8" CONCRETE
S, N, W = 8" CONC.
E = 8" ON ONLY 1/8

Closed table: Surface very little multiplication.

Spacing Fl6 - Fl6 = 8.255 cm
" Fl6 - Conc = 4.128 cm
to 4 Conc = 30,780 cm

SAME BUT ADD REMAINING CONCRETE TO EAST SIDE.
" S, N, W with 8" CONCRETE

1. POS. (+) .531 .631 127.69 sec; 123.39" 198.02 sec; 198.02 sec
2. POS. (0) .627 .639 ∞
3. POS. (-) .670 .682 180.000; -9.23" -180.000; -8.62 Ave -8.93"

+ to ∞ = 106 mils = 22.69" = 0.214 $/mil$
- to = 49 mils = 8.93" = 0.203 $/mil$

Rough est. Conc to closest table:
530 mils ($0.2$ $/mil$) = +106 $/mil$
probably more like +20 $/mil$ due to $mil$ error.

$\sqrt{1}$ (22.69") @ 0.426"
$\sqrt{2}$ @ 0.533"
$\sqrt{2}$ (8.93") @ 0.576"
Change flange springs.

Spacing: $h_1 - h_2 = 8.662 \text{ cm}$

$h_1 - conl = 4.331 \text{ cm}$

$2 \times 14 \text{ cyl} = 31.186 \text{ cm}$

Table locked about 50 mils closing due to some physical restriction of alignment was approved. 20 at this point as indicated.
Page dimensions: 617.0x795.0

Instrument Check on FEB 2 7 1974 Source

FM-1 3.75 400 Hz Low Trip OK Trip SGMM OK

IC-1 3.71 x 10^-10 Motor Trip OK Fast Trip OK
IC-2 3.4 x 10^-10 Motor Trip OK
IC-3 1.6 x 10^-9 Calibration OK
IC-4 1.8 x 10^-9 Calibration OK
Rm #13 - Neg Disc Area Cleared E OK

49 D

Make alignment adjustments

PC + 0.100 West 0.100 East
PC + + 0.100 West 0.100 East

49 E

Add full 8" trip to 49 D

PC + 0.912
PC - 1.006

Average

1.047
1.058
-20.5, 2.50, -7.76

Rough set to closed = .906" (0.175 mil/sec) = 159°

49 F

Remove 4" compute from the top.
5 sides = 8"; top = 4" compute

PC + 0.761
PC - 0.819

Average

0.791
0.814
-59.7; 12.94; 66.04; 13.98; 13.84

Rough set to closed (account) - .720 (0.175 mil/sec) = 126°
50A

Close pack linearity & k = 32.525 cm 6 cyl

NORTH

492 - 493 - 438 | 351 - 468 - 437

BF3 when table open = 26,200 cm
BF3 and table closed = 70,850 cm

Closed table West = 100 cm, East = 0.99

8" concrete on bottom
8" on side

50B

11 cylinders

485 - 439 - 492 - 483 - 438 on North
351 - 468 - 437 - 451 - 475 - 491 on South

8" bottom
8" on side

BF3 table separated = 40,500 cpm
BF3 table closed = 100,700 cpm

150C

13 cylinders

8" bottom
12" on movable table (outside) East
8" on stationary (outside) East

NORTH


BF3 table separated = 53,200 cpm
BF3 table closed = 101,300 cpm
Entrainment Check on MAR 1 1974 Source

<table>
<thead>
<tr>
<th>IC-1</th>
<th>875 V/IC Low Trip</th>
<th>OK</th>
<th>Trip</th>
<th>OK</th>
</tr>
</thead>
<tbody>
<tr>
<td>IC-2</td>
<td>3 x 10^-10 Water Trip</td>
<td>OK</td>
<td>Post Trip</td>
<td>5 ppm OK</td>
</tr>
<tr>
<td>IC-3</td>
<td>10^-9 Calibration</td>
<td>NO</td>
<td>NO</td>
<td></td>
</tr>
<tr>
<td>IC-4</td>
<td>10^-9 Calibration</td>
<td>OK</td>
<td>B OK</td>
<td></td>
</tr>
</tbody>
</table>

RM 113 = Neg Proc, Area Cleared = OK

13 cylinders

12" Wall of concrete on East side only
BF_{3} same position, table separated: 56850 cpm
BF_{3} table closed: 39100 cpm

Same cylinders as Same 12" Wall on East side of the linear array.
Add 6" concrete to West side of 4-4' depth, 4-4' depth only.
Put BF_{3} in slightly different position:
BF_{3} table separated: 40000 cpm
BF_{3} table closed: 10000 cpm

Complete the single stacker (50b)
14 flakes high

\[
BF_{3} - 5p \rightarrow 27000\text{ cpm}
\]

West East

Poa (+)

30° 128°

\[
\begin{align*}
\text{Width} &= 12" \\
\text{12°} \\
\text{9°}
\end{align*}
\]

\[
R > 1 (19.2°) @ 0.195''
\]
50g - Same but remove cyl 12 from table. Note that a small crack was closed (grinded) in the 8" concrete.

West East 1C +3
Pc (+) .308 283 +22.49 sec + 26.15 ft
Dc (O) .382 357 —

Field 26.15 ft or 0.353 A/m.

260 x .353 = +19.2 ft. calc 20 ft. cloud.

1994 value is insignificant change due to cloud.

50h - Same as 50g except remove cyl 1485

11 cyl East
West East 1C +3
Pc (+) .308 275 +47.18 sec; + 16.63 ft
Dc (O) .356 333

48 milo = 16.63 ft or 0.346 A/m.

230 x .346 = + 80 ft calc closed.

Relative Air Dia after shutdown = 95.3 = 18 mt/sec.

491 - 475 - 451 - 439

6 cyl

50J - Remove 491 - 475 - 451 - 439

12" 12"

8"

Very slightly out at 30 mils from closure. L = 0.047
1 x 5 Array

1. 875 Volt Trip. OK
2. 3 x 10^-10 Water Trip. OK
3. 2 x 10^-10 Water Trip. OK
4. 10^-9 Calibration. OK
5. Rim #113: Depth. Clear. Closed

50K

Remove Cyl #437
Add: 16" high concrete to West side of #492.

Sub: \( h_{\text{rel}} = 0.03 \) m from closed due to alignment.

50L

Add to the partial stack (cyl 50L) to make the [8" only 16" H] become 8" only 28" H.

\[
\begin{array}{c|c|c}
& \text{West} & \text{East} \\
\hline
\text{R2} & 0.427 & 0.493 \\
\text{R0} & 0.407 & 0.493 \\
\end{array}
\]

\[ \frac{12.73}{41.3425} + 18.15 = 1024 \]

\[ L > 1 (18.15^\circ) @ 0.318" \]

\[ K = 0.385" \]
Remove #49 from #111
Reinstall #437 to south

Space between cyl = 4.138cm
Plus touch, cabinet i.e. 0.6
Total = 26.63cm

Sub: 30 mils from closed table, very little multiplication.

Add full ends, at touch of concrete, except that this is at 0.87" crack at northwest corner.

Note: 0.013
500

Add to 500, Total = 550

Size 12" x 10" placed wrong way and pointing on concrete.

8 4" of concrete, W=50cm, T=8cm, Bottom

Super 18" x 8" spaced. Chock = 3.08m, 2.03cm, 0.08
50R  **Remove one piece (1.130" x 1.16 x 1.6")** 93

Dec 6

50S  **Remove another (1.130" x 1.16 x 1.6")**

So the remaining piece is 0.729" thick, which is spherical @ 3/16" from edge of cone.

Res. (D)  .126, .110 closed +351.294 -212.564 -712.54

+ 724.604 -734.64 -212.564 -712.54

(x) 711.5 mil = 2440.5 = 0.2067 mil

(x) 724.604 = 7.944 = 0.2517 mil

\[ V \approx 0.117 \]

\[ x < 1 (3.35\%) @ 0.144" \]

\[ \text{Value one piece} = 2.304 \]

---

50Q x 5 50S = 26.875 19.784 = 6.574 value of 260mil of plate.

ie 0.02527 mil of plate:

729(0.02527) = 18.42 to be removed

\[ 19.784 \text{ to be added} \]

---

50Tn  **Add an 8" tool "T = 8"** NESW = 12" 137 not closed due to alignment

West = .172 East = .157 estimated period worth +264 (cont.)

50TB  **Rerun after some alignment**

West = .147 East = .134 still not closed (See cloud 50S)

Period worth: +30.7% (drawn price)
Repeat after alignment.

\[ \text{West} \quad \text{East} \]
\[ +1.17 \quad +1.3 \quad \text{closed} \quad +178.00 '' \quad +4.98'' \quad +19.34'' \quad +28.30'' \]

\[ \text{Inc} \quad 1 \quad 4 \quad \text{Inc} \quad 3 \quad 2 \quad 5 \quad + 0.06 \quad \text{or} \quad +0.206'' \quad \text{in/in} \]

\[ 50s \text{ vs. } 50Tc \quad \begin{array}{c}
8''\text{ TOP Value} = 9.15''
\end{array} \]

\[ \begin{array}{c}
\text{Cond} \quad \text{E} \quad 0.141 \quad \text{E} \quad 0.173
\end{array} \]

50Tc : Remove the 0.729'' plexi.

50Tc : Add the 260 mils (ref 50s)

Value of 260 mils = 6.57'' from 50s

\[ \text{West} \quad \text{East} \quad + C \quad 4 \quad 3 \quad 1 \quad 2 \quad 5 \quad +504'' \quad +2.36'' \]

\[ 0.0 + 2.36 - 6.57 = -4.21'' \]

Summary

Clean Cont. Cyl. Spacing = 4.138 cm

\[ \begin{array}{c}
\text{Hinge to End} = 0.00'' \quad \text{cm} \\
\text{Bottom} = 8'' \text{ concrete} \\
\text{TOP} = 8'' \text{ concrete} \\
W= 5 \quad W= 12'' \text{ concrete} \\
8'' \text{ TOP} = 9.15'' \\
\text{Reactivity of conf.} = -4.21'' \\
\text{cyl R value} = 26.663 \text{ cm}
\end{array} \]
Instrument Check on MAR 6 1974 Source 60A #20

FM-1 875 v, 60Hz Low Trip OK Trip OK

IC-1 3 x 10^-10 Motor Trip, SCR, OK Post Trip 0 IC

IC-2 3 x 10^-10 Motor Trip OK Billy Alarm

IC-3 10^-9 Calibration OK

IC-4 10^-9 Calibration OK

Set #1/3: Deg Per Area: Clear OK

---

Add the 0.75" thick plexiglass (ref. 50TD)

Remove 4" concrete from 3/5 of the West Reflector

Sub IC#3 = 0.28

Same as spacing.

---

Add 4" concrete back to west wall... all 12"

Remove 12" from South end of linear array.

Sub IC#3 = 0.30

Same as spacing.

---

Optional Table

Movable table same as above.
Change cyll. spacing (flap) to 3.810 cm²

B-8, E-12, N-12, W-12, S-12, T-8" concrete cyll.

\[ \text{Cyl. spacing} = 26.385 \text{cm} \]

<table>
<thead>
<tr>
<th>Pos.</th>
<th>East</th>
<th>IC</th>
<th>IC#1</th>
</tr>
</thead>
<tbody>
<tr>
<td>+1</td>
<td>1.19</td>
<td>1.19</td>
<td>+24.1/20cc; 25.16 + 24.11cc; 425.16</td>
</tr>
<tr>
<td>-1</td>
<td>1.57</td>
<td>1.57</td>
<td>-188.6 cc; -8.69</td>
</tr>
</tbody>
</table>

\[ \text{Plus}=136 \text{ mils}; \text{Minus}=41.5 \text{ mils} \]

50 TE vs 53A = 4.21 + 25.16 = 29.37

**Note:** This is at the above position and is assumed closed at this point in time. Due to the rather close cylinder spacing, the spacing is increased by 0.318".

This Config. Reactivity = 25.16° with above assumption.

See next pg. for resolution of the above position problem.

**Note:** Use +53C for final reactivity.

8" on bottom.
8" on top @ 58" inside.

Clear Config. = +27.78°

\[ \text{Flg to Flg spacing} = 3.810 \text{ cm} \]

\[ \text{Flg to ambit} = 0.0 \text{ cm} \]

[Width of 0.328 cm change of spacing @ 3.96 cm = 99.74 cm²]

50 TE (summing) vs 53C (summing)
Instrument Check on MAR 7 1974 Source C 20

Table:

| IC-1 | 310°-10° | Motor Trip: OK | Fast Trip: SCRAM 0IC |
| IC-2 | 310°-10° | Motor Trip: OK | Light Alarm |
| IC-3 | 10°-9° | Calibration: OK |
| IC-4 | 10°-9° | Calibration: OK |

Part #113 = Dog Bone: Area Closure C: OK

53B

Smyr up slight alignment.

Reason 53A

Reader (+) 1.11 1.12 21.80 sec, 27.15° + 20.31 sec, 27.60°

V = 27.38°

53C

More adjustment to concrete. Reason 53B

Reader (+) 1.06 1.01 closed +20.14 sec, 24° 20.96 sec, 27° 20.96 sec, 27°

Avg +27.28°

Reactivity of Cool closed = +27.28°

See sketch 19.97

53D

Add 4" concrete to East side of South Tabel.

8" Top of Bunkers

Same separation (spacing)

1.31 (25.59°) @ 0.146°

1.06 @ 0.285°

1.06 @ 0.285°

1.06 @ 0.285°

Pit 1 (10.13°) @ 0.331°

+ to 1 = 139 mils, 22.29° = 0.211 %/mil

- to 1 = 146.5 mils, 10.13° = 0.218 %/mil
Add 4" concrete to East side of North Fld.

Photo Pg 101

\[
\begin{align*}
\text{PC} & = 13.49 & \text{EC} & = 4.28 \\
\text{DC} & = 14.73 & \text{EC} & = 4.72 \\
\text{Neg} & = 5.17 & \text{EC} & = 5.16 \\
\end{align*}
\]

\[\text{AvC} = \frac{148.89 + 197.2 + 443.07 + 77.67}{4} = 122.8\]

\[
\begin{align*}
+ 10 & \infty \text{ m} & = 17.70^\circ & 0.21^\circ & \text{ m} \\
- 20 & \infty \text{ m} & = -9.70^\circ & 0.221^\circ & \text{ m}
\end{align*}
\]

53 D vs 53 E = width of 53E addition = 17.70 ±

53 C vs 53 D = width of 53D addition = 15.59 ± (using curve)

53 C vs 53 E = 4" full addition is $46.20^\circ$ (using curve)

\[
46.20^\circ + 27.38^\circ = 73.58^\circ \text{ calc to closed}
\]

\[
\begin{align*}
\text{K} & > 1 (17.70) @ 0.285'' \\
\text{K} & \leq 1 (9.70) @ 0.413''
\end{align*}
\]

$\text{F/mil vs Table Sep. Curve}$

Linear Array Concrete Replacement
53F  Remove North end concrete

MOBILE TABLE  Same Spacing of 8" on bottom & top
16"  12"

Say:  1c" 3" = 0.03

53G  Add 4" concrete to open ends above.
      i.e. 4" touching cylinder.

<table>
<thead>
<tr>
<th></th>
<th>West</th>
<th>East</th>
</tr>
</thead>
<tbody>
<tr>
<td>1c&quot;</td>
<td>1/4&quot;</td>
<td>1/4&quot;</td>
</tr>
<tr>
<td>16&quot;</td>
<td>1/4&quot;</td>
<td>1/4&quot;</td>
</tr>
</tbody>
</table>

\[ \frac{39.93}{18.65} + \frac{40.00}{18.37} \]
\[ \text{Avg} = 18.51 \]

\[ +16 \approx 102 \text{ mil} = 185 \text{ in} \]

\[ \text{Avg} = 0.007 \]

B:8, W:4.5 = 12, E:16, W:12, T=8  concrete retested

53H  Add 4 more inches to North end

<table>
<thead>
<tr>
<th></th>
<th>West</th>
<th>East</th>
</tr>
</thead>
<tbody>
<tr>
<td>1c&quot;</td>
<td>1.387</td>
<td>1.387</td>
</tr>
<tr>
<td>16&quot;</td>
<td>1.387</td>
<td>1.387</td>
</tr>
</tbody>
</table>

\[ \frac{285.6}{4.39} + \frac{285.6}{4.39} \]
\[ \text{Avg} = 4.20\text{"} \]

53E vs 53H
\[ +17.20" \text{ vs } +4.20" = 13.50\text{"} \]

286 mils (1908) = 5456" + 4.2" = 5876°

From the 12" North concrete:
- Remove 4" from N -> North = 14.82°
- Remove 8" from N -> North = 55.07°  i.e. an additional
NOTE: There is only 12" on South (Left hand), Only one brick was laying top in view.
1X4 Array  
Instrument Check on 8 MAR 1974 Source 60C 920

RP-1 875 volts Low Trip 750mV OK Trip 0.2C

IC-1 3x10^-10 Motor Trip OK Fast Trip 0.2C
IC-2 5x10^-10 Motor Trip OK
IC-3 10^-9 Calibration OK
IC-4 10^-9 Calibration OK

Rm #113 - Neg Diff; blew channel

[Diagram]

54A Remove cyl #431 Put others at contact.

Spacing 7/8" = 1.0cm

Cyl. # 1 = 22.525 cm

Cyl. # 431 = 48.9 cm

R=8, N=12, S=12, E=16, W=12, T=0 concrete reflected.

Super Critical (2 + 15°) @ Table digit: 1.480

very rough cut = +300'ichard

54B Make cyl. spacing = 0.932 cm (7/8 to 7/8)

23.457' + to 7th cyl.

Raff same as above.

Super (2 + 15°) @ Table digit: 0.920

k>1 (±15°) @ 0.816
D. Change cyl. spacing to \(2.203\text{ cm} \pm 0.002\),
\[cyl. \frac{1}{8}
\] = \(24.728\text{ cm}\)

<table>
<thead>
<tr>
<th></th>
<th>West</th>
<th>East</th>
</tr>
</thead>
<tbody>
<tr>
<td>(P_{2x}(+))</td>
<td>1.239</td>
<td>0.232</td>
</tr>
<tr>
<td>(P_{2y}(+))</td>
<td>1.335</td>
<td>0.329</td>
</tr>
<tr>
<td>(P_{2y}(-))</td>
<td>0.374</td>
<td>0.369</td>
</tr>
</tbody>
</table>

\[+\rightarrow \infty = 96.5\text{ mil} ; 23.30^\circ \approx 0.241^\circ \text{ mil} \quad @ \ 3.18^\circ \text{ direction} \]
\[\infty \rightarrow - = 39.6\text{ mil} ; 10.88^\circ \approx 0.275^\circ \text{ mil} \quad @ \ 25^\circ \]

Note: This conf. has an addition to the ref. specified in Unit \#54\(\frac{3}{4}\) the following:

- 8" over the top of cyllide, \#438. Also some additional points on North \& South ends.

\(f = 1 (23.70^\circ) \approx 0.130^\circ\)
\(f = \infty \approx 0.219^\circ\)
\(f = 1 (12.36^\circ) \approx 0.264^\circ\)

**Clean Up** above by removing item per note. Remain reflected as noted.

\(f_2 (+)\) | 0.236 | 0.231 |
| \(f_2 (-)\) | 0.324 | 0.321 |

\[\rightarrow \infty = 89\text{ mil} ; 33.70^\circ \approx 0.266^\circ \text{ mil} \quad @ \ 217^\circ \quad \approx 12.36\]
\[\infty \rightarrow - = 45\text{ mil} ; 12.36^\circ \quad 0.275^\circ \text{ mil} \quad \approx 2.49\]

See plot p. 101

-\(\infty \) closed: 219.5 mil \(\times 0.2336^\circ\) mil from same \(+\frac{3}{4}1.28^\circ\)

\(f = 1 (23.70^\circ) \approx 0.130^\circ\)
\(f = \infty \approx 0.219^\circ\)
\(f = 1 (12.36^\circ) \approx 0.264^\circ\)
54E  Add an 8" top to 54D.

\[
\begin{align*}
\text{West} & \quad \text{East} \\
\text{Pos}(+) & \quad 326.0 \quad 319.0 \\
\text{Neg}(-) & \quad 370.0 \quad 365.0 \\
\end{align*}
\]

\[
\begin{align*}
\text{Pos} & \quad \text{Neg} = 45 \text{ mile} = 4 \text{ or } 0. \\
\text{Smile Factor Equation} & \quad 1.26 \text{ mil}
\end{align*}
\]

\[
\begin{align*}
\frac{\text{54D}}{\text{54E}} = \frac{\text{Value of Top} + 6 \text{" addition}}{\text{Neg} \div \text{Not (light)}} = \frac{10.55'}{11.22'} \\
\text{AVG} = 10.89'
\end{align*}
\]

2645 miles to closest (2393.2 mil from curve) = 163.35'

54F  Remove 4" from East Wall.

\[
\begin{align*}
\text{West} & \quad \text{East} \\
\text{Pos}(+) & \quad 124 \quad 113 \\
\text{Neg}(-) & \quad 194 \quad 189 \\
\end{align*}
\]

\[
\begin{align*}
\text{Pos} & \quad \text{Neg} = 74.5 \text{ mil} = 16.15' \\
\text{Smile Position} & \quad 0.217 \text{ mil} \quad 0 \text{.217 mil} \quad 110 \text{ mil}
\end{align*}
\]

\[
\begin{align*}
A = 1(16.15') \quad @ \quad 0.014'' \\
\end{align*}
\]

\[
\begin{align*}
\text{Smile Position} & \quad 0.217 \text{ mil} \quad 110 \text{ mil}
\end{align*}
\]

\[
\begin{align*}
\text{Smile Position} & \quad 0.217 \text{ mil} \quad 110 \text{ mil}
\end{align*}
\]
### Instrument Check on MAR 13, 1974 Source 60 Y 420

<table>
<thead>
<tr>
<th>Part #</th>
<th>Voltage</th>
<th>Low Trip</th>
<th>OK</th>
<th>Trip</th>
<th>OK</th>
</tr>
</thead>
<tbody>
<tr>
<td>IC-1</td>
<td>2x10^-10</td>
<td>Motor Trip</td>
<td>OK</td>
<td>Fast Trip</td>
<td>OK</td>
</tr>
<tr>
<td>IC-2</td>
<td>2x10^-10</td>
<td>Motor Trip</td>
<td>OK</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IC-3</td>
<td>10^-9</td>
<td>Calibration</td>
<td>OK</td>
<td></td>
<td>A</td>
</tr>
<tr>
<td>IC-4</td>
<td>10^-9</td>
<td>Calibration</td>
<td>OK</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>Run #113</td>
<td>Negligible</td>
<td>t = 215°C, Unclear</td>
<td>C</td>
<td>OK</td>
<td></td>
</tr>
</tbody>
</table>

### 55A
Remove cyl # 483

- Cylinder @ contact (CP)
- Spacing = 0.0 (CP)
- Cyl - Cyl = contact (CP)

\[ B = 8", N = 16", S = 16", E = 16", W = 16", T = 8" \text{ on North Table only} \]

### Table

<table>
<thead>
<tr>
<th>Run #</th>
<th>BF#/G (CPM)</th>
<th>IC #</th>
<th>Scale Bin</th>
<th>South</th>
<th>50c</th>
<th>TOP Refl</th>
<th>BF Refl</th>
<th>TABLE Sep (in)</th>
<th>PLEXI Thick (mm)</th>
<th>E (in)</th>
<th>L (in)</th>
</tr>
</thead>
<tbody>
<tr>
<td>55A</td>
<td>9,270</td>
<td>107x10^-9</td>
<td>85</td>
<td>0</td>
<td>0.0036</td>
<td>0.063</td>
<td>0.04</td>
<td>53.0</td>
<td>0.0</td>
<td>29.5</td>
<td></td>
</tr>
<tr>
<td>55B</td>
<td>9,494</td>
<td>107x10^-9</td>
<td>8</td>
<td>1.5</td>
<td>0.0040</td>
<td>0.011</td>
<td>0.04</td>
<td>53.0</td>
<td>0.635</td>
<td>23.16</td>
<td></td>
</tr>
<tr>
<td>55C</td>
<td>9,600</td>
<td>107x10^-9</td>
<td>85</td>
<td>1.5</td>
<td>0.0039</td>
<td>0.04</td>
<td>0.04</td>
<td>53.0</td>
<td>0.0</td>
<td>29.5</td>
<td></td>
</tr>
</tbody>
</table>

[Diagram]

- 3/4" x 3/4" x 44 1/2" plywood between [438, 351], [351, 468]
- Spacing of South and concrete from cyI flange
- IC # 2 @ # 4 placed alongside of West concrete.
55F Remove 4" concrete from West Side.
B=8"; N=16"; S=16"; E=12"; W=12"; T=8"

West

East

IC 3

124.7

124.7

IC 4

197.2

203.2

203.2

124.7

-39.2

-3.4

-3.4

33.4

20.32

34.07

20.52

20.92

20.92

26.17

28.9

129.2

28.9

29.7

-18.1

-8.79

-18.1

-9.1

-8.79

-9.1

1962 x 1000 = 271 miles: 20.92 = 0.305 $/mil @ = 128 position

25.5 miles = 8.969 = 0.351 $/mil @ = 175 position

164.5 miles (from curve: 0.010) = $47,954

21 (0.020) @ 0.167

55F Remove 4" concrete from East Side.
B=8"; N=16"; S=16"; E=12"; W=12"; T=8"

West

East

IC 3

113.2

113.2

IC 4

149

155

149

155

-240.4 sec +464

-248.4 sec +462

-248.4 sec +462

49.5 sec -8.84

-306.5 sec -18.78

-306.5 sec -18.78

49.5 sec -8.84

12.5 miles = 4.634 = 0.265 $/mil @ = 38 position

10.5 miles = 2.81 = 0.768 $/mil @ = 50 position

49 miles (from curve: 0.250) = $12,689 @ Closed

21 (0.033) @ 0.032

210 @ 0.049

21 (0.060)

55F Remove 8" top

B=8"; N=16"; S=16"; E=12"; W=12"; T=0

West

East

IC 3

102

106

102

106

+76.9 sec 11.45

78.73 sec 11.54

78.73 sec 11.54

11.45

11.54

11.45

11.54

40.5 miles = 11.52 = 0.284 $/mil @ = 20

21 (0.020) @ 0.042

1 (0.025) from W = 0.25 + 11.52 = 11.77 @ Closed

55F vs 55F = 0.92 @ Value TOP
<table>
<thead>
<tr>
<th>Pin</th>
<th>Table Separation (in.)</th>
<th>IC#2 (10^10/m)</th>
<th>IC#4 (10^9/m)</th>
<th>Reflection (in.)</th>
<th>Emissivity</th>
<th>BT (°K)</th>
<th>550°/16°</th>
<th>7°/44°</th>
<th>52°/14°</th>
<th>BFA (°K)</th>
</tr>
</thead>
<tbody>
<tr>
<td>56A</td>
<td>0.0</td>
<td>0.6</td>
<td>0.023</td>
<td>0.6</td>
<td>0.123</td>
<td>1.450</td>
<td>842°</td>
<td>459°</td>
<td>52°</td>
<td>4550°</td>
</tr>
<tr>
<td>B</td>
<td>0.0</td>
<td>1.7</td>
<td>0.023</td>
<td>1.7</td>
<td>0.123</td>
<td>1.910</td>
<td>71°</td>
<td>48°</td>
<td>38°</td>
<td>4913°</td>
</tr>
<tr>
<td>C</td>
<td>0.0</td>
<td>1.7</td>
<td>0.023</td>
<td>1.7</td>
<td>0.123</td>
<td>1.910</td>
<td>71°</td>
<td>48°</td>
<td>54°</td>
<td>4640°</td>
</tr>
</tbody>
</table>

- IC#2 @ surface of West concrete
- IC#4 @ surface of West concrete
- BFA(A) West side 10° above 113° floor.
- BFA(B) West side 3° above 113° floor.
### Instrument Check

**Run** | **ZG R.** | **IC R.** | **XG R.** | **YB** | **OFFSET** | **CONC. REFLECT.** | **BT N S E W** | **Cyl** | **Eot**
--- | --- | --- | --- | --- | --- | --- | --- | --- | ---
**061** | 53 | 0.55 | 1.3 | 0.002561 | 0.167 | 0.161 | 12.2 | 4.98 | 27.505
**56E** | 53 | 0.50 | 1.0 | 0.001910 | 1.017 | 1.717 | 16.16 | 14.98 | 27.505
**56F** | 53 | 0.5 | 1.05 | 0.0019 | 1.017 | 1.717 | 16.16 | 3.63 | 27.505
**56G** | 53 | 0.5 | 1.05 | 0.0019 | 1.017 | 1.717 | 16.16 | 3.63 | 27.505
**56H** | 53 | 0.5 | 0.98 | 0.0025 | 5.439 | 4.51 | 4.98 | 27.505
**56I** | 53 | 0.5 | 1.0 | 0.0025 | 5.439 | 4.51 | 4.98 | 27.505
**56J** | 53 | 0.5 | 1.02 | 0.0025 | 5.439 | 4.51 | 4.98 | 27.505
**56K** | 53 | 0.5 | 0.98 | 0.0025 | 5.439 | 4.51 | 4.98 | 27.505

**SEE Plot Top Pg 111**

\[
\frac{IC+XG+YB}{4} = \frac{1000 + B + 100}{4}
\]

**Width = 20.2 cm ± 12.2 cm**
<table>
<thead>
<tr>
<th>Run #</th>
<th>SEP. Position</th>
<th>CONCRETE RECTANGULAR</th>
<th>B</th>
<th>F3</th>
<th>A</th>
<th>B</th>
<th>F3</th>
<th>TCA 10&quot;</th>
<th>IC4 Chart</th>
</tr>
</thead>
<tbody>
<tr>
<td>57A</td>
<td>53</td>
<td>88888880</td>
<td>925.3</td>
<td>1524.2</td>
<td>1338</td>
<td>0.30</td>
<td>0.020</td>
<td></td>
<td></td>
</tr>
<tr>
<td>57B</td>
<td>53</td>
<td>88883584</td>
<td>1327.5</td>
<td>2120.4</td>
<td>1302</td>
<td>0.60</td>
<td>0.030</td>
<td></td>
<td></td>
</tr>
<tr>
<td>57C</td>
<td>53</td>
<td>8888888</td>
<td>1590.7</td>
<td>2271.8</td>
<td>1372</td>
<td>0.60</td>
<td>0.034</td>
<td></td>
<td></td>
</tr>
<tr>
<td>57D</td>
<td>53</td>
<td>8888888</td>
<td>16987</td>
<td>22357</td>
<td>1426</td>
<td>0.60</td>
<td>0.032</td>
<td></td>
<td></td>
</tr>
<tr>
<td>57E</td>
<td>53</td>
<td>8888888</td>
<td>16820</td>
<td>20440</td>
<td>1457</td>
<td>0.60</td>
<td>0.035</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* See Drawing pg 111.
Some comments:

- 57E: Same conf as 57E except that all items are in contact.
- 8" concr. off on all sides (b) 16" concr. between cyto and 
  materials.

<table>
<thead>
<tr>
<th>Table &amp; Sp</th>
<th>IC1 &amp; 2</th>
<th>IC4 &amp; 4</th>
<th>BF &amp; A cm²</th>
<th>BF (B cm²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>53 m</td>
<td>0.68</td>
<td>0.005</td>
<td>23939</td>
<td>19276</td>
</tr>
<tr>
<td>0 m</td>
<td>1.20</td>
<td>0.0105</td>
<td>32723</td>
<td>2703</td>
</tr>
</tbody>
</table>

ADD 2 cylinders

leta = 460° (74° 37')

* More from 8" to 8" = 63.17 cm
  Cost/but = 8 to 8" = 22.53 cm
  8" concr. on 6 sides
  (8" mi. center)

* If table were closed
Instrument Check on MAR 22 1974

Low Trip: 5/10

Motor Trip: 3x10^-10

Calibration: 10^9

Area: 0.15

Temp: 21°C

West: 1.273

East: 1.281

Revolution: 1.77° + 42.99sec + 123.4 + 13.95sec + 17.94° + 17.55°

Total: 216.2 miles or 0.079199

Remove 4" more as now have 8" concrete pipe still abutting south cylinder

West: 1.954

East: 1.940

Total: 22.95

118 miles: 13.17° = 0.118°/mil

Remove 4" more as now have 4"
Spread cil. 4'4" apart: N 5 1/4

East and West of closed:

- 73.32 5cm
- 8" concrete (6 sides) + section (3) filled with concrete 5 3/4"
- Section (6) void.

58 E

West East
1.101 1.123 closed
3x10^-10 (2.2) 0.265 8750

58 F

Section (3) (4) (5) filled. Section (6) void.
3x10^-10 (0.9) 0.115 29427

58 G

Sections (3) (4) (5) are filled. Section (6) is void.
3x10^-10 (0.45) 0.060 15967

58 H

All sections filled
23 2 3.38
Concrete is besides table
Ledge 0.132"

3x10^-10 (0.65) 0.060 1573 0.65
10x10" (0.6) 0.085 26945

Wall @ 53"
3x10^-10 (0.18) 0.022 5973
10x10" (1.7)
Instrument Check on MAR 25 1978 Source 60k Co #20

**N-1** 875 Volts
Low Trip: OK
High Trip: OK

**IC-1** 3 x 10^-10
Motor Trip: OK
Fast Trip: 0.1 C

**IC-2** 3 x 10^-10
Motor Trip: OK

**IC-3** 10^-9
Calibration: 0.1 C

**IC-4** 10^-9
Calibration: 0.1 C

Pm #113 = Neg. Pmu. T - 205°C.

---

**581** Repeat 58H

\[
\frac{t_{x+y}}{t_{x+y}} = \frac{t_{x+y}}{t_{x+y}}
\]

\[
\text{table} @ 53" \quad \frac{(x \times 10^{-11}) \times 1.4}{0.021} = 6010
\]

\[
\text{table} @ 0.07" \text{ separation: } 7.9 \quad 0.094 \quad 21625
\]

---

**585** Add 4" concrete to North side. \(N = 12"\)

\[
@ 53" \quad 1.45 \quad 0.0215 \quad 0.364
\]

\[
\begin{array}{cccc}
\text{Rec. (I)} & 1.18 & 0.190 & 0.185" \\
\text{Dr. (CO)} & 1.84 & 0.248 & 0.195" \\
\text{Neg. (-)} & 1.94 & 0.297 & 0.199" \\
\end{array}
\]

\[
\frac{t_{x+y}}{t_{x+y}} = \frac{t_{x+y}}{t_{x+y}}
\]

\[
\begin{array}{c}
+ \infty = 60 \text{ mils} = 0.070\% \text{ mil}
\\
\infty = 39 \text{ mils} = 0.071\% \\
\end{array}
\]

\[
\text{85 mils} \times (0.070\% \text{ mil}) = 5.95 + 4.20 \quad \text{Closed} + 10.15\% \\
\text{Cure 58K 90B}
\]
Repeat 585 after slight contact adjustment.

75 miles = +5.54; 0.07 = 4/"mil

80 miles x (0.07/"mil") = 5.68 + 5.54 = closed + 11.19 4"

Add 4" to South Side.

Table Separation

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>P 82</td>
<td>2.5&quot;</td>
<td>25.0</td>
<td>2.40</td>
</tr>
<tr>
<td></td>
<td>2.85&quot;</td>
<td>28.15</td>
<td>2.90</td>
</tr>
<tr>
<td></td>
<td>3.0&quot;</td>
<td>30.05</td>
<td>3.20</td>
</tr>
</tbody>
</table>

(+) 0.500" = 11.12 4'
(-) 0.300" = 6.57 4'

(0.071 + 0.022) 4/mile x 2900 = 135 4' Very Rough Cut

* 4" will on South = 184 4' more
Instrument Check on Source 606 #20

FM-1 875 MHz Low Trip STRAM OK Trip OK

IC-1 3 x 10^-6 Motor Trip OK Fast Trip OK
IC-2 3 x 10^-6 Motor Trip OK
IC-3 10^-9 Calibration OK
IC-4 10^-9 Calibration OK

Well 113 - Depth 300 Cleaned C OK

Had photo made of 58% with tape from side and top (from above).

Repeat # 58A 8-8-8-8-8-8-11 months

West East Table

<table>
<thead>
<tr>
<th>W-e</th>
<th>West</th>
<th>East</th>
<th>Sep</th>
<th>IC # 3</th>
<th>IC # 4</th>
<th>Avg</th>
</tr>
</thead>
<tbody>
<tr>
<td>113</td>
<td>991</td>
<td>987</td>
<td>0.882</td>
<td>+71.9</td>
<td>71.7</td>
<td>71.8</td>
</tr>
<tr>
<td>1127</td>
<td>1076</td>
<td>1072</td>
<td>0.972</td>
<td>1038</td>
<td>94.6</td>
<td>97.6</td>
</tr>
</tbody>
</table>

(+to (-)) = 55.9 mL = 0.0124 mL = 0.1244 mL
(-to (+)) = 55.9 mL = 6.49 mL = 0.1189 mL

Move North table UF 6 cycle back (northward 3/4") and mount North and compass so there is 3/4" void between it and UF. South table came as 58M.

3/4" space

@ 53" 10x10^-12 2.8 1.0032 56.1
0" 10x10^-15 6.3 1.097 29200 Sub
### Table 1

<table>
<thead>
<tr>
<th></th>
<th>West</th>
<th>East</th>
<th>Total Skip</th>
<th>IC #3</th>
<th>IC #4</th>
<th>Avg</th>
</tr>
</thead>
<tbody>
<tr>
<td>P2</td>
<td>1.101</td>
<td>1.107</td>
<td>0.0&quot;</td>
<td>+125°8</td>
<td>+18.08</td>
<td>+8.18</td>
</tr>
<tr>
<td>DC</td>
<td>1.185</td>
<td>1.193</td>
<td>0.085&quot;</td>
<td>123°21</td>
<td>14.17°</td>
<td></td>
</tr>
<tr>
<td>Neg</td>
<td>-2.253</td>
<td>2.233</td>
<td>0.125&quot;</td>
<td>-383°0</td>
<td>-3.60°</td>
<td>-3.62</td>
</tr>
</tbody>
</table>

\[ \text{Total North} = \pm 85.5 \text{ mil} = 8.139^\circ = 0.0956 \text{ mil} \]

\[ \text{Total North} = \pm 40 \text{ mil} = 3.659^\circ = 0.0913 \text{ mil} \]

---

### Table 2

<table>
<thead>
<tr>
<th></th>
<th>West</th>
<th>East</th>
<th>Total Skip</th>
<th>IC #3</th>
<th>IC #4</th>
<th>Avg</th>
</tr>
</thead>
<tbody>
<tr>
<td>P11</td>
<td>1.011</td>
<td>1.070</td>
<td>0.0&quot;</td>
<td>+231°5</td>
<td>+498</td>
<td>+5.09</td>
</tr>
<tr>
<td></td>
<td>1.151</td>
<td>1.160</td>
<td>0.052&quot;</td>
<td>212°57</td>
<td>5.18°</td>
<td></td>
</tr>
</tbody>
</table>

\[ \text{Total North} = \pm 52 \text{ mil} = 0.0986 \text{ mil} \]
<table>
<thead>
<tr>
<th>ITEM</th>
<th>LOCATION</th>
<th>IDENT. NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coss</td>
<td></td>
<td>60454</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TRACKS</th>
<th>SCANS</th>
<th>TRACKS/SCAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

CALIBRATION FACTOR: TRACKS/SCAN PER MILLIREM
DOSE EQUIVALENT THIS FILM: 20 MREM
NOTE: 1 STAR TRACK

<table>
<thead>
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<th>IDENT. NO.</th>
</tr>
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<tr>
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CALIBRATION FACTOR: TRACKS/SCAN PER MILLIREM
DOSE EQUIVALENT THIS FILM: 50 MREM
NOTE: 1 STAR TRACK

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CALIBRATION FACTOR: TRACKS/SCAN PER MILLIREM
DOSE EQUIVALENT THIS FILM: 20 MREM
NOTE: 1 STAR TRACK

NON-RECORD FILM DATA (NTA)

REQUESTER
ADDRESS
REMARKS

NON-RECORD FILM DATA (NTA)

REQUESTER
ADDRESS
REMARKS

NON-RECORD FILM DATA (NTA)

REQUESTER
ADDRESS
REMARKS

NON-RECORD FILM DATA (NTA)

REQUESTER
ADDRESS
REMARKS

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REQUESTER
ADDRESS
REMARKS

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ADDRESS
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REMARKS

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REQUESTER
ADDRESS
REMARKS

NON-RECORD FILM DATA (NTA)

REQUESTER
ADDRESS
REMARKS

NON-RECORD FILM DATA (NTA)

REQUESTER
ADDRESS
REMARKS

NON-RECORD FILM DATA (NTA)

REQUESTER
ADDRESS
REMARKS
### 4 x 8 x 16 in. (nom.) Concrete Blocks
Random Samples (2 Apr 74) - JRT

<table>
<thead>
<tr>
<th>Sample</th>
<th>Weight (kg)</th>
<th>Width (cm)</th>
<th>Thickness (cm)</th>
<th>Length (cm)</th>
<th>$\rho$ (g/cm$^3$)</th>
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</thead>
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<tr>
<td>1</td>
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<td>10.18</td>
<td>40.50</td>
<td>2.146</td>
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<tr>
<td>2</td>
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<td>17.600</td>
<td>20.74</td>
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<td>2.112</td>
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<tr>
<td>5</td>
<td>17.960</td>
<td>20.60</td>
<td>10.32</td>
<td>40.65</td>
<td>2.078</td>
</tr>
</tbody>
</table>

$\bar{x} \pm$ $\bar{v} \rightarrow$ 17.809 20.56 10.20 40.35 2.105

$\pm$ $\rightarrow$ 0.109 0.06 0.03 0.84 0.016
<table>
<thead>
<tr>
<th>Material</th>
<th>ID</th>
<th>Wall</th>
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<tr>
<td>Steel</td>
<td>8.035&quot;</td>
<td>0.1800&quot;</td>
</tr>
<tr>
<td>Monel</td>
<td>8.000</td>
<td>0.1875</td>
</tr>
<tr>
<td>Nickel</td>
<td>8.000</td>
<td>0.1875</td>
</tr>
</tbody>
</table>

"Steel" alloys are more reactive by about 6%.

At 250°C, a reaction rate of \(2 \times 10^{-12}\) to 10 times faster than metal.
44.70" Dim @ 20"
67.45 Avic @ 20"
**Independent Estimations of UF₆ Heights in Cylinders**

<table>
<thead>
<tr>
<th>Cylinder Number</th>
<th>Original JRT &amp; JJL</th>
<th>JJL</th>
<th>JRT</th>
<th>ERR</th>
<th>RKR</th>
<th>(°) Height Average</th>
<th>Height Average (cm)</th>
<th>Mass (kg)</th>
<th>Volume (cm³)</th>
<th>ρ (g/cm³)</th>
<th>(a + b \times x) (g/cm³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>460</td>
<td>30.0</td>
<td>26.5</td>
<td>29.5</td>
<td>--</td>
<td>--</td>
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<td>108.024</td>
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<td>33.5</td>
<td>33.0</td>
<td>31.5</td>
<td>32.5</td>
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<td>30.0</td>
<td>83.82</td>
<td>109.589</td>
<td>27.182</td>
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<td>40.5</td>
<td>39.5</td>
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<td>41.5</td>
<td>40.8</td>
<td>40.6</td>
<td>40.0</td>
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<td>109.884</td>
<td>33.441</td>
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<td>34.5</td>
<td>30.5</td>
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<td>32.0</td>
<td>31.6</td>
<td>80.26</td>
<td>110.043</td>
<td>26.028</td>
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<td>--</td>
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<td>29.3</td>
<td>74.42</td>
<td>110.178</td>
<td>24.134</td>
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<td>32.5</td>
<td>33.5</td>
<td>33.0</td>
<td>34.0</td>
<td>33.3</td>
<td>84.58</td>
<td>110.178</td>
<td>27.129</td>
<td>4.02</td>
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<td>38.5</td>
<td>38.5</td>
<td>37.0</td>
<td>38.5</td>
<td>38.6</td>
<td>98.04</td>
<td>110.451</td>
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<td>3.50</td>
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<td>32.2</td>
<td>31.2</td>
<td>31.9</td>
<td>81.03</td>
<td>110.610</td>
<td>26.278</td>
<td>4.21</td>
<td>4.23</td>
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<tr>
<td>439</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
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<td>--</td>
<td>110.904</td>
<td>--</td>
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<td>4.32</td>
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<td>32.5</td>
<td>--</td>
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<td>34.5</td>
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<td>29.0</td>
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<td>75.95</td>
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<td>4.45</td>
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<tr>
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<td>--</td>
<td>34.5</td>
<td>31.0</td>
<td>35.5</td>
<td>33.6</td>
<td>85.34</td>
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<td>35.5</td>
<td>31.5</td>
<td>36.0</td>
<td>35.4</td>
<td>89.92</td>
<td>112.042</td>
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<td>38.5</td>
<td>37.5</td>
<td>38.5</td>
<td>41.5</td>
<td>38.9</td>
<td>98.81</td>
<td>113.353</td>
<td>32.043</td>
<td>3.54</td>
<td>3.46</td>
</tr>
</tbody>
</table>

Average: 4.084 (new 5 readings average)

\(\frac{\Sigma x^2}{\Sigma y} = 109.302.67\)
\(\Sigma xy = 5127.49\)
\(\Sigma x = 1,274.31\)
\(\Sigma y = 60.94\)

\(\frac{(\Sigma x^2)}{\Sigma y} = 1,623,865.98\)
<table>
<thead>
<tr>
<th>No.</th>
<th>Reflectors</th>
<th>Array</th>
<th>Flange-to-Flange (cm)</th>
<th>$\mathcal{Q}$ to $\mathcal{Q}$ Reactivity at Closure</th>
<th>Derived from Estimates from Radiographs</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>Bare</td>
<td>2 x 8</td>
<td>0</td>
<td>22.525</td>
<td>3.950 $\mu$A/m² $\times 10^3$</td>
</tr>
<tr>
<td>9</td>
<td>Bare</td>
<td>3 x 3</td>
<td>0</td>
<td>22.525</td>
<td>3.950 $\mu$A/m² $\times 10^3$</td>
</tr>
<tr>
<td>22</td>
<td>Bare</td>
<td>3 x 4</td>
<td>0.237</td>
<td>20.812</td>
<td>3.950 $\mu$A/m² $\times 10^3$</td>
</tr>
<tr>
<td>36</td>
<td>Bare</td>
<td>4 x 4</td>
<td>2.403</td>
<td>24.390</td>
<td>3.950 $\mu$A/m² $\times 10^3$</td>
</tr>
<tr>
<td>35a</td>
<td>Bottom only Poly (1)</td>
<td>1 x 12</td>
<td>0</td>
<td>22.525</td>
<td>4.017 $\mu$A/m² $\times 10^3$</td>
</tr>
<tr>
<td>35b</td>
<td>Bottom and one side (2)</td>
<td>1 x 13</td>
<td>0</td>
<td>22.525</td>
<td>4.017 $\mu$A/m² $\times 10^3$</td>
</tr>
<tr>
<td>37a</td>
<td>Bottom and two sides (3)</td>
<td>1 x 13</td>
<td>0</td>
<td>22.525</td>
<td>4.017 $\mu$A/m² $\times 10^3$</td>
</tr>
<tr>
<td>38a</td>
<td>Bottom and four sides (5)</td>
<td>2 x 2</td>
<td>0</td>
<td>22.525</td>
<td>3.990 $\mu$A/m² $\times 10^3$</td>
</tr>
<tr>
<td>38b</td>
<td>Bottom and four sides (5)</td>
<td>2 x 2</td>
<td>0.6138 $\times 10^{-3}$</td>
<td>76.4</td>
<td>3.990 $\mu$A/m² $\times 10^3$</td>
</tr>
</tbody>
</table>

*(Between cylinder-to-cylinder flanges only is 2.45 cm (Flexi) and 0.159 cm spacing between)*

<table>
<thead>
<tr>
<th>No.</th>
<th>Reflectors</th>
<th>Array</th>
<th>Flange-to-Flange (cm)</th>
<th>$\mathcal{Q}$ to $\mathcal{Q}$ Reactivity at Closure</th>
<th>Derived from Estimates from Radiographs</th>
</tr>
</thead>
<tbody>
<tr>
<td>39a</td>
<td>Five sides (5)</td>
<td>3 x 3</td>
<td>3.569</td>
<td>26.094</td>
<td>4.083 $\mu$A/m² $\times 10^3$</td>
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<tr>
<td>40a</td>
<td>Five sides (5)</td>
<td>4 x 4</td>
<td>6.668</td>
<td>29.192</td>
<td>3.990 $\mu$A/m² $\times 10^3$</td>
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<tr>
<td>40b</td>
<td>Six sides (6)</td>
<td>4 x 4</td>
<td>7.056</td>
<td>29.521</td>
<td>3.990 $\mu$A/m² $\times 10^3$</td>
</tr>
</tbody>
</table>

But measured using mod. "In and Out"

Evaluate (on corner) diff. of No. 460 and No. 423 = Run 25 vs 26 = 35.41%; No. 460 is greater by 35.41%

Evaluate (on top) diff. of No. 460 and 404 = 24.19%

Evaluate 1/2 of top reflector = Run 404 vs 404 = 34.76%

Evaluate 0.625 cm steel on table = Run 32 vs 33 = 39.4%.

$\Delta x = 6.668$ cm spacing calc to closure = 3956 using $\Delta x = 40.0$

$26.668 + 34.768 (2) = 96.138$

$\delta = \sqrt{\frac{\chi^2}{n\sum (x_i - \bar{x})^2}}$

$\delta = \sqrt{\frac{\chi^2}{n\sum (x_i - \bar{x})^2}}$

$\delta = \sqrt{\frac{\chi^2}{n\sum (x_i - \bar{x})^2}}$

15 cyl. $\Delta x$ diff. = 4.465 to 3.303 g/cm²

15 cyl. average: $\rho$ = 3.993 g/cm³

height = 86.36 cm

Mass = 111.027 kg

Mass = 244.359 kg.
# UF₆ Cylinder Information

<table>
<thead>
<tr>
<th>Cylinder Number</th>
<th>Height (in.)</th>
<th>Weight UF₆ (lb)</th>
<th>( \rho(\text{UF}_6) ) a (g/cm³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>453</td>
<td>30.5</td>
<td>243.90</td>
<td>4.449</td>
</tr>
<tr>
<td>438</td>
<td>33.5</td>
<td>246.90</td>
<td>4.067</td>
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<td>40.5</td>
<td>243.50</td>
<td>3.318</td>
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<td>462</td>
<td>40.5</td>
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<td>3.301</td>
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<td>33.5</td>
<td>245.40</td>
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<tr>
<td>492</td>
<td>34.5</td>
<td>241.6</td>
<td>3.864</td>
</tr>
</tbody>
</table>

Avg. weight 244.25625 ± 0.68031708 lb

\[ \bar{\rho} = \frac{4.0025 \pm 0.09186}{0.68925 \pm 0.071609} \]

\[ \bar{\rho} = 2.694 \text{ g/cm}^3 \]

---

a. Based on 8 in. i.d. for cylinder.
<table>
<thead>
<tr>
<th>From Low $\rho$ to High $\rho$</th>
<th>Numerically</th>
<th>$\text{UF}_6$ Estimated Height (cm)</th>
<th>Calculated $\rho$ (g/cm$^3$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>462</td>
<td>351</td>
<td>85.09</td>
<td>1.043</td>
</tr>
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<td>423</td>
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<td>437</td>
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<td>438</td>
<td>85.09</td>
<td>1.043</td>
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<td>492</td>
<td>439</td>
<td>82.55</td>
<td>4.149</td>
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<td>451</td>
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<td>4.043</td>
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<td>475</td>
<td>85.09</td>
<td>4.043</td>
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<td>80.01</td>
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<td>102.87</td>
<td>3.303</td>
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## Linear Array, Concrete Reflected Composite Basic Summary

<table>
<thead>
<tr>
<th>Run No.</th>
<th>No. of Cylinders</th>
<th>B</th>
<th>W</th>
<th>S</th>
<th>E</th>
<th>N</th>
<th>T</th>
<th>Cylinder (r_r) to (r_T) (cm)</th>
<th>Spacing (^a) Between Cylinder Flange</th>
<th>Reactivity at Closed or Calculated to Closed</th>
</tr>
</thead>
<tbody>
<tr>
<td>50B</td>
<td>11</td>
<td>8</td>
<td>0</td>
<td>0</td>
<td>8</td>
<td>0</td>
<td>0</td>
<td>22.525</td>
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<tr>
<td>D</td>
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<td>8</td>
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\(^a\) Spacing is between cylinders only. The concrete is always in contact with cylinder flanges.

\(^b\) 8 in. by the side of 4 cylinders only.
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<thead>
<tr>
<th>Run Number</th>
<th>Reflector Sides (in.)</th>
<th>Cylinder L to L (cm)</th>
<th>Spacing Flange-to Flange (cm)</th>
<th>Reactivity Direct or Calculated To Closed (¢)</th>
<th>(¢) Value of Concrete Change</th>
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<tbody>
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a. Flange to Concrete always = 1/2 Flange to Flange.
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<th>Cylinder C to C (cm)</th>
<th>Spacing Flange-to Flange (cm)</th>
<th>Reactivity Direct or Calculated To Closed</th>
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</table>

a. Flange to Concrete always = 1/2 Flange to Flange.