BOOK90R

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

-"Book 9" hand-written on spine of 3-ring notebook

-pages not included in this copy of logbook: 1, 3, 4, 45, 64, 82, 102, 106, 111, 112, 122; no numbered pages after page 129, 3 non-numbered sheets after page 129

Scanned by:
Sheila Finch
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August 30, 1999

. T. Mihalczo
J. W. Lynn
J. R. Taylor

DATE MAR 23 1972	SAFETY CHECK					
TIME 0935 AM/PM	BY TAYLOR & LYNN					
CHANNEL	(A)	B	C	D	E	F
RANGE	$.3 \times 10^{-10}$	OPR	L^{10}	[illegible]	900V	900V
SOURCE DIST.	2'	OK	5'		6"	@
% R. C. DROP	100	—	—		100	100
ELEC. CHECK	✓	✓	✓			
AUX. CHECK	✓	✓	✓			
SOURCES	PuBe & Co^{60}		CHECKED	OK		
TABLE OK	OK	AREA CLEARED OK				

→ CONTINUED FROM LOG BOOK NUMBER 8. ←

Run # 471 – SPIRAL FISSION CTR @ ℄ OF SPHERE.
– Cf^{252} CHAMBER JUST INSIDE THE SOUTH EDGE.
– 14 – 1/4" U-BUTTONS ON.
– 2 – 3/8" U-BUTTONS ON. (i.e. 1/4 + 1/8 = 3/8)

∞ shim sel. = 85 LN = 0.34 ; C = H^{28} @ 85

Run # 472 Remove 8 – 1/4" U-Buttons → Worth Total of 21¢.
Reactivity ∴ −21.¢ t = 11:00
(SEE JTM LOG Pg 159) STEADY = LN = .0001 ; C = L^{15} @ 58

Run # 473 add Cf^{E} (tapped to the Sphere surface)
LN = .00026 ; C = L^{19} @ 55

Run # 474 Remove Cf^{E} from Sphere (See JTM Pg 163)

Run #475 Remove all buttons.
Reactivity = -43¢ t = 16:14

Sphere assembled for the night.

MAR 2 + 1972

08:15 Bottom was down.
Est. from "C" this occured at ~ 07:30.

DATE MAR 2 4 1972 SAFETY CHECK

TIME ~~0~~0900 AM BY Lynn & Mihalczo

[illegible]					E (circled)	F
[illegible]	.3x10^-10	opr	L-10		900	900
[illegible]	2'	ok	5'		6"	ok
[illegible]	100	—	100		100+	—
[illegible]	✓	✓	✓			
[illegible]	✓	✓	✓			
[illegible]	N ~~Y~~ Y				✓	
[illegible]	✓	✓			✓	

Run #476 - Buttons = 6(¼") + 2(⅜") on.

Steady Run as per #474. [Extra N Sources ~ 18" from Stack]

Run #477 - Back to Run #475, for the night.

Run #478

MAR 27 1972 Back to "8 buttons off" = -21¢
See JTM 206 Pg 165

Run #479 All buttons off (-43¢) for overnight run.

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DATE MAR 2 8 1972 **SAFETY CHECK**

TIME 09:30 ~~AM~~ PM BY Taylor & Lynn

CHANNEL	A	B	C	D	E	F
RANGE	$.3 \times 10^{-10}$	opr	L/O		900	900
SOURCE DIST.	2'	8K	8'		6"	✓
% F. S. TEMP	100	—	100		100	100
BLDG. ALARM	✓	✓	✓			
AUX BLDG.	✓	✓	✓			

SOURCES USED Pu Be & Co 60 MAGNETS ✓

TAGLES ✓ LIGHTS ✓ AREA CLEARED ✓

Run # 480 - Clean sphere. 8 (¼") Buttons. (No Counters).
Base Run for evaluation of 7" dia X .004" thick discs placed between section II & III.

TMC = +0.215 & up. #1 = 22.195 ; #3 = +8 ; #6 = +6
k > 1, ℓ = +0.205¢, BF3 #2 0.199¢, #3 .17¢, Log N .16¢, "C" .16¢, "A" ¢

Run # 481 - ~~Add~~ 1 disc between sect II & III. wt = 47.834g.
TMC = -3.16¢ k < 1, BF3 #2 -3.14¢, #3 -2.68¢, Log N -2.93¢, "C" -2.56¢, "A" -3.17¢

Run # 482 2 - disc in place. 2nd disc wt = 46.033g.
93.867 gms.
BF_3 #3 = -3.91¢; BF_3 #2 = -3.92¢, LN = -3.88¢; A = -3.55¢
TMC = -3.99¢

[redacted]

ADD 1 DISC = -3.38¢ WORTH PER DISC VIA TMC
ADD 1 MORE = -0.83¢ WORTH PER DISC VIA TMC

Run #483 – To see if additional pressure on foil disc will add more reactivity.
10 (¼") Buttons on.

TMC

up as Run # 480 – #1 = 22.195 ρ =
moved to #1 = 22.230 ρ =
then #1 = 22.236 ρ =

Run #484 all buttons off SFC in center and CF 59 @ South inside edge. For overnight run. However ABLE dropped the table sometime during the night.

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DATE MAR 29 1972 SAFETY CHECK

TIME 0900 AM BY Taylor & Lynn

CHANNEL	A	B	C	D	E	F
RANGE	1.3×10^{-10}	OPR	1.15		900V	900V
SOURCE DIST.	2'	✓	3'		6"	@
% R. S. TRIP	100	—	—		100	100
BLEED VALVE	✓	✓	✓			
AUX VALVE	✓	✓	✓			

SOURCES USED PuBe & Co^{60} INTERLOCKS ✓

TABLES ✓ CLOTHS ✓ AREA CLEARED ✓

Run #485 4 - 4 mil foil discs between Sect II & III.
16 (¼") Buttons on. SFC in place (SEE Run #357)

TMC = -1156 rec
-1.13 ϕ

hN	-1020 rec	-1.30 ϕ
D	-1166	-1.13
A	-1105	-1.20

Run #486 14 - ¼ U-Buttons on (as run #453)
2 - 3/8 U-Buttons on
SFC in center
CF 59 ~~inside South edge~~ ~~inside South edge~~ OK
Shim sel. = 90
ρ = ∞ hN @ 0.27
F @ 0.50

Rec #487 Remove all buttons. (-43¢)
See JTM Log Pg 171
C = L15@45 (slightly above bkg)

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SAFETY CHECK

DATE ~~MAR 30 1972~~ TIME 0840 ~~AM~~ BY Taylor & Michalopo

CHANNEL	A	B	C	D	E	F
RANGE	$.3 \times 10^{10}$	OPR	LIS	$.3 \times 10^{-10}$	900V	900V
SOURCE DIST.	2'	—	3'	2'	44	@
% F. S. TRIP	100	—	—	100	100	100
BLDG. ALARM	✓	✓	✓			
AUX CHAN.	✓	✓	✓			

SOURCE USED Pu Be & Co60 SHIELDS ✓

TABLES ✓ LIGHTS ✓ AREA CLEARED ✓

Run #488 16 - 1/4" U-Buttons Out; SFC center; Cf 59 in.

Ln (ϕ)	SHIM SEL.	CTU Sel #1	VDT #3	VDT #4
+2.06	-8 (TOUCH)	22.155	-19	-17
+3.10	-8	22.185 (UP)	+5	+5
-1.47	90	22.185	+5	+5
-4.02	175	22.185	+5	+5
-6.55	800	22.185	+5	+5
		999.890 (DN)		

Run #489 Remove all buttons. Shim @ 800 calc. Reactivity = -41.76 + (-6.55) = -48.3¢
See JTM 606 Pg 173

DATE APR 3 1972 SAFETY CHECK
TIME 0820 BY Taylor & Mihalczo

	A	B	D	E	F
RANGE	$.3 \times 10^{10}$	OPR	$.3 \times 10^{-10}$	900V	900V
SCR	2'	3'	2'	4"	@
	100	"	100+	100	100
ELEV	✓	✓			
ADJ	✓	✓	✓		
SOURCE	PuBe & Co^{60}				✓
TABLE	—				—

Run #490 Reactivity Check
16 - 1/4" U-Buttons Out
Shim sel = 1195 -> "Out."

$\ell_N = -231$ sec $= -6.69^{\$}$; $A = -220 = 7.10^{\$}$; $D = -219 = -7.13^{\$}$
Avg $= -6.97^{\$}$ measured from $\simeq$ .2 to .05 on Ln.

Below .01 sees Cf^{252}. Maybe even higher.
Power now exponential by 20% at Ln 0.001 20% high at this point due to Cf source

Run #491 Remove 8 buttons $-20.86^{\$} + (-6.97^{\$}) = -27.83^{\$}$
See DTM Log Pg 175

APR 4 1972 checked inst. response OK
APR 4 1972
APR 4 1972

Run #492 Cont as run #491 See Pg DTM 177

DATE APR 5 1972 SAFETY CHECK

TIME 0945 AM BY Taylor & Lynn

CHANNEL	(A)	B	C	D	E	F
RANGE	.3X10^-10	OPR	L^18	{	900V	900V
SOURCE DIST.	2'	OK	1'	{	6"	@
% F. S. TRIP	100	—	—	{	100	100
BLDG. ALARM	✓	✓	✓			
AUX. CONN.	✓	✓	✓			

SOURCES USED PuBe & Co60 MAGNETS ✓

TABLES ✓ LIGHTS ✓ AREA CLEARED ✓

Run # 493 Con't move as run # 491 SEE JTM Eq 179. →

- Lower Stops so as to raise table 20 more mils Sel # 1 = 2220 S = UP.
- Pushed CTR off of the magnet as TOP came down mis-aligned.
- Realigned whole sphere - "Zeroed" sels. etc.

Sel # 1 Dn = 000.00 UP = 22.275 #3 = +4; #4 = -9

t = 1200 hrs. Con't JTM data.

Sel for TOP : in = 000.00 ; out = 3.83

DATE APR 6 1972 SAFETY CHECK

TIME 0935 AM PM BY JCT & JJL

CHANNEL	A	B	C	D	E	F
RANGE	$.3 \times 10^{-10}$	OPR	218	$.3 \times 10^{-10}$	900V	900V
SOURCE DIST.	2'	–	18"	18"	6"	@
% F. S. TRIP	100	–	–	100++	100	100
BLDG. ALARM	✓	✓	✓			
AUX DITTO	✓	✓	✓			

SOURCES LOAD PuBe & Co^{60} MARKERS ✓

TABLES ✓ LIGHTS ✓ AREA CLEARED ✓

Run #494 Conf same as run #491.
Data accum via JTM Pg 180
Dn @ 1615.

DATE APR 7 1972 SAFETY CHECK

TIME 0845 AM PM BY Taylor & Lyons

CHANNEL	A	B	C	D	E	F
RANGE	$.3 \times 10^{-10}$	OPR	218	$.3 \times 10^{-6}$	900V	900V
SOURCE DIST.	2'	✓	18"	2'	6"	@
% F. S. TRIP	100	–	–	100++	100	100
BLDG. ALARM	✓	✓	✓			
AUX DITTO	✓	✓	✓			

SOURCES LOAD PuBe & Co^{60} MARKERS ✓

TABLES – LIGHTS ✓ AREA CLEARED ✓

Run #495 Cont Source See JTM Pg 182
Dn @ 1615 hrs

Run #496 Remove all buttons for overnight data.
Reactivity = -48.3¢ (Table ran down.)

DATE APR 10 1972 SAFETY CHECK
TIME 08 15 AM BY Taylor & Lynn

CHANNEL	(A)	B	C	D	E	F
RANGE	.3x10^-10	OPR	L^15		900V	900V
SOURCE DIST.	2'	–	3'		6"	@
% F. S. DEF	100	–	–		100	100
BLDG. ALARM	✓	✓	✓			
AUX	✓	✓	✓			

SOURCE USED PuBe & Co60 ✓
TABLES ✓ ✓ ✓

Run #497 8 1/4" U-Buttons on as run #491
Cont STM Pg 184 Dn @ 16:15

DATE APR 11 1972 SAFETY CHECK
TIME 12 50 AM BY Taylor-Lynn

CHANNEL	A	B	C	(D)	E	F
RANGE	.3x10^-10	OPR	X	.3x10^-10	900V	900V
SOURCE DIST.	2'	OK	X	30"	4"	@
% F. S. DEF	100		X	100	100	100
BLDG. ALARM	✓	✓	✓			
AUX	✓	✓	✓			

SOURCE USED PuBe Co60 ✓
TABLES ✓ ✓ ✓

"C" out for a thorough check-up.

Run #498 Same as Run #491
Cont STM Log Pg 186

DATE APR 12 1972 SAFETY CHECK

TIME 0900 AM BY Taylor & Lyman

CHANNEL	A	B	C	D	E	F
RANGE	$.3 \times 10^{-10}$	OPR	A	$.3 \times 10^{-10}$	900 V	900 V
SOURCE DIST.	2'	OK	X	2'	6"	OK
% F. S. TRIP	100	~		100	100	100
BLOCK HOUSE	~	~	~			
AUX CHAN.	~	~	~			

SOURCES USED PuBe #C060 MAGNETS ~

TABLES ~ LIGHTS ~ AREA CLEARED ~

Run #499 Cont Same

See STM Log Pg 187

DATE APR 13 1972 SAFETY CHECK

TIME 0835 AM BY Taylor & Lyman

CHANNEL	A	B	C	D	E	F
RANGE	$.3 \times 10^{-10}$	OPR		$.3 \times 10^{-10}$	900V	900V
SOURCE DIST.	2'	OK		2'	6"	@
% F. S. TRIP	100	OK		100	100	100
BLOCK HOUSE	~	~	~			
AUX CHAN.	~	~	~			

SOURCES USED PuBe #C060 MAGNETS ~

TABLES ~ LIGHTS ~ AREA CLEARED ~

Run #500 Cont Same

See STM Log Pg 189

APR 14 1972

11^{30} — Taylor & Lynn

	A	B	C	D	E	F
	$.3\times10^{-10}$	OPR		$.3\times10^{10}$	900V	900V
	2'	—		2'	6"	@
	100			100	100	100
	✓	✓	✓			
	✓	✓	✓			
	PuBe & Co^{60}			✓		
TABLE	✓		✓			✓

Run #501 Con't Same — See JTM Log Pg 191.
Ch A scrammed the CTR Table (electronic)
Power level = .0005 via sources as conf. is $-27.83¢$. 14:00 hrs.

Run #502 Con't Same above after taking "A" out of circuit.

SAFETY CHECK

DATE APR 17 1972

TIME 08^{30} AM BY Taylor & Lynn

CHANNEL	A	B	C	(D)	E	F
RANGE	$.3\times10^{-10}$	OPR		$.3\times10^{10}$	900V	900V
SOURCE DIST.	2'	—		2'	6"	@
[illegible] TRIP	100	—		100	100	100
BLUE [illegible]	✓	✓	✓			
AUX [illegible]	✓	✓	✓			
SOURCES USED	PuBe & Co^{60}			✓		
TABLE	✓	LIGHTS ✓		[illegible] CLEARED ✓		

Run #503 Reactivity Check @ ∞
([illegible])

14 - 1/4 U-Buttons On
2 - 3/8 U-Buttons On
Shim @ 65

SFC in center
@ f^{54} @ South
inside edge.

∞ as per hw, A & D.

11:50 - after repair of the cycle timer, we cont cycling data via JTM Pg 193.
(typical 2 min at time - hw Peak = .0003)

DATE APR 1 8 1972 **SAFETY CHECK**

TIME 08¹⁰ AM/PM BY JCT & JDL

CHANNEL	A	B	C	D	(E)	F
RANGE	$.3\times10^{-10}$	OPR	⌇	$.3\times10^{-10}$	900V	900V
SOURCE DIST.	2'	—	⌇	2'	6"	@
% F. S. TRIP	100		⌇	100	100	100
BLDG. ALARM	✓	✓	✓			
AUX. CHKS.	✓	✓	✓			

SOURCES USED PuBe & Co^{60} MONITORS ✓

TABLES ✓ LOCKED ✓ AREA CLEARED ✓

Run # 504 Reactivity Check
∞ Shim = 65 See Data Pg JTM 196
Some problems with the Model 630 timer which was corrected.

Run # 505 Reassemble and cont. Same.

SAFETY CHECK

DATE APR 19 1972
TIME 08 10 AM BY Taylor & Lyman

CHANNEL	A	B	C	D	E	(F)
RANGE	.3x10-10	OPR		.3x10-10	900V	900V
SOURCE DIST.	2'	—		2'	6"	@
% F. S. TRIP	100	—		100	100	100
BLDG. ALARM	✓	✓	✓			
AUX CHS.	✓	✓	✓			

SOURCES USED PuBe & Co60 PROBES ✓
TABLES LIGHTS ✓ AREA CLEARED —

Run #506 Reactivity Check (con't 14-1/4's & 2-3/8's)
A, D & Lo ∞ Shim @ 65 See JTM Log Pg 199

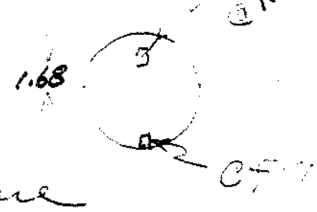
SAFETY CHECK

DATE APR 20 1972
TIME 08 15 AM BY Taylor & Lyman

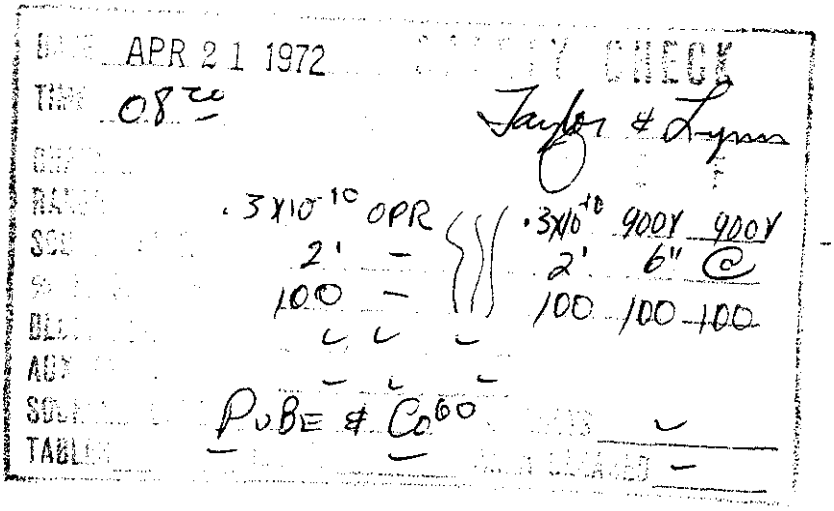
CHANNEL	(A)	B	C	D	E	F
RANGE	.3x10-10	OPR		.3x10-10	900V	900V
SOURCE DIST.	2'	—		2'	6"	@
% F. S. TRIP	100	—		100	100	100
BLDG. ALARM	✓	✓	✓			
AUX CHS.	—	✓	—			

SOURCES USED PuBe & Co60 PROBES ✓
TABLES ✓ LIGHTS — AREA CLEARED ✓

Run #507 Reactivity Check
16 - 1/4 U Buttons On
SFC 1.678" from center of Sphere
Cf 59 just inside South edge.
Shim @ 425 → ∞ A, D & Lo
... continuous tape data JTM Pg 204



Run #508 Reactivity Check @ 15:30 hrs.
Shim still @ 425 ch A → +7464 pcc ; +0.17 ¢



Run #509 Reactivity check shim @ 425 A, D, hv → ∞
Data accum. via DTM 206 Pg 208

Run #510 Reactivity Check shim @ 425 ; A, D, hv → ∞
@ 15:30 hrs

SAFETY CHECK

DATE APR 24 1972
TIME 9:10 AM BY Taylor & Lynn

CHANNEL	A	B	C	D	(E)	F
RANGE	$.3 \times 10^{-10}$	OPR		$.3 \times 10^{-10}$	900V	900V
SOURCE DIST.	2'	—		2'	6"	@
% F. S. TRIP	100			100	100	100
BLDG. ALARM	✓	✓	✓			
AUX CTRS.	—	—	—			

SOURCES USED PuBe & Co^{60} ... ✓
TABLES ✓ LIGHTS ✓ AREA CLEARED ✓

Run# 511 Reactivity Check @ Lw = 0.3 Same Config as #507
Shim = 425 T = ∞ as per A, D, & Lw.
Data collection via JTM Log Pg 212

Run# 512 ~~Reactivity Check~~ @ 15:30 hrs.
Shim @ 425 ⟶ T = ∞ as per A, D & Lw.

SAFETY CHECK

DATE APR 25 1972
TIME 08:20 AM BY Taylor & Lynn

CHANNEL	A	B	C	D	E	(F)
RANGE	$.3 \times 10^{-10}$	OPR		$.3 \times 10^{-10}$	900V	900V
SOURCE DIST.	2'	—		2'	6"	@
% F. S. TRIP	100			100	100	100
BLDG. ALARM	✓	✓	✓			
AUX CTRS.	—	—	—			

SOURCES USED PuBe & Co^{60} ... ✓
TABLES ✓ LIGHTS ✓ AREA CLEARED ✓

Run# 513 Reactivity check; Lw @ 0.3; Shim = 375; T = ∞ as per A, D, & Lw.
Con't data via JTM Log Pg 216

Run# 514 REACTIVITY CHECK; SHIM = 375;

	T	ρ
D	+ 300 S sec	+ 0.42 ¢
[illegible]	[illegible]	[illegible]

DATE APR 26 1972	SAFETY CHECK						
TIME 08³⁰ AM BY JRT & JJL							
CHANNEL	(A)	B	C	D	E	F	
RANGE	.3x10⁻¹⁰	OPR		.3x10⁻¹⁰	900V	900V	
SOURCE	2'	—		2'	6"	@	
	100	-		100	100	100	
BL	✓	✓	✓				
AUX	✓	✓	✓				
SO	RBe & Co⁶⁰					✓	
TA	✓		✓			✓	

Run # 515A Reactivity check ; hN = 0.34 ; Shim 475 ; A, D. hN
See JTM hoc for data Pg 220.

515B Single hASL & (TMK via C3 only). hN = .0051

515C Same hN = .0055

515D hN = .0055 i.e → (.0050 − .0060)

515E hN = .0060

515F Reactivity Check ; hN = 0.34 ; Shim 475 ;
D → T = −8626 ; ρ = −.15¢
A → T = −8660 ; ρ = −.15¢

515G Single hN = .006

SAFETY CHECK

DATE APR 2 7 1972

TIME 08 50 AM/PM BY Taylor & Lynn

CHANNEL	A	B	C	(D)	E	F
RANGE	.3x10⁻¹⁰	APR	}	.3x10⁻¹⁰	900V	900V
SOURCE DIST.	2'	—	}	2'	6"	@
% F. S. TRIP	100	—	}	100	100	100
BLDG. ALARM	✓	✓	✓			
AUX OPS.	✓	✓	✓			

SOURCES USED PuBe & Co60 — CONTENTS ✓

TABLES ✓ LIGHTS ✓ AREA CLEARED ✓

Run #516A Reactivity Check @ hN = 0.30
Shim Sel - 400 → ~~[illegible]~~ as per hN A & D

516 B LASL Single & TMC VIA C3. hN = .0055 avg.
C hN = .0055
D hN = .006
E hN = .0055
F hN = .0055

516 G Reactivity Check @ hN = 0.30
Shim Sel = 400 ch A T = -18911; -.07¢

516 H LASL Single hN = .0085

APR 2 8 1972 SAFETY CHECK

TIME 0830 BY Taylor & Lynn

	A	B	C	D	E
RANGE	$.3 \times 10^{-10}$	OPR		$.3 \times 10^{-10}$	900V	900V
SEN	2'	—		2'	6"	@
SC	100	—		100	100	100
BLE	~	~	~			
AUX	~	~	~			
SOU	PuBe + Co^{60}					~
TE	~	~				~

Run #517A REACTIVITY CHECK @ $\lambda_N = 0.30$

Shim Sel = 375 → T = ∞ as per λ_N, A, & D.

B JTM Log Pg 28 λ_N avg = .006

C $\lambda_N = .006$

D $\lambda_N = .0055$

E $\lambda_N = .0075$

DATE MAY 1 1972 **SAFETY CHECK**

TIME 0900 AM BY Taylor & Lynn

CHANNEL	A	B	C	D	E	F
RANGE	$.3 \times 10^{-10}$	OPR		$.3 \times 10^{-10}$	900V	900V
SOURCE DIST.	2'	—		2'	6"	@
% F. S. TRIP	100	—		100	100	100
BLDG. ALARM	✓	✓	✓			
AUX [illegible]	—	—	—			
SOURCES USED	PuBe & Co^{60}					✓
TABLES	✓	[illegible]	✓	[illegible]		✓

Run # 518 A Reactivity Check @ LN = > 0.3

Shim Sel = 375 → I = ∞ as per A, D, & LN.

518 B Data accum. via JTM log Pg 231

Dn @ 1300 per meeting.

DATE MAY 2 1972 **SAFETY CHECK**

TIME 0830 AM PM BY Taylor & Lynn

CHANNEL	(A)	B	C	D	E	F
RANGE	$.3 \times 10^{-10}$	OPR		$.3 \times 10^{-10}$	900V	900V
SOURCE DIST.	2'	—		2'	6"	@
% F. S. TRIP	100	—		100	100	100
BLDG. ALARM	✓	✓	✓			
AUX [illegible]	—	—	—			
SOURCES USED	PuBe & Co^{60}					✓
TABLES	✓	[illegible]	✓	[illegible]		✓

Run # 519 A Reactivity Check @ LN = 0.34

Shim Sel = 425 → I = ∞ as per A, D, & LN.

519 B Data collection see JTM log Pg 233

519 C Recheck Reactivity Shim @ 425

I = ∞ as per A, D & LN.

DATE MAY 3 1972 SAFETY CHECK
TIME 0830 AM BY Taylor & Lapan

CHANNEL	A	B	C	D	E	F
RANGE	$.3 \times 10^{-10}$	OPR		$.3 \times 10^{-10}$	900V	900V
SOURCE DIST.	2'	–		2'	6"	@
% P. S.	100	–		100	100	100
BLDG.	✓	✓	✓			
AUX	–	–	–			
SOURCE	RaBe & Co^{60}					
TABLE	✓	✓		AREA CLEARED ✓		

Run #520A Reactivity Check @ k_N = 0.34
shim Sel. = 425 → $T = \infty$ as per A, D, k_N.

#520B Cont and cycling data collection See LTM Pg 237
TYPICAL: Cont run: k_N = .005 → .006 (10 min)
2 min at 30 sec Wait Peak of cycle = .0003 (2σ)

#520C Reactivity Check shim @ 425
ch A = -537 sec; -.24¢
ch D = -415 7 sec; -.31 avg = 0.27¢

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DATE MAY 5 1972 **SAFETY CHECK**

TIME 0830 AM PM BY Taylor & Lynn

CHANNEL	(A)	B	C	D	E	F
RANGE	$.3 \times 10^{-10}$	OPR		$.3 \times 10^{-10}$	900V	900V
SOURCE DIST.	2'	–		2'	6"	@
% F. S. TRIP	100	–		100	100	100
BLDG. ALARM	✓	✓	✓			
AUX OTR'S.	✓	✓	✓			

SOURCES USED RaBe & Co^{60} MAGNETS ✓

TABLES — LIGHTS — AREA CLEARED ✓

Run #521 All Sphere holes filled with U^{235}
He^3 counter at surface on West.
6 – 1/4" U^{235} Buttons On.
Shim Sel @ 130
$T = \infty$ as per 1N, A, D, FBF$_3$ # 1, 2 & 3.

& rod check out traverse.
Sel = 7.880 with source & @ & Sphere.
Sel = 4.358 end of source at edge of sphere

Sel "travel" = 3.522 units — 0.93896
Distance traveled = 3.307 inches / ratio

DATE MAY 8 1972 **SAFETY CHECK**
TIME 13^{20} BY Taylor & Lipman

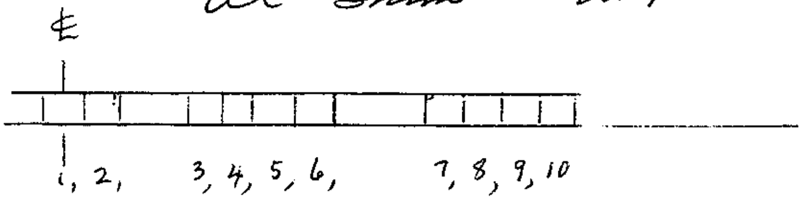
CHANNEL	A	B	C	(D)	E	F
RANGE	$.3\times10^{-10}$	OPR		$.3\times10^{-10}$	900 V	900 V
SOURCE	2'	–		2'	6"	@
%	100	–		100	100	100
BL...	✓	✓	✓			
AUX	✓	✓	✓			

SOURCE PuBe & Co^{60} ... ✓
TABLE ✓ ... ✓ AREA CLEARED ✓

Runs for UT students lab (JTM)

FOIL Run

Run #522 All holes filled. He ctr not present.
~~8~~ - 1/4" U Buttons On.
∞ Al Shim = 217



Exp = 15 min
Down = 13:51

Log N = .01
"A" = $.3\times10^{-8}$ @ 31
"D" = $.3\times10^{-8}$ @ 60

"IMPORTANCE"

Run #523 All holes filled
He^3 ctr @ surface
No buttons on.
Shim @ 130
Reactivity = −15.6¢
Using CS E for "importance" data.

DATE MAY 9 1972 **SAFETY CHECK**

TIME 1305 AM PM BY Taylor & Lynn

CHANNEL	A	B	C	D	E	F
RANGE	.3x10^10	OPR		.3x10^9	900R	900R
SOURCE DIST.	2'	—		2'	6''	@
% F. S. TRIP	100	—		100	100	100
BLDG. ALARM	✓	✓	✓			
AUX OTPS.	✓	✓	✓			

SOURCES USED Pu Be & Co^{60} CHANGES ✓

TABLES ✓ LIGHTS ✓ AREA SECURED ✓

RUN #524 Repeat Run #522 for UT students.
(all conditions same)
EXP = 15 min Dn @ 13:39

Run #525 Importance as run #523

DATE MAY 11 1972 SAFETY CHECK
TIME 13'15 AM/PM BY Taylor & Lynn

CHANNEL	A	B	C	D	E	F
RANGE	$.3 \times 10^{-10}$	OPR		$.3 \times 10^{-10}$	900V	900V
SOURCE	21'	—		21'	6"	@
	100	—		100	100	100
BIAS	✓	✓	✓			
AUX	—	—	—			
SOURCE	PuBe #6600					✓
TARGET	—					—

Run #526 Repeat Run # 522 for UT Students
(all conditions same).
EXP - 15 MIN DN @ 13:44

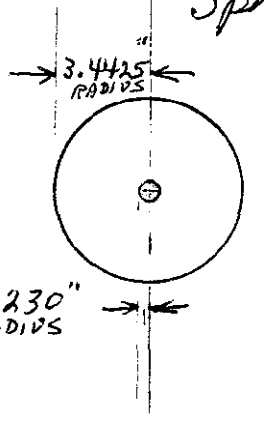
Run #527 Importance as run # 523

DATE MAY 19 1972 SAFETY CHECK
TIME 0930 AM BY Taylor & Lyon

CHANNEL	(A)	B	C	D	E	F
RANGE	$.3 \times 10^{-10}$	OPR	L12	$.3 \times 10^{-10}$	900V	900V
SQUARE CENT.	30"	01C	4'	24"	6"	@
% P. S. TRIP	80	—	—	100	100	100
BLDG. AGAIN	✓	✓	✓			
AUX GAIN	✓	✓	✓			
SOURCE USED	AmBe & Co^{60}			HEATERS	✓	
TABLES	✓		✓			

Run #528A Evaluate a 0.460" dia; 15.614g Sphere of ^{235}U @ center of big Sphere.

12 - 1/4" U-Buttons On.
No detectors "up".
Al shim @ rel - 130
Sphere has all holes filled.



SEE SERIES OF RUNS NEXT PAGE

^{235}U = .460" dia U-Sphere @ center
V = Void @ center.

NOTES: Keeping bottom stationary

Run #	A I	A P	D I	D P	Ln I	Ln P	TMC I	TMC P	BF_3 #1 I	BF_3 #1 P	BF_3 #3 I	BF_3 #3 P	
528 A	94.93	10.05	103.3	9.42	99.29	9.71	99.26	9.71	97.7	9.83	97.7	9.83	235 U
B	1750	0.71	2081	0.58	2314	0.54	2070	0.61	2149	0.58	2149	0.58	VOID
		9.34		8.84		9.17		9.10		9.25		9.25	
529 A	86.67	10.78	99.13	9.72	97.72	9.83	98.51	9.77	96.41	9.93	91.85	10.30	U
B	1002	1.23	1110	1.11	964	1.28	1164	1.06	1244	0.99	1231	1.09	V
		9.55		8.61		8.55		8.71		8.94		9.21	
530 A	248.9	4.50	249.7	4.49	238.9	4.67	244.3	4.58	285.9	3.98	277.7	4.09	V
B	60.36	14.05	63.10	13.62	61.36	13.89	62.70	13.68	61.89	13.79	63.19	13.62	U
		9.55		9.13		9.82		9.10		9.81		9.53	

→ Remove 3 - 1/4" U Buttons = 9 buttons on

Run #	A I	A P	D I	D P	Ln I	Ln P	TMC I	TMC P	BF_3 #1 I	BF_3 #1 P	BF_3 #3 I	BF_3 #3 P	
531 A	216.4	5.09	195.7	5.55	186.1	5.80	168.89	6.30	180.5	5.96	178.5	6.07	U
B	-414.8	-3.39	-455.7	-3.06	-428.7	-3.27	-415.7	-3.38	437.8	-3.19	427.3	-3.28	V
		8.48		8.61		9.07		9.68		9.15		9.35	
532 A	171.8	6.21	167.3	6.35	143.3	5.61	183.6	+5.87	184.4	5.85	180.5	5.96	U
B	-507.2	-2.72	-555.1	-2.47	-523.0	-2.63	-560.4	-2.44	-518.4	-2.66	-533.0	-2.58	V
		8.93		8.82		8.24		8.31		8.51		8.54	

Run # 528 thru 532 ⟶ $\bar{X} = 9.028¢ \pm 0.014¢$ (WORTH OF .46" SPHERE)

TO BE CON'T (MORE)

(Keeping bottom stationary)

DATE MAY 30 1972 SAFETY-CHECK
TIME 0920 AM BY Taylor & Lynn

CHANNEL	A	B	C	D	E	F
RANGE	$.3 \times 10^{-10}$	OPR	2½	$.3 \times 10^{-10}$	900V	900V
SOURCE DIST.	30"	OK	4'	24"	6"	@
%	100	–	–	100	100	100
BLOCK	✓	✓	✓			
AUX	✓	✓	✓			
SOURCE	Pu Be & Co^{60}					✓
TABLE	–		✓			✓

Run # 533 More evaluations of the 0.460" dia. sphere. all holes filled!
9 - ^{235}U Buttons On (as in 531A)
Shim sel = 200
(See series of data next page)

NOTE: V = Void @ center
U = ^{235}U Sphere (0.460" dia @ center)

(Keeping bottom stationary)

[illegible]		A		D		Ln		TMC		BF_3 #1		BF_3 #2		BF_3 # [illegible]	[illegible]
	I(ma)	f(-)	T	f	T	f	T	f	T	f	T	f	T	f	
		5.2[illegible]		5.34		5.44		5.78		5.76		5.76		5.76	
533A	-282	-5.27	-278	-5.34	-258	-5.84	-260	-5.79	-261	-5.78	-261	-5.78	-261	-5.78	V
		[illegible]		.30		4.2[illegible]		4.23		4.54		4.5[illegible]		4.54	
B	250	4.48	261	4.31	266	4.25	262	4.30	245	4.57	242	4.61	245	4.57	U
		9.71		9.64		10.06		[illegible]		[illegible]		10.27		[illegible].30	[illegible]
		9.75		9.65		10.09		10.09		10.35		10.38		10.35	
		-4.53		-4.79		-4.66		-5.04		-4.71		-4.79		-4.92	
534A	-320	-4.54	-305	-4.80	-312	-4.67	-292	-5.04	-305	-4.80	-305	-4.80	-298	-4.95	V
		4.77		4.58		4.42		4.51		4.39		4.37		4.40	
B	231	4.81	243	4.60	253	4.44	247	4.53	255	4.40	256	4.39	254	4.42	U
		9.32		9.37		[illegible]		[illegible]				9.16		9.32	9.28
		9.35		9.40		9.11		9.57		9.20		9.19		9.37	
		4.61		4.5[illegible]		.53		4.45		4.63		4.40		4.54	
535A	241	4.63	248	4.52	246	4.54	249	4.50	240	4.65	254	4.42	245	4.56	U
		-5.36		-4.94		-4.94		-5.10		-5.04		-5.14		-5.10	
B	-277	-5.37	-297	-4.95	-302	-4.86	-284	-5.11	-292	-5.05	-287	-5.16	-284	-5.11	V
		[illegible]		9.44		9.37		9.58		9.67		9.54		9.64	9.60
		10.06		9.47		9.40		9.60		9.70		9.58		9.67	
		4.02		3.72		3.95		4.02		4.30		4.30		4.21	
536A	281	4.04	307	3.73	287	3.96	281	4.04	261	4.32	261	4.32	267	4.22	U
		-4.47		-4.55		-5.10		-4.58		-4.84		-5.02		-4.94	
B	-324	-4.48	-319	-4.56	-289	-5.11	-317	-4.59	-302	-4.85	-293	-5.03	-297	-4.95	V
		8.49		8.27		9.05		8.60		9.14		9.32		9.15	8.86
		8.52		8.29		9.07		8.63		9.17		9.35		9.17	
		-4.79		-4.88		-5.08		-5.14		-5.10		5.10		-5.14	
537A	-305	-4.80	-300	-4.89	-290	-5.09	-287	-5.15	-289	-5.11	-289	-5.11	-287	-5.16	V
		3.58		3.30		3.46		3.47		3.56		3.61		3.54	
B	320	3.59	350	3.31	332	3.48	331	3.49	322	3.57	317	3.63	324	3.55	U
		8.37		8.18		8.54		8.61		8.66		8.71		8.6[illegible]	8.54
		8.39		8.20		8.57		8.64		8.68		8.74		8.71	

DATE JUN 1 1972 SAFETY CHECK
TIME 0845 AM BY Taylor & Lynn

CHANNEL	A	B	C	D	E	F
RANGE	$.3 \times 10^{-10}$	CPR	1/2	$.3 \times 10^{-10}$	900V	900V
SCO[illegible]	30"	OK	4'	24"	6"	@
[illegible]	100	—	—	100	100	100
BLDG. [illegible]	✓	✓	✓			
AUX [illegible]	✓	✓	✓			
SOURCE [illegible]	PuBe & Co^{60}			✓		
TABLES	✓		✓		✓	

Conf same as Run #533

Con't Evaluation of "E sphere"

Up Sel.: 22.275

Run #	T	A	T	D	T	LN	T	TMC	T	[illegible]	T	[illegible]	T	[illegible]		Conf
		3.87		3.86		3.85		3.67		3.75		3.79		3.82		
538A	293	3.89	294	3.88	295	3.87	311	3.69	304	3.77	300	3.81	298	3.83		U
		-4.42		-5.12		-4.84		-4.43		-4.79		[illegible]		-4.73		
B	-327	-4.43	-288	-5.13	-302	-4.86	-326	-4.45	-305	-4.80	-313	-4.66	-308	-4.75	5.51	V
		8.29		8.94		[illegible]		8.10		8.54		[illegible]		8.55		
		8.32		9.01		8.73		8.14		8.57		8.47		8.58		
		4.17		4.54		4.75		[illegible]		4.50		[illegible]		[illegible]		
539A	221	5.00	244	4.58	233	4.78	236	4.72	229.8	4.83	228	4.86	228	4.86		U
		-4.90		-4.07		-4.87		[illegible]		-4.93		-4.96		-4.98		
B	-299	-4.91	-316	-4.61	-300	-4.89	-299	-4.91	-294.5	-5.00	-295.8	-4.97	-294.5	-5.00	[illegible]	V
		9.97		9.14		9.63		[illegible]		9.79		[illegible]		9.72		
		9.91		9.19		9.67		9.63		9.83		9.83		9.86		

NOTE: Removed Al Shim; Added 1-1/4" Button

Run #	T	A	T	D	T	LN	T	TMC	T	[illegible]	T	[illegible]	T	[illegible]		Conf
		-5.25		-4.73		[illegible]		-5.21		-4.85		-4.87		-4.84		
540A	-282	-5.26	-303	-4.84	-293	-5.03	-284	-5.22	-298.7	-4.90	-299.7	-4.90	-303.3	-4.84		V
		4.57		4.37		4.12		4.76		4.50		[illegible]		4.48		
B	242	4.61	255	4.41	251	4.47	+227	4.88	+247.5	4.52	246.2	4.55	250.2	4.48	[illegible]	U
		9.84		9.22		[illegible]		[illegible]		9.38		[illegible]		9.52		
		9.87		9.25		9.50		10.10		9.42		9.45		9.32		
		-4.40		-4.65		-4.81		-4.86		[illegible]		-4.60		-4.84		
541A	-299	-4.91	-314	-4.64	-304	-4.82	-301	-4.87	-302.3	-4.86	-316	-4.61	-303.6	-4.84		V
		4.06		4.75		4.68		[illegible]		4.63		4.71		4.66		
B	278	4.08	233	4.77	237	4.70	240	4.65	239.7	4.63	234.5	4.74	238.4	4.68	[illegible]	U
		9.46		[illegible]		[illegible]		[illegible]		[illegible]		[illegible]		9.47		
		8.99		9.41		9.52		9.52		9.50		9.35		9.52		

Keeping Top stationary

JUN 2 6 1972

0820

Taylor & Lynn

$.3 \times 10^{-10}$ 6PR $\frac{1}{2}$" $.3 \times 10^{-10}$ 900V 900V

30" OK 4' 24" 6" @

100 – – 100 100 100

P.B.E. @ 60°

Conf. same as Run # 540 ie. 10 - ¼" U-Buttons on. Shim is away.

Con't Sphere Evaluation. (Keeping Top stationary).

Run #	A T (sec)	A P (#)	D T	D P	hv T	hv P	mx T	mx P	BF_3 #1 T	BF_3 #1 P	BF_3 #2 T	BF_3 #2 P	BF_3 #3 T	BF_3 #3 P	O N F
542A	254	4.42	260	4.33	260	4.33	286	3.98	241	4.63	247.5	4.52	247.5	4.52	U
B	-286	-5.17	-276	-5.40	-258	-5.85	-291	-5.07	-284	-5.22	-283	-5.24	-281.4	-5.27	Void
		9.59		9.73		10.18		9.05		9.85		9.76		9.79	9.68
543A	278	4.08	296	3.86	304	3.76	293	3.89	291.8	3.90	300	3.81	285.3	3.99	U
B	-305	-4.80	-270	-5.54	-274	-5.44	-287	-5.15	-282.7	-5.24	-291.8	-5.05	-286.6	-5.16	V
		8.88		9.40		9.20		9.04		9.14		8.86		9.15	9.07
544A	-306	-4.78	-290	-5.09	-277	-5.37	-279	-5.33	-287	-5.16	-292	-5.05	-280	-5.30	V
B	241	4.63	291	3.92	279	4.07	+279	4.06	273.6	4.13	269.7	4.19	265.8	4.25	U
		9.41		9.01		9.44		9.37		9.25		9.21		9.51	9.30
545A	303	3.78	305	3.75	300	3.81	298	3.83	289.2	3.94	291.8	3.92	302.2	3.99	U
B	-276	-5.40	-290	-5.09	-286	-5.17	-286	-5.17	-280.1	-5.30	-281.4	-5.27	-277.5	-5.36	V
		9.19		8.84		8.98		9.00		9.24		9.19		9.15	9.15
546A	-297	-4.95	-305	-4.80	-271	-5.51	-287	-5.15	-277.5	-5.36	-284	-5.21	-276.2	-5.39	V
B	284	4.00	301	3.80	289	3.94	293	3.89	284	4.00	302.2	3.78	290.5	3.92	U
		8.95		8.60		9.45		9.04		9.36		8.99		9.31	9.07

1610 hrs DN

JUN 28 1972
08^{30} — Taylor & Lynn

(E)

.3x10^-10	OPR	L^12	.3x10^-10	900V	900V
30"	a/c	4'	2'	6"	@
70*	–	–	100	100	100

PuBe & Co^60

Con't Same

* Not in circuit. To be adjusted later.

Run #	A T(°C)	A P(¢)	D T	D P	Ln T	Ln P	Tm T	Tm P	BF_3 #1 T	BF_3 #1 P	BF_3 #2 T	BF_3 #2 P	BF_3 #3 T	BF_3 #3 P		Con F.
547A	300	3.81	288	3.96	310	3.70	302	3.79	302.2	3.79	302.2	3.79	302.2	3.79		U
B	-265	-5.66	-299	-4.91	-297	-4.95	-287	-5.15	-278.8	-5.33	-291.8	-5.05	-284	-5.21		V
		9.47		8.87		8.65		8.94		9.12		8.84		9.00		
548A	-282	-5.26	-299	-4.91	-305	-4.80	-288	-5.13	-290.8	-4.97	-294.5	-5.00	-291.8	-5.05		V
B	249	4.50	271	4.18	279	4.07	275	4.12	271	4.17	268.4	4.21	272.3	4.154		U
		9.76		9.09		8.87		9.25		9.14		9.21		9.20		
549A	273	4.15	280	4.05	278	4.08	274	4.13	272.3	4.15	272.3	4.15	273.6	4.13	4.11	U
B	-~~322~~	-4.51	-~~303~~	-4.84	-296	-4.97	-303	-4.84	-305	-4.80	-307.5	-4.75	-312.7	4.67		V
		8.66		8.89		9.05		8.47		8.95		8.90		8.80		
550A	-291	-5.02	-306	-4.78	-274	-5.44	-287	-5.15	-286.6	5.16	-281.4	-5.27	-286.6	-5.16		V
B	273	4.15	302	3.79	302	3.79	291	3.92	291.8	3.90	302.3	3.78	302.3	3.78		U
		9.22		8.57		9.23		9.07		9.06		9.05		8.94		

1600 HRS DN.

JUL 26 1972 SAFETY CHECK

0915 Taylor & Lynn

A B C D E F

.3×10⁻¹⁰ OLR 6'' .3×10⁻¹⁰ 900'

30'' OK 4' 2' @

100 — — 100 100

✓ ✓ ✓

✓ X X — Repaired OK

PuBe & Co⁶⁰

Cont Same 39

"E" out for repairs.

Keep TOP stationary

Run #	A T(sec)	A P(+)	D T	D P	Lw T	Lw P	TMC T	TMC P	BF_3 #1 T	BF_3 #1 P	BF_3 #2 T	BF_3 #2 P	BF_3 #3 T	BF_3 #3 P		Co/NF
551 A	283	4.00	279	4.05	282	4.01	273	4.13	266	4.22	266	4.22	276	4.09		U
B	-281	-5.27	-294	-5.00	-315	-4.61	-284	-5.21	-293	-5.02	-285	-5.18	-289	-5.10		V
		9.27		9.05		8.62		9.34		9.24		9.40		9.19	9.16	
552 A	-286	-5.16	-298	-4.92	-310	-4.70	-286	-5.16	-289	-5.10	-285	-5.18	-289	-5.10		V
B	254	4.40	285	3.97	287	3.95	271	4.16	284	3.98	276	4.09	271	4.16		U
		9.56		8.89		8.65		9.32		9.08		9.27		9.26	9.15	
553 A	279	4.05	285	3.97	286	3.96	278	4.06	284	3.98	279	4.05	284	3.98		U
B	-286	-5.16	-295	-4.98	-281	-5.27	-288	-5.12	-285	-5.18	-287	-5.14	-286	-5.16		V
		9.21		8.95		9.23		9.18		9.16		9.19		9.14	9.15	
554 A	-310	-4.70	-299	-4.90	-304	-4.81	-286	-5.16	-292	-5.04	-289	-5.10	-289	-5.10		V
B	268	4.20	289	3.92	291	3.90	282	4.01	268	4.20	271	4.16	268	4.20		U
		8.90		8.82		8.71		9.17		9.24		9.26		9.30	9.06	

1545 hrs Dn

JUL 2 8 1972 SAFETY CHECK

0900 AM BY Taylor & Lynn

	A (circled)	B	C	D	E	F
	.3x10^-10	OPR	L12	3x10^-10		900V
	30"	OK	4'	2'		@
	100	—	—	100		100
	✓	✓*	✓			
	✓	✓	✓			

PuBe & Co60

Keep Top Stationary.
* B was tripped with source (without adjustment)

Run#	A T(sec)	A P(%)	D T	D P	Ln T	Ln P	TMC T	TMC P	BF3 #1 T	BF3 #1 P	#2 T	#2 P	#3 T	#3 P		Conf
555A	292	3.89	300	3.79	307	3.72	285	3.97	285	3.97	285	3.97	292	3.89		U
B	-281	-5.27	-314	-4.63	-286	-5.16	-290	-5.08	-292	-5.04	-287	-5.14	-294	-5.00		V
		9.16		8.42		8.88		9.05		9.01		9.11		8.89	8.93	
556A	-282	-5.25	-295	-4.98	-298	-4.92	-283	-5.23	-301	-4.86	-300	-4.88	-305	-4.79		V
B	273	4.13	310	3.68	294	3.86	296	3.84	300	3.79	296	3.84	301	3.78		U
		9.38		8.66		8.78		9.07		8.65		8.72		8.57	8.83	
557A	268	4.20	276	4.09	278	4.06	270	4.17	266	4.22	266 (corrected)	4.22	294	3.87 (corrected)		U
B	-297	-4.94	-299	-4.90	-281	-5.27	-287	5.14	-294	-5.00	-291	5.06	294	5.00 (struck)		V
		9.14		8.99		9.33		9.31		9.22		9.28		8.87	9.16	
558A	-296	-4.96	-299	-4.40	-280	-5.29	-297	-4.94	-296	-4.96	-301	-4.86	-296	-4.96		V
B	257	4.36	273	4.13	268	4.20	264	4.25	266	4.22	268	4.20	262	4.25		U
		9.32		9.03		9.49		9.19		9.18		9.06		9.24	9.22	

16:00 hrs DN

JUL [illegible] 1972 SAFETY CHECK

0840 BY Taylor & Lunn

	A	B	C	D	E	F
	.3x10⁻¹⁰	CPR	4"²	.3x10⁻¹⁰		900V
	3"	OK	4'	2'		@
	100	—	—	100		100
	✓	✓*	—			
	✓	✓	✓			
	PuBe # 660					✓
	✓		✓			✓

Keeping TOP stationary "B" needed slight "rundn. for trip" OK.

Run #	A T(sec)	A R(¢)	D T	D ρ	Ln T	Ln ρ	TMC T	TMC ρ	BF3#1 T	BF3#1 ρ	BF3#2 T	BF3#2 ρ	BF3#3 T	BF3#3 ρ		Conf
559A	269	4.18	279	4.05	274	4.11	262	4.28	266	4.22	263	4.27	266	4.22		U
B	-287	-5.14	-306	-4.77	-272	-5.48	-294	-5.00	-292	-5.04	-292	-5.04	-305	-4.79		V
		9.32		8.82		9.59		9.28		9.26		9.31		9.01	9.23	
560A	-313	-4.65	-300	-4.88	-301	-4.86	-291	-5.06	-296	-4.96	-292	5.04	-294	-5.00		V
B	221	4.97	239	4.64	250	4.48	241	4.61	242	4.59	240	4.63	238	4.66		U
		9.62		9.52		9.34		9.67		9.55		9.67		9.66	9.58	
561A	231	4.79	239	4.64	248	4.50	238	4.66	240	4.63	234	4.75	237	4.68		U
B	-289	-5.10	-291	-5.06	-291	-5.06	-309	-4.72	-288	-5.12	-292	-5.04	-287	-5.14		V
		9.79		9.70		9.56		9.38		9.75		9.79		9.82	9.68	
562A	-282	-5.25	-300	-4.88	-297	-4.94	-292	-5.04	-294	-5.00	-294	-5.00	-288	-5.12		V
B	268	4.20	271	4.16	279	4.05	270	4.17	263	4.25	262	4.28	267	4.21		U
		9.45		9.04		8.99		9.21		9.25		9.28		9.33		

15:30 hrs. Dn

DATE AUG 1 1972 SAFETY CHECK
TIME 0945 AM BY Taylor & Lynn

	A	B	C	D	E	F
	3×10^{-10} OPR	12	3×10^{-10}		900K
	30" OK	4'	2'		
	100 —	—	100		100
	✓ *	✓			
	✓	✓	✓		
	Pu Be + Co^{60}				✓
	✓	✓			✓

Keeping TOP stationary
* OK but slightly "sluggish on trip.

Up Selsyn = 22.15
DN = 999.86
Travel = 22.29" (TOTAL)
Slow = 1.30"

Run #	A T	A P	D T	D P	LN T	LN P	TMC T	TMC P	BF_3 #1 T	BF_3 #1 P	BF_3 #2 T	BF_3 #2 P	BF_3 #3 T	BF_3 #3 P		Coin
563A	316	3.62	332	3.46	339	3.40	335	3.43	328	3.50	326	3.52	320	3.58		✓
B	-296	-4.96	-268	-5.58	-278	-5.34	-300	4.88	-300	-4.88	-304	-4.81	-302	-4.84		✓
		8.58		9.04		8.74		8.31		8.38		8.33		8.42	8.54	
564A	-282	-5.25	-296	-4.96	-305	-4.79	-295	-4.98	-294	-5.00	-297	-4.94	-297	-4.94		✓
B	252	4.43	256	4.37	259	4.33	251	4.45	254	4.40	249	4.50	249	4.50		✓
		9.68		9.33		9.12		9.43	~~254~~	9.40		9.44		9.44	9.41	
565A	247	4.51	255	4.39	250	4.48	248	4.50	248	4.50	249	4.50	249	4.50		✓
B	-289	-5.10	-301	-4.86	-294	-5.00	-290	-5.08	-292	-5.04	-291	-5.06	-289	-5.10		✓
		9.61		9.25		9.48		9.58		9.54		9.56		9.60	9.52	
566A	-282	-5.25	-296	-4.96	-291	-5.06	-293	-5.02	-284	-5.21	-291	-5.04	-292	-5.04		✓
B	247	4.51	269	4.18	274	4.11	269	4.18	268	4.20	272	4.14	270	4.17		✓
		9.76		9.14		9.17		9.20		9.41		9.18		9.21	9.30	

1540 hrs. DN

AUG 7 1972

13^{10} Taylor & Lynn

$.3\times10^{-10}$ OPR	L^{12}	$.3\times10^{-10}$	900V	900V	
30" OK	4'	2'	6"	@	
100%	—	—	100	100	100

PUBE & 6^{00}

Channel "E" checked out and back "on line."

Run #567 Test Runs for Tom Hamrick

13:30 ≃ 4 ¢ positive period. @ selsyn = 22.15
13:40 Level @ 22.115 selsyn #1
Log n = .00075
13:46 Deliberate SCRAM for Tom Hamrick.
via manual SCRAM button.

Run #568 Test Run for Examiner (Tom Hamrick)

14:02 ≅ 4 ¢ positive period
14:17 Level @ 22.115 selsyn (#1) Log N = .00054
14:19 Shut down by magnet scram only.

44

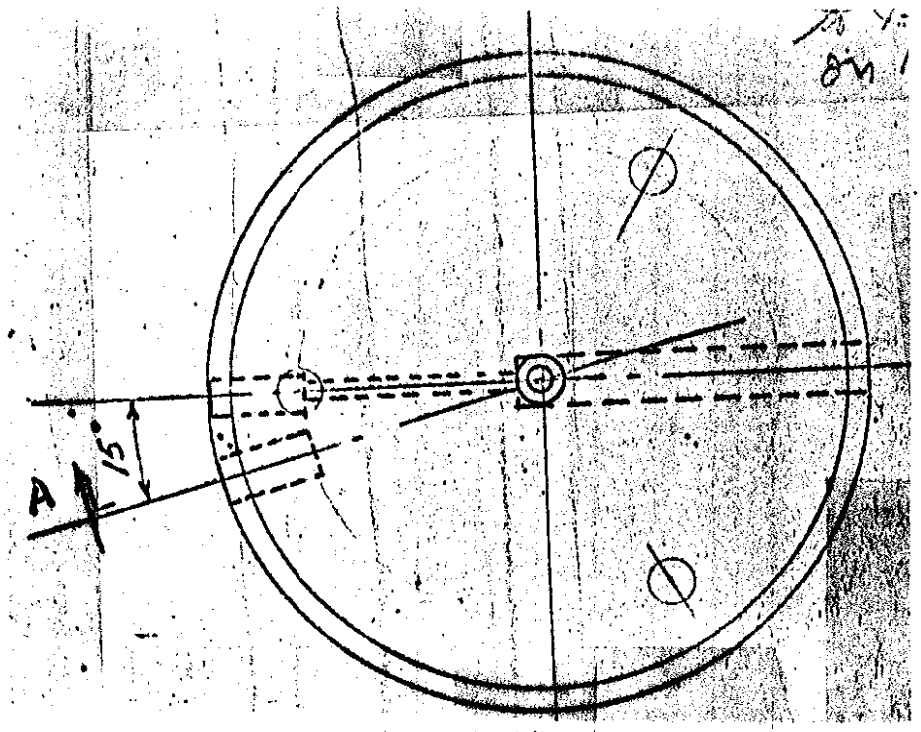
DATE AUG 10 1972 SAFETY CHECK

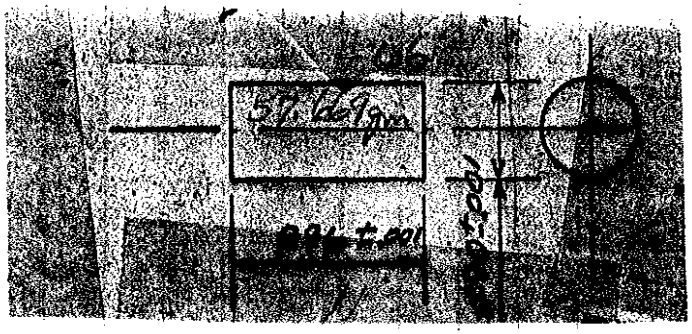
TIME 0830 BY Jack & Jay

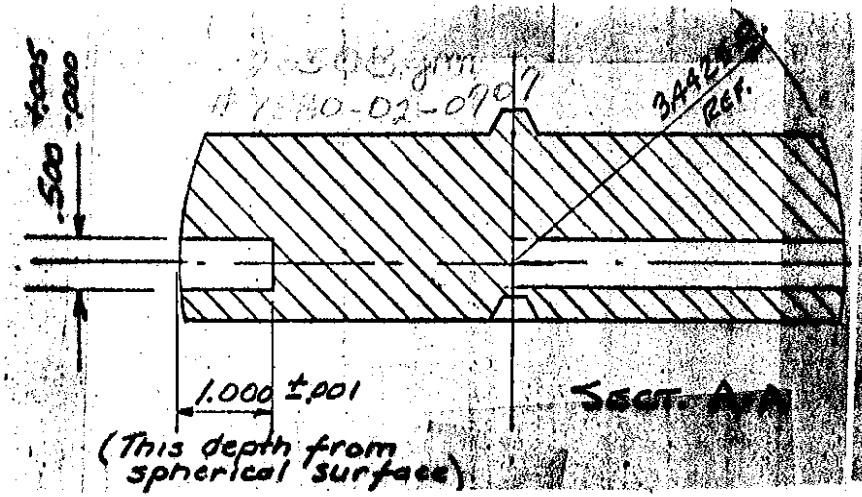
	A	B	C	D	E
GRADUAL	$.3 \times 10^{-10}$	OPR	L'2	3300	900V
	24" ✓		4'	30"	5"
	100 —		—	100	100
	✓		—	✓	✓
	✓		✓	✓	✓
	Nu Be & Co^{60}				✓
	✓		✓		

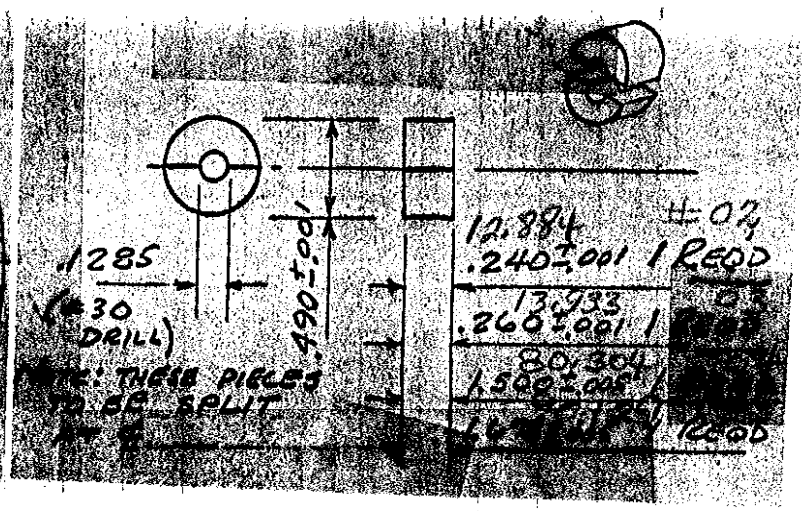
Run #		A T	A ρ	D T	D ρ	Ln T	Ln ρ	TMC T	TMC ρ	BF_3 1 T	BF_3 1 ρ	2 T	2 ρ	3 T	3 ρ	Conf
569	A	302	3.77	284	3.98	304	3.75	282	4.01	272	4.14	274	4.11	266	4.22	✓
	B	276	5.38	272	5.48	278	5.34	277	5.36	280	5.29	279	5.32	282	5.25	✓
			9.18		9.46		9.09		9.37		9.43		9.43		9.47	9.34
570	A	270	5.53	275	5.41	268	5.58	277	5.36	280	5.29	279	5.32	280	5.29	✓
	B	277	4.07	297	3.83	299	3.80	279	4.05	291	3.90	299	3.80	277	4.07	✓
			9.60		9.24		9.38		9.41		9.19		9.12		9.36	9.32
13:05 PM																
571	A	286	3.96	301	3.78	284	3.98	275	4.10	270	4.17	272	4.14	274	4.11	✓
	B	272	5.48	286	5.18	290	5.08	311	4.68	306	4.77	309	4.72	310	4.70	✓
			9.44		8.96		9.06		8.78		8.94		8.86		8.81	8.80
572	A	263	5.70	271	5.50	265	5.65	276	5.39	280	5.29	277	5.36	274	5.43	
	B	286	3.96	298	3.82	302	3.77	289	3.92	292	3.89	291	3.90	293	3.87	
			9.66		9.32		9.42		9.30		9.18		9.26		9.30	
15:00 hrs																

CENTER FUEL ALTERATION
AND AUX. PIECES
RCV'D 6 Sept 72









SEP 7 1972 - Fuel wts and tolerances checked OK.
See opp. page.
- Reheung and aligned the fuel on the CTU assembly device. Checked Selsyns.
- CTU Selsyn #1: Dn = 000.005" Slow - 21.03" Up = 22.335"
Top Selsyn: OUT = 3.80" Dn = 0.00"
VDT #1 = +2 & VDT #2 = -1

SEP 11 1972 SAFETY CHECK
0830 AM BY Taylor & Lynn

	A	B	C	(D)	E	F
	.3X10^{-10}	OPR	h'2	.3X10^{10}	900V	900V
	2'	OK	5'	2'	5"	@
(100)	100	—	—	100	100	100
	✓	✓	✓			
	✓	✓	✓			

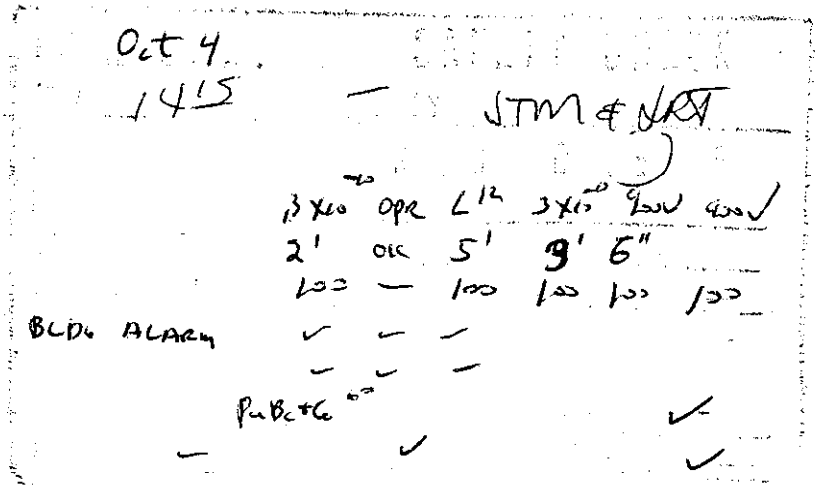
PUBE# ^{60}Co ✓

Run# 573 – Piece# 7880-02-0706 is in it's hole as per drawing Pg 46.
– 10 (1/4 U-Buttons On)
– Shim away (70g. al)
– All other holes filled as usual.

hN = −834 T ; −1.60¢ ρ
A = −980 T ; −1.35¢ ρ } −1.47¢
D = −905 T ; −1.46¢ ρ

∴ The machining of the 1" deep hole and the filler in place caused a loss of reactivity of 5.35¢ (Ref run# 572).

Oct 4.
1415 — JTM & NRT



Run # 574 Same as # 573 except.
add 3 (1/4" U-Buttons) = 13 TOTAL.

14:25 ≃ +5¢ period
14:28 level
14:30 dn

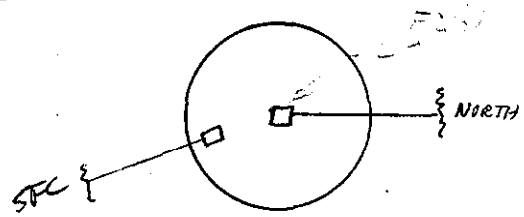
Test check for ¢ by JTM.

DATE OCT 11 1972 SAFETY CHECK

TIME 10 49 AM EST BY Taylor & Lynn

CHANNEL	A	B	C	D	E	F
RANGE	.3X10	OPR	1	.3X1	900V	900V
SOURCE DIST.	2'	O/C	4'	3'	4"	@
	100	—	—	100	100	100
	↓	↓	↓			
		↓	↓	↓		
	PuBeC					↓
	↓		↓			↓

RUN # 575



- DETECTORS INSIDE SPHERE
- ALL VOIDS FILLED WITH ^{235}U
- 16 - 1/4" U- BUTTONS ON
← See drawing #46

10:48 ± PERIOD (SHIM IN) = + 3¢

10:50 UP SELSYN = 22.34

A2 SHIM @ 400 UNITS = DC → (nearly)

10:55 DOWN

OCT 11 1972

1:45 — Mihalczo + Taylor

$.3 \times 10^{-10}$ OPR L 12 $.3 \times 10^{-6}$ 900V 900V ✓

2' OK 5 3' 4" @

100 ~~✓~~ – 100 100 100

✓ ✓ ✓

✓ ✓ ✓

P-Be + Co^{60} ✓

✓ ✓ ✓

Run #5 75 CONFIGURATION THE SAME AS ON PREVIOUS PAGE

REASSEMBLY FOR OPR. TESTING.

DC? VDT #3 at −13.5 mils

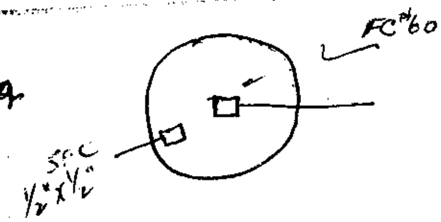
with

same

DATE OCT 12 1972	SAFETY CHECK					
TIME 13^15 AM/PM	BY Taylor & Lynn					
CHANNEL	A	B	C	(D)	E	F
RANGE	$.3\times10^{-10}$	OPR	L^{12}	$.3\times10^{-10}$	900V	910V
SOURCE [illegible]	2'	OK	4'	20"	4"	@
% F. S. [illegible]	100	–	–	100	100	100
BLDG. [illegible]	✓	✓	✓			
AUX [illegible]	–	–	–			
S[illegible]	PuBe & Co^{60}					–
TAB[illegible]	–		✓			✓

NOTE on A & D readings are from 0–10 scale of meters regardless of scale selector

Run # 576A



Detectors inside sphere
all voids filled
16 – 1/4" U Buttons on
1 – 17gm al shim on surface

Shim (remote) = 00011 @ ∞ @ $h\nu = 0.01$

#576B. Pull 17gm al shim
$h\nu =$ T = −282.3 sec f = −5.2¢ ≃
NOTE: Seeing Cf source slightly.

Run # 577A <u>Add one</u> more 17gm al surface shim.
Up Selsyn = 22.345 (Total Al on surface: 34gm)

Remote shim @ 66 = ∞ $h\nu = .01$; A: 42 on 10×10^{-10}; D: 65 on $.3\times10^{-8}$; C 29.3 on H^{17}

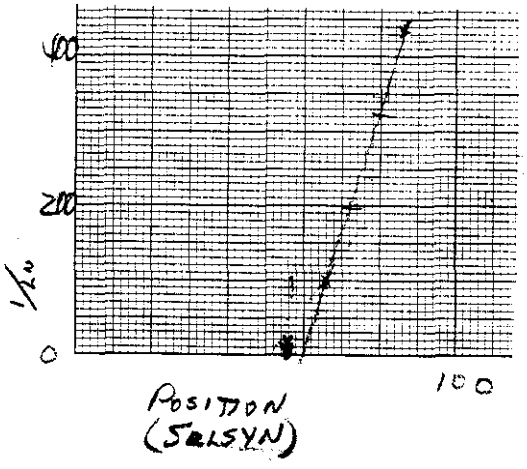
#577B Raise Power to ; L_N = .055 ; A = 27 on 1×10^{-8} ;
D = 40 on 3×10^{-8} ; C = 57 on H^{22}
Remote shim @ 57 = ∞

#577C Raise Power To ; L_N = .121 A = 62.5 on 1×10^{-8} ;
D = 93.5 on 3×10^{-8} ; C = H^{26} ~~out~~ 53
Remote shim @ 57 = ∞

#577D Lower Power to L_N = .0023 ; A = 34 on 3×10^{-10} ;
D = 49 on 10×10^{-10} ; C = 22 on H^{12}
Remote shim @ 86 = ∞

#577E Lower Power to L_N = .00072 ; A = 24 on 1×10^{-10} ;
D = 51 on 3×10^{-10} ; C = 77 on L^{23}
Remote Shim @ 235 = ∞

#577F Raise Power to L_N = .01 ; A = 45 on 10×10^{-10} ;
D = 72 on $.3 \times 10^{-8}$; C = 31 on H^{17}
~~Remote~~ Remote Shim @ 60 = ∞



DATE OCT 1 6 1972 SAFETY CHECK

TIME 11⁰⁰ AM BY Taylor & Mihalczo

CHANNEL	A	B	C	D	(E)	F
RANGE	$.3\times10^{-10}$	OPR	L'2	$.3\times10^{-10}$	900V	900V
SOURCE DIST.	1'	OK	4'	2'	3"	@
% F. S. TRIP	100	—	—	100	100	100
BLDG. ALARM	✓	✓	✓			
AUX [illegible]	✓	✓	✓			

[illegible] PuBe & ^{60}Co [illegible] ✓

TARGET ✓ [illegible] — [illegible] —

Run# 578 - Put shielding around E & F after putting them onto floor.
- Make "high power" run.
- Conf same as Run# 577A
- Shim @ 44 ⟶ ∞

A	48 on 10×10^{-8}
B	0.8 (chart) some saturation - est = 1.6
C	off scale
D	63 (on 100 scale) on $.3\times10^{-6}$
E	not on scale
F	0.8
Bldg A	.7K
Bldg B	.3K
Bldg C	.22K

OCT 18 1972

08 15 Lynn & Middleton SRT

.3x10^-10 OPR L2 .3x10^-10 900V 900V
18" – 4' 2' 2" @
100 – – 100 100 100

PuBe & 60Co

Run #579 Chick ∞ @ 0.2 on Lin chart
Shim (remote) @ selsyn = 95 08:30
SFC @ edge & FC #60 @ center of sphere.

SAFETY CHECK

DATE OCT 19 1972
TIME 0800
BY Taylor & Mihalczo

	A	B	C	(D)	E	F
	$.3\times10^{-10}$	OPR	L^{12}	$.3\times10^{-10}$	900V	900V
	1'	O/S	4'	2'	3"	@
	100	–	–	100	100	100
	✓	✓	✓			
	✓	✓	✓			
	NUBE & ^{60}Co				✓	
	✓	✓			✓	

Run #580A Same as #579 except FC#61 instead of FC#60 @ ℄ of sphere.
Remote Shim @ 72 = ∞
Bldg alarm A = 0.75 K   B & C = less.
Ln = 0.9 on scale (est) = 1.9 corrected
A = 10×10^{-8} @ 51 (on 100% scale)
D = $.3\times10^{-6}$ @ 65 (on 100% scale)

580B Reduce Power via shim use.
Remote Shim @ 72 = ∞
Ln = 0.2 scale (est) = 0.25 corrected
A = 3×10^{-8} @ 29 (on 100% scale)
D = 10×10^{-8} @ 41

See JTM Log Pg 246 for oscillating data collection.
Having a little trouble with table drifting down 10-12 mils.

10:45 SCRAM BY channel A. (electronic)
There was no indication on A when it SCRAMMED. Took it out of circuit so we may continue. We were @ DC at very low power.

11:00 Conf back together for data collection.
Typical cycling:
2 min cto; 4" stroke of top;
L_N max @ 0.03

Run #581 Recheck "high power" run.
Shim = 72
L_N = 0.82 chart (last 1.7)
$A = 10 \times 10^{-8}$ @ 43
$D = .3 \times 10^{-6}$ @ 59

Run 583 Reactivity check

$c^{t/T} = x \quad \frac{t}{\ln x} = T$

C $\frac{-66}{63}$ in 5 min — 6449 mm

A $\frac{85.5}{80}$ in 8 x 50 mm — 6016 mm

D ~~.214~~

$\rho = \frac{-.213 + (-.198)}{2} = -0.206$

DATE SEP 2 5 1972 [illegible]

TIME 08 00 AM BY Taylor & Mihalczo

CHANNEL	A	(B)	C	D	E	F
RANGE	10×10^{-12}	OPR	L^{12}	10×10^{-12}	900V	900V
SOURCE PROT.	8"	OK	1"	3"	1"	@
% F. S. [illegible]	100	–	100	100	100	100
BLDG. ALARM	✓	✓	✓			
AUX [illegible]	✓	✓	✓			
SOURCES USED	PuBe & Co^{60}				✓	
TABLES	✓		✓			✓

Inst. conditions as per Pg 58

Run 584 Level Shim @ 109 ∞ Up sd = 22.355
$A = .25 \times 10^{-8}$; $D: .10 \times 10^{-8}$; $B: 0.44$ (est = .7)
$C: H^{22}$ @ 60 ; F: 0.5

Make static & oscillating runs (see JTM Pg 258)
Had a Table "run-down" due to low oil. Added oil and let level and proceeded.

Run # 585 Recheck ∞ @ 1600 hrs.
Shim still @ 109
A ∞
B ∞ 0.42
C ∞
D ∞
Cont. ASD runs Pg 264 of JTM Log

OCT 25 1972 JRT

0715 BY JTM + Thomas Taylor

A	B	C	D	E	F
10^{-12}	OPR	1"	10^{-12}	900V	900V
8"	OK	1"	-	2"	@
100	OK	OK	100	100	100

Run #586 Level Shim @ 103½

A = .27 x 10^{-8} ; B = 0.47 ; C: 1/21 @ 73 ; D 27 x .3 x 10^{-8}

Cont static & oscillating data collection JTM Pg 266

12:00 Still experiencing occasional "table drift down" for a few mils. Lowered table ≈ 200 mils and raised it back up and it held rest of the day

Run #587 Resistivity check Shim @ 103½

A .78 x .3 x 10^{-8} B .43 C

D .32 .3 x 10^{-8}

A $-\frac{7\gamma}{7\sigma}$ in 8 Div C $\frac{62.5}{59}$ in 10 min

-11549 sec, -0.11 ¢ -10411 -12048 sec -0.12 ¢

OCT 26 1972
08^{30} — Taylor & Lynn

10x10^-12	OPR	H^2	10x10^-12	900V	900V
8"	O/C	1"	3"	1"	@
100	–	–	100	100	100

✓ ✓ ✓
✓ ✓ —

PuBe & Co ✓

Run # 588 Reactivity check
Shim @ 111 → ∞
B = 0.46
A = $.26 \times 10^{-8}$
C = H^{22} @ 57
D = 0.1×10^{-8}
Data collection STM LOG Pg 276

Run # 589 Recheck reactivity
Shim same @ 111

		T	f
A	$.3\times10^{-8}$ chart: 83 to 70.5 in 10(50)	-3063	-.420
B	.46 to .40 in 9(50)	-3220	-.399
C	H^{21} chart: 64 to 51.5 in 2(300)	-2761	-.467
D	10×10^{-10} chart: 94.5 to 81 in 9(50)	-2919	-.441
		Avg	-0.432

OCT 27 1972

Mihalczo Thomas

10 X 10^-11	0pa	L12	10 X 10^-11	9002	9000
5"	OK	—	1"	2"	0
100	~~100~~	10	100	100	100
✓	✓	=			
✓	✓	—			

PuBe 60

RUN 590 REACTIVITY CHECK

Shim 1015 ∞

A ,275 x 10^-8

B ,5

C ,75 H 21

D ,375 x 10^-8 x.3

Data collection via JTM LOG Pg 284

typical max. ΔN for 2 min ct of acid = ,0028
30 min Rossi Alpha = ,028

591 REACTIVITY CHECK

,126 x 10^-8

A — ,5

B

C + 70/63 in 7.5 min +427/sec +0.29¢

D + 36/34 in 5x50 sec +4373 +0.29

avg +0.29¢

OCT 30 1972

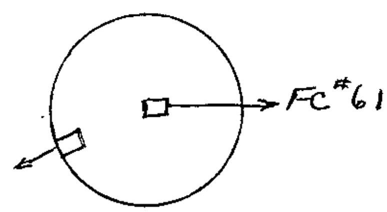
8:15

Taylor Mihalczo

10^{-12}	opn	LIP X 10^{-10}		good	good
	BIK		100	100	100
100	—	—	100	100	100
—	—	—			
—	—	—			
PuBe	C			—	✓

Run #592 Level with Shim @ 107 ~~sel~~ —
Conf. still same as run# 577A Pg 52
i.e. 16 U-Buttons (1/16") and 2 (≃5¢ each) al
shims on surface of sphere.

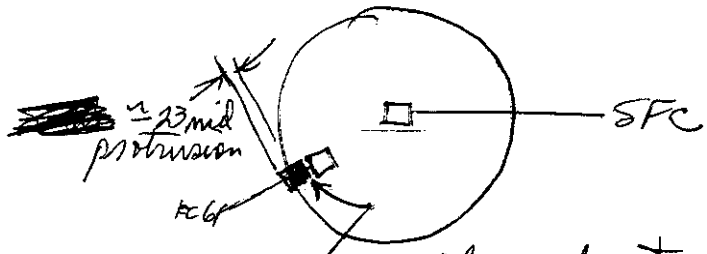
A .26 × 10^{-8}
B 0.50
C H^{21} @ 74
D .1 × 10^{-8}
Dn @ 09:00



Run# 593 Remove 8 U-Buttons (Put the screws back into the sphere so button value = 2.60¢ ea.
Go to "high" power — Pull surface shim (used to "get up" only) and run the TMS during the neg. period. Button Calc. = ~~[illegible]~~ −20.8¢

¢ cts too low for data from LASA as per LDM.

Run # 594 Switch the detectors 61 & SFC
Put 8-U Buttons back on
The smaller small hole diameter
filled for the radius is now used
The remote shim ∴ = 490 for ≤
B ≤ 0.51



≃23 mil gap due to solder on the detector. The solder is part of the seal so cannot alter same.

Data collection See TM 206 Pg 292

Typical Ln = 2 min count max = .0014
Rossi Alpha = ≃ .01

NOV 1 1972
0800 — Mihalczo & Lynn

10×10^{-12}	apr L-12	10×10^{-12}	900 ✓	900 ✓	
.8	.012	2"	—	2"	off
100	—	—	100	100	100
✓	✓	✓			
✓	✓	✓			

PuBe & Co^{60} ✓

✓ ✓ — ✓

Run #595 Repeat Run #594. ∞ at Shim = 497 SET

Data collection YTM LOG Pg 296.

Run 596 Reactivity Check 5:45 pm

				T	ρ
C	+	77/74	in 5 min	+7549	+0.168
A	+	75/72	in 6.5×50 sec	+7961	+0.159
D	+	90/86	in 6×50	+6599	+0.192
				avg	+0.17¢

NOV 2 1972

TAYLOR · Lynn

10x10^-12 OPR L12 10x10^-12 900V 900V
8" ✓ 1" 3" 1" @
100 – – 100 100 100
✓ ✓ ✓
✓ ✓ ✓
PuBe # 64Co ✓
✓ ✓ ✓

Run # 597 Reactivity check for cont. same as # 594
Remove shim @ 492 → ∞ ; LN: 0.5 Λ. chart
Up sets. = 22.355
Data collection DDM Log Pg 303
Having much difficulty with the CTU table intermittenly drifting down a few mils.

Down @ 11^30. Made realignment of fuel (only slight) and established CTU up position to be 22.350. This position pushes up ≃ 5-7 mils after closure.

Run # 597 "Back Up" and cont data taking after ERR repaired the "630 timer." Went out again later. It was noted that there is very slight leak in valve # 8 of CTU. The drip pan was cleaned for further observation.

#598 Recheck of reactivity shim @ 492 $k_{in} = 0.5$

			T	ρ
A	50.5/87.2	4 (50)	−2501.7	−0.52
C	68.8/61	5 (60)	−2493.1	−0.52
			avg	−0.52

DATE NOV 3 1972 SAFETY CHECK

TIME 0815 AM PM BY Taylor & Lyons

	A	B	C	D	(E)	F
	10×10^{-12}	OPR	2×10^{-12}	10×10^{-12}	900V	900V
	8"	~	1"	3"	1"	@
	100	~	~	100	100	100
	~	~	~			
	~	~	~			
	PuBe & ^{60}Co				~	
	~	~			~	

Run# 599 Reactivity Check for con't. same as Pg 66, Run 594
k_N @ 0.48 chart Shim @ 321 = ∞
NOTE: The change in shim reading is due to having moved the fuel position on realigning.

Data collection JTM 206 Pg 10
10:50 Dn. Had some table drift down so we checked for oil leakage (none) and adjusted flanges so as to "push up" 15 mils instead of 5 mils. after CTR closure.

Run# 600 Reassembled the configuration 11:05
Selsyn = 22.365
Cont Data collection JTM Log Pg 11

Run# 601 Recheck reactivity shim @ 321 k_N = 0.6
C = 43 9/64 in 10 min +1582 sec +0.785
D = 48.6/41.5 in 5 min +1902 sec +0.656
+0.72

NOV 6 1972

Nichalson & Taylor

10×10^{-12}	OPR	λ^{12}	10×10^{-12}	900V	900V
8"	✓	1"	3"	1"	@
100	–	–	100	100	100
✓	✓	✓			
✓	–	✓			
Rubber at 60°C				✓	
✓		–		–	

Run # 602 Put Tc under one of the 1/4" buttons (this Tc is # 3 @ panel & #1 on chart read-out).
15 min @ high power °C 22.5° —> 23.4°.
hv @ 0.55 Shim: 336 = ∞

DN @ 1345 for announced Emergency Drill.

DATE NOV 7 1972 SAFETY CHECK

TIME 08:25 BY Mihalczo & Lynn

CHANNEL	A	B	G	H	E	F
RANGE	$10X10^{-12}$ cpr		L-12	$10X10^{-12}$	900V	900V
SOURCE DIST.	8"	8"	8"	2"	1"	⊙
% F. S. TRIP	100	—	—	100	100	100
BLDR. ALARM	✓	✓	✓			
AUX CTLS	✓	✓	✓			

SOURCES USED Pu Be & Co 60 MAGNETS ✓

TABLES ✓ TRAYS ✓ AREA CLEARED ✓

Run #603 — LN = .48

Al Shim = 370

collecting Data & TM Log Pg 21

In for material to enter South Cell.

DATE NOV 8 1972	SAFETY CHECK					
TIME 11:30 AM	BY Taylor & Lynn					
CHANNEL	(A)	B	(C)	D	E	F
RANGE	10×10⁻¹²	OPR	1/2	10×10⁻¹²	900V	900V
SOURCE DIST.	8"	OK	OK	2"	1"	@
% F. S. TRIP	100	—	—	100	100	100
BLDG. ALARM	✓	✓	✓			
AUX CTRS.	✓	✓	✓			
SOURCES USED PuBe & ⁶⁰Co		MAGNETS ✓				
TABLES ✓	LIGHTS ✓	AREA CLEARED ✓				

Rhoette back "on line" but it needs some attention!

Run # 604A Reactivity Check
Shim @ 389 → ∞ Ln = 0.5
Rhoette not working but it's shielding puts it in the right range at high power

604B Raised to 0.34 inches and ran TMR

Continue with data collection JDM 206 Pg 25

Run # 605 Recheck reactivity Shim @ 389; LN = 0.58
~~C 79/62.7 (5 min) 6554 +0.143~~
C 82.7/84.6 (5 min) +13207 sec +0.096¢
Use +0.10¢

Dn 16:15

DATE NOV 9 1972 SAFETY-CHECK

TIME 02³⁰ AM BY Mihalczo Thomas

CHANNEL	A	B	C	D	(E)	F
RANGE	1×10^{-12}	opr	L-12	1×10^{-12}	400	500
SOURCE DIST.						
% F. S. TRIP	100		100	100	100	100
BLDG. ALARM	✓	✓	✓			
AUX. OTRS.	—	—	—			

SOURCES USED Pu Be Co RADIOS ✓

TABLES ✓ LIGHTS ✓ AREA CLEARED ✓

Run 606 Reactivity check Shim = 366; ∞ LN = 0.62
Data collection JTM 200 Pg 80

Run #607 Recheck reactivity shim = 366 LN = 0.6
C: 57/63.5 in 5 min T = 277 sec ρ = + 0.45¢

13

DATE NOV 10 1972 SAFETY CHECK

TIME 08 50 AM BY Taylor & Mihalczo

CHANNEL	A	B	C	D	E	(F)
RANGE	10×10^{-12}	OLR	6^{12}	10×10^{-12}	900	900
SOURCE CHECK	8"	✓	✓	2"	2"	@
% F. S. [illegible]	100	✓	✓	100	100	100
ELEC. [illegible]	✓	✓	✓			
AUX [illegible]	✓	✓	✓			

SOURCE [illegible] PuBe [illegible] ✓

TABLES — [illegible] — AREA CLEARED —

Run # 608 Check reactivity shim @ 465 ∞

0840 Tc under a button before start-up = 21.9 °C

0850 Initially @ 0.6 LN 21.9° C

0851 still @ high power 22.3° C

0900 Dn. 22.5° C

Data collection JTM 206 Pg 37

1200 after 3 hrs of data collection 21.9°C

Run #604 Recheck reactivity shim @ 465 LN = 0.4

C = 60/56 (15 min) T - 1304 sec ρ = − 0.10¢

5 mr/hr @ hall gate @ LN ~ 0.4 start

1440 after being up 10 min 24°C

1445 Dn temp of ad reducing until 15:45 = 23.1°C

DATE NOV 1 3 1972 **SAFETY CHECK**

TIME 08^{45} AM/PM BY Taylor & Lynn

CHANNEL	A	B	C	D	E	F
RANGE	10×10^{-12}	OPR	L^{12}	10×10^{-12}	900V	900V
SOURCE [illegible]	8"	—	—	2"	2"	@
% F. S. TRIP	100	—	—	100	100	100
[illegible]	✓	✓	✓			
[illegible]	✓	✓	✓			
S[illegible]	PuBe & Co^{60}			[illegible]		✓
TAPE [illegible]	—	—		[illegible]		—

Run #610 Reactivity Check shim @ 409 ∞ hw: 0.66

Data Collection STM Log Pg 42

Run #611 Recheck reactivity shim @ 409 hw = 0.50
Channel C → 71.1/71.9 in 5 min T = +26812 ρ = +0.05¢

DATE NOV 1 ± 1972 SAFETY CHECK
TIME 08^{30} BY Taylor & Lynn

CHANNEL	A	B	C	D	E	F
RANGE	10x10^{-12}	OPR	6^{L}	OVR^{12}	900V	900V
	8"	—	—	2"	2"	@
	100	—	—	100	100	100
	✓	✓	✓			
	✓	✓	✓			

PuBe #6Ra ✓
✓ ✓ ✓

Run #612 React. check = Shim @ 409 = ∞ Lw = 0.60
Data collection DTM 206

Run #613 Recheck reactivity Shim = 409 Lw = 0.50
C = 36/37.2 in 5 min T = +9149 sec ρ = +0.14¢

DATE NOV 1 5 1972			SAFETY CHECK			
TIME 09[20] AM	BY Taylor & Lynn					
CHANNEL	A	B	C	D	E	F
RANGE	10×10^{-12}	OPR	L^{12}	10×10^{-12}	900V	400V
SOURCE DIST.	8"	–	–	2'	2"	@
% F. S. TRIP	100	–	–	100	100	100
BLDG. ALARM	✓	✓	✓			
AUX. STOP	✓	✓	✓			
SOURCE USED	PuBe #6 Co		INTERLOCKS	–		
TABLES ✓	DOORS –		AREA CLEARED ✓			

BF_3 #1 West
#2 South
#3 East

Run #614 Remove the SFC & the Cf[61] from sphere
Remove the 2 al reflectors from top piece.
Fill all holes
Cf^E located at ℄ of sphere.
14 – 1/4" U buttons on (One has Tc under it)

Ln 0.6 T = +172 ρ = + 6.2¢ (+)

#615 Remove 3 U-Buttons ; Total on = 11
Ln = 0.6; C = T = +1560 ρ = + 0.80¢

#616 Remove 1 U-Button ; Total on = 10 ↙
Ln = 0.5 ; Ln ; C ; A = ∞ shim @ 210 relays.
Temp = 24°C at end of this "high power".

"Remote" Run Source #358 removed from Room

#617 Remove 9 - 1/4" U-Buttons ∴ Sphere = ~~-.234~~ [illegible]
→ adjust BF_3's via distance and parrafin to get ≏ 3000 CPS with Sco. E!
λ_N = .00065 tc = 21°C 12:05 hrs.

2 Min Counts

	Ctr #1 (West)	#2 (South)	#3 (East)
"E" ℄	356,018	348,332	408,241
	356,347	348,991	408,210
	355,439	350,139	410,480
	177,967/min	174,577/min	204,489/min
	2966/sec	2910/sec	3408/sec
			Avg. 3095/sec
"Bgd"	56	54	56
	56	40	69
	49	43	55
	26.8/min	22.8/min	30/min

0.442 CPS

#618 Cf 61 at center of sphere.
14 (¼") buttons on.

Maybe 15 → see Run #628

Temp = 20.25° C

k = 1 al Shim = -6

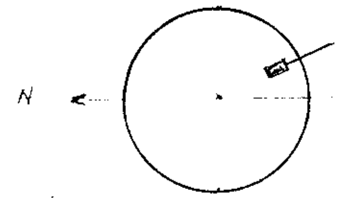
#619 Removed 9 (¼") buttons
~~#619~~ Counts - 2 minutes

LogN = .00055
~~24.24~~

	#1	#2	#3
Cf 61	289,489	284,137	331,687
	286,838	283,841	328,332
	287,363	281,783	328,300
	288,901	283,953	330,549 20.3°C
	144,074/min	141,714/min	164,856/min
	2401/sec	2362/sec	2748/sec

Avg = 2504/sec

#620 Cf[61] at South East position.
11 (1/4") buttons
∞ shim @ 138



Run #621 Removed 9 (1/4") U Buttons − ~~23.~~ 24.2 ¢ Δ N = .00032
(2 min cts) Temp: 20°C

Cf[61] @ SE POSITION

#1	#2	#3	
156934	154813	178822	20.0°C
156415	153532	178376	
156632	154371	179244	
156097	154706	179177	
157264	155457	179975	
157759	156024	180568	
156150	153785	179256	20.3°C
157388	155249	179886	
78415 CPM	77371 CPM	89707 CPM	
1307 CPS	1290 CPS	1495 CPS	

AVG CPS = 1364

NOV 16 1972 SAFETY CHECK

10:30 AM BY Taylor & Lynn

10x10^-12 opr L-12 10x10^-2 900V 900V

8" OK OK 2" 2" OK

102 100 100+ 102

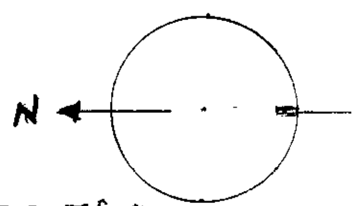
✓ ✓ ✓

✓ ✓ ✓

PuBe & Co^60 ✓

✓ ✓ ✓

Run #622 Cf 59 in South position.
11 (¼") U-buttons on.
k = 1, Shim = 206



Tc = 23.7° C

623 Removed 9 (¼") U-buttons. k ≅ -24.2 ¢ (~~23.4~~)

Tc = 23.1° C LN = .0001

Five (5) Minute Counts

Cf 59 South

Note: Cf 61 was 2½ ft from sphere

#1	#2	#3	Tc
86551	85755	98939	
86015	86015	98779	
86476	86288	99785	
86831	86907	100087	22.2°
86964	86522	99222	
86621	86401	99138	21.6°
86576	~~104067~~	99037	
87460	~~96276~~	100068	21.6°
~~174591~~ ✓	87107	100372	
86187	85800	98961	
85739	86444	99903	
288.47 CPS	287.87 CPS	331.60 CPS	

AVG = 302.65 CPS

12:45 PM

	#1	#2	#3	
Bgd with cf61 @ 2½' away	1296/5 min	1791	1715	cf 61 in Rm 108
	1997	2470	2374	
	5.49 cps	7.10 cps	6.82 cps	

avg cps 6.47 Bkg

Remove cf61 Put back in cf59 in South (5 min cts)

84663	84796	95487
84591	85301	97116
83807	84335	96819
85053	86506	97487
84212	83782	96704
84856	84780	97468
84107	85388	97282
281.57 cps	283.28 cps	323.03 cps

Bgd

22/5 min	140	52
14/2 min	~~84~~	29
8/2 min	87	25
10/2 min	17	39
4.91 CPM	26 cpm	13.2 CPM
.08 cps	.43	.22 cps

Run # 624 Cf "E" at center

10 (¼") U-buttons on. $T_c = 20.1°C$

$k = 1$ Al Shim = 246

2" from Bottom pe reads 2 R – 30 Min after Shut down.

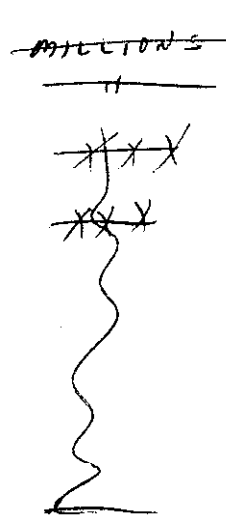
#625 Removed 9 (¼") U Buttons -24.2 & -23.7

$T_c = 20.1°C$

Cf "E"

2 minute Counts

Log N = .00072



#1	#2	#3
~~MILLIONS?~~	376,538	394,363
	381 949	396862
	386970	400723
	391791	401967
	361169	402710
	358856	403910
	371542	404001
	363573	402542
	359792	402137
	3025 cps	3359 cps

DATE NOV 1 7 1972 SAFETY CHECK

TIME 0835 AM BY Taylor & Lynn

CHANNEL	A	B	C	D	E	(F)
RANGE	10×10⁻¹²	OPR	L12	10×10⁻¹²	900V	900V
SOURCE [illegible]	8"	ok	ok	2"	2"	ok
% [illegible]	100	–	–	100	100+	100+
D[illegible] ALARM	✓	✓	✓			
AU[illegible]	✓	✓	✓			
S[illegible]		✓		✓		
TA[illegible]	✓		✓			✓

Run # 626 ℄ of "E" at Center.

10 (1/4") U-Buttons on. Tc = 21.45 °C

k = 1 Al Shim = 236

Sect II & III = 10 R @ 5" – 1 min after raising top.

627 (9) (1/4") U-Buttons removed.

~~24.2~~ ~~23.4~~ Tc = Log N = .00076

2 min Counts

	#1	#2	#3
"E" ℄	339887	327931	392945
	342647	327895	395694
	347474	332101	399378
	343525	328796	398458
	2862 cps	2743 cps	3305 cps

10:05 Bkg

61	67171	146
49	69242	114
74	67302	122
25	24	37
13	10	45 (after ERR book)

SEE P. 164 NBE1

Run #628 – Cf 61 at Center
15 (1/4") U-Buttons Tc = 21°C
k = 1 Al shim = -9

#629 Removed 9 (1/4") U-Buttons. ~~234~~ -24.2 ¢
Lw: .00053 Tc = 20.7°C

2 min Counts

Cf 61 ¢

#1	#2	#3
279998	279900	318756
280004	280127	319188
280409	279965	318472
281248	~~281980~~	320031
2337 CPS	2337 CPS	2659 CPS

Run #630 – Cf 61 at SE Position –
11 (¼") U-Buttons on.

T_C=20.6°C

k=1 Al Shim = 111

#631 Remove ⑨ (¼") Buttons 2 minute h_N=.00030

	①	②	③
	144672	144983	166411
Cf 61	146123	146422	167229
SE	147539	147852	168769
	150238	149549	171187
	148409	149541	170413
	148729	149892	171004
	149485	150706	171820
	147992	149207	169944
	1239.4 cps	1245.1 cps	1421.0 cps

Run #632 of 59 at South Position.
11 (¼") u-Buttons on — Tc = 20.1°C
k = 1, Al Shim = 218

Run #633 Remove 9 (¼" u-Buttons) ~~-24.2~~ -234 hN = .00009

5 min. cts. Tc = 20° C

81966	81578	93842	
82942	82599	9550 ✓	
82651	82520	9445	
82711	82607	95002	
82554	82782	95243	
83,364	82936	95522	Tc = 19.5°
83063	83296	96196	
82251	82000	93769	
275.63 cps	275.13 cps	316.68 cps	

Run #634 Cf "E" at Center
10 (¼") U Buttons on
k = 1 Al Shim = 289 C = N-22 @ 65
LN = .55
Tc = 19.8° C.

#635 Remove 9 (¼") U-Buttons
LogN = .00068

2 min cts Tc = 19.9°C

"E"

℄	#1	#2	#3
	345 666	342 710	393 250
	344 559	342 028	391 848
	346 680	345 271	395 311
	350 212	346 627	398 189
	350 955	346 395	396 766
	350 565	346 883	397 319
	2921.5 cps	2888.6	3311.9

NOV 20 1972	SAFETY CHECK					
08 40	BY Mihalczo & Taylor					
	A	B	C	D	E	F
	10x10⁻¹²	OPR	10¹²	10x10⁻¹²	900V	900V
	8"	✓	✓	2"	2"	@
	100	—	—	100	100	100
	✓	✓	✓			
	✓	✓	✓			
	PuBe & 60Co				—	—
	—		—		—	

Run #636 Cf E @ center of sphere
10 - (1/4") U-Buttons on
Remote shim = 272 (∞)
tc @ end of run 20.3°C

hn = 0.50

R #637 Remove 9 (1/4" Buttons) = ~~23.4~~ 24.2 ¢ hn = .00067
(2 min cts)

Cf E @ ℄

CTR #1	CTR #2	CTR #3	
349815	347706	398190	19.5°C
350107	346962	398020	
351728	349542	399905	
352143	350951	400421	19.5°C
352615	350315	401151	
353004	349892	401072	
2938.2 CPS	2919.9 CPS	3340 7 CPS	

~~Bkg cts (2 min cts)~~

~~81~~	~~40~~	~~110~~
13	20	21
14	7	21
0.11 CPS	0.11 CPS	0.18 CPS

Run #638 Put Cf 61 at center of sphere.
16 (1/4") U-Buttons on
Remote shim = 48 ∞ ΔN = 0.42
tc @ end of run = 20.3 °C

Run #639 Remove 9 (1/4" Buttons) ~~-33.4~~ -24.2 ¢ ΔN = .000
(2 min cts)

#1	#2	#3
288682	283499	323978
287844	284100	324687
289644	283731	324520
288513	283160	323777
2405.6 CPS	2363.5 CPS	2702.0 CPS

Cf 61 @ ⊗

Run #640 Put of 6' @ SE position
11 (1/4") U. Buttons on
Remote shim - 157 ∞ $\Delta w = 0.32$

Run #641 Remove 8 (1/4" U-Buttons) -21.5 $\Delta w = .00033$
(3 min cts)

#1	#2	#3
258275	253381	291414
258561	253599	290674
259246	254105	290154
259442	255168	291907
1438.3 cps	1411.5 cps	1616.9 cps

of 6' @ SE

Run #624 Remove 1 more button -24.2 ¢
of 6' @ SE
(3 min cts)

#1	#2	#3
227531	222482	255549
230123	224918	257992
228728	224459	256373
228039	224304	255707
1270.0 cps	1244.7 cps	1424.5 cps

Run #625 Cf^{59} in South position
11 - 1/4" U-Buttons In.
Remote shim = 215 ∞ ΔN = 0.46

Run #626 Remove ⑨ (1/4" U-Buttons) -24.2 -23.4 ΔN = .00009
(5 min cts)

Cf59 @ 5

#1	#2	#3	
84353	83275	96033	
86292	84479	97231	
87380	85546	98486	
88044	87561	100517	tc = 18°C
89637	87849	101275	
91876	90542	103779	
92623	91660	105058	
93673	91967	106122	
91639	90238	103001	
94585	92716	106789	tc 18.3°C

?
?

Run #627 Source (Cf^{E} @ ℄ of sphere.
10 1/4" U-Buttons on)
Remote shims = 76 — ΔW = 0.5

628 Remove 9 (1/4 U-Buttons) ΔW .00075

2 min counts

384419	374054	430654
385829	377716	434422
386589	379156	434588
387539	377562	434094
389075	379522	435708
389953	380695	438093
391480	383488	439759

?.

96 NOV 21 1972 — BF_3 detectors placed around source @ 1 3' ± 1'
— 15 min ea to each (change Sa. each ct).

	cf61 #1	cf61 #2	cf61 #3	cf59 #1	cf59 #2	cf59 #3	cfE #1	cfE #2	cfE #3
0815	20904	19932	41747	5219	5216	11334	23588	23102	54688
	21503	19868	40224	5265	5341	11626	23012	23649	53932
	20891	20107	41654	5143	5408	11583	23256	23082	53068
1050	78222 *	20092	41778	20615 *	5323	11463	*	23608	54070
	*	19791	42187		5225	11668	22822	23651	53947
	20766	20182	42148	5090	5199	11493	22779	23504	54467
1450	20861	20084	42220	5133	5251	11436	22950	23235	53784
	20619	19857	42513	5121	5218	11324	22682	23542	53598
CPM	1394.9	1332.6	2787.3	343.01	351.51	766.06	1534.2	1557.3	3596.3

* Hi frequency noise in #1 ampl. Needs repair. ERR lists it.

NOV 22 1972

15 min ea	20413	19793 ~~20413~~	42842	5130	5124	11569	22850	23380	52823
				5074	5424	11406	22773	23472	53257
							23013	23741	53766
20 min	27838	26594	55527				66200 *	31320	72214
	27498	26410	56677				69117 *	31407	72228
	27467	26433	56069						
Begin applying via C-1	28152	26591	56423				31173	31090	70954
	27707	26786	56017				31105	31390	71018
	28095	26440	56110				31304	31226	70948
	27879	26509	55930				30149	31630	72552
	28112	26487	56236				30922	31348	72702

NOV 27 1972

	Cf 61			Cf E		
10 min cts	27343	26168	57345	30569	30787	70812
	27668	26266	55635	30685	30903	69979
PM	1392.5	1323.2	[illegible]	154[illegible]	[illegible]	[illegible]

AmBe #114

103742 152097 117066

Cf E

(5 min)

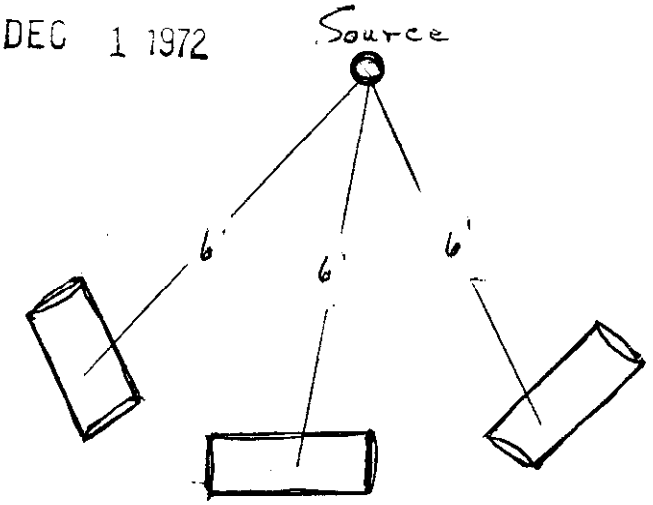
NOV 28 1972 Inst. have been moved a little.
Had Hi Freq. noise again in C 1. It went away after the pre-amp was moved. coincidence?

(15 min cts)

AmBe #114 #1	#2	#3	Cf E #1	#2	#3
312585	457144	360084	20272	29701	22669
314661	459401	356143	20018	29439	22881
314464	463798	350441	20174	30112	22849
314714	467750	357041	20410	29362	23091
315673	468855	362546	20162	30482	24162
20961	30?93	23?17	1347	195?	1542
		Am/E →	15.561	15.540	15.446

6125	6535	7176	12357
6499		7212	112588
6600		7147	112281
6369		7122	113030
6440		7287	112524
6386		7119	113412
6355		7143	113930
6420		7212	113324

DEC 1 1972



NOV 29 1972

~~AmBE 322492 459291 272764 Cf 61 17894 25661 429156~~ (15 MIN CTS)

Am Be #114 ①	②	③	Cf 61 ①	②	③	Cf E ①	②	③
322492	459291	~~272764~~	17894	25661	~~429156~~	20943	29562	~~918592~~
325401	461865	~~351787~~	18161	25363	X	20811	30157	X
328298	459613	X	18190	25647	X	20785	30388	22182
			17054	26897	18410	20434	30126	22806
AVG. CPS 361.55	516.40	X	20.091	28.346		23.048	33.398	24.993

NOV 30 1972 (15 min cts)

CPS → .141 .176 .157

Bkg: ① = 127; ② = 158; ③ = 141

Am ①	②	③	Cf 61 ①	②	③	Cf E ①	②	③
325633	454847	391195	18179	25310	17121	20830	30020	22972
326774	460928	380905	18044	25051	16657	20562	30023	23075
327288	463624	384322	18177	25458	16990	20541	30003	22453
331660	451306	370820	18299	26416	19674	20700	30193	22243

DEC 1 1972

15 min cts

Cf 61 ①	②	③	Cf E ①	②	③	Am ①	②	③
6272	6689	6619	7323	7601	7566	112504	116332	121800
6626	6799	6556	7359	7623	6917	112735	116205	119839
6747	6955	6479	7294	7644	7249	112428	115749	118379
6516	6808	6454	7269	7823	7188	113177	116580	117891
6587	6973	6415	7434	7790	7334	112773	115808	119703
6533	6681	6214	7266	7613	7159	113559	116724	117046
6502	6681	6498	7290	7536	7267	114077	116213	117432
6567	6885	~~6658~~ 6058	7359	7561	6927	113473	116529	

BACKGROUND

147 154 142

START 4:41 PM FRI

STOP 9:17 AM SAT

996 min

CF - 434114 − 9761 = 424353 | 447408 − 10225 = 437183 | 484262 − 9694 = 474568 | 66.4

START 9:36 AM SAT

E STOP 8:13 AM MONDAY

1340690 − 27411 = 1313279 | 1396208 − 26716 = 1369492 | 974183 − 27224 = 946959 (?)

2797 min

Am B START 8:17 MONDAY

STOP 9:33

76 min

569635 − 745 = 568890 | 582432 − 780 = 581652 | ~~708778~~

4 Dec 12 Long Cro Pg 40

(15 min cto)

AM				E			#61		
113352	115283	126155	✓	7213	7566	7656	6506	6541	6260
113048	116101	125720	✓	7377	7575	7164	6305	6644	6826
111622	115663	129628	✓	7185	7597	7531	6678	6985	6509
111218	115815	127333	✓	7217	7712	7189	6668	6853	6941
263	341 Beg	346		263	341	346	263	341 Beg	346
112462	115197	125379	✓	7265	7712	7302	6173	7008	6771
111602	115426	126945	✓	7141	7607	7689	6404	6716	6972

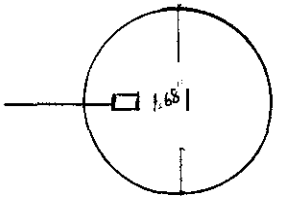
DEC 5 1972

09:15 — Taylor & Lyon

Monthly Bldg. Alarm Check

10×10^{-12}	oper	L=12	16×10^{-12}	900	900
6"	ok	0	2"	2"	ok
100+	—	ok	10	100+	

Run #628 15 - 1/4" α Buttons on.
Cf #1 located with 1.68" split plug near center of sphere.



k > 1, Al shim out.

$T_c = 21.8°C$

#629 Removed 1 - 1/4" α Button.

$\log N = .38$
"c" = +21@1 →

k = 1,
Al Shim = 229

#630 Removed 9 - 1/4" Bu
(2 min cts), (Run =

BF_3 #1	i
~~210215~~	~~2c~~
211228	2c
211721	20
211666	20
212123	20

Run# 631 10 - 1/4" - U Buttons on -
Cf "E" at Center.

k = 1 , Alskin = 222   Log N = .45
"C" = H^{20} @96

#632 Removed 9 - 1/4" U buttons

-24.2 ¢

2 min cts   Log N = .0006

316388	308938	480408
317928	311898	480769
322057	314782	486469
321922	314368	483303
325038	317010	488608
325361	316215	483205

Bkgd

123	136	175
47	61	89
30	31	62
27	30	76

Run #633 10 - 1/4" u Buttons in.
1/2 of center plug (.128" dia) out.
CF 2 against surface of sphere. ∝ shim = 84

Remove (9) → Run #634 | 5 min cts.

62018	60748	91433
63450	60984	93172
62710	60997	90374
63314	61327	92679
62852	61077	91576
63527	61910	92096
63229	60891	90484
64437	62315	91719
63301	61771	91739
63537	61527	91085
63960	62602	92613
← use bkg 60	90	180

DEC. 6 1972

08:40 — Taylor & Ivy

10×10^{-2} apr 2-12 10×10^{-12} 400 400

6" ok ok 2" 2" ok

100 — 102 100+ —

✓ ✓ ✓

✓ ✓ ✓

Pu Be + Co 60 — ✓

✓ ✓

Run #635 11 - ¼" u Buttons on. (Cf² on surface)

Repeat ; Run #633.

@ Shim = 202 hN = 0.46

#636 Remove 9 buttons. -24.2#

(5 min Counts)

Cf ≡

	①	②	③
1	63199	62099	91273
	62615	61185	90902
	61995	60291	89771
2	61998	60694	96271
	63405	60776	90267
	64018	62218	88812
	62997	61271	87671
3	62575	60560	87262
	61811	60133	85452
	63418	61738	89696

Run #637 10 1/4" u Buttons on -
Cf "E" at Center of Sphere -
ℓ shim = 229 Δw = 0.38
Chvette: 1.2 E-8
C = 1722 @ 50

Run #638 Remove 9 buttons (2 min cts)

	①	②	③
Cf "E" 1	311433	303492	451829
2	313613	306160	~~4~~ 455372
3	316342	308537	457677

Run #639 15 - ¼" Buttons on
Cf 61 located as Run #628.
Al = 160 Log N = .234
"C" = 45 H-22
Rhatta =

#640 Remove 9 ¼" Buttons.

Cf 61

	206207	202041	322113
2	208915	204618	324184
2	209749	205669	321462
2	209349	203697	320753
3	210167	205310	350375

Bkg

17	17	27
14	12	34
9	6	35
17	11	37
10	16	37
0.112 CPS	0.103 CPS	0.283 CPS

110 DEC 7 1972 Conf same as Pg 98 Source only

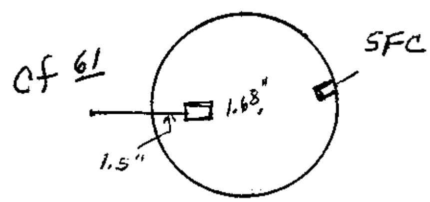
time		BF_3 #1	(2)	(3)	
1 sec	cf2	3151	3662	3955	do not use BF_3 #3
1s ✓	E	6631	7574	8616	
1s	Bkg	137	107	239	
1s	cf2	3253	3654	4368 → ?	
✓	E	6696	7611	8732	
✓	Bkg	126	106	407 ?	
	cf2	3274	3720	4704	
✓	E	6608	7486	9298 ?	
	Bkg	127	134	249	
	cf2	3180	3669	4925 ?	
✓	E	6816	7390	8335	
	Bkg	184	130	845 ?	
	cf2	3148	3635	4159	
✓	E	6712	7401	9133 ?	
	Bkg	144	153	(213) saw relay noise	
	Bkg	151	125	174	
	E	6569	7607	8737 ?	
	cf2	3023	illegible	illegible	
	Bkg	142	164	447	
	E	6645	7538	8417	
	cf2	3113	3531	4965	

DEC 8 1972 SAFETY CHECK

10:10 BY Taylor & Lyman

	A	B	C	D	E	F
	10×10^{-12}	off	L-12	10×10^{-12}	900	900
	6"	OK	OK	2"	2"	OK
	100	—	—	100	100+	—
	✓	✓	✓			
	✓	✓	✓			
	PuBe & Co 60					✓
	✓	[illegible]	✓	[illegible]		✓

Run #641 16 - 1/4" U Buttons On - Counters as shown. 1 pc Al on Surface -



ρ = +2.5¢, Al Shim Out.
h_N = +1.51¢

#642 Removed the 1 pc of Al from Surface.

k = 1, Al Shim = 215

Data STM Pg 52

#643 Recheck reactivity @ h_N = 0.30
C = +0.19¢

DEC 11 1972 SAFETY-GREEN

TIME 0830 AM BY Taylor + Lyman

	A	B	C	D	E	F
	10×10^{-12}	OPR	10^{-12}	10×10^{-12}	900V	900V
	6"	OK	OK	2"	2"	OK
	100	—	—	100	100	100

RUBE & Co

Run #644 Reactivity Check
shim @ 236 → → DC $k_N = 0.36$

Data collection STM log Pg 55.

Run #645 Recheck reactivity @ shim = 236 = ∞ as per k_N, C, A, D.

DEC 1 - 1972
[redacted]

10:00 — Taylor & Lyman

10x10⁻¹² opr L-12 10x10⁻¹² 900V 900V
6" OK OK 2" 2" ok
100 100 100+
✓ ✓ ✓
✓ ✓ ✓
PuBe & Co 60 ✓
✓ ✓ ✓

Run #646 – Reactivity Check
Al Shim = 232, ∞ Log N = 0.55

JTM Log = p. 62

Run #647 Recheck reactivity (shim = 232)
C = T – 7880 sec ρ = – 0.16¢

DEC 1 5 1972
8:35 — Taylor & Lyman

10X10⁻¹² opr Ltd 10X10⁻² 900 900
6" OK OK 2" 2" ok
100 — — 100 100+ —

PuBe & Co⁶⁰

#648 Reactivity check
Shim @ 222 ∞ ΔN = 0.51
Δ = 382
Data collection JTM Log Pg 64

Run #649 Recheck reactivity (shim = 222)
C = T = +6871 ρ = +0.18 ¢

DEC 14 1972

8:25 — Taylor + Lyman

10×10^{-12} ogm $\ldots$ 10×10^{-12} 900 900

6" OK OK 2" 2" OK

100 100 100+ —

✓ ✓ ✓

✓ ✓ ✓

Probe & C: 60 ✓

✓ ✓

Run #650 Reactivity check.

Shim @ 234 → ⟶ $\Delta N = 0.56$

Data Collection TM Log Pg 69

Av 0.315

Run #651 Recheck reactivity (Shim = 234)

$C \rightarrow T = +145.3$ rec; $\rho = +0.09$¢

DEC 15 1972

TIME 0840 — TAYLOR & LYNN

	A	B	C	D	E	F
RANGE	10x10⁻¹²	OPR	L²	10x10⁻¹²	900V	900V
	6"	✓	✓	2"	2"	@
	100	—	—	100	100	100
	✓	✓	✓			
	✓	✓	✓			
	PuBe & ⁶⁰Co				✓	
	✓	✓				✓

Run #652 Reactivity check

Shim @ 237 = ∞ LN = 0.55

0.310

Data Collection JIM Pg 74

Run #653 recheck reactivity (shim = 237)

0.14

C → T = +7385 sec ρ = +0.17¢

DEC 20 1972

10 @ 0 — TAYLOR & REEDY

A	B	C	D	E	F
10×10^{-12}	OPR	L12	10×10^{-12}	900V	900V
6"	—	—	2"	2"	@
100	—	—	100	100	100

ROBERTSON CO

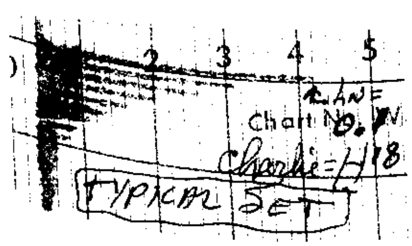
Run #654 ALL HOLES FILLED
SFC @ ℄ OF SPHERE (No other instruments)
16 1/4" U-BUTTONS ON.
~~~ @ alchim = 137

Run #655 add one (1" x 1" x 7/8") U-Block to surface of sphere hN → T = +96.10 f = ±9.90¢

Run #656 Remove the (1" x 1" x 7/8")
Put up one (1" x 1" x 1/8") U-Block to surface
hN = T + 402.78 ; f = ±2.90¢

DN @ 11:30 hrs.
~~~

Run # 657 — all holes filled
SFC @ ℄
16 - 1/4" U-Buttons On
2 - al pieces on surfaces (34 gm total)
3 - 1" x 1" x 1/8" U-Blocks on surface (114 gm total)
4 - 1" x 1" x 7/8" U-Block on surface (1073 gm total)
Al shim @ 137

JRT & JTM
UP @ 13:00

TMC T = +4.575 sec (+4.191) ρ = +53.10¢ (+54.??¢)

Collect data JTM log Pg 79
ossilate top @ 1 5.2 sec at time with the usual 4" travel in-out time decay.



Run # 658 Recheck reactivity
TMC T = +4.069 (+3.??) ρ = +55.26¢
Rhoitte ρ = +54.679

cont data collection

Run # 659 Recheck reactivity again TMC +50.56
Rhoitte [illegible]

Run #660 Remove 2 - 1"x1"x7/8" U-Blocks
Remove 3 - 1"x1"x 1/8" U-Blocks

TMC +21.16 cc +26.90¢

Rhrette ρ = +27.0¢

Cont ATM data collection.

Run# 661 Recheck reactivity

TMC T +19.06 ρ + 28.45¢

JAN 3 1973 SAFETY CHECK
09 BY TAYLOR & REEDY

A	B	C	D	E	(F)
10x10⁻¹²	OPR	10²	10x10⁻¹²	900V	900V
6"	✓	✓	2"	2"	@
100	–	–	100	100	100
✓	✓	✓			
✓	✓	✓			

PuBe & ^{60}Co ✓

✓

Run #662 Reactivity check (con't as run #661)
TMC T +21.36 ρ = +26.76¢ (+21.2?)
Rhoette T — ρ = +27.31¢

collecting data DM log Pg 82

Run #663 Recheck Reactivity 18.72 [28.07¢]
TMC T +21.59 ρ = +26.60¢
Rhoette — ρ = +26.95¢

Run #664 Add 1 - 1"x1"x7/8" U-Block
1 - 1"x1"x1/8" U-Block

[40.40¢]
TMC T +9.72 sec (9.20) ρ = +39.45¢
Rhoette — ρ = +38.76¢

collecting data run D Pg 83 DM

Run #665 Recheck reactivity
TMC T +9.97 +10.00 sec ρ = +39.02 ¢ +38.97 ¢
Rhoette — ρ = +38.88 ¢

Run # 666 Remove 3 - 1"x1"x 3/8" U-Block
add 1 - 1"x1"x 1/8" U-Block
+13.41
TMC T +62.59 +63.15 ρ = +13.61 ¢
Rhoette — ρ: ——
Lw T +64.72 sec ρ = +13.29 ¢

collecting data start run F in JTM logbook

Run #667 Recheck reactivity
TMC T +63.89 sec +69.73 sec ρ = +13.41 ¢ +12.60 ¢
Rhoette T — ρ = +13.53 ¢
Lw T +65.14 sec ρ = +13.23 ¢

JAN 5 1973

TAYLOR & LYNN

10×10^{-12}	OPR	μ^{12}	10^{-12}	900V	900V
6"	✓	—	2"	2"	@
100	~	—	100	100	100
✓	✓	✓			
—	✓	—			
PuBe $\neq$ ^{60}Co				✓	
—	~			—	

Run# 668 Reactivity Check (same as # 667)
TMC T= f= +13.60 ¢
Rhoetta — f= +13.19 ¢

collect data TTM Pg 86

Run# 669 Recheck reactivity
TMC T= ρ = 13.49

Run# 670 Remove 1 - 1"x1"x1/8" U-Block
Add 3 - 1"x1"x3/8" U-Block
TMC T= f= 37.14 ¢
3/8" 1/8" 1"
Total = 3 (large 7/8") + 1 (1/8"), 2 al and all button, shim 37

collect data
Run# 671 Recheck reactivity
TMC T= ρ = +37.01 ¢

#672 Recheck reactivity
TMC ⊤ = ρ = +38.24
Rhoette — ρ = +36.40¢

Run #673 add 1 - 1"x1"x7/8" U Block
add 2 - 1"x1"x1/8" U Block

(as in run # 657)
4 - 7/8
3 - 1/8
TOTAL → 4 (7/8"), 3 (1/8") 2 al pieces shim = 137
and all buttons on.

TMC ⊤ = +4.49 sec ρ = +53.42¢
Rhoette — ρ = 49.8¢ doubtful

collect data

Run #674 Recheck reactivity
TMC ⊤ = +4.86 sec ρ = +51.97¢

JAN [illegible] 197[illegible]

08·40 — Taylor & Lynn

10x10^-2	opr	L^12	10x10^-2	400	900
6"	ok	ok	2"	2"	ok
.100	—	—	.100	100+	—
✓	✓	✓			
✓	✓	✓			

Run #675 – Removed Cf^61.
1990 gm plug in (large sect. of plug .46" Ball) in all the way
Remaining center hole (.129" dia.) void.
Blocks same. See #673

Pitte = + 61.76
TMC = + 63.34+

Pulled 199 gm plug   Pitte = – 15.9

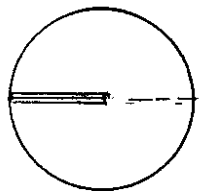
#676 Repeat

Pitte = + 60.70+
TMC = + 63.14+

Pulled plug   Pitte – 13.47
TMC = – 29.16
LN = – 20.8+

TH

#677 - 198 gm plug placed even with the sphere surface



Pitte = + ~~55.48~~ 53.2 ¢
TMC = + 55.98
IN =

Pulled plug
-2 3/4"

~~Pitte~~ TMC = - 13.90 ¢
LN = - 11.5 ¢
Ch"A" = -11.0 ¢
Pitte = -

#678 Remved 4 - 7/8" ~~b~~blocks. (≈ 39 ¢)
Plug even with surface of sphere.

Pitte = +
TMC = +29.68 ¢

Pulled plug -
Pitte = -
TMC = ?

Run # 679 - 12 - 1/4" u Buttons on.
Ball plug fully in.
Al shim @ 205

TMC, "C", "A" + LN = ∞, Pitte =

Pulled plug - Pitte = —

Run # 680 - 2 - 1/4" u Buttons on
Ball plug in.
Al shim @ 59

TMC, "C", "A" + LN = ∞ Pitte =

Pulled Plug - Pitte = —
+
Curved plastic
(set to give ~ 25#)

Oct 72 Rossi &

Nov Boks

Series of runs @ ≈ -24

Nov. 28, 1971 Compare all the

of sources also the

[illegible] B13 [illegible]

Dec. 72 Rossi Alpha

Eval 1"x1"x7/8" U Block on surface

Jan 73 Rossi & eval

Last run Jan 16, 1973 #680 was to establish

a method to pull #100

from sphere.

(5-9) Nov 73 VAT

Cross Sect. of Be Box Time of Flight Meth

Using LDSL equip as part of data collection.

March 72 More!!

~~Hor~~ Evaluations such as buttons

More Rossi

Apr Rossi

May "Foil" runs

CF importance

eval .23" rad sphere @ ℄ of 3.42"

~~stat~~ gobs.

Aug Test for T. Wannick

6 Sept 72 More center piece alteration (.5" hole idea

18 Feb 71 U cyl graphite sandwich

in

~~6 Dec 71 Base of sphere~~

Nov. → Rossi Alpha

6 Dec 71 Data accum via oscillating top.

E-9

of sources

Rossi α

27 Jan 72 - Control fuel has been altered and reinstalled on CTR

Fiss ctr vs of at various positions

Grbs!!

10 Feb 72