National® Brand

COMPUTATION NOTEBOOK

Department e09084

Subject Neutron Spectroscopic Factors

Name

Address

43-648

75 Sheets, 4 x 4 Quad., 11 3/4" x 9 1/4"

0 73333 43648 8

Rediform Inc. • Coppell, TX 75019

Made in Mexico

91-118

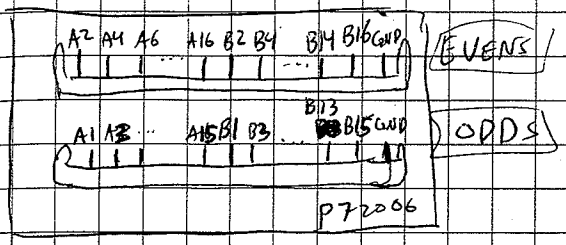
Go_333_Run_??

Vacuum Reference (2014/12/15), no cryo pump.

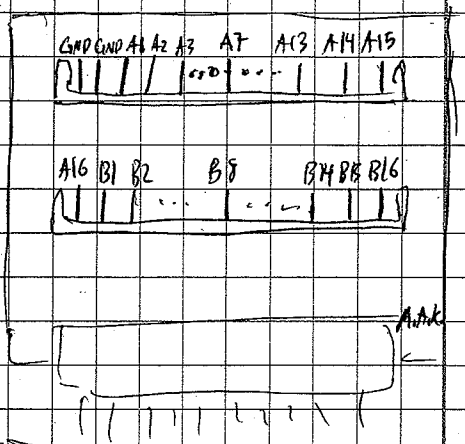
60 s → 600 Torr
930 s → 50 Torr
1850 s → 150 mT
2500 s → 100 mT
4250 s → 2.4×10^{-4} T.

10/30/2024

Back of Pre-amp



FRONT



PA2 - Ch. A1+A16, B1-B4 Good — Height 3.0-3.5 V
ALL GOOD

PA3 - ~~A12~~ - 3.6V B14 - 3.6V

PA4 - A2 - 3.7V A4 - 3.7V ~~A8 - Unsure baseline~~ 3.0V
A14 - 2.9V A15 - 2.8V A16 - 2.8V ~~B13~~ - 2.9V B14 - 2.8V
~~B15~~ - 2.8V ~~B16~~ - 2.9V B6 No signal - Slot empty

PA5 - A2 - 2.7V A11 - 2.8V A14 - 3.7V B3 - 2.9V ~~B4~~ - 2.6V

PA6 - ~~A16~~ - 2.5V B6 - 2.7V B16 - 2.7V

PA7 - A6 - 3.6V

PA8 - B4 - 3.6V B10 - 2.9V

3/2024 PA9 - Good through A1-B8 — Signal very noisy, checking if peak amplitudes ~3.0V
1/4/24 All Good (Between 2.5 & 3.5V)

PA10 - A1 - No signal B10 - 4.2V ~~Bad slot~~ Slot good 2473
PA11 - All good — BAD BOARD SLOT
PA12 - ~~A~~15 - 3.8V — OK
PA13 - All good
PA14 - All good
PA15 - All good
PA16 - All good
PA17 - All good
PA18 - B3 3.7V,
PA19 - All good — 1276 OK — Slot Board had @ A16 Output Not Connected - Fixed
PA0 - All good — OK, replaced
PA1 - A10 No signal, A16 - No signal, B1 - No signal — slot empty — Empty Now: B16, A1

Pulser Settings: Width = 2.0 ms, Rise = 1 µs, Fall = 0.5 µs
Rate = 28.0 Hz, Delay = 250 ms, A = 0.050 V (Neg)
Pulse Top Flat, Atten = 1x, Clamp Off

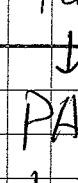
3/10/2014 Move good Pre-amps from board [redacted] 19 to fill in other boards

PA 1 - All good
PA 4 - All good
PA 10 - All good
PA 19 - A1 - 2473 [redacted] B1 - 2105 A2 - 2185 B2 - Empty
↓ ↓ ↓
High gain Uneven baseline Out

$R_{feedback}$ 2061 (Good): 5.15 MΩ
2473 : 5.10 MΩ
2105 : 5.30 MΩ
2185 : 5.43 MΩ

dE PA Attenuator Check

Pulse:



Pulse: +1.0 V @ 2x att.

Output from CB (Slot 13, ch 4):

e10011 board: ~ 11 V (14) (14)

e05133 board: ~ 24 V note: only found ~~12~~ of these

"hira adapt v1.0": ~ 34 V note: found (14) of these

e03045 board: ~ 16 V (5)

e10011 board → ~25 MeV dynamic range (d.r.)

→ e05133 → 11.5 MeV d.r.

→ hira adapt v1.0 → 8 MeV d.r.

DEs to be added to HiRA

(11V) T0: insert 2086-7 ✓

(9V) T3: replace 2085-7* w/ 2085-8*, insert 2160-3 ✓

(7V) T12: replace 2113-7* w/ 2113-3*, insert 2260-9 ✓

(-9V) T6: insert 2266-6

(-7V) T18: insert 2266-1

(6V) T8: ~~22~~insert 2266-4

(7V) T15: insert 2260-7

(7V) T2: insert 2297-10

(7V) T17: insert ~~3007-2~~ 2260-5

(6V) T16: insert 2297-3

(7.5V) T4: insert 3007-2

(8V) T10: insert 2297-8

(8V) T7: insert 2266-9

Telescope w/ PB Test

- T1 ✓
- w/ T9 ✓
- T14 ✓
- T0 ✓

DE Bias Cables

Note: 15A switches on PA power supply must be on to properly power

CAEN channel	Cable	PA
05, 0000	Tower 0	PA 4
05, 0001	Tower 0	PA 1
05, 0002	Tower 0	PA 3
05, 0003	Tower 0	PA 0
05, 0004	Tower 0	PA 2
05, 0005	Tower 0	CsI
05, 0006	Tower 1	PA 9
05, 0007	Tower 1	PA 6
05, 0008	Tower 1	PA 8
05, 0009	Tower 1	PA 5
05, 0010	Tower 1	PA 7
05, 0011	Tower 1	CsI
03, 0000	Tower 2*	PA 14
03, 0001	Tower 2	PA 11
03, 0002	Tower 2	PA 13
03, 0003	Tower 2	PA 10
03, 0004	Tower 2	PA 12
03, 0005	Tower 2	CsI
03, 0006	Tower 3	PA 19

*Tower 2 used to bias CsI in e1015

CAEN channel	Cable	PA
03.0007	Tower 3	PA16
03.0008	Tower 3	PA18
03.0009	Tower 3	PA15
03.0010	Tower 3	PA17
03.0011	missing	missing

Extra cable test

- PA 0 ✓
- PA 1 ✓
- PA 2 ✓
- PA 3 ✓
- PA 4 ✓

Mapping on Nov 21

03.0006	Tower 3	PA14
03.0007	Tower 3	PA11
03.0008	Tower 3	PA13
03.0009	Tower 3	PA10
0.3010	Tower 3	PA12

11/20/14

- DE MB: blown capacitor C16 (during powering up OR during adjustment of cable)
  - backup MB put in, Jon Elson to replace C16 cap

- Issues w/ multiple XLMs
  - when more than 1 XLM, CHDP control segfaults when loading bitfile
    - wrong XLM lights up
  - each individual MB on 1 XLM: works fine
    - MB1+MB2: works fine
    - MB1+MB4: fail to load setup file

- RESOLVED: MaxMB changed in chip_cont.h, Zibi changed to older version of code

DE Mapping

Position	PA	Flage	Cable #	Chip #	Slot in MB
0	4	BL 0	4	10	11
1	3	BL 1	5	11	12
2	2	BL 3	6	12	13
3	1	BL 4	7	13	5
4	0	DS 5	ex 4	14	16
5	7	DS 0	8	7	8
6	9	DS 4	10	5	6
7	8	DS 2	9	6	7
8	6	US 4	3	8	9
9	5	US 3	2	9	10
10	12	BR 4	13	2	2
11	10	BR 0	11	4	5
12	13	BR 5	18	1	1
13	11	BR 2	12	3	4

THIS MAP HAS BEEN UPDATED.

go to page 18

Tower 1 | Tower 2 | Tower 3 | Tower 4 | Tower 5

T0 P0 — 7,8 / 11,[12] MB3 — U = ? [V] 350 (290) — I = ? [µA] — 4

T2 P4 — 9,10 / 14,[15] MB1 — U = 310 [V] — I = 2.68 [µA] — ex 4

e09084

T17 P10 — 9,10 / 14,[15] MB2 — U = 300 [V] — I ~ 4 [µA] — 13

T3 P1 — 5,6 / 8,[9] MB3 — U = ? [V] 290 — I = ? [µA] — 5

T6 P5 — 7,8 / 11,[12] MB1 — U = 220 [V] — I = 1.62 [µA] — 8

T10 P8 — 5,6 / 8,[9] MB2 — U = 340 [V] — I = 1.68 [µA] — (3) or 14

T4 P11 — 7,8 / 11,[12] MB2 — U = 450 [V] — I = 1.8 [µA] — 11

CB slot

T12 P2 — 3,4 / 5,[6] MB3 — U = ? [V] 440 — I = ? [µA] — 6

T18 P6 — 5,6 / 8,[9] MB1 — U = 220 [V] — I = 1.8 [µA] — 10

T8 P9 — 3,4 / 5,[6] MB1 — U = 265 [V] — I = 2.40 [µA] — (2) or 0

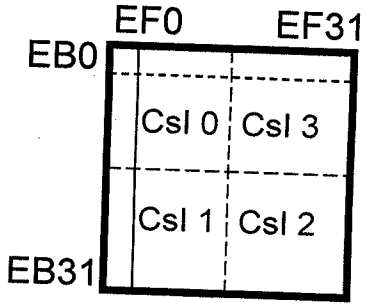
T7 P12 — 3,4 / 5,[6] MB2 — U = 340 [V] — I = 2.64 [µA] — 18

T9 P3 — 1,2 / 2,[3] MB3 — U = ? [V] 300 — I = ? [µA] — 7

T15 P7 — 1,2 / 2,[3] MB1 — U = 210 [V] — I = 2.7 [µA] — 9

T16 P13 — 1,2 / 3,[4] MB2 — U = 180 [V] — I = 3.12 [µA] — 12

☐ E Front



High Resolution Array

Detector Database

Detector Homepage

Overview of all single-sided Si (DeltaE) detectors

Part Number	Telescope	Status	Location	Micron/IU Depletion [V]		Leakage Current [µA]		e100ll T
~~2086-10~~	~~99~~	~~Not Working~~	~~MSU~~	~~4~~		~~0~~		
2086-7	99 T0	Working	MSU	-9/-11		0.11		11
2160-3	99 T3	Working	MSU	-9/-9		0.27		17
2160-4	99	Needs Repair	MSU	-9/-11		0.36	28	12
2260-2	99	Working	MSU	-6/-7		0.03	30	16
2260-5	99 T17	Working	MSU	-5/-7		0.01	1	6
2260-7	99 T15	~~Needs Repair~~	MSU	-5/-7	Fixed	0.17	1	3
2260-9	99 T12	Working	MSU	-5/-7		0.6		0
2266-1	99 T18	Working	MSU	-5/-7		0.21		18
2266-4	99 T8	Working	MSU	-6/-6		0.26		2
2266-6	99 T6	Working	MSU	-6/-9		0.16		–
2266-8	9 T9	Working	MSU	-8/-8		0.27		–
2266-9	99 T7	~~Needs Repair~~	MSU	-6/-8	Fixed	0.15	24	15
2297-10	99 T2	Working	MSU	-7/-7		0.02		19
2297-2	14 T14	Working	MSU	-7/-7		0.04	flipped tele	–
2297-3	99 T16	~~Needs Repair~~	MSU	-6/-6	Fixed	0.08		7
~~2297-4~~	~~99~~	~~Not Working~~	~~MSU~~	~~-9/-9~~		~~0.03~~	~~BROKEN?~~	
2297-7	1 T1	Working	MSU	-8/-8		0.06		8
2297-8	99 T10	Working	MSU	-8/-8		0.06		8
2297-9	99	Working	MSU	-8/-8		0.03	1	10
3007-2	99 ~~T4~~ T4	Working	MSU	7.5		0	one strip?	–

Nov 21st, 2014 - Pulsar DE

P11 missing. P1 = strange P1B - Cable bad, Okay

① Chipboard i. Position 11 DE not working ⟶ Need to be changed

② P1 strange = due to cable not being connected from flange to PA.

③ Change CB 4, Slot 5 to CB #52 (from MB Rev F)

12/01 CsI Bias through Spunky

+12 V
-12 V
Test
Bias: CAEN slot 5, Channel 11

Bias

Bias: CAEN: Slot 3 Channel 5

Bias: CAEN: Slot 5, Channel 6

- Slot 3, Channel 11 seems to be missing;
  - bad cable or bad connection in box

1401

Testing bias on DE + PA

All telescopes work except: P5, P7, P13

- No bias getting to PA8
  - switch PA8 board w/ PA9 board
    → problem stays w/ PA position
    → bad Molex connector?

- P5 PA7 detector looks bad (noise gets worse w/ bias)
  - switch detector that works to PA7 → problem stays with PA
  - try PA7 det in PA9: det works
  - try PA8 det in PA9: det works
  - try PA11 det in PA12: det works

DE Mapping

Position	PA	Flange	Cable #	Chip #	Slot #
0	4	BL0	4	10	11
1	3	BL1	5	11	12
2	2	BL3	6	12	13
3	1	BL4	7	13	15
4	0	DS5	4	14	16
5	15 ~~17~~	DS0	8	7	8
6	9	DS4	10	5	6
7	14	DS2	9	6	7
8	6	US4	3	8	9
9	5	US3	2	9	10
10	12	BR4	13	2	2
11	10	BR0	11	4	5
12	13	BR5	18	1	1
13	16	BR2	12	3	4

*PA 17 replaced w/ PA 15 on 12/6

2/12

PA power supply keeps tripping (+12 V)

- Current from +12 V: 10.8 A < (trip @ 15 A)
- Could be bad circuit breaker (tripping well below trip current) or could be temperature related

→ Kurt Kranz put in 20 A fuse to +12 V circuit

12/6

Slow Venting Procedure

REMINDER: TURN CLOCKWISE TO CLOSE, COUNTER CLOCKWISE TO OPEN

Assuming the chamber is under vacuum...

1. Close the air needle valve, and the blue N_2 needle valve. Make sure gate valves to S800 & beamline closed.
2. Start "Venting Procedure" on the Panelmate. This will open the N_2 gate valve. You will see a red light on the gate valve to indicate that it's open.
3. Slowly open the N_2 needle valve (blue). (The black N_2 needle valve should already be open). You can watch the pressure go up on the Pirani gauge. Increase the pressure in a controlled way by controlling the blue valve. The pressure should go up ~1mTorr/sec until 50 mTorr. Then slowly open the valve all the way.
4. The pressure should now be increasing at ~50 mTorr/sec. At ~50 Torr, the gate valve to air will open and the N_2 gate valve will close. (Note: it might not be 50 Torr. ~~Xxxx~~ on the Pirani, it could be ~30).

5. Open the air needle valve slightly so a tiny amount of air is flowing. Then close the blue N_2 needle valve (This is to avoid random pressure fluctuations below the set point causing the air gate valve to close).

6. Slowly open the air needle valve.

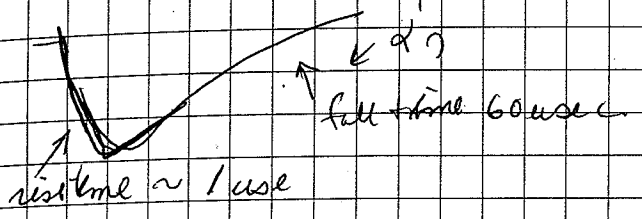
Once it's all the way open, the pressure should increase by ~0.5 Torr/sec. Venting to air should take about 30 min.

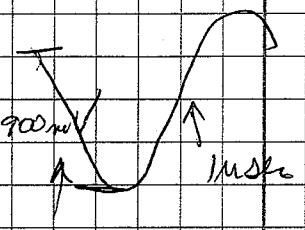
0.15 V → 40 mV
pulse signal signal

Noise examination preparation

1, MB 4 CB 2 ch 0

CSA

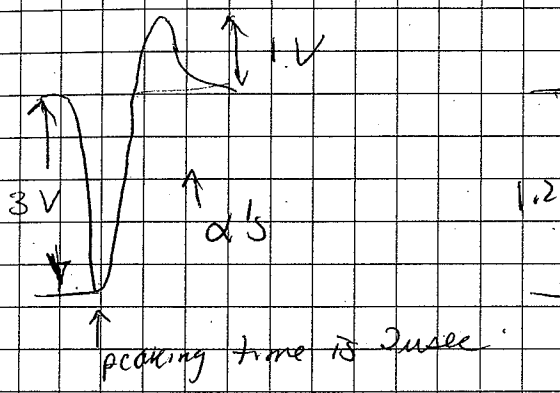


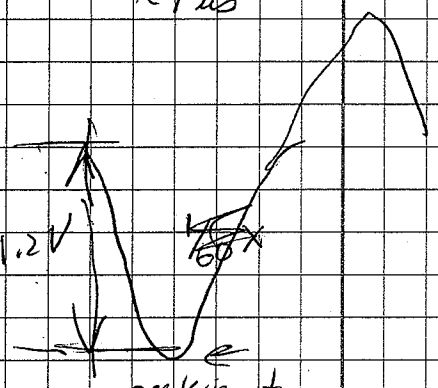


Rise time ~ 1 us

MAX Amplitude ~ 3.5 V for 8.7 MeV

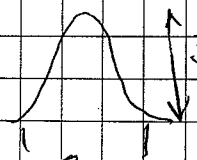
Shaper -3 V

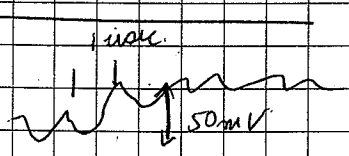




lower amplitude pulser stops counting at ~~[illegible]~~ ~1.5 V

CSA noise





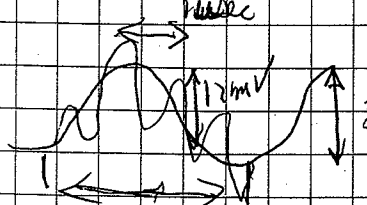
5 mV put AC +50 l

not firing at -12 on noise

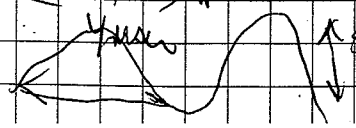
~~Starts~~ firing on noise at +10

at +13 is 2-4 /sec but no clear noise sign

CSA



Shaper



← 1/60 × 8.7 MeV

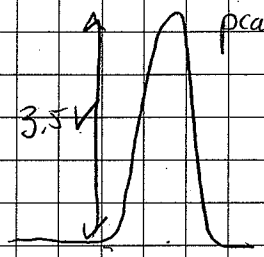
~~150~~ 145

using

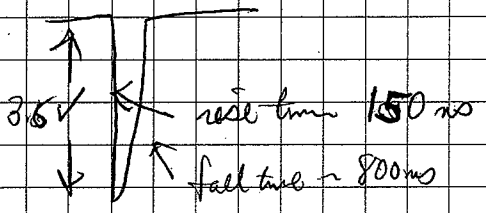
S. amp Coarse gain x20
        fine gain 0.992
-ve polarity

TFA gain x 50

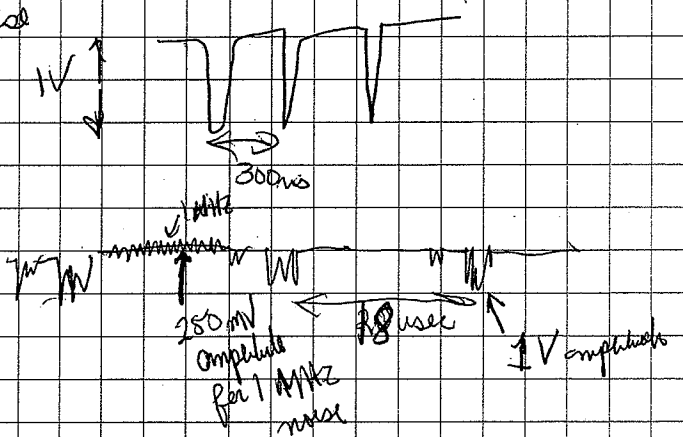
8.7 mV



TFA

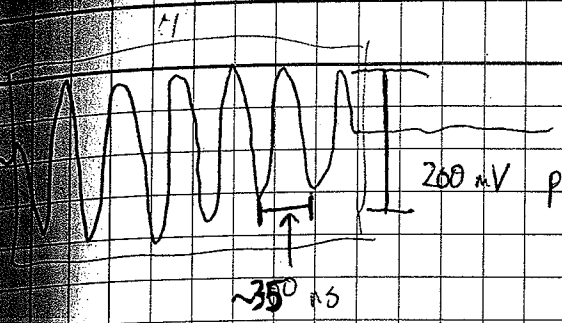


noise



12/13/14 1:05 AM. Juan did something so 1 MHz noise is a factor of 2 smaller. new one ~120 mV

12/13/14 11:15 AM 1 MHz noise and ~~noise~~ gone; new ones appear at 2.5 MHz same amplitude (~200-250 mV)



(12/3/14, 11:20 AM)

Wewent through to CsA and TFA

Typical TFA output → 4 V for 87 MeV typical noise was 35 mV ⇝ 85 keV

tel 10 was ~165 keV 75 mV noise

other bad cases were P6 and P8

— I turned Bias off P10 Chip # 2 and noise got worse

— turned off bias on P8 Chip # 8 and noise got worse but

with bias 30 mV w/out bias 45 mV

turned off bias on P6 chip # 5 and not much change

w/out Bias and w bias ~54 mV

- Channel 3, 0011 in CAEN working at CAEN output
  - also works at PA box
  - does not work at Sparky
    → bad cable from PA box to Sparky

CsI Dist Boxes

P13: Box 4 Channel 4
P12: Box 4 Channel 3
P11: Box 4 Channel 2
P10: Box 4 Channel 1
P9: Box 3 Channel 2
P8: Box 3 Channel 1
P7: Box 2 Channel 4
P6: Box 2 Channel 3
P5: Box 2 Channel 2
P4: Box 2 Channel 1
P3: Box 1 Channel ~~0~~ 4
P2: Box 1 Channel ~~1~~ 3
P1: Box 1 Channel ~~X~~ 2
P0: Box 1 Channel 1

12/13 Pin Sources: 4:45 P/M

Pin #	Activity (cpm)	Position
1	100	10
2	1200	4
3	3600	1
4	120	8
5	5000	0
6	2000	2
7	680	5
8	60	
9	110	9
10	76	11
11	72	12
12	60	13
13	290	6
14	1500	3
15	200	7

- Strongest pin sources will put in 4 newly added telescopes since we have calibration from e100 15

Run 215 Pin-Source Run (see page 27)

MB 1,

T2: Chip Board 9 (Slot 14) has energy scale upside-down!

For both pulser Δ scalers.

20:17 MB1 CB 10 Thresholds raised from −7 to −12

NO DATA COLLECTED - see below for data run

Spectel data not corresponding to CHIP settings...

Had to reboot MBs & XLM crate multiple times and still had trouble displaying α-data.

Run 216 Pin-source run, MB 1, 2, 3

21:58 start run. Take α-data for 2 hours.

Stop after 10 min → too much noise on several CBs on MB 3, so only MB 1 & 2.

Run 217 Pin-source run

22:27 start run. Take data for 2-3 hours.

Run only MB 3 with discriminator mask to avoid noise on suspect channels.

Active channels (mask): Ch. 6-11 Ch. 22-27

Run 218 Pin-Source Run

23:08 start run. MB 3 Only. CB 3 & 4, plus all even CBs, are completely on, but CB odds (backs) have masked channels: Ch 6-11, Ch 22-27 are ON, others are OFF.

⇒ Never Mind! MB3 CB2 is covered in noise too, so we'll try again

Run 219 Pin-Source run

23:13 start run. MB3; CB3 & 4 are 100% on.
all other CBs are limited channel range:
Ch 6-11; Ch 22-27 ON.

Run 220 Pin-Source run
MB1 only
Start 00:00 12/4/14

Run 221 dE only X source run (^{228}Th + pin source)

All CBs on, bias on.

MB4 (dE) noise levels, w/ bias on (12/4/14, 10:20)

CB #	Noise (mV, peak-to-peak)	CB #	Noise (mV
1	10	13	10
2	40	14	15
3	10		
4	10		
5	15		
6	10		
7	10		
8	10		
9	12		
10	10		
11	10		
12	10		

Multiplexer mapping

Hardware position	Computer position	Title	Notes
1	0	MB1 CSA	• Linear channels on 1-12
2	1	MB2 CSA	
3	2	MB3 CSA	
4	3	MB4 CSA	
5	4	MB1 Shaper	
6	5	MB2 Shaper	
7	6	MB3 Shaper	
8	7	MB4 Shaper	
9	8	CsI 1 Linear Test	
10	9	CsI 2 Linear Test	
11	10	CsI 3 Linear Test	
12	11	CsI 4 Linear Test	
13	12	CsI 1 Logic Test	
14	13	CsI 2 Logic Test	
15	14	CsI 3 Logic Test	
16	15	CsI 4 Logic Test	
17	16	Computer Trigger	
18	17	Busy veto	
19	18	Silicon Front OR	
20	19	Silicon Back OR	
21	20	E OR of ORs	
22	21	dE OR	
23	22	CsI OR of ORs	
24	23	HiRA raw trigger	
25	24	HiRA fire trigger	
26	25	ADC Gate	
27	26	QDC Gate	
28	27	MCP 00	
29	28	MCP 10	
30	29	MCP 04	
31	30	MCP 14	
32	31		

Vacuum incident, ~11:30 pm

- Andy Thuh wanted to regenerate cryo pump, so he shut the cryo gate valve so that it would stay under atmosphere and warm up. He also propped the cryo pop off valve with a ziptie. Unfortunately, he left the valve between the roughing pump and the cryo open, so upon pumping down we were pumping on the atmosphere through the cryo pump.
- This problem was noticed when after ~800 s during pumpdown the pressure was at ~260 torr (typically it would be nearly 50 torr at this time. After the open valve was discovered, it was closed and pumpdown was resumed. However the pumpdown was still slow, so the pumpdown procedure was stopped, and the venting procedure started.
- The rough pump was smoking for several minutes after venting began and it was covered in oil.
- After venting procedure complete, chamber was inspected. No noticeable problems found (ie no oil in the chamber and no broken targets / Mylar foils).

Run 231 dE Alpha Calibration

start: 14:25 stop: 14:49

Run 232 Coarse pulser ramp
0.1 – 1.1 V, 11 peaks 10s/peak

dE trigger, so alpha data present.

D.1 dE α-cal using runs 221 & 231

Dead channels:

tele 11. 27
tele 12. 02, 04, 06, 08, 31
tele 9. 15, 16

vdef file location: e09084/Spectcl/vdef-files/
alpha_dE_runs_221-231.vdef

Run 233 Junk (no discriminators).

~~Run 234~~

We noticed that the buffers in the runs previous to now have a very strange buffer structure. This is a result of having two stacks declared in the dagconfig. This has now been fixed.

Previous structure had two "bofe 1f3" words memories with in the

TFA = fast w/ gain = 5

B-S y-f

Bias test		Noise off f	Noise off s	Noise on f	Noise on +	Noise on s	
P0	PA4	35-40	50	35	60 kev	30	good ✗
P1	PA3	35-40	50	25	60 kev	25	good ✗
P2	PA2	40	50	25	60 kev	25	good ✗
P3	PA1	40	50	20	60 kev	20	good ✗
P4	PA0	40	50	20	60 kev	20	good ✗
P5	PA17	40	50				no change.
P6	PA9	40	50	25-30	66 kev	30	good ✗
P7	PA14	40	50	25-50	66 kev	30	good ✗
P8	PA6	25	40	25	60 kev	25	good ✗
P9	PA5	40	50	25	20 kev	25	good ✗
P10	PA12	150 mv ↙ oscillates	80 mV	100	180 kev	50	take Bias Scan Bad.
P11	PA10	15 mV	15 mV	25	40 kV	20	fixed ✗
P12	PA13	40 mV	40 mV	25-30	60 kev	25-30	grey ✗
P13	PA16	40-50 mV	40-50 mV	25-		25-30	good ✗

12/6

DE Mapping Check

CB	PA	Position	Correct?
1	13	12	✓
2	12	10	✓
3	16	13	✓
4	10	11	✓
5	PA9	6	✓
6	14	7	✓
7	15 ~~8~~	5	✓
8	6	8	✓
9	5	9	✓
10	4	0	✓
11	3	1	✓
12	2	2	✓
13	1	3	✓
14	0	4	✓

? In CAEN
P5 PA15 T6

Mapping of Tek II DE to cell II Ef

ASIC ch#	Spectrum Ch#	
0	31	
1	30	
2	29	29,5
3	28	28,5
4	27	27,5
5	26	26,5
6	25	25,5
7	24	24,5
8	23	23,5
9	22	22,5
10	21	21,5
11	20	20,5
12	19	19,5
13	18	18,5
14	17	17,5
15	16	16,5
16	15	15,5
17	14	14,5
18	13	13,5
19	12	12,5
20	11	11,5
21	10	10,5
22	9	9,5
23	8	8,5
24	7	7,5
25	6	6,5
26	5	5,5
27	4	4,5
28	3	3,5
29	2	2,5
30	1	1,5
31	0	0,5

Things to fix after experiment

- PA box: Molex connectors, D$_{pin}$ connectors
- bad shaper
- Sparky (Tower 0 sometimes doesn't turn on)
- Update silicon cables (e.g. 10015 vs. 08085)

7/12/2014

QDC 2 address changed to BBBB → work!

12/7 Missing PAs

P11: Ch Strip 27

P6: Strip 29

P9: Strip 15, 16

P12: Strip 2, 4, 6, 8, 31

PT3 (PA16) not taking bias!

Holes to puke: P5, P13

CsIs: P8, P9 not being biased

Scaler

0. HiRA Line
1. Master Trigger
2. MB 1 OR (EF)
3. MB 2 OR (EF)
4. MB 1 OR (EB)
5. MB 2 OR (EB)
6. CsI 1 OR
7. CsI 2 OR
8. CsI 3 OR
9. CsI ~~[illegible]~~ OR AM
10. MCP 0
11. MCP 1
12. XFP
13. OBJ
14. Computer Trigger
15. End of Event
16. HiRA Raw
17. CsI 4 OR
18. XLM1 Complete
19. XLM2 Complete
20. XLM1 Catch
21. XLM2 Catch
22. MB 3 OR (EF)
23. MB 3 OR (EB)
24. MB 4 OR ~~[illegible]~~ (DE)

25. ~~[illegible]~~
26. MCP0. Line
27. MCP1. Line
28. XFP. Line
29. OBJ.

~~MB 3 OR (EF)~~
MB 4 OR (~~EB~~) DE
~~MB 3 OR (EB)~~
~~MB 4 OR (EB)~~
~~CsI 4 OR~~

Rate chart — Device limit

CRAD 06 — XF scint/100 — 15K

CRAD 04 — S800 FP — 10K

CRAD 02 — HIRA — 10KHz

S800 Momentum acceptance = 5.8%

Ar beam: 70 MeV/u

69.8 MeV/n

$B\rho^2$ 2.3058

^{46}Ar beam:

(CH2)n=25um → Bρ=3.130

Carbon=17mg/cm^2 → Bρ=3.110

$(CH_2)_n$ = 75um → Bρ = 3.122

^{45}Ar:

(CH2)n=25um → Bρ=3.090-3.070

C=17mg/cm^2 →Bρ=3.090-3.050

$(CH_2)_n$ = 75 um → Bρ = 3.09 - 3.062

^{36}Ar beam:

(CH2)n=75um → Bρ=2.440

Carbon=17mg/cm2 → Bρ=2.428

^{35}Ar:

(CH2)n=75um → Bρ=2.403-2.362

C=17mg/cm^2 →Bρ=2.403-2.349

^{34}Ar beam:

(CH2)n=75um → Bρ=2.305

Carbon=17mg/cm2 → Bρ=2.293

Ar: 2.245

^{33}Ar:

(CH2)n=75um → Bρ=2.266-2.224

C=17mg/cm^2 →Bρ=2.266-2.211 2.239

For knockout ^{34}Ar on C → ^{33}Ar

energy loss Bρ = 2.225

^{34}Ar(p,t)^{32}Ar

69.8 MeV/A — 69.38

Energy loss in targets -- considered

12/8/14

CRDC mask calibration

Run 261 $(CH_2)_n$ 75 μm target, run setting
Bf = 2.245

9:05 AM.
to
4 min run — 724 gated
780,000 (rate)
total = 6 × 10⁹

9:23 AM
Run 262 $(CH_2)_n$ 75 μm target run
ends 9:42 AM.

9:50 AM.
Run 263 Record.
$(CH_2)_n$ 75 μm target CRDC2 mask

CRDC 1 → upstream
CRDC 2 → downstream

Run 263 10:28 AM (~15 mins)
$(CH_2)_n$ 75 μm target CRDC 1 mask

Run 264 10:56 AM (~20 mins)
$(CH_2)_n$ 75 μm target CRDC 1 mask

Run 265 11:20 AM (1 h, 20 mins)
$(CH_2)_n$ 75 μm target S800 single

Run 266 12:39 (20 mins)
$(CH_2)_n$ 75 μm target S800 single

Run 267 start 13:04 (44 mins)
$(CH_2)_n$ 78 μm target S800 single

Run 268 (15 mins)
$(CH_2)_n$ 75 μm S800 single (35 mins)

Run 269 starts 14:37
$(CH_2)_n$ target, 5800 Singles.

12/9/2014

TPC Mapping

64 MCP0.Cne

65 MCP1.Cne

66 XFP.Cne

67 OBJ

68 S800.HRA

69 Master Tagger

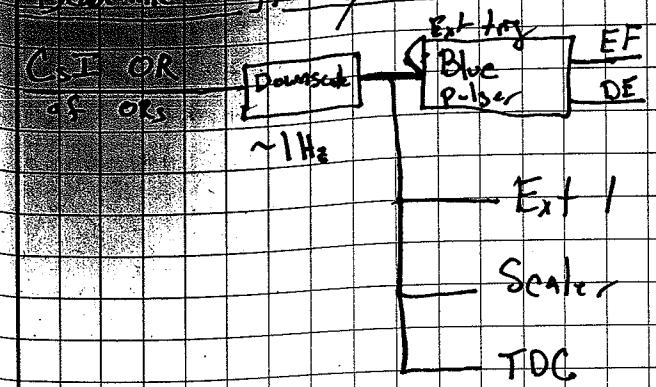
70 Electronic Deadtime Count (Pulser)

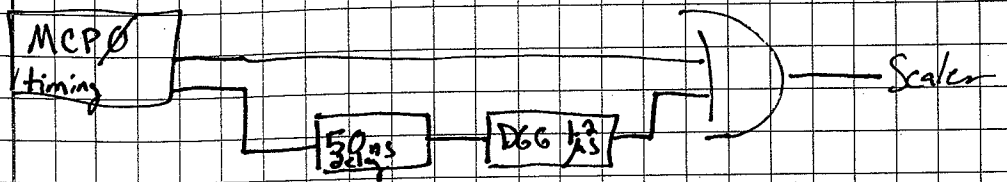
External 2 = DS MCP

External 1 : Pulser for electronics deadtime

- Vacuum was at $\sim 1.3 \cdot 10^{-5}$, chamber front door duct sealed to help lower pressure

Deadtime efficiency Circuit





Same for MCP1

12/9:

- Since vacuum incident: pressure only gets to ~ $7-8 \cdot 10^{-6}$ Torr (we had $2-3 \cdot 10^{-6}$ before)
- ~~No~~ DR thresholds were set w/ TMP off and Cryo on (at ~ $1.3 \cdot 10^{-5}$ Torr)
- adding in TMP lowers pressure to ~ $7 \cdot 10^{-6}$ Torr
- Note: at first we were unable to open up the turbo valve. When we removed the bypass (w/ turbo at full speed), the Cryo valve shuts and the turbo won't open. The Cryo won't open, even if the bypass is put back in. Roben Walker came in and added a button to open the turbo valve, which starts a 2 min. timer for the cryo to open
- Front door of chamber covered in duct seal
- Currently, we cannot run at $< 10^{-5}$ w/ just the cryo

12/19

Mapping issue seen earlier solved
→ cabling issue! e10015 cables are
all loaded from 06035 ~~pulls~~ ~~cables~~ cables

For KO with C target
^{34}Ar (70 MeV/u)
C target thickness 17 mg/cm^2
1/2 tgt thickness ~8.5 mg/cm^2

→ ^{34}Ar energy at 1/2 tgt thickness = 69.313 MeV
^{33}Ar after target = 68.6 MeV/u

11
2-2254 BJ

^{34}Ar(p,t) calculation

	^{34}Ar	^{33}Ar
	70	
^{34}Ar(70 MeV/u) Eloss in tgt (CH_2)n; 75 μm	69.127	Bρ = 2.181

(CH_2)n 75 micron ($\frac{1}{2}$ tgt : 37.5 μm)

^{34}Ar → 70 MeV/u [ ] → ^{34}Ar 69.664 MeV.

$\frac{1}{13}$ 0.26

^{34}Ar (p, t) ^{33}Ar.

69.664 | 0.75 mg/cm²

Q 71.4 → 71.04

Bρ 2.1979

Unfortunately the cross-section of ^{34}Ar(p,t) is ~X10 less than ^{36}Ar(p,t) reaction

^{34}Ar + p → t + ^{33}Ar

target thickness 75 μm (6.975 mg/cm²) (2.3112)

½ thickness 37.5 μm (3.487 mg/cm²)

^{34}Ar (E/A = 70 MeV) at ½ tgt thickness :- 69.667 MeV/u

^{34}Ar (p,t) ^{33}Ar reaction p thickness = $\frac{1}{13}$ × 6.975 mg/cm² = 0.3

^{34}Ar (69.667 MeV/u) + p → t + ^{33}Ar (71.42 MeV/u)

71.

↓ ½ tgt thickness

71.067 MeV

↓

Bρ = 2.198

Optimum C tgt setting is 2.239

for KOI 2.225

blocker setting : initial 49 ± 255 slits

Barney printout at 12:30 pm

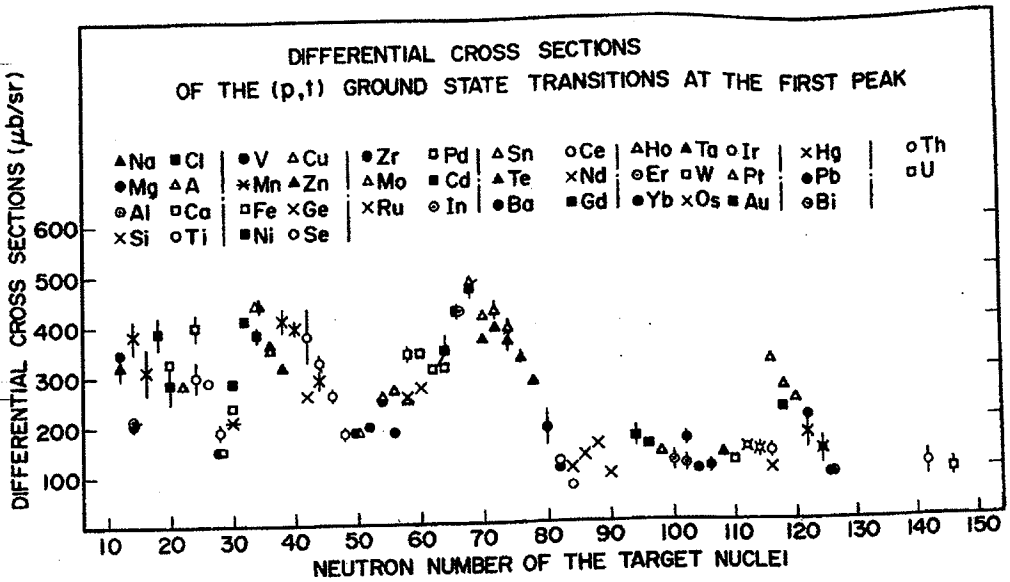


Fig. 1. Neutron-number dependence of the cross sections for the (p, t) ground-state transition at the first peak of the angular distributions at $E_p = 51.9$ MeV.

MCP#_Foil_Frame_G10:

* Measured plane on downstream side of MCP foil frame, when MCP drive is in the foil position. This plane will have to be offset the thickness of the g10 frame, to get the actual plane of the foil.

MCP#_Foil_Screw_#

0-3, top left (looking from downstream) is 0, counting clockwise

this is a measurement of the screw heads. using the 3mm ball.

MCP#_Mask_RefPoint_#

0-3 starting at top, going clockwise, looking from downstream

MCP#_MaskHole_#

0-5, in this config. → looking from downstream

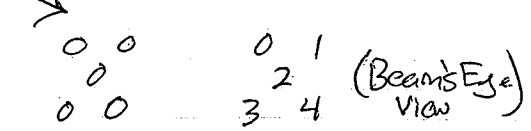
MCP 0

0 0 0 0 1 2
0 3
0 4
0 5

MCP 1

0 0 0 0 0 1 2 3
0 4
0 5

Target_MaskHole_0-4



Target_Mask_Upstream_Surface ← This is the nominal target position in the $\hat{z}$ direction

Target_Mask_Downstream_Surface ← this needs to be offset by the mask thickness.

Target_Plastic1_Upstream_Surface
Target_Plastic1 = Downstream Surface } (Both offset by a frame thickness.)

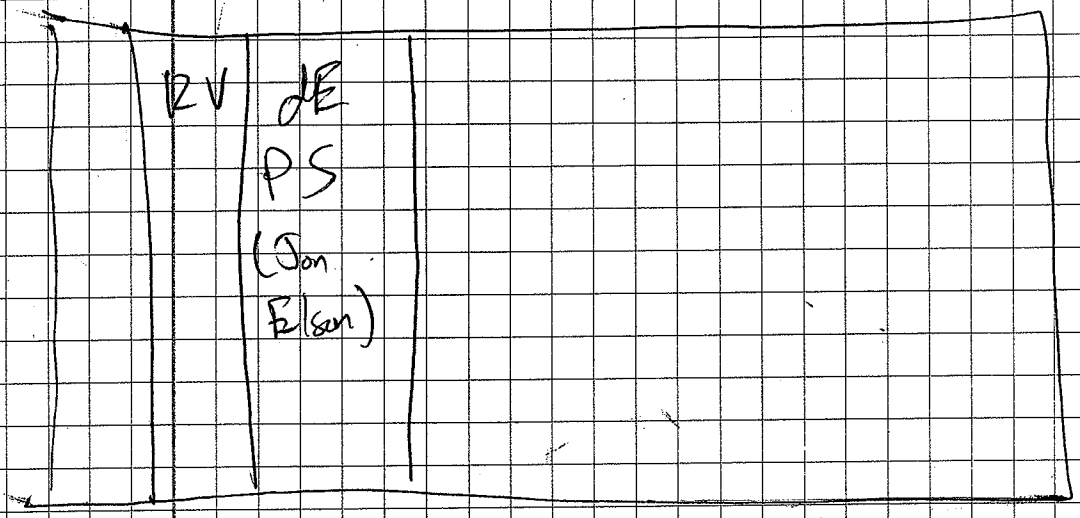
Plastic 1 = thin plastic
Plastic 2 = thick plastic

12/21/19

FINAL ELECTRONICS, TRIGGER LOGIC

Rack 1 (for LBH):

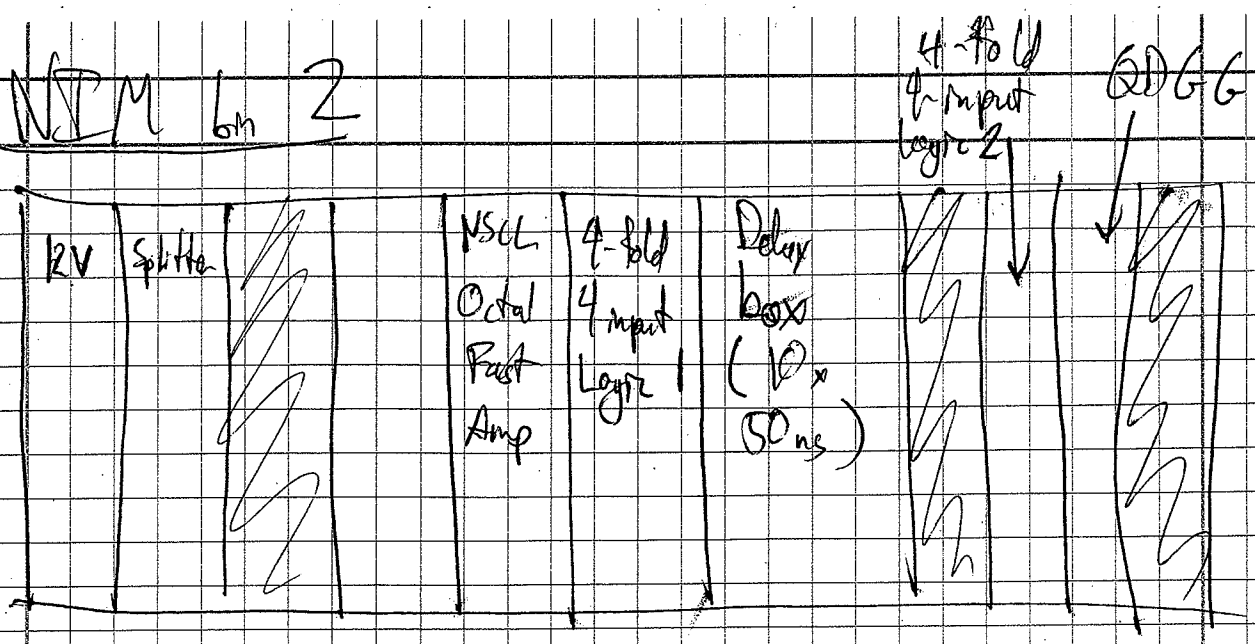
NIM bin 1



12 V: provides 12V for MB4

dE PS: powers dE MB

NIM bin 2



12V: provides +12V to MCP0, MCP1 Fast PA

Splitters for pulser test circuit:

→ In: pulser pulse

← Out 1: nothing (insert to CFD input to test)

← Out 2: Attn. (3 Lecroy Model 101) to nothing (insert to MCP signal to test that channel (MCP 0, 1: 0, 1, 2, 3)

Delay box: MCP OR delay

→ In: MCP OR

← Out: After 4 delays (each), out to GDG on NIM 3 bank 2

NSCL Octal Fast Amp:

Bank 1: → In: 4F4T 1 Y (bank 1)

← Out: 4F4T 1.2 B

Bank 4: → In: 4F4T 2.4 Y

← Out: 4F4T 1.2 A

← Out: 4F4T 1.4 A

cont.

N8M2, Rack 1 (cont'd)

Octal FA:

Bank 6: → Pin: 4P4T L3 Y

← Out: 4P4T L4 B

4P4T 1:

Bank 1: → Pin: QDGG.1 X

150 ns ⟷ Y: Octal FA.1

150 ns ← Y: MCP0 Double Scaler

Bank 2: → A: Octal FA.4

→ $\overline{B}$: Octal FA.1

120 ns ← Y: MCP0 Electronics Live Scaler

Bank 3: → A: QDGG.2 X

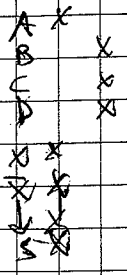
190 ns ← Y: Octal FA.6

190 ns ← Y: Scaler

Bank 4: → A: Octal FA.9

→ $\overline{B}$: Octal FA.6

200 ns ← Y: MCP1 Electronics Live Scaler



Delay Box 2 → In 1: MCP0 → delayed 200 ns
← Out 4: Rack 2, NIM 3, Octal Disc. 1
→ In 5: NIM 3, Quad CFD. 2 → delayed 50 ns
← Out 5: QDGG. 1 Start
→ In 6: NIM 3, Quad CFD. 3 → delayed 50 ns
← Out 6: QDGG. 2 Start
→ In 7: MCP1 → delayed 200 ns
← Out 10: Rack 2, NIM 3, Octal Disc. 2

FPGA 2: Bank 1: → A: NIM 3, Quad CFD. 2
→ B: QDGG. 1 Y

Bank 2: → A: NIM 3, Quad CFD. 3
→ B: QDGG. 2 Y

Bank 3: → A: Rack 2 NIM 3, FIFO 3.4 (Master)
1 μs ← Y: ~~Octal FA. 4~~ NIM 3, FIFO 2. 1 (Master)
1 μs ← Y: NIM 3 FIFO 4. 4

Bank 4: → A: Rack 2, NIM 4, FIFO 1.4 (CSI OR & OR)
40 ns ← Y: Octal FA. 4

SDG 6

Bank 1: → ST; Delay Box Out 5

100 ns ← X; FIFO 1.1 A

1.2 μs ← Y; FIFO 2.1 B

Bank 2: → ST; Delay Box Out 6

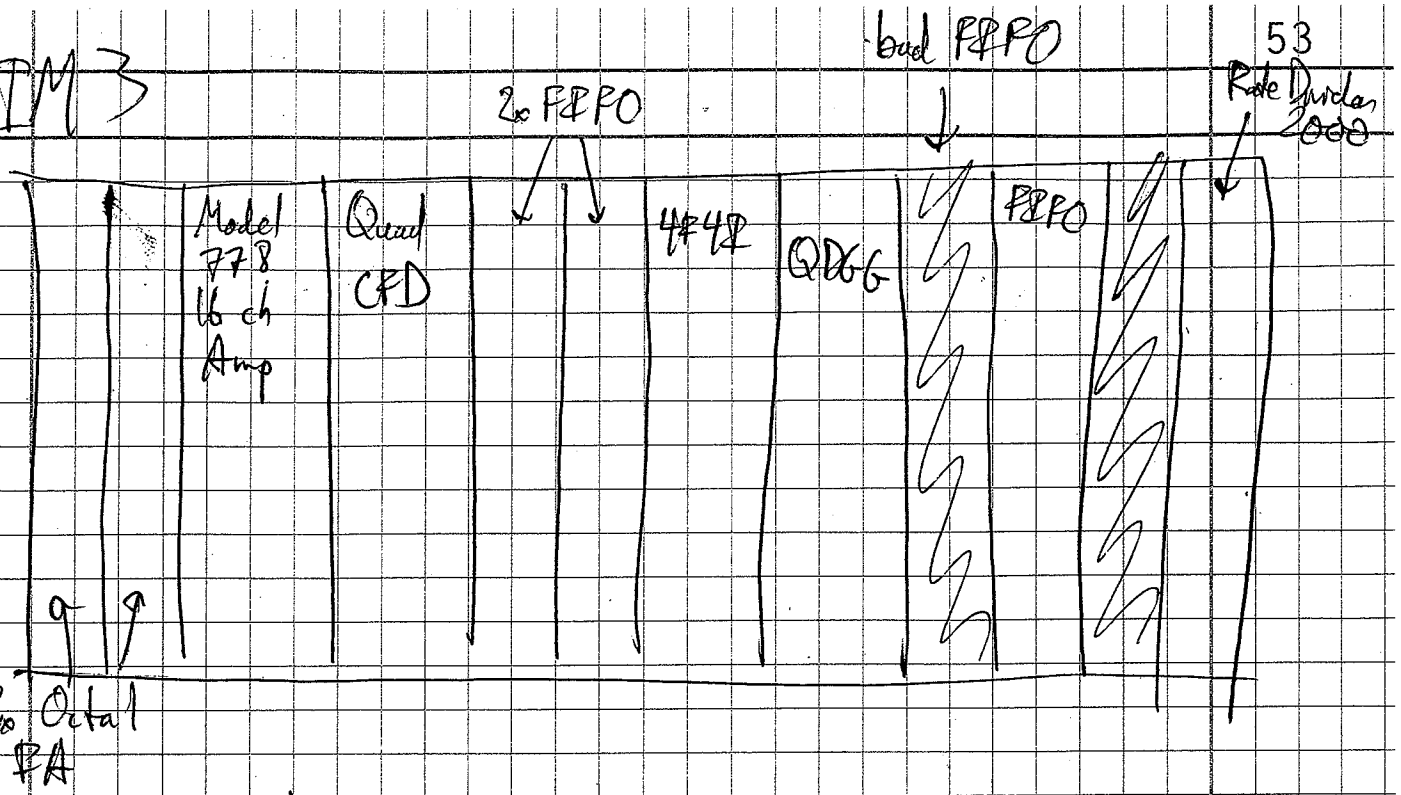
120 ns ← X; FIFO 1.3 A

1.2 ms ← Y; FIFO 2.2 B

Bank 4: → ST; NIM 3, 4F4P 1.4 $\overline{X}$ (MCP Gate)

1.2 ms ← X; NIM 3, 4F4P 1.4 $\overline{C}$ (MCP Gate)

NIM 3



Octal FA 1: → In: MCPD Tme
← Out: Quad CFD. 2 In
← Out: Patch cable 7
Bank 3: → In: MCP1 Tme
← Out: Quad CFD. 3 In
← Out: Patch cable 6

Octal FA 2: Bank 1 → In: DB1. 1
← Out:
- Same for all 8 banks: In from DB1 or 2, out to

PSTPD: Bank 1: → In: MCP 0-0

← Out: DB3.1

... Same for all 8 banks: Input from MCP position signal and output to DB3 or 4

Quad CPD: Bank 2: → In: Octal FA 1.1 (MCP0 Time)

Delay: 2 ns

← Out: NIM 2, 4F4T 2.1 A

← Out: NIM 2, DB2 In 5

← Out: FIFO 1.2 (MCP0)

Bank 3: → In: Octal FA 1.3 (MCP1 Time)

Delay: 2 ns

← Out: NIM 2, 4F4T 2.2 A

← Out: NIM 2, DB2 In 6

← Out: FIFO 1.3 (MCP1)

FIFO 1: Bank 1: → In: 4F4T 4 Y (MCP/QDC Gate)

← Out: Multiplexer

← Out: FIFO 3.4 (Fast for Busy MCP)

← Out: Back 2 NIM 4, QDC G.1 (QDC mode)

← Out: QDC G.4 ST (QDC FC block)

NBM3, PPO1 cont.

Bank 2: → In: Quad CPD.2 (MCP 0)
← Out: Multiplexer
← Out: Bank 4 In (MCP OR)
← Out: NBM2, DB2 In 1
← Out: Scales

Bank 3: → In: Quad CPD.3 (MCP 1)
← Out: Multiplexer
← Out: Bank 4 In (MCP OR)
← Out: NBM2, DB2 In 7
← Out: Scales

Bank 4: → In: Bank 2 (MCP 0)
→ In: Bank 3 (MCP 1)
← Out: RD Bank 1 (MCP Downscale)
← Out: PPO2.2 In (MCP OR)

PPO2: Bank 1: → In: NBM2, HPHR2.3 Y (Master)
← Out: Rack 2: NBM2, Splitter 1.1 (MB1 Stop)
← Out: Rack 2, NBM2, Splitter 2.1 (MB2 Stop)
← Out: Rack 2, NBM2, Splitter 3.1 (MB3 Stop)
← Out: HPHR.3 $\overline{A}$

NIM 5 GPIO 2 cont.

Bank 2: → In: FIFO1.4 (MCP OR)
← Out: NIM2 DB1.1
← Out: 4P4T.2 B
← Out: ?

Bank 3: → In: 4P4T.2 X
← Out

Bank 4: → In: QDGG.2 X
← Out: Q4 4P4T.4 A

4P4T: Bank 1: → In A: RD.2 out (Downsaked MCP)
800 ns ← Out Y: FIFO3.2 (OR MCP, EI)
Bank 2: → B: FIFO2.2 (MCP OR)
← Out: FIFO2.3
Bank 3: → A: FIFO2.1 (Master)
→ B: QDGG.4 Y (QDC Gate)
280 ns ← Y: FIFO3.3 (Fast Clear)
Bank 4: → on next page

Bank 4; → A: FIFO 2.4
→ B: FIFO 3.2 (OR McP, E1)
→ $\overline{C}$: NIM2, QDGG.4 X
→ $\overline{D}$: FIFO 3.4 (Fast for Busy McP)
25 ns ← $\overline{X}$: NIM2, QDGG.4 ST
← Y: FIFO 1.1 (QDC Gate)
← Y: Rack 2, VME, QDC1 Gate
250 ns ← W:

QDGG: Bank 1: → ST: E1
← X: FIFO 3.2 (OR McP, E1)
Bank 2: → ST: NIM2, DB1, Out 4
← X: FIFO 2.4
Bank 4: → ST: FIFO 1.1 (QDC Gate)
70 ns ← Y: 4F4T.3 B (Fast Clear)

FIFO 3

Bank 2: → In: 4F4I.1 Y (MCP DS mode)
→ In: QDC6.1 X (EI mode) ?

Bank 3: → In: 4F4I.3 Y (FC)
← Out: Multiplexer
← Out: Rack 2, VME, QDC1 FCLR
← Out: Rack 2, VME, QDC2 FCLR

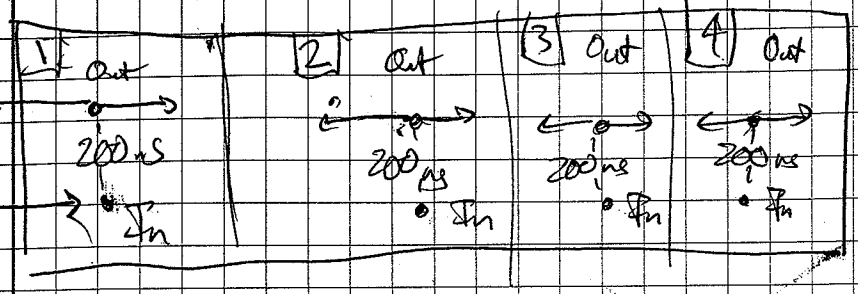
Bank 4: → In: Rack 2, NIM 3, FIFO 4.3 (Busy)
→ In: FIFO 1.1 (QDC gate)
→ In: Rack 2, NIM 4, FIFO 2.1 (QDC mode)
→ In: NIM 2, 4F4I 2.3 Y (Master)
← Out: 4F4I.4 D (QDC gate)

Rate Divider: Bank 1: Set to 200
→ In: FIFO 1.4 (MCP OR)
← Out: Bank 2 ($\frac{1}{n}$)
Bank 2: Set to 200
→ In: Bank 1
← Out: 4F4I.1

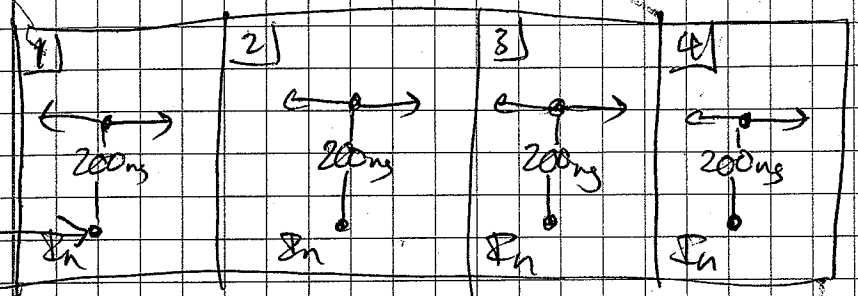
Delay Boxes

DB1

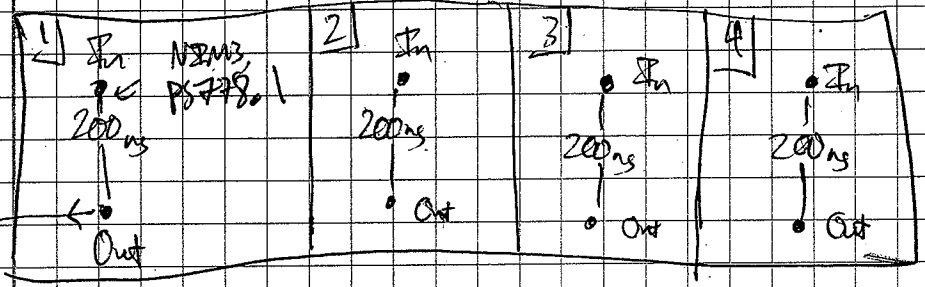
NIM 8I
Octal Fast
Amp 2.1



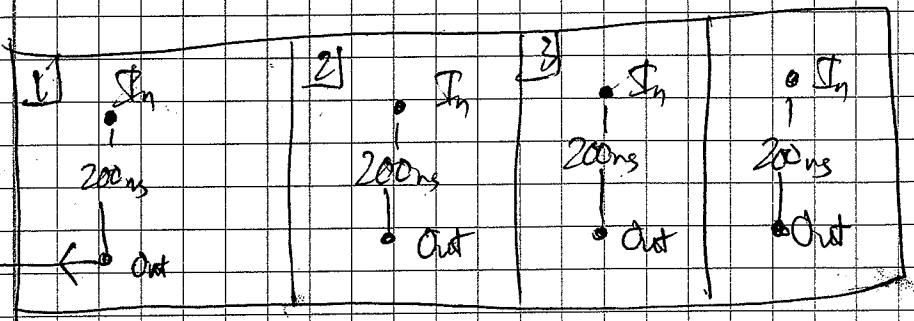
DB1
MCP 0 to QDC
and to HG



DB2
MCP 1 to QDC
and to HG

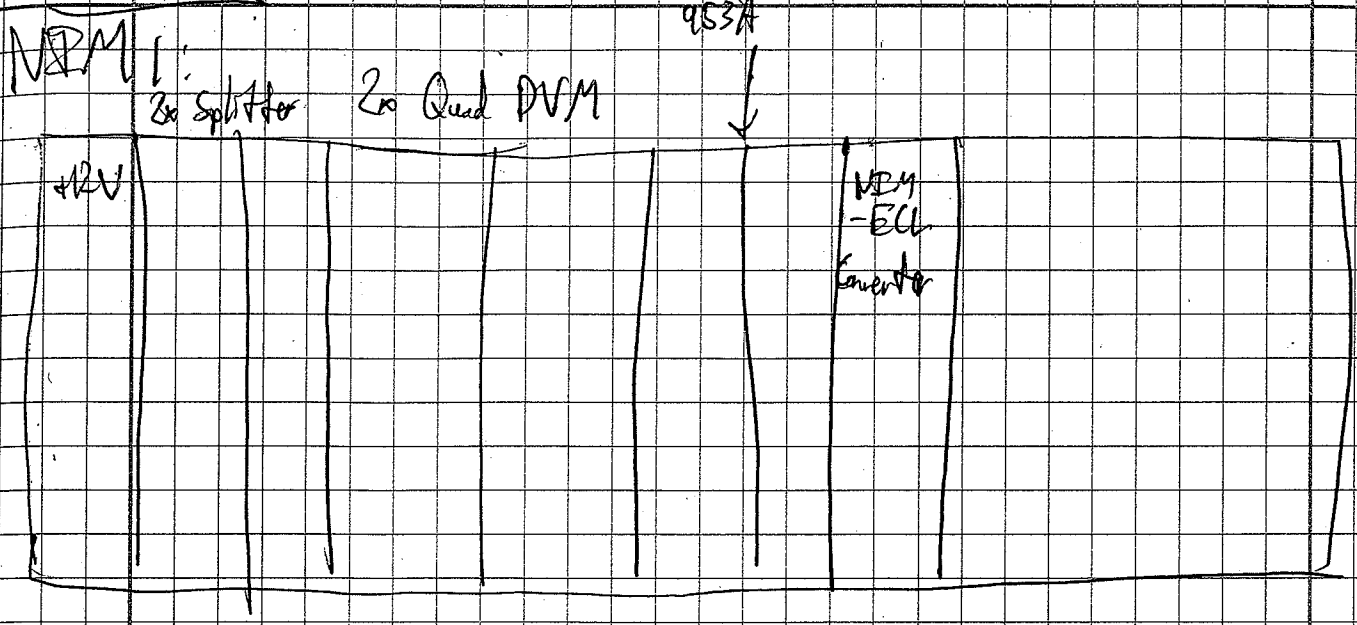


DB3
MCP 0,03
LG



DB4
MCP 1 0-3
LG

Rack 2:



+12V: powering MB1, MB2, MB3, TC box

Splitter 1: TC
- In 1: MB1 Voltage
- In 2: MB1 Temp
- In 6: MB2 Voltage
- In 7: MB2 Temp
- In 11: MB3 Voltage
- In 12: MB3 Temp

Splitter 2: TC
- In 6: MB4 Voltage
- In 7: MB4 Temp

Quad DVM 1: MB1 Voltage, Temp, MB2 Voltage, Temp
Quad DVM 2: MB3 Voltage, Temp, MB4 Voltage, Temp

TC953A1: Bank 1: MB1 EB bias, +100V, to Sparky Tower 1
Bank 2: MB2 EB bias, +100V, to Sparky Tower 2
TC953A2: Bank 2: MB3 EB bias, +100V, to Sparky Tower 3

~~ECL-MEM-ECL:~~

Bank 1: ← Out: VME XLM72, bottom input

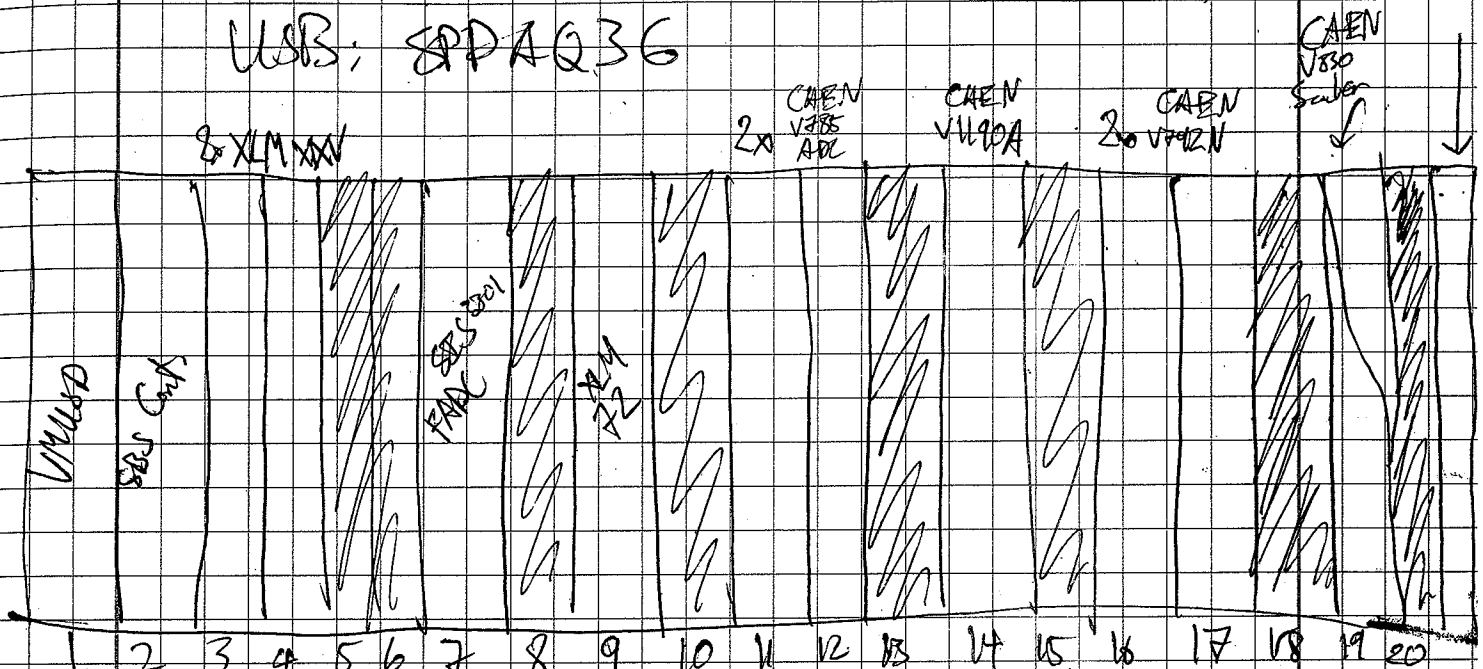
→ Pin 1: S800 clock (from upstream)

→ Pin 2: MEM3, Coincidence Bank 3 Out

VME

VM-USB: → In: NIM4, QDGG.2 Y (Comp. trigger
← O1: NIM2, FIFO 2.2 (Comp busy)
← O2: NIM2, QDGG.1 ST (B.E)

USB: 8PAQ36



SBS Cont: Out: 8PDAQ36

XLM XXV1: ⇔ LVDS A: MB1
⇔ LVDS B: MB2
⇔ Out: NIM2, BCL-NIM-BCL 1 In+Out (R)

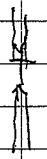
XLM XXV2: ⇔ LVDS A: MB3
⇔ LVDS B: MB4
⇔ Out: NIM2, BCL-NIM-BCL 2 In+Out (R)

3301

FADC: → LEMO In 1: NIM2, ENE 1 Out 9 (MB1 Clock)
LEMO In 2: NIM2, ENE 1 Out 10 (MB2 Clock)
LEMO In 3: NIM2, ENE 2 Out 9 (MB3 Clock)
LEMO In 4: NIM2, ENE 2 Out 10 (MB4 Clock)

Telescope alignment after experiment

Viewer center is ~2mm to the left on ~~telescope~~ 1
we cannot really see the viewer marker which is
facing the detector so Jack makes a "center mark"
Left on the telescope is left of the beam as it is going
~~DA~~

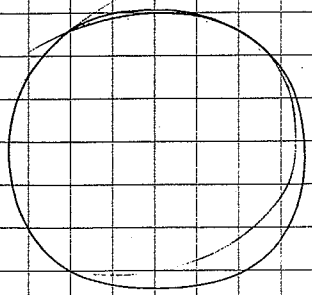


MCP0 used green laser to shine on center
hole so shine was getting within uncertainty,
the center hole is also left of the beam.

MCP1: same procedure as MCP0.
the deviation from center is much less.
~1mm

Put in Carbon foil!

*see pictures of C foil, target ladder (taken on
Justin's phone)



* remove C foil

(Cont. from ~~Book~~ p. 63)

ADC (Cont.)

→ DL In 1: MB1 E → DL In 2: MB1 T

→ DL In 3: MB2 E → DL In 4: MB2 T

→ DL In 5: MB3 E → DL In 6: MB3 T

→ DL In 7: MB4 E → DL In 8: MB4 T

XLM #2: Button in →: NIM, ENE out (XLM In Timestamp)

CAEN 785 ADC1: → In 1-15: CsI E1 (CAMAC Shaper 1 Ln Out)

→ In 16-31: CsI E2 (CAMAC Shaper 2 Ln Out)

← Out Gate/Comm: ADC2 Gate/Comm

→ In Gate/Comm: NIM4 QDGG 4 Y

ADC2: → In 1-15: CsI E3 (CAMAC Shaper 3 Ln Out)

→ In 16-31: CsI E4 (CAMAC Shaper 4 Ln Out)

← Out Gate/Comm: 50 Ω

→ In Gate/Comm: ADC1 Gate/Comm

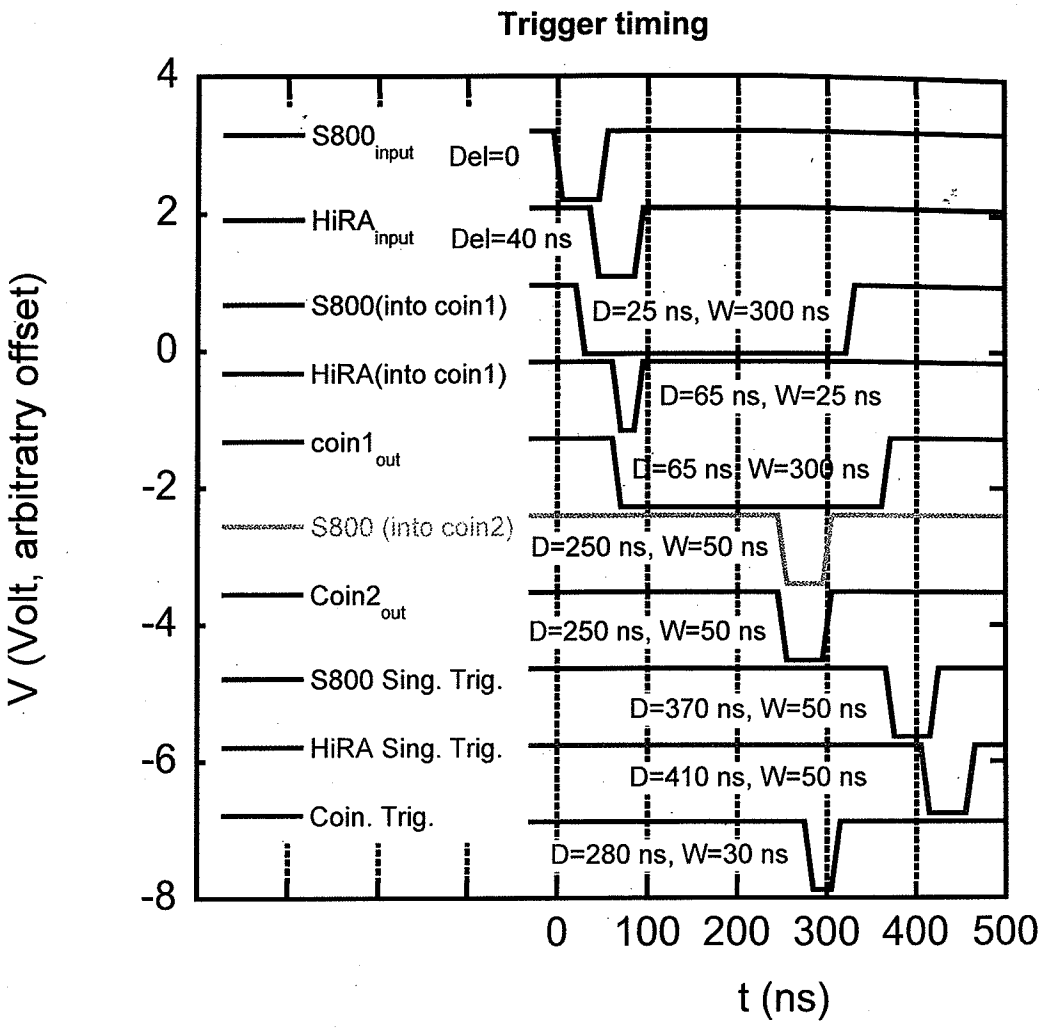
CAEN V1190A TDC: → In A: CsI 1 + CsI 2 (ECL Pos Out Shapers 1+2)

→ In B: CsI 3 + CsI 4 (ECL Pos Out Shapers 3+4)

→ Trigger: NIM3: FIFO 3.4 (Master)

← Trigger Terminator

→ In C: NIM3: ENE Out (R)


Trigger timing
V (Volt, arbitratry offset)
4
2
0
-2
-4
-6
-8
S800input Del=0
HiRAinput Del=40 ns
S800(into coin1)
D=25 ns, W=300 ns
HiRA(into coin1)
D=65 ns, W=25 ns
coin1out
D=65 ns, W=300 ns
S800 (into coin2)
D=250 ns, W=50 ns
Coin2out
D=250 ns, W=50 ns
S800 Sing. Trig.
D=370 ns, W=50 ns
HiRA Sing. Trig.
D=410 ns, W=50 ns
Coin. Trig.
D=280 ns, W=30 ns
0 100 200 300 400 500
t (ns)

~~V792N QDC 1: In PCLR: Rack 1, NIM 3, FIFO. 3 (Reset) (Clear)~~

← Gate/Comm: QDC 2 Gate/Comm

→ Gate/Comm: Rack 1, NIM 3, ~~GPIB~~ 4PULSE. 1 (MCP Gate)

→ In 7: MCP01 → In 8: MCP 00

→ In 10: MCP02 → In 11: MCP 03

→ In 12: MCP10 → In 13: MCP 11

→ In 14: MCP12 → In 15: MCP13

(from MCP Splitter)

QDC 2: In PCLR: Rack 1, NIM 3, FIFO. 3 (RC)

← Gate/Comm: 50Ω

→ Gate/Comm: QDC 1 Gate/Comm

→ In 1: MCP05 → In 2: MCP06

→ In 3: MCP07 → In 4: MCP14

→ In 5: MCP15 → In 6: MCP16

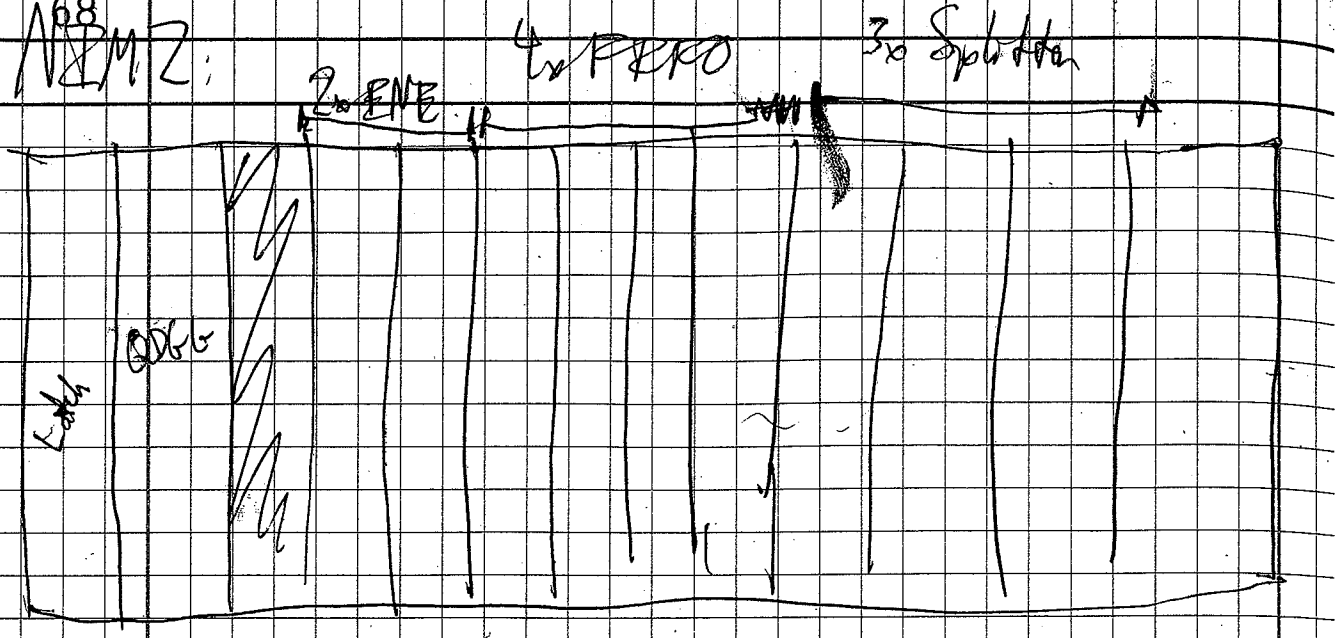
→ In 7 MCP17 → In 15: MCP04

Scaler: → In 0-15: NIM 4, Splitter 2, Out

→ In 16-31: NIM 4, Splitter 3 Out

CAMAC Controller: Branch highway: CAMAC Model 1302

68



Latch Bank 1: → Start In: NIM3. FIFO 6.3
↔ Stop In: FIFO 6.1 (XLM1 Comp)
Bank 2: → Start In: NIM3. FIFO 6.3
→ Stop In: FIFO 6.2 (XLM2 Comp)
Bank 3: → Start In: FIFO 6.1 (XLM1 Comp)
→ Stop In: FIFO 2.3 (E.E)
← Latch: FIFO 1.3 (XLM1 Latch)
Bank 4: → Start In: FIFO 1.2 (XLM2 Comp)
→ Stop In: FIFO 2.3 (E.E)
← Latch: FIFO 1.4 (XLM2 Latch)
GG. Bank 4 → ST: VME, VMEJB 02 (E.E)
← X: FIFO 2.3
Bank 3: → ST: FIFO 1.3
(Empty)

Banks In

ENE1: → In (R): VME, XLM1 Out (R)

← Out 9: VME, FADC LEMO In 0 (SRS Clock A)

← Out 10: VME, FADC LEMO In 1 (SRS Clock B)

← Out 11: NIM3, FIFO 5.1 (XLM1 GBL ENABLE)

← Out 12: FIFO 1.1 (XLM1 Complete)

→ In 1: NIM3, FIFO 4.1 (Master)

→ In 2: NIM3, FIFO 4.1 (Master)

→ In 7: FIFO 2.1

→ In 8: FIFO 2.1

← Out (R): VME XLM1, In/Out (R)

ENE2: → In (R): VME, XLM2 In/Out (R)

← Out 9: VME, FADC LEMO In 2

← Out 10: VME, FADC LEMO In 3

← Out 11: NIM3, FIFO 5.3 (XLM2 GBL ENABLE)

← Out 12: FIFO 1.2 (XLM2 Complete)

→ In 1: NIM3 FIFO 3.4 (Master)

→ In 2: NIM3, FIFO 3.4 (Master)

→ In 7: FIFO 2.1

→ In 8: FIFO 2.1

← Out (R): VME XLM2 In/Out (R)

FIFO 1: → Fn: FIFO1.4 (NIM Type)

← Out: BANK 1:

→ Fn: ENE 1. 12

← Out: Latch. 3 Start Fn

← Out: Latch. 1 Stop Fn

← Out: Scaler (disconnected)

Bank 2: → Fn: ~~VME VMUSB 01~~ (Out Busy)

← Out:

→ Fn ENE 2. 12

← Out: Latch. 4 Start Fn

← Out: Latch. 2 Stop Fn

← Out: Scaler (disconnected)

Bank 3: → Fn: Latch. 3 Latch (XLM 1 Latch)

← Out: NIM 3, 4FAN. 2 Fn

← Out: QDGG Bank 3

Bank 4: → Fn: Latch. 4 Latch (XLM 2 Latch)

← Out: NIM 3, 4FAN. 2 Fn

FIFO 2: Bank 1: → Fn: FIFO2.4 (NIM True)

← Out: ENE 1 Fn 7

← Out: ENE 1 Fn 8

← Out: ENE 2 Fn 7

← Out: ENE 2 Fn 8

Bank 2: → In: VME VMEbus 01
← Out: NEM3, FBPO 4.2 (Bus Veto)
Bank 3: → In: QDGG.1 N (E, E)
← Out: Latch.3 Stop In
← Out: Latch.4 Stop In
← Out: Scaler
Bank 4: No In, NIM Fire
← Out: FBPO 4.1
← Out: Rack 3, Interlock, In 7

FBPO 3: Bank 1: → In: Splitter1, Out 3 (MB1 FOR)
← Out: Scaler
← Out: FBPO 4.1 (F OR)
Bank 2: → In: Splitter2, Out 3 (MB2 FOR)
← Out: Scaler
← Out: FBPO 4.1 (FOR)
Bank 3: → In: Splitter1, Out 4 (MB1 BOR)
← Out: Scaler
← Out: FBPO 4.2 (BOR)
Bank 4: → In: Splitter 2, Out 4 (MB2. BOR)
← Out: Scaler
← Out: FBPO 4.2 (BOR)

FIFO4: Bank 1: → In: FIFO 3.1 (MB1 FOR)
→ In: FIFO 3.2 (MB2 FOR)
→ In: FIFO 4.4 (MB3 FOR)
← Out: Bank 3 (OR of OR_5)
← Out: NRM 3, Coherence. 1 A
← Out: Multiplexer
Bank 2: → In: FIFO 3.3 (MB1 BOR)
→ In: FIFO 3.4 (MB2 BOR)
→ In: NRM 3 FIFO 6.1 (MB3 BOR)
← Out: Bank 3 (OR of OR_5)
← Out: NRM 3, Coherence. 1 B
← Out: Multiplexer
Bank 3: → In: Bank 1 (FOR)
→ In: Bank 2 (BOR)
← Out: Multiplexer
← Out: NRM 3, Coherence. 1 C
Bank 4: → In: Splitter 3, Out 3 (MB 3 FOR)
~~→ In: Splitter 3, 0~~
← Out: Bank 1 (FOR)
← Out: Scaler

Splitter 1: → Fn (R): MB1 Inspect

← Out 1: Rack 1, NIM 3, FIFO 2.1 (Master)

← Out 3: FIFO 3.1

← Out 4: FIFO 3.3

← Out 6: Multiplexer

← Out 7: Multiplexer

F Pulser attn → Out 14 → Out 13 → Splitter 2 Out 14

Splitter 2 Out 15 → Out 15 → Out 16

Splitter 2: → Fn (R): MB2 Inspect

← Out 1: Rack 1, NIM 3, FIFO 2.1 (Master)

← Out 3: FIFO 3.2

← Out 4: FIFO 3.4

← Out 6: Multiplexer

← Out 7: Multiplexer

Splitter 1 Out 13 → Out 14 → Out 13 → Splitter 3 Out 13

B Pulser → Out 15 → Out 16 → Splitter 1 Out 15 → Splitter 3 Out 15

Splitter 3: → Fn (R): MB3 Inspect

← Out 1: Rack 1, NIM 3, FIFO 2.1 (Master)

← Out 3: FIFO 4.4

← Out 4: NIM 3, FIFO 6.1

← Out 6: Multiplexer

← Out 7: Multiplexer

Splitter 2 Out 13 → Out 13 → Out 14

Splitter 2 Out 15 → Out 15 → Out 16

Check the correspondence of Tel# & Pin Source#

Tel#	Pin Source
10#	2#
11#	13#
12#	15#
13#	5#
9#	3#
8#	11#
4#	6#
5#	4#
6#	7#
7#	12#
0#	7#
1#	8#
2#	9#
3#	10#

Feb 16

DE ✓
F ✓
B ✓
Isi OK

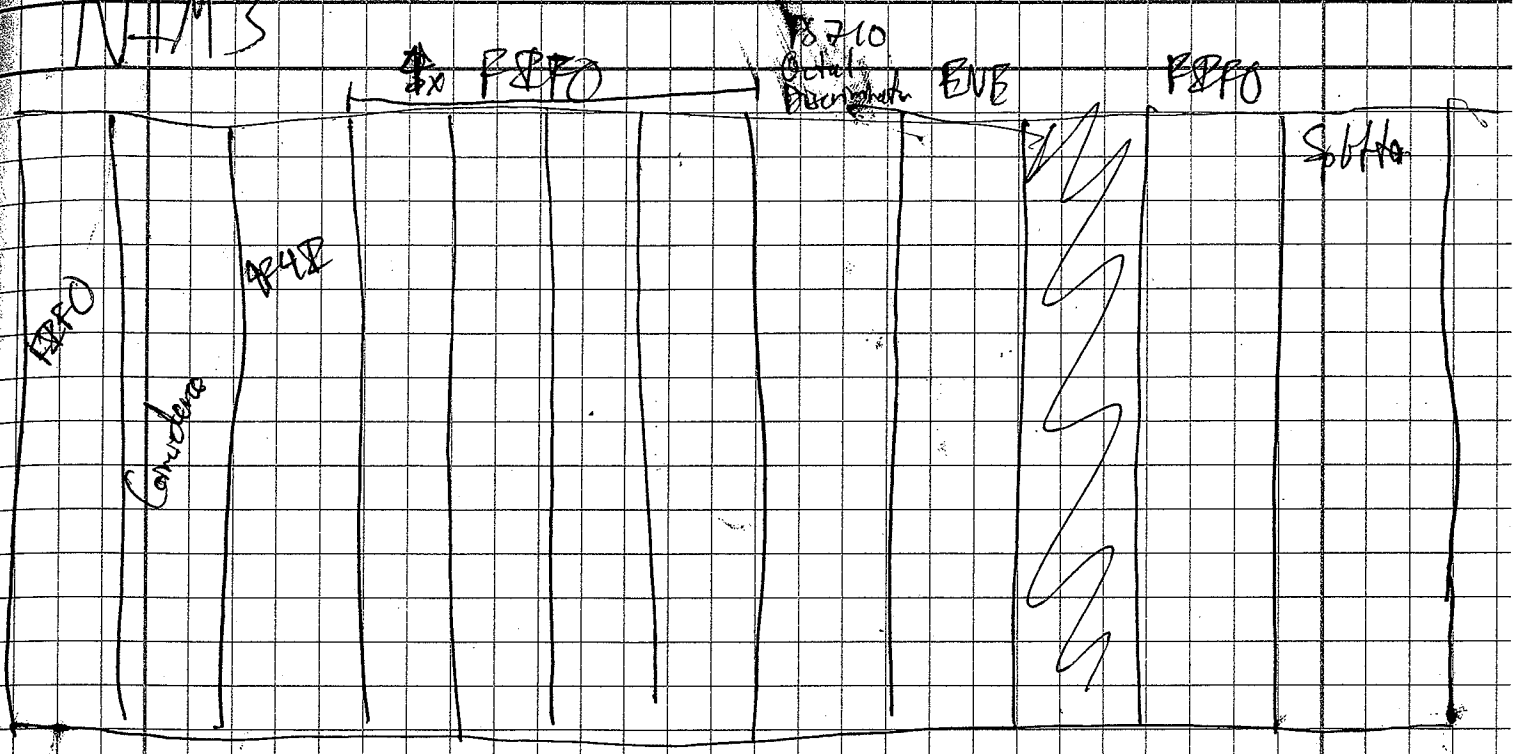
Tele	DE	F	B	CSE
10	✓	✓	✓	✓
11	✓	✓	✓	✓
12	✓	✓	✓	✓
13	✓	✓	✓	✓
8	✓	AC	Beam side slightly out	✓
9	✓	✓	✓ AC	✓
0	✓	AC ✓	✓	✓
1	✓	AC Beam side slightly out	AC ✓	✓
2	✓	✓	✓	✓
3	✓	✓	Wall side slightly out	✓
4	✓	✓	✓	✓
5	✓	✓	✓	✓
6	✓	✓	✓	Beam side slightly out
7	✓	✓	✓	✓

AC : Andy's Cable Notes

12-11 Thick

11-10 thick

NIM 3



FRFO 1; Bank 1; → In: Pulser 1 Trig Out (External Trig)
← Out: FRFO 2.3
← Out: Pulser 2 Ext. Trig. (not in)
← Out: ENE In. 7
← Out: Scalers
Bank 2; → In: NIM 4 FRFO 1.4 (CAF OR & OR5)
← Out: Rack 3; NIM 1; Scale Down In
← Out: Coincidence. 1 (not in)
Bank 3; → Coincidence. 1 Out
← Out. → In: NIM 4 FRFO 1.4 (CAF OR & OR5)
← Out: Patch Panel 4
Bank 4; → In: Pulser 3 Trig Out
← Out: Coincidence. 1 D (not in)
← Out: TTL Pulser 2 Ext Trig (not in)

Coincidence:

Bank 1: → In A: NIM 2, FIFO 4.1 (FOR)
→ B: NIM 2, FIFO 4.2 (B OR)
→ C: NIM 2, FIFO 4.3 (OR of ORs)
→ D: FIFO 6.2 (DE OR)
← Out: FIFO 3.1 (HiRA Raw)
← Out: FIFO 1.3

Bank 2: → A: FIFO 3.1 (HiRA Raw)
→ Veto: FIFO 4.2 (Busy Veto)
← Out: FIFO 2.2 (HiRA Live)

Bank 3: → A: FIFO 6.2 (8800 Trig)
→ Veto: FIFO 4.2 (Busy Veto)
← Out: Scalers
← Out: NIM 1, ENE. In. 2
← Out: FIFO 2.1 (Master Trig)

PS 794: Bank 1: → In: Back 1, NIM 3, Rate Divider
← Veto: FIFO 4.3 (Busy)
← Out: Terminator
← Out: FIFO 2.4 (External 2)

Bank 2: → In: NIM 3, FIFO 1.3 (XLM Latch)
→ In: NIM 3, FIFO 1.3 (XLM 2 Latch)
← Out: NIM 4, QDC 6.4 ST (CPU Trig)

(cont. on p. 108)

CsI Pulser Ramps

v. 1 | Run # 662	Date: 12/24/14	Start:	Stop:
Your Name:		Built data? ☐ Yes ☐ No	

Also on Shift: ☐ Andy ☐ Ben ☐ Betty ☐ Bill ☐ Charles ☐ Christoph ☐ Cole ☐ Corinne ☐ Giordano ☐ Han ☐ Iwasaki ☐ Jack ☐ Jenny ☐ Jon ☐ Juan ☐ Justin ☐ Karl ☐ Kyle ☐ Li ☐ Mingbo ☐ Rachel ☐ Sean ☐ Suwat ☐ Xiao ☐ Xu ☐ Yassid ☐ Zibi ☐ _____

Run Type: ☐ Data Singles: (☐ HiRA ☐ S800 ☐ MCP) Calib: (☒ HiRA ☐ S800 ☐ MCP) ☐ CRDC ☐ Junk

S800 Trigger Box: (1+) ☐ S800 ☐ Coin. ☐ Ext.1 (☐ pulser ☐ _____) ☐ Ext. 2 (☐ MCP DS __ ☐ _____) ☒ Sec.: _____ DS 1

HiRA Trigger: ☐ EF&EB ☐ EF ☐ CsI pulser | Beam: ☐ 34Ar ☐ 46Ar ☐ 36Ar ☐ pdt ☐ _____

Target: ☐ Viewer ☐ CH2 25 um ☐ CH2 75 um ☐ out ☐ Mask ☐ C (17 mg/cm2) ☐ Alpha ☐ Empty

MCP MCP 0 (US): V: _____ I: _____ ☐ foil ☐ mask ☐ out

MCP 1 (DS): V: _____ I: _____ ☐ foil ☐ mask ☐ out

Drive Positions:
_____ mm Target (I251Y-R)
_____ mm MCP 0 (US) (I250Y-R)
_____ mm MCP 1 (DS) (I250X-R)

MCP Voltage on? ☐ Yes ☐ No | S800 Segment 8 Brho: | Vacuum: _____ e- torr

Comments: CsI Shaper 1 Pulser Ramp, 0-2V, 21 step, 10s/step

Run 663 : Junk

v. 1 | Run # 664	Date: 12/24/14	Start:	Stop:
Your Name:		Built data? ☐ Yes ☐ No	

Also on Shift: ☐ Andy ☐ Ben ☐ Betty ☐ Bill ☐ Charles ☐ Christoph ☐ Cole ☐ Corinne ☐ Giordano ☐ Han ☐ Iwasaki ☐ Jack ☐ Jenny ☐ Jon ☐ Juan ☐ Justin ☐ Karl ☐ Kyle ☐ Li ☐ Mingbo ☐ Rachel ☐ Sean ☐ Suwat ☐ Xiao ☐ Xu ☐ Yassid ☐ Zibi ☐ _____

Run Type: ☐ Data Singles: (☐ HiRA ☐ S800 ☐ MCP) Calib: (☒ HiRA ☐ S800 ☐ MCP) ☐ CRDC ☐ Junk

S800 Trigger Box: (1+) ☐ S800 ☐ Coin. ☐ Ext.1 (☐ pulser ☐ _____) ☐ Ext. 2 (☐ MCP DS __ ☐ _____) ☒ Sec.: _____ DS 1

HiRA Trigger: ☐ EF&EB ☐ EF ☐ CsI pulser | Beam: ☐ 34Ar ☐ 46Ar ☐ 36Ar ☐ pdt ☐ _____

Target: ☐ Viewer ☐ CH2 25 um ☐ CH2 75 um ☐ out ☐ Mask ☐ C (17 mg/cm2) ☐ Alpha ☐ Empty

MCP MCP 0 (US): V: _____ I: _____ ☐ foil ☐ mask ☐ out

MCP 1 (DS): V: _____ I: _____ ☐ foil ☐ mask ☐ out

Drive Positions:
_____ mm Target (I251Y-R)
_____ mm MCP 0 (US) (I250Y-R)
_____ mm MCP 1 (DS) (I250X-R)

MCP Voltage on? ☐ Yes ☐ No | S800 Segment 8 Brho: | Vacuum: _____ e- torr

Comments: CsI Shaper 3 Pulser Ramp, 0-2V, 21 step, 10 s/step

v. 1 | Run # 665	Date: 12/24/14	Start:	Stop:
Your Name:		Built data? ☐ Yes ☐ No	

Also on Shift: ☐ Andy ☐ Ben ☐ Betty ☐ Bill ☐ Charles ☐ Christoph ☐ Cole ☐ Corinne ☐ Giordano ☐ Han ☐ Iwasaki ☐ Jack ☐ Jenny ☐ Jon ☐ Juan ☐ Justin ☐ Karl ☐ Kyle ☐ Li ☐ Mingbo ☐ Rachel ☐ Sean ☐ Suwat ☐ Xiao ☐ Xu ☐ Yassid ☐ Zibi ☐ _____

Run Type: ☐ Data Singles: (☐ HiRA ☐ S800 ☐ MCP) Calib: (☐ HiRA ☐ S800 ☐ MCP) ☐ CRDC ☐ Junk

S800 Trigger Box: (1+) ☐ S800 ☐ Coin. ☐ Ext.1 (☐ pulser ☐ _____) ☐ Ext. 2 (☐ MCP DS __ ☐ _____) ☐ Sec.: _____ DS ___

HiRA Trigger: ☐ EF&EB ☐ EF ☐ CsI | Beam: ☐ 34Ar ☐ 46Ar ☐ 36Ar ☐ pdt ☐ _____

Target: ☐ Viewer ☐ CH2 25 um ☐ CH2 75 um ☐ out ☐ Mask ☐ C (17 mg/cm2) ☐ Alpha ☐ Empty

MCP MCP 0 (US): V: _____ I: _____ ☐ foil ☐ mask ☐ out

MCP 1 (DS): V: _____ I: _____ ☐ foil ☐ mask ☐ out

Drive Positions:
_____ mm Target (I251Y-R)
_____ mm MCP 0 (US) (I250Y-R)
_____ mm MCP 1 (DS) (I250X-R)

MCP Voltage on? ☐ Yes ☐ No | S800 Segment 8 Brho: | Vacuum: _____ e- torr

Comments: CsI Shaper 3 Pulser Ramp 2-3 V, 11 steps, 10 s/step

v. 1 | Run # 666	Date: 12/29/17	Start:	Stop:
Your Name:		Built data? ☐ Yes ☐ No	

Also on Shift: ☐ Andy ☐ Ben ☐ Betty ☐ Bill ☐ Charles ☐ Christoph ☐ Cole ☐ Corinne ☐ Giordano ☐ Han ☐ Iwasaki ☐ Jack ☐ Jenny ☐ Jon ☐ Juan ☐ Justin ☐ Karl ☐ Kyle ☐ Li ☐ Mingbo ☐ Rachel ☐ Sean ☐ Suwat ☐ Xiao ☐ Xu ☐ Yassid ☐ Zibi ☐ _____

Run Type: ☐ Data Singles: (☐ HiRA ☐ S800 ☐ MCP) Calib: (☒ HiRA ☐ S800 ☐ MCP) ☐ CRDC ☐ Junk

S800 Trigger Box: (1+) ☐ S800 ☐ Coin. ☐ Ext.1 (☐ pulser ☐ _____) ☐ Ext. 2 (☐ MCP DS__ ☐ _____) ☐ Sec.: _____DS___

HiRA Trigger: ☐ EF&EB ☐ EF ☐ CsI pulser Beam: ☐ 34Ar ☐ 46Ar ☐ 36Ar ☐ pdt ☐_____

Target: ☐ Viewer ☐ CH2 25 um ☐ CH2 75 um ☐ out ☐ Mask ☐ C (17 mg/cm2) ☐ Alpha ☐ Empty

MCP MCP 0 (US): V: _____ I:_____ ☐ foil ☐ mask ☐ out

MCP 1 (DS): V: _____ I:_____ ☐ foil ☐ mask ☐ out

Drive Positions:

_____ mm Target (I251Y-R)

_____ mm MCP 0 (US) (I250Y-R)

_____ mm MCP 1 (DS) (I250X-R)

MCP Voltage on? ☐ Yes ☐ No S800 Segment 8 Brho: Vacuum: _____ e- torr

Comments: CsI Shaper 4 Pulser Ramp, 0-3V, 31 steps, 10s/step

Start final

* Upon biasing up, P2 reached 5.26 μA at full bias (200V + 100V = 300 V). We decide to run as is anyway.

v. 1 | Run # 667	Date: Dec 24	Start: 01:48	Stop: 02:48
Your Name:		Built data? ☒ Yes ☐ No	

Also on Shift: ☐ Andy ☐ Ben ☐ Betty ☐ Bill ☐ Charles ☐ Christoph ☐ Cole ☐ Corinne ☐ Giordano ☐ Han ☐ Iwasaki ☐ Jack ☐ Jenny ☐ Jon ☐ Juan ☐ Justin ☐ Karl ☐ Kyle ☐ Li ☐ Mingbo ☐ Rachel ☐ Sean ☐ Suwat ☐ Xiao ☐ Xu ☐ Yassid ☐ Zibi ☐ _____

Run Type: ☐ Data Singles: (☐ HiRA ☐ S800 ☐ MCP) Calib: (☒ HiRA ☐ S800 ☐ MCP) ☐ CRDC ☐ Junk

S800 Trigger Box: (1+) ☐ S800 ☐ Coin. ☐ Ext.1 (☐ pulser ☐ _____) ☐ Ext. 2 (☐ MCP DS__ ☐ _____) ☒ Sec.: _____DS___

HiRA Trigger: ☐ EF&EB ☐ EF ☐ CsI Beam: ☐ 34Ar ☐ 46Ar ☐ 36Ar ☐ pdt ☐_____

Target: ☐ Viewer ☐ CH2 25 um ☐ CH2 75 um ☐ out ☐ Mask ☐ C (17 mg/cm2) ☒ Alpha ☐ Empty

MCP MCP 0 (US): V: _____ I:_____ ☐ foil ☐ mask ☐ out

MCP 1 (DS): V: _____ I:_____ ☐ foil ☐ mask ☐ out

Drive Positions:

_____ mm Target (I251Y-R)

_____ mm MCP 0 (US) (I250Y-R)

_____ mm MCP 1 (DS) (I250X-R)

MCP Voltage on? ☐ Yes ☐ No S800 Segment 8 Brho: Vacuum: 3.7 e-5 torr

Comments:

v. 1 | **Run #** 668 | **Date:** Dec 24 | **Start:** 02:48 | **Stop:** 03:48

Your Name: | **Built data?** ☒ Yes ☐ No

Also on Shift: ☐ Andy ☐ Ben ☐ Betty ☐ Bill ☐ Charles ☐ Christoph ☐ Cole ☐ Corinne ☐ Giordano ☐ Han ☐ Iwasaki ☐ Jack ☐ Jenny ☐ Jon ☐ Juan ☐ Justin ☐ Karl ☐ Kyle ☐ Li ☐ Mingbo ☐ Rachel ☐ Sean ☐ Suwat ☐ Xiao ☐ Xu ☐ Yassid ☐ Zibi ☐ _____

Run Type: ☐ Data Singles: (☐ HiRA ☐ S800 ☐ MCP) Calib: (☒ HiRA ☐ S800 ☐ MCP) ☐ CRDC ☐ Junk

S800 Trigger Box: (1+) ☐ S800 ☐ Coin. ☐ Ext.1 (☐ pulser ☐ _____) ☐ Ext. 2 (☐ MCP DS __ ☐ _____) ☒ Sec.: _____ DS___

HiRA Trigger: ☐ EF&EB ☐ EF ☐ CsI **Beam:** ☐ 34Ar ☐ 46Ar ☐ 36Ar ☐ pdt ☐_____

Target: ☐ Viewer ☐ CH2 25 um ☐ CH2 75 um ☐ out ☐ Mask ☐ C (17 mg/cm2) ☒ Alpha ☐ Empty

MCP MCP 0 (US): V: _____ I:_____ ☐ foil ☐ mask ☐ out

MCP 1 (DS): V: _____ I:_____ ☐ foil ☐ mask ☐ out

Drive Positions:
_____ mm **Target** (I251Y-R)
_____ mm **MCP 0 (US)** (I250Y-R)
_____ mm **MCP 1 (DS)** (I250X-R)

MCP Voltage on? ☐ Yes ☐ No **S800 Segment 8 Brho:** **Vacuum:** 3.5 e-5 torr

Comments:

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v. 1 | **Run #** 669 | **Date:** Dec 24 | **Start:** 03:48 | **Stop:** 04:48

Your Name: | **Built data?** ☒ Yes ☐ No

Also on Shift: ☐ Andy ☐ Ben ☐ Betty ☐ Bill ☐ Charles ☐ Christoph ☐ Cole ☐ Corinne ☐ Giordano ☐ Han ☐ Iwasaki ☐ Jack ☐ Jenny ☐ Jon ☐ Juan ☐ Justin ☐ Karl ☐ Kyle ☐ Li ☐ Mingbo ☐ Rachel ☐ Sean ☐ Suwat ☐ Xiao ☐ Xu ☐ Yassid ☐ Zibi ☐ _____

Run Type: ☐ Data Singles: (☐ HiRA ☐ S800 ☐ MCP) Calib: (☒ HiRA ☐ S800 ☐ MCP) ☐ CRDC ☐ Junk

S800 Trigger Box: (1+) ☐ S800 ☐ Coin. ☐ Ext.1 (☐ pulser ☐ _____) ☐ Ext. 2 (☐ MCP DS __ ☐ _____) ☒ Sec.: _____ DS___

HiRA Trigger: ☐ EF&EB ☐ EF ☐ CsI **Beam:** ☐ 34Ar ☐ 46Ar ☐ 36Ar ☐ pdt ☐_____

Target: ☐ Viewer ☐ CH2 25 um ☐ CH2 75 um ☐ out ☐ Mask ☐ C (17 mg/cm2) ☒ Alpha ☐ Empty

MCP MCP 0 (US): V: _____ I:_____ ☐ foil ☐ mask ☐ out

MCP 1 (DS): V: _____ I:_____ ☐ foil ☐ mask ☐ out

Drive Positions:
_____ mm **Target** (I251Y-R)
_____ mm **MCP 0 (US)** (I250Y-R)
_____ mm **MCP 1 (DS)** (I250X-R)

MCP Voltage on? ☐ Yes ☐ No **S800 Segment 8 Brho:** **Vacuum:** 3.3 e-5 torr

Comments:

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v. 1 | **Run #** 670 | **Date:** Dec 24 | **Start:** 04:48 | **Stop:** 05:47

Your Name: | **Built data?** ☒ Yes ☐ No

Also on Shift: ☐ Andy ☐ Ben ☐ Betty ☐ Bill ☐ Charles ☐ Christoph ☐ Cole ☐ Corinne ☐ Giordano ☐ Han ☐ Iwasaki ☐ Jack ☐ Jenny ☐ Jon ☐ Juan ☐ Justin ☐ Karl ☐ Kyle ☐ Li ☐ Mingbo ☐ Rachel ☐ Sean ☐ Suwat ☐ Xiao ☐ Xu ☐ Yassid ☐ Zibi ☐ _____

Run Type: ☐ Data Singles: (☐ HiRA ☐ S800 ☐ MCP) Calib: (☒ HiRA ☐ S800 ☐ MCP) ☐ CRDC ☐ Junk

S800 Trigger Box: (1+) ☐ S800 ☐ Coin. ☐ Ext.1 (☐ pulser ☐ _____) ☐ Ext. 2 (☐ MCP DS __ ☐ _____) ☒ Sec.: _____ DS___

HiRA Trigger: ☐ EF&EB ☐ EF ☐ CsI **Beam:** ☐ 34Ar ☐ 46Ar ☐ 36Ar ☐ pdt ☐_____

Target: ☐ Viewer ☐ CH2 25 um ☐ CH2 75 um ☐ out ☐ Mask ☐ C (17 mg/cm2) ☒ Alpha ☐ Empty

MCP MCP 0 (US): V: _____ I:_____ ☐ foil ☐ mask ☐ out

MCP 1 (DS): V: _____ I:_____ ☐ foil ☐ mask ☐ out

Drive Positions:
_____ mm **Target** (I251Y-R)
_____ mm **MCP 0 (US)** (I250Y-R)
_____ mm **MCP 1 (DS)** (I250X-R)

MCP Voltage on? ☐ Yes ☐ No **S800 Segment 8 Brho:** **Vacuum:** 2.5 e-5 torr

Comments:

v. 1 | Run # 671	Date: Dec 24	Start: 05:48	Stop: 06:51
Your Name:		Built data? ☒ Yes ☐ No	

Also on Shift: ☐ Andy ☐ Ben ☐ Betty ☐ Bill ☐ Charles ☐ Christoph ☐ Cole ☐ Corinne ☐ Giordano ☐ Han ☐ Iwasaki ☐ Jack ☐ Jenny ☐ Jon ☐ Juan ☐ Justin ☐ Karl ☐ Kyle ☐ Li ☐ Mingbo ☐ Rachel ☐ Sean ☐ Suwat ☐ Xiao ☐ Xu ☐ Yassid ☐ Zibi ☐ _____

Run Type: ☐ Data Singles: (☐ HiRA ☐ S800 ☐ MCP) Calib: (☒ HiRA ☐ S800 ☐ MCP) ☐ CRDC ☐ Junk

S800 Trigger Box: (1+) ☐ S800 ☐ Coin. ☐ Ext.1 (☐ pulser ☐ _____) ☐ Ext. 2 (☐ MCP DS __ ☐ _____) ☒ Sec.: _____ DS__

HiRA Trigger: ☐ EF&EB ☐ EF ☐ CsI Beam: ☐ 34Ar ☐ 46Ar ☐ 36Ar ☐ pdt ☐_____

Target: ☐ Viewer ☐ CH2 25 um ☐ CH2 75 um ☐ out ☐ Mask ☐ C (17 mg/cm2) ☒ Alpha ☐ Empty

MCP MCP 0 (US): V: _____ I:_____ ☐ foil ☐ mask ☐ out

MCP 1 (DS): V: _____ I:_____ ☐ foil ☐ mask ☐ out

Drive Positions:
_____ mm Target (I251Y-R)
_____ mm MCP 0 (US) (I250Y-R)
_____ mm MCP 1 (DS) (I250X-R)

MCP Voltage on? ☐ Yes ☐ No S800 Segment 8 Brho:

Vacuum: 2.2 e-5 torr

Comments:

v. 1 | Run # 672	Date: Dec 24	Start: 06:51	Stop: 07:48
Your Name:		Built data? ☒ Yes ☐ No	

Also on Shift: ☐ Andy ☐ Ben ☐ Betty ☐ Bill ☐ Charles ☐ Christoph ☐ Cole ☐ Corinne ☐ Giordano ☐ Han ☐ Iwasaki ☐ Jack ☐ Jenny ☐ Jon ☐ Juan ☐ Justin ☐ Karl ☐ Kyle ☐ Li ☐ Mingbo ☐ Rachel ☐ Sean ☐ Suwat ☐ Xiao ☐ Xu ☐ Yassid ☐ Zibi ☐ _____

Run Type: ☐ Data Singles: (☐ HiRA ☐ S800 ☐ MCP) Calib: (☒ HiRA ☐ S800 ☐ MCP) ☐ CRDC ☐ Junk

S800 Trigger Box: (1+) ☐ S800 ☐ Coin. ☐ Ext.1 (☐ pulser ☐ _____) ☐ Ext. 2 (☐ MCP DS __ ☐ _____) ☒ Sec.: _____ DS__

HiRA Trigger: ☐ EF&EB ☐ EF ☐ CsI Beam: ☐ 34Ar ☐ 46Ar ☐ 36Ar ☐ pdt ☐_____

Target: ☐ Viewer ☐ CH2 25 um ☐ CH2 75 um ☐ out ☐ Mask ☐ C (17 mg/cm2) ☐ Alpha ☐ Empty

MCP MCP 0 (US): V: _____ I:_____ ☐ foil ☐ mask ☐ out

MCP 1 (DS): V: _____ I:_____ ☐ foil ☐ mask ☐ out

Drive Positions:
_____ mm Target (I251Y-R)
_____ mm MCP 0 (US) (I250Y-R)
_____ mm MCP 1 (DS) (I250X-R)

MCP Voltage on? ☐ Yes ☐ No S800 Segment 8 Brho:

Vacuum: 1.8 e-5 torr

Comments:

v. 1 | Run # 673	Date: Dec 24	Start: 07:48	Stop: 08:47
Your Name:		Built data? ☒ Yes ☐ No	

Also on Shift: ☐ Andy ☐ Ben ☐ Betty ☐ Bill ☐ Charles ☐ Christoph ☐ Cole ☐ Corinne ☐ Giordano ☐ Han ☐ Iwasaki ☐ Jack ☐ Jenny ☐ Jon ☐ Juan ☐ Justin ☐ Karl ☐ Kyle ☐ Li ☐ Mingbo ☐ Rachel ☐ Sean ☐ Suwat ☐ Xiao ☐ Xu ☐ Yassid ☐ Zibi ☐ _____

Run Type: ☐ Data Singles: (☐ HiRA ☐ S800 ☐ MCP) Calib: (☒ HiRA ☐ S800 ☐ MCP) ☐ CRDC ☐ Junk

S800 Trigger Box: (1+) ☐ S800 ☐ Coin. ☐ Ext.1 (☐ pulser ☐ _____) ☐ Ext. 2 (☐ MCP DS __ ☐ _____) ☒ Sec.: _____ DS__

HiRA Trigger: ☐ EF&EB ☐ EF ☐ CsI Beam: ☐ 34Ar ☐ 46Ar ☐ 36Ar ☐ pdt ☐_____

Target: ☐ Viewer ☐ CH2 25 um ☐ CH2 75 um ☐ out ☐ Mask ☐ C (17 mg/cm2) ☒ Alpha ☐ Empty

MCP MCP 0 (US): V: _____ I:_____ ☐ foil ☐ mask ☐ out

MCP 1 (DS): V: _____ I:_____ ☐ foil ☐ mask ☐ out

Drive Positions:
_____ mm Target (I251Y-R)
_____ mm MCP 0 (US) (I250Y-R)
_____ mm MCP 1 (DS) (I250X-R)

MCP Voltage on? ☐ Yes ☐ No S800 Segment 8 Brho:

Vacuum: 1.5 e-5 torr

Comments:

v. 1 | Run # 674	Date: Dec 24	Start: 08:47	Stop: 09:43
Your Name:		Built data? ☒ Yes ☐ No	

Also on Shift: ☐ Andy ☐ Ben ☐ Betty ☐ Bill ☐ Charles ☐ Christoph ☐ Cole ☐ Corinne ☐ Giordano ☐ Han ☐ Iwasaki ☐ Jack ☐ Jenny ☐ Jon ☐ Juan ☐ Justin ☐ Karl ☐ Kyle ☐ Li ☐ Mingbo ☐ Rachel ☐ Sean ☐ Suwat ☐ Xiao ☐ Xu ☐ Yassid ☐ Zibi ☐ _____

Run Type: ☐ Data Singles: (☐ HiRA ☐ S800 ☐ MCP) Calib: (☒ HiRA ☐ S800 ☐ MCP) ☐ CRDC ☐ Junk

S800 Trigger Box: (1+) ☐ S800 ☐ Coin. ☐ Ext.1 (☐ pulser ☐ _____) ☐ Ext. 2 (☐ MCP DS __ ☐ _____) ☒ Sec.: _____ DS___

HiRA Trigger: ☐ EF&EB ☐ EF ☐ CsI Beam: ☐ 34Ar ☐ 46Ar ☐ 36Ar ☐ pdt ☐ _____

Target: ☐ Viewer ☐ CH2 25 um ☐ CH2 75 um ☐ out
☐ Mask ☐ C (17 mg/cm2) ☒ Alpha ☐ Empty

Drive Positions:
_____ mm Target (I251Y-R)
_____ mm MCP 0 (US) (I250Y-R)
_____ mm MCP 1 (DS) (I250X-R)

MCP MCP 0 (US): V: _____ I: _____ ☐ foil ☐ mask ☐ out
MCP 1 (DS): V: _____ I: _____ ☐ foil ☐ mask ☐ out

MCP Voltage on? ☐ Yes ☐ No S800 Segment 8 Brho: Vacuum: 1.4 e-5 torr

Comments:

v. 1 | Run # 675	Date: Dec 24	Start: 09:45	Stop: 10:45
Your Name:		Built data? ☒ Yes ☐ No	

Also on Shift: ☐ Andy ☐ Ben ☐ Betty ☐ Bill ☐ Charles ☐ Christoph ☐ Cole ☐ Corinne ☐ Giordano ☐ Han ☐ Iwasaki ☐ Jack ☐ Jenny ☐ Jon ☐ Juan ☐ Justin ☐ Karl ☐ Kyle ☐ Li ☐ Mingbo ☐ Rachel ☐ Sean ☐ Suwat ☐ Xiao ☐ Xu ☐ Yassid ☐ Zibi ☐ _____

Run Type: ☐ Data Singles: (☐ HiRA ☐ S800 ☐ MCP) Calib: (☒ HiRA ☐ S800 ☐ MCP) ☐ CRDC ☐ Junk

S800 Trigger Box: (1+) ☐ S800 ☐ Coin. ☐ Ext.1 (☐ pulser ☐ _____) ☐ Ext. 2 (☐ MCP DS __ ☐ _____) ☒ Sec.: _____ DS___

HiRA Trigger: ☐ EF&EB ☐ EF ☐ CsI Beam: ☐ 34Ar ☐ 46Ar ☐ 36Ar ☐ pdt ☐ _____

Target: ☐ Viewer ☐ CH2 25 um ☐ CH2 75 um ☐ out
☐ Mask ☐ C (17 mg/cm2) ☒ Alpha ☐ Empty

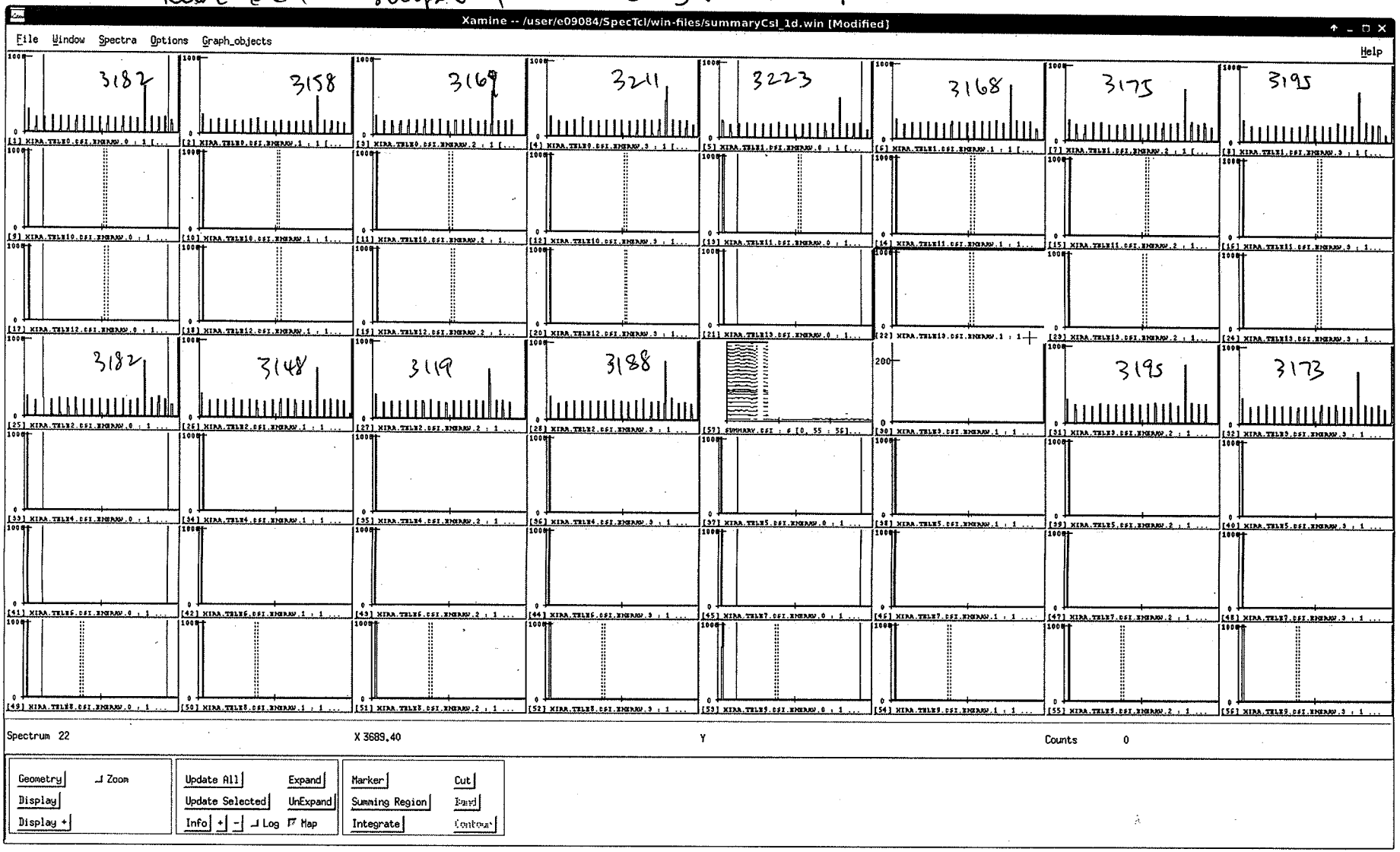
Drive Positions:
_____ mm Target (I251Y-R)
_____ mm MCP 0 (US) (I250Y-R)
_____ mm MCP 1 (DS) (I250X-R)

MCP MCP 0 (US): V: _____ I: _____ ☐ foil ☐ mask ☐ out
MCP 1 (DS): V: _____ I: _____ ☐ foil ☐ mask ☐ out

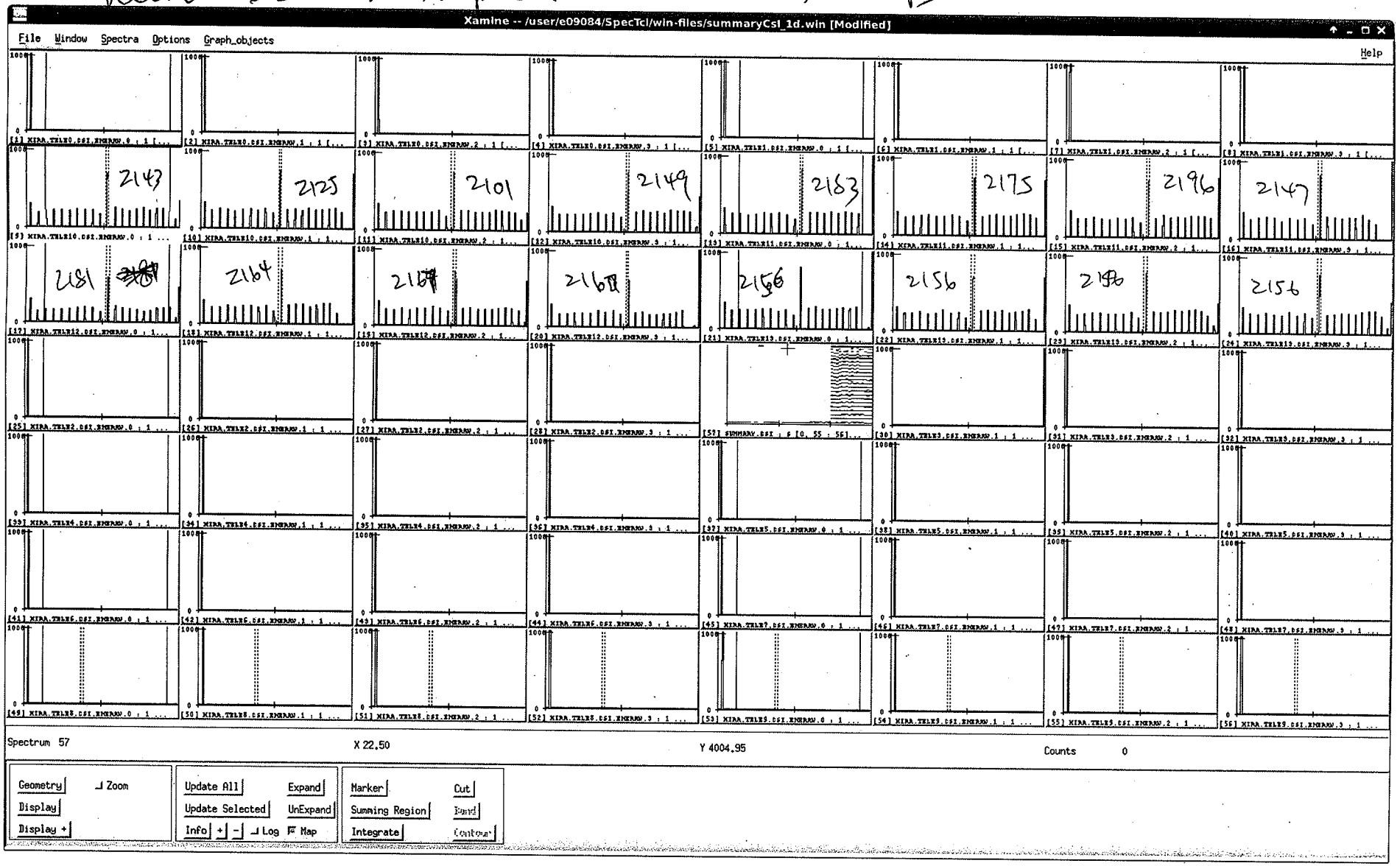
MCP Voltage on? ☐ Yes ☐ No S800 Segment 8 Brho: Vacuum: 1.2 e-5 torr

Comments:
end to change pulser trigger for S12.

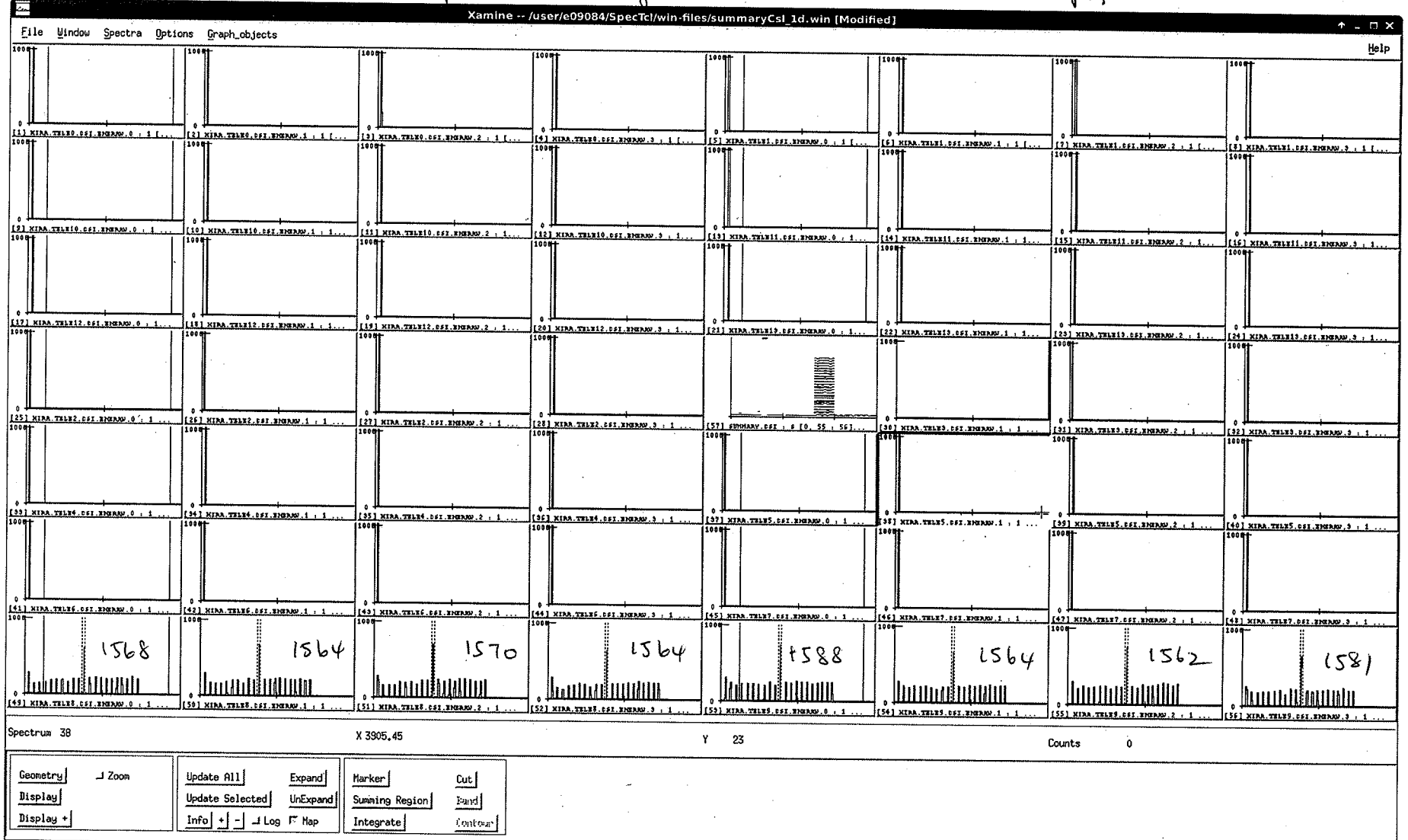
Run 666 shapers 4 0-3V 31 steps?



Run 662 Cs2 shaper 1 0-2V, 21 steps



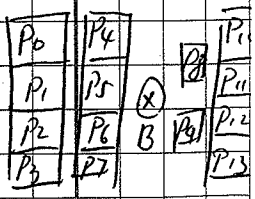
Run 664 CsI pulser shaper 3 0-2V 21 steps.



During Dec 23 night, when we do the CsI pulser calibration, we found that ~~tower~~ shaper 3 (channel 16-31) see no signals. The reason ~~is~~ was not clear, and we just did the pulser calibration for the rest before going to alpha source calibration for E_F & F_B.

Morning Dec 24, We start to work on CsI pulser calibration after taking ~~of~~ alpha source ~~or~~ data for 8 hours ~~during~~ the night shift. But we find that No CsI pulser can be seen!

Then we went the chamber & check the cabling of the tower 2 (position 4 - position 7 at tower 2), we found that the cabling of CsI of Position 5 (~~T5~~ T_6) was wrong, it was upside down and caused wield problems.

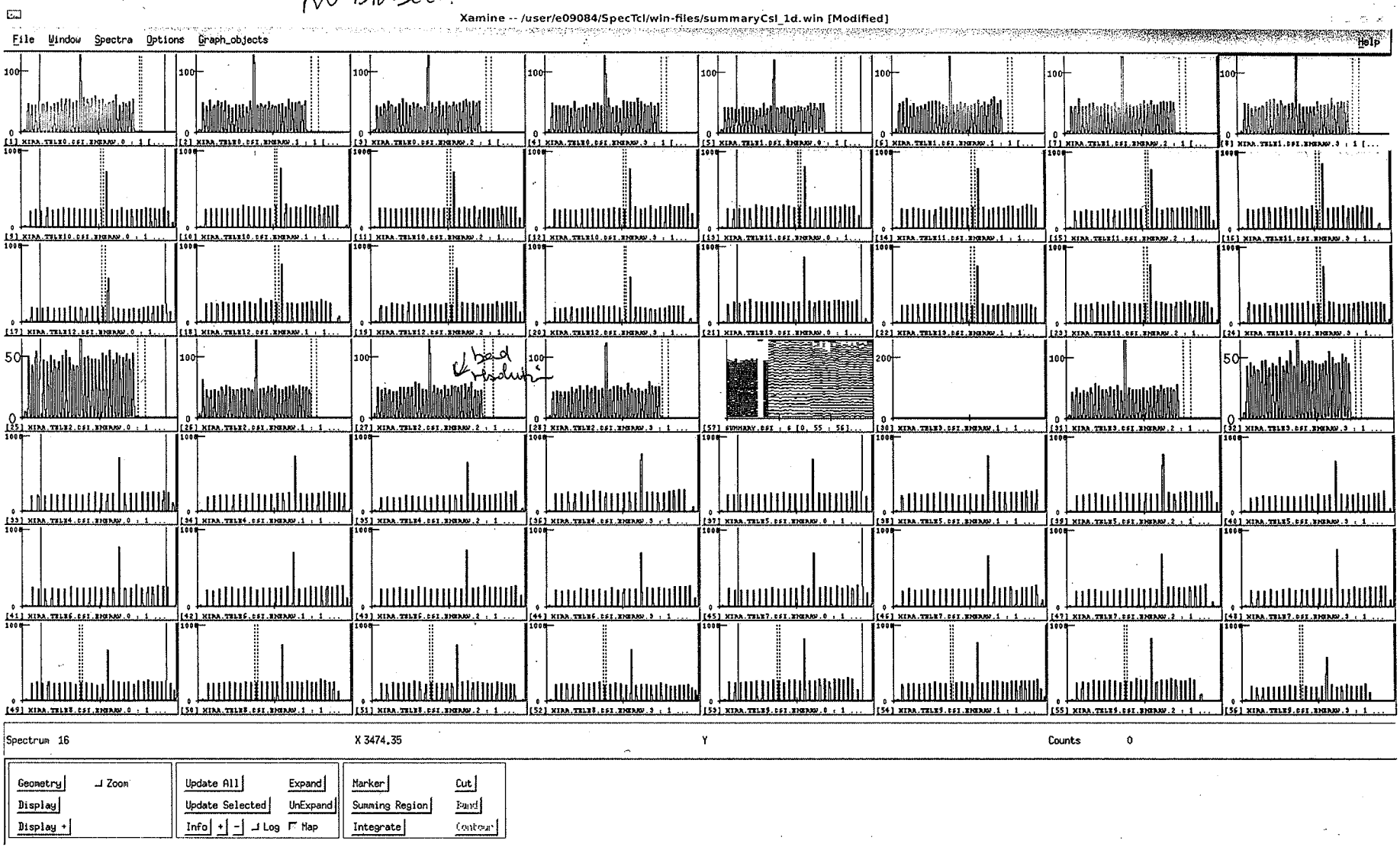


And then we found also the fuse for the CsI - preAmp power supply was also burnt. After fixing this fuse, The pulser signals from all the four towers are shown on the online specta.

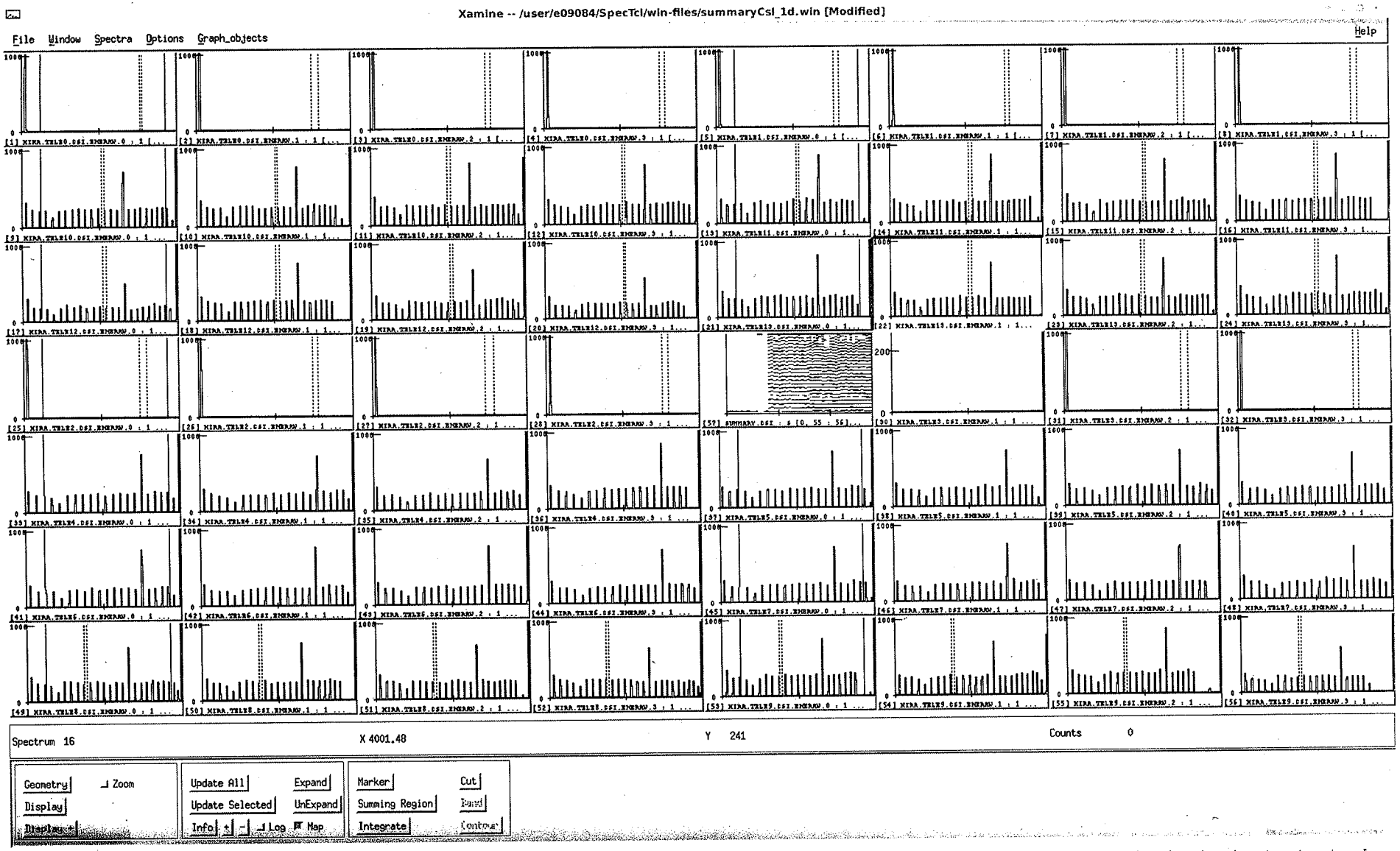
Now, we start to do the CsI pulser calobration.

▶ From run 676 - 686, All pulser polarity ~~of~~ are Negative.

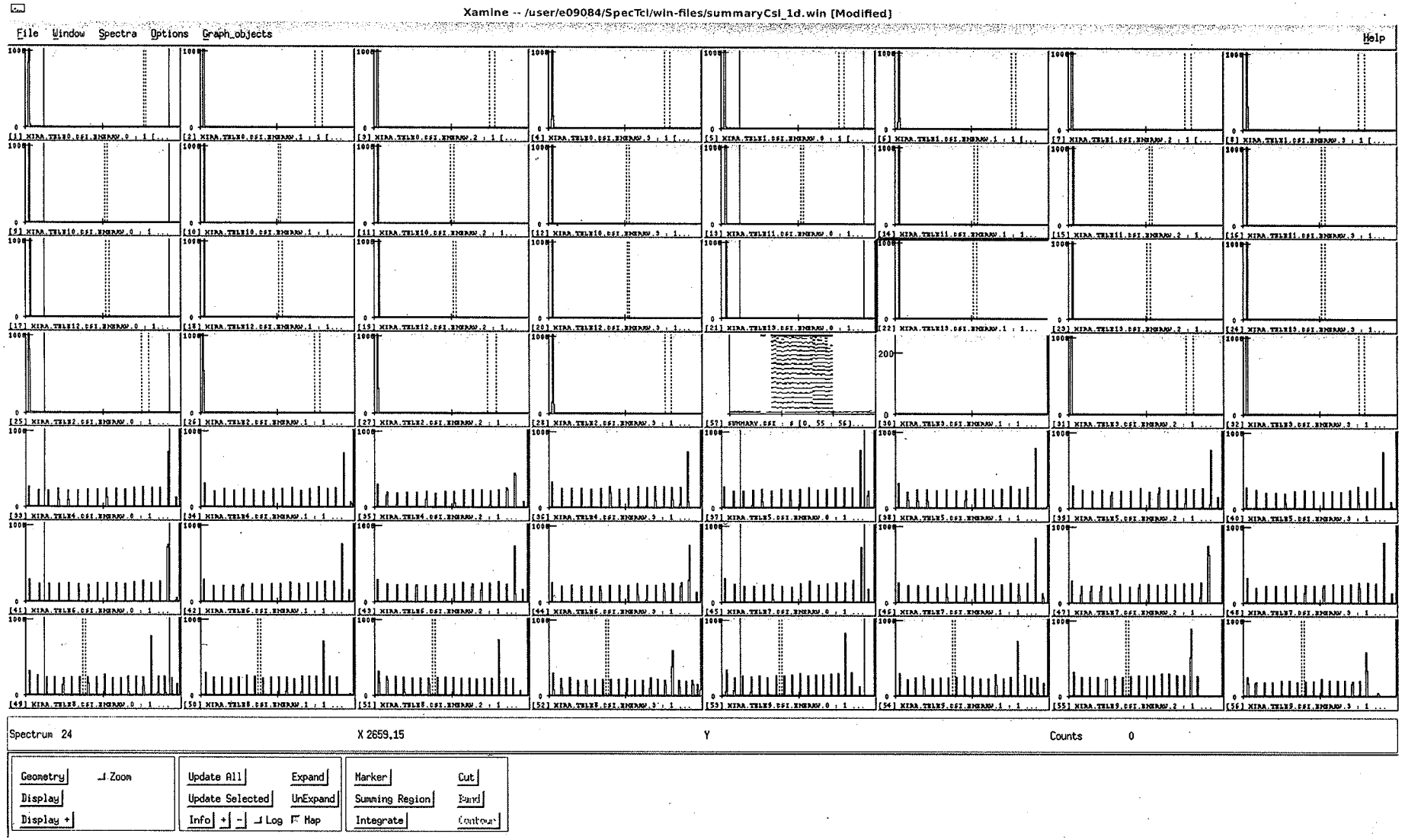
Run 678 no biased.



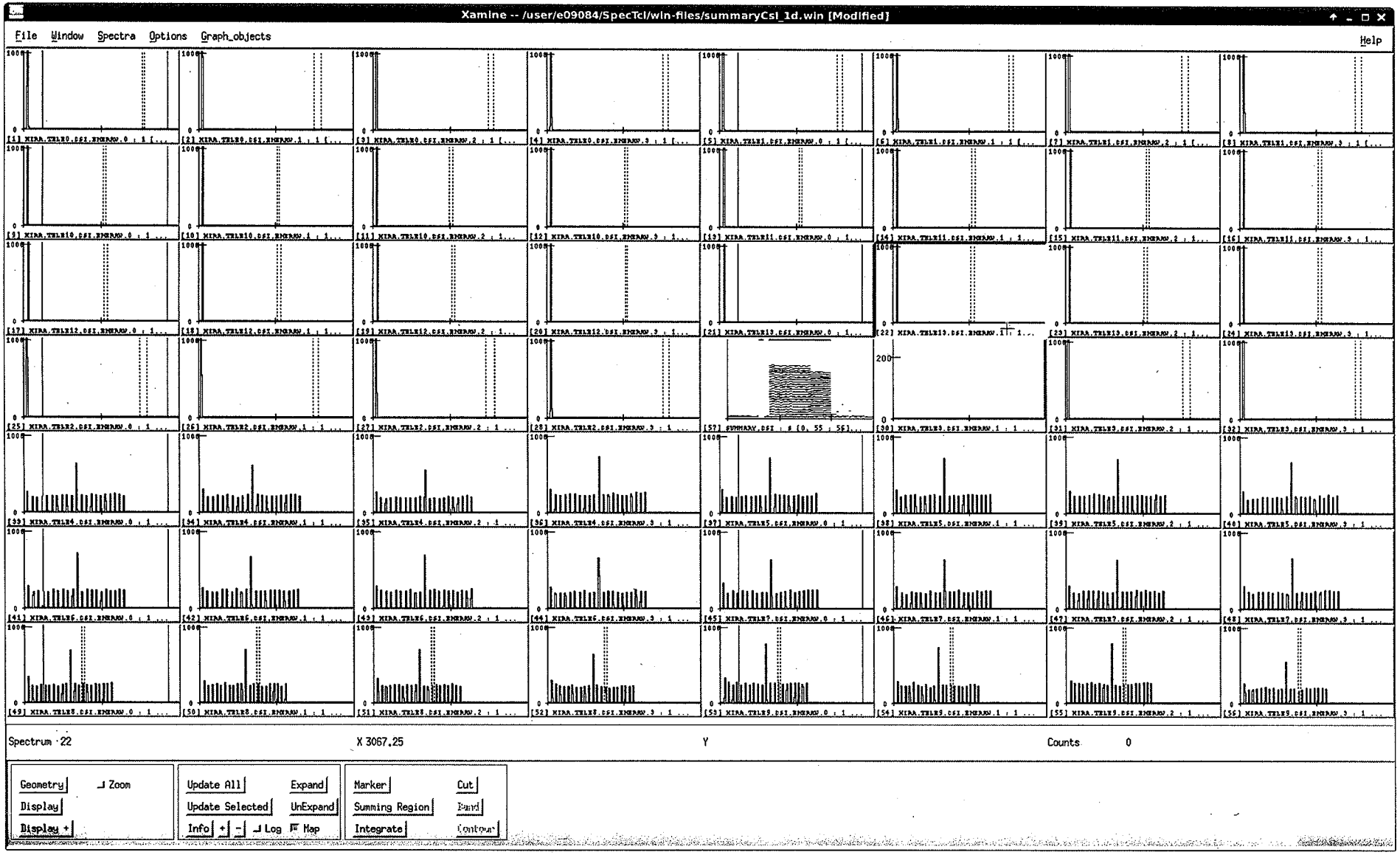
Run 679


Xamine -- /user/e09084/SpecTcl/win-files/summaryCsI_1d.win [Modified]
File Window Spectra Options Graph_objects
Help
Spectrum 16
X 4001.48
Y 241
Counts 0
Geometry
Zoom
Display
Update All
Expand
Update Selected
UnExpand
Info
Log
Map
Marker
Cut
Summing Region
Integrate

Run 680

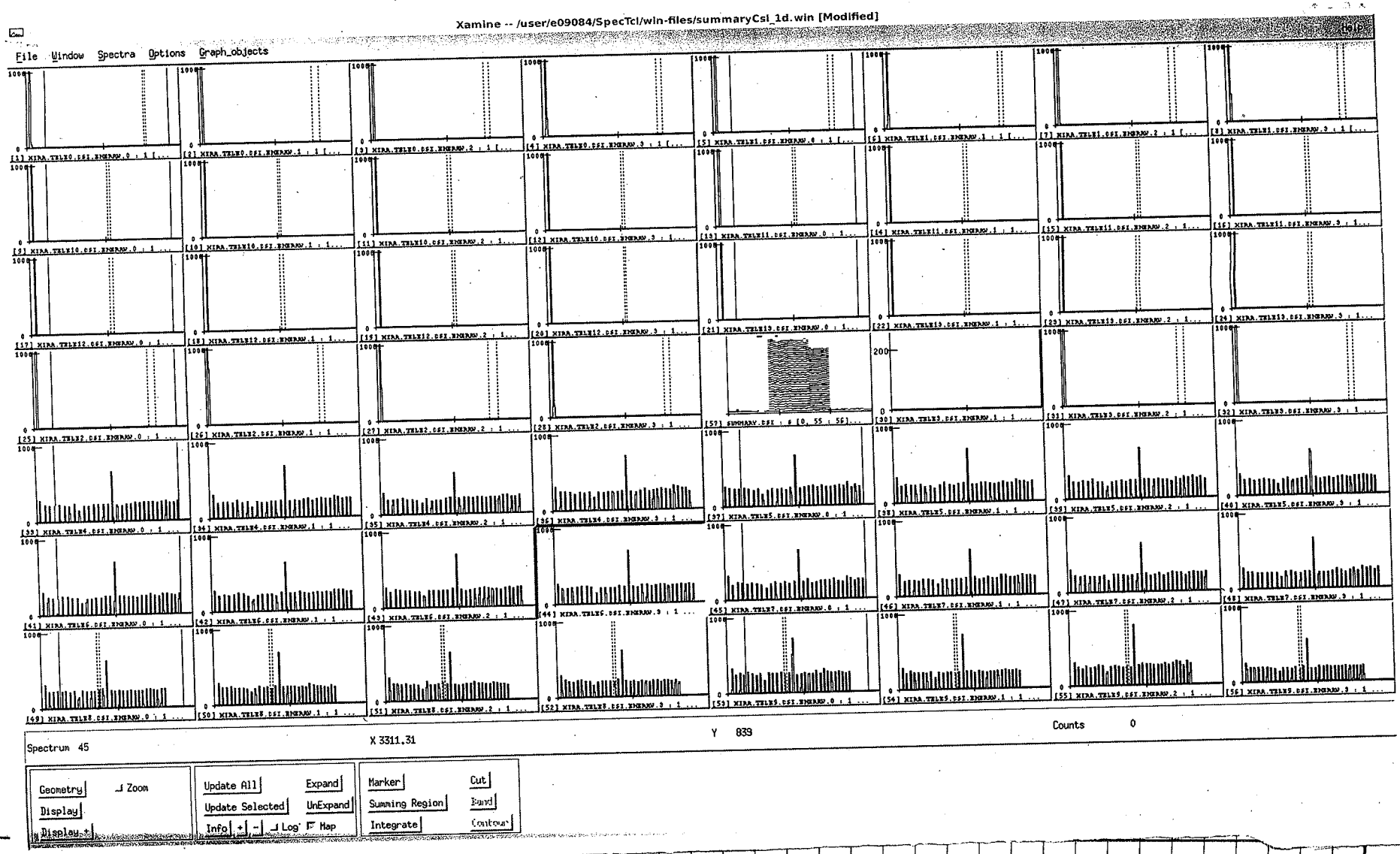

Xamine -- /user/e09084/SpecTcl/win-files/summaryCsI_1d.win [Modified]
File Window Spectra Options Graph_objects
Help
Spectrum 24
X 2659,15
Y
Counts 0
Geometry
Zoom
Display
Display +
Update All
Expand
Update Selected
UnExpand
Info
+
-
Log
Map
Marker
Cut
Summing Region
Band
Integrate
Contour

Run 681

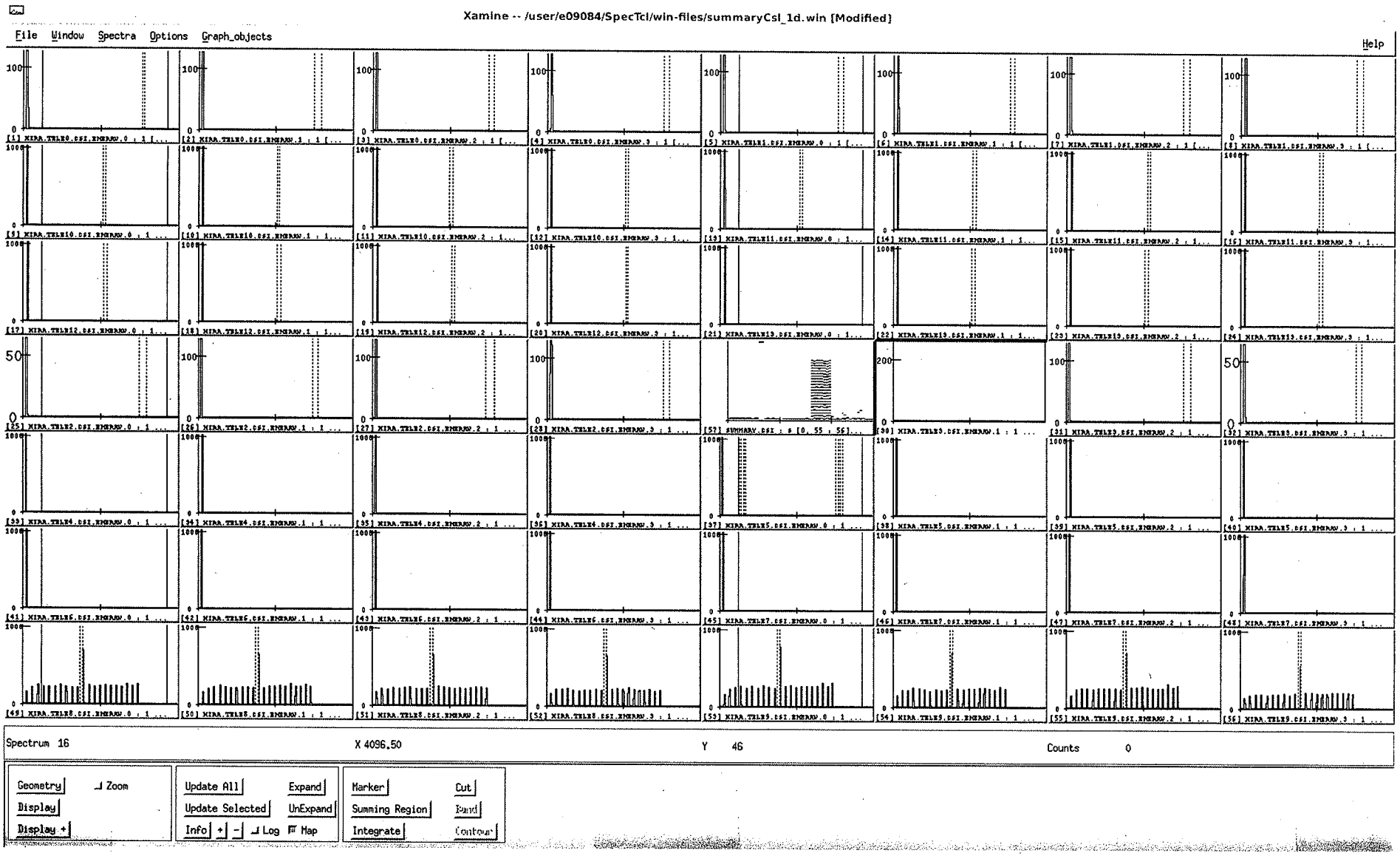

Xamine -- /user/e09084/SpecTcl/win-files/summaryCsI_1d.win [Modified]
File Window Spectra Options Graph_objects Help
Spectrum 22
X 3067.25
Y
Counts 0
Geometry
Zoom
Display
Display +
Update All
Expand
Update Selected
UnExpand
Info
Log
Map
Marker
Cut
Summing Region
Integrate

Run 682.

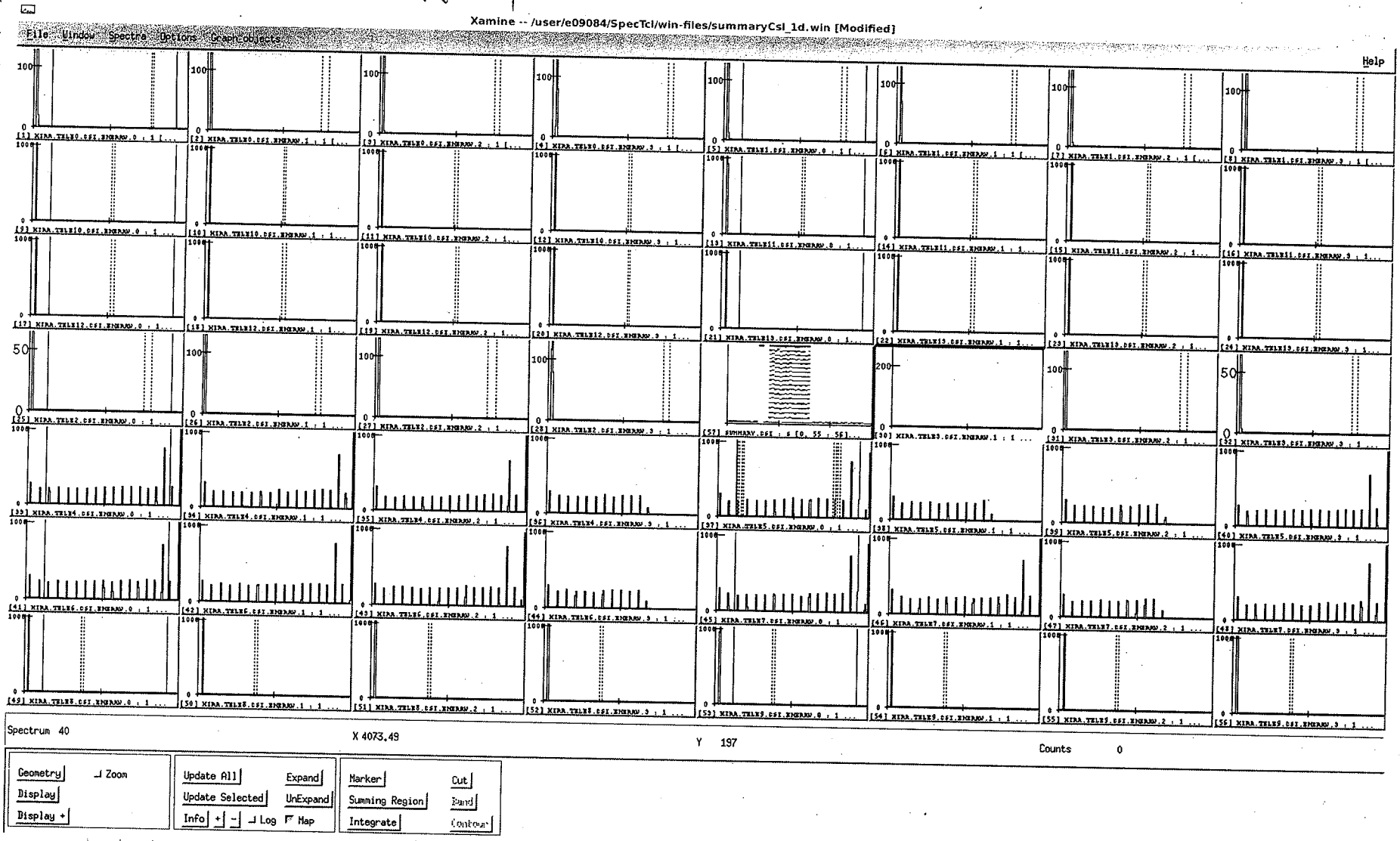
Good Run!



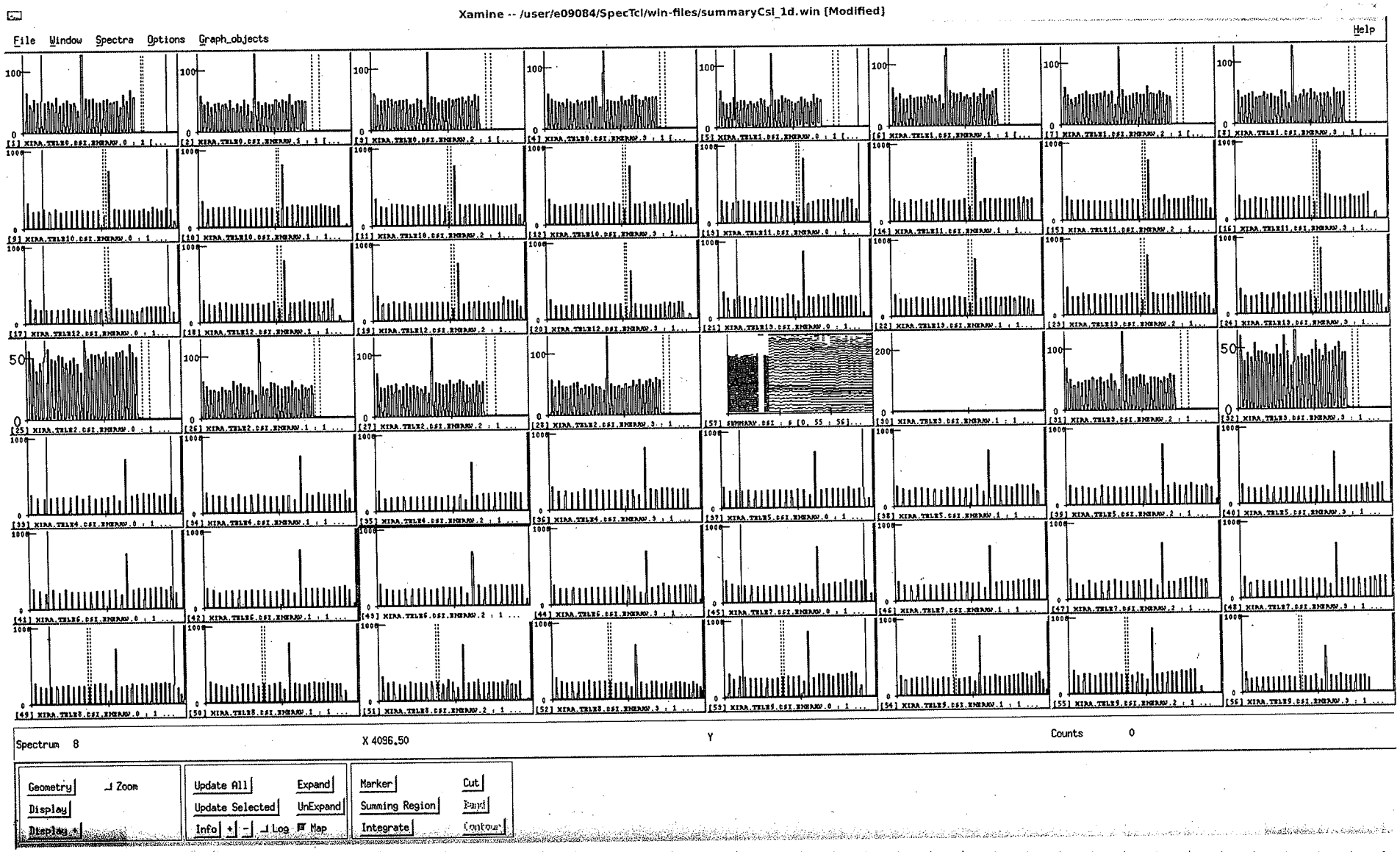
Run 683


Xamine -- /user/e09084/SpecTcl/win-files/summaryCsI_1d.win [Modified]
File Window Spectra Options Graph_objects
Help
Spectrum 16
X 4096.50
Y 46
Counts 0
Geometry
Zoom
Display
Display +
Update All
Expand
Update Selected
UnExpand
Info
Log
Map
Marker
Cut
Summing Region
Integrate
Contour

Run 684


Xamine -- /user/e09084/SpecTcl/win-files/summaryCsI_1d.win [Modified]
File Window Spectra Options Graph objects
Help
Spectrum 40
X 4073.49
Y 197
Counts 0
Geometry
Zoom
Display
Display +
Update All
Expand
Update Selected
UnExpand
Info
+
-
Log
Map
Marker
Cut
Summing Region
Band
Integrate
Contour

Run 686


Xamine -- /user/e09084/SpecTcl/win-files/summaryCsI_1d.win [Modified]
File Window Spectra Options Graph_objects
Help
Spectrum 8
X 4096,50
Y
Counts 0
Geometry
Zoom
Display
Update All
Expand
Update Selected
UnExpand
Info
Log
Map
Marker
Cut
Summing Region
Integrate
Contour

v. 1 | Run # 676	Date: Dec 24	Start:	Stop:
Your Name: XIAO		Built data? ☐ Yes ☐ No	

Also on Shift: ☐ Andy ☐ Ben ☒ Betty ☒ Bill ☐ Charles ☐ Christoph ☐ Cole ☐ Corinne ☐ Giordano ☐ Han ☐ Iwasaki ☐ Jack ☐ Jenny ☐ Jon ☐ Juan ☐ Justin ☐ Karl ☐ Kyle ☐ Li ☐ Mingbo ☐ Rachel ☐ Sean ☐ Suwat ☐ Xiao ☐ Xu ☐ Yassid ☐ Zibi ☐ Chen

Run Type: ☐ Data Singles: (☐ HiRA ☐ S800 ☐ MCP) Calib: (☒ HiRA ☐ S800 ☐ MCP) ☐ CRDC ☐ Junk

S800 Trigger Box: (1+) ☐ S800 ☐ Coin. ☐ Ext.1 (☐ pulser ☐ _____) ☐ Ext. 2 (☐ MCP DS __ ☐ _____) ☐ Sec.: _____ DS__

HiRA Trigger: ☐ EF&EB ☐ EF ☒ CsI pulser Beam: ☐ 34Ar ☐ 46Ar ☐ 36Ar ☐ pdt ☐ _____

Target: ☐ Viewer ☐ CH2 25 um ☐ CH2 75 um ☐ out ☐ Mask ☐ C (17 mg/cm2) ☐ Alpha ☐ Empty

MCP MCP 0 (US): V: _____ I: _____ ☐ foil ☐ mask ☐ out

MCP 1 (DS): V: _____ I: _____ ☐ foil ☐ mask ☐ out

Drive Positions:
_____ mm Target (I251Y-R)
_____ mm MCP 0 (US) (I250Y-R)
_____ mm MCP 1 (DS) (I250X-R)

MCP Voltage on? ☐ Yes ☐ No S800 Segment 8 Brho: Vacuum: _____ e- torr

Comments: CsI pulser run ! Pulser ramp 0-4V, 21 steps, All CsI are in.

v. 1 | Run # 677	Date:	Start:	Stop:
Your Name:		Built data? ☐ Yes ☐ No	

Also on Shift: ☐ Andy ☐ Ben ☐ Betty ☐ Bill ☐ Charles ☐ Christoph ☐ Cole ☐ Corinne ☐ Giordano ☐ Han ☐ Iwasaki ☐ Jack ☐ Jenny ☐ Jon ☐ Juan ☐ Justin ☐ Karl ☐ Kyle ☐ Li ☐ Mingbo ☐ Rachel ☐ Sean ☐ Suwat ☐ Xiao ☐ Xu ☐ Yassid ☐ Zibi ☐ _____

Run Type: ☐ Data Singles: (☐ HiRA ☐ S800 ☐ MCP) Calib: (☐ HiRA ☐ S800 ☐ MCP) ☐ CRDC ☐ Junk

S800 Trigger Box: (1+) ☐ S800 ☐ Coin. ☐ Ext.1 (☐ pulser ☐ _____) ☐ Ext. 2 (☐ MCP DS __ ☐ _____) ☐ Sec.: _____ DS__

HiRA Trigger: ☐ EF&EB ☐ EF ☐ CsI Beam: ☐ 34Ar ☐ 46Ar ☐ 36Ar ☐ pdt ☐ _____

Target: ☐ Viewer ☐ CH2 25 um ☐ CH2 75 um ☐ out ☐ Mask ☐ C (17 mg/cm2) ☐ Alpha ☐ Empty

MCP MCP 0 (US): V: _____ I: _____ ☐ foil ☐ mask ☐ out

MCP 1 (DS): V: _____ I: _____ ☐ foil ☐ mask ☐ out

Drive Positions:
_____ mm Target (I251Y-R)
_____ mm MCP 0 (US) (I250Y-R)
_____ mm MCP 1 (DS) (I250X-R)

MCP Voltage on? ☐ Yes ☐ No S800 Segment 8 Brho: Vacuum: _____ e- torr

Comments: Junk !

v. 1 | Run # 678	Date: Dec 24	Start:	Stop:
Your Name: XIAO		Built data? ☐ Yes ☐ No	

Also on Shift: ☐ Andy ☐ Ben ☒ Betty ☒ Bill ☐ Charles ☐ Christoph ☐ Cole ☐ Corinne ☐ Giordano ☐ Han ☐ Iwasaki ☐ Jack ☐ Jenny ☐ Jon ☒ Juan ☐ Justin ☐ Karl ☐ Kyle ☐ Li ☐ Mingbo ☐ Rachel ☐ Sean ☐ Suwat ☐ Xiao ☐ Xu ☐ Yassid ☐ Zibi ☐ Chen

Run Type: ☐ Data Singles: (☐ HiRA ☐ S800 ☐ MCP) Calib: (☐ HiRA ☐ S800 ☐ MCP) ☐ CRDC ☐ Junk

S800 Trigger Box: (1+) ☐ S800 ☐ Coin. ☐ Ext.1 (☐ pulser ☐ _____) ☐ Ext. 2 (☐ MCP DS __ ☐ _____) ☐ Sec.: _____ DS__

HiRA Trigger: ☐ EF&EB ☐ EF ☒ CsI pulser Beam: ☐ 34Ar ☐ 46Ar ☐ 36Ar ☐ pdt ☐ _____

Target: ☐ Viewer ☐ CH2 25 um ☐ CH2 75 um ☐ out ☐ Mask ☐ C (17 mg/cm2) ☐ Alpha ☐ Empty

MCP MCP 0 (US): V: _____ I: _____ ☐ foil ☐ mask ☐ out

MCP 1 (DS): V: _____ I: _____ ☐ foil ☐ mask ☐ out

Drive Positions:
_____ mm Target (I251Y-R)
_____ mm MCP 0 (US) (I250Y-R)
_____ mm MCP 1 (DS) (I250X-R)

MCP Voltage on? ☐ Yes ☐ No S800 Segment 8 Brho: Vacuum: _____ e- torr

Comments: CsI pulser run, Pulser ramp 0-6V, 31 steps. All CsI in.

v.1 | Run # 679 | Date: Dec 24 | Start: | Stop:

Your Name: Xiao | Built data? ☑ Yes ☐ No

Also on Shift: ☐ Andy ☐ Ben ☒ Betty ☒ Bill ☐ Charles ☐ Christoph ☐ Cole ☐ Corinne ☐ Giordano ☐ Han ☐ Iwasaki ☐ Jack ☐ Jenny ☐ Jon ☒ Juan ☐ Justin ☐ Karl ☐ Kyle ☐ Li ☐ Mingbo ☐ Rachel ☐ Sean ☐ Suwat ☐ Xiao ☐ Xu ☐ Yassid ☐ Zibi ☐ Chen

Run Type: ☐ Data | Singles: (☐ HiRA ☐ S800 ☐ MCP) | Calib: (☐ HiRA ☐ S800 ☐ MCP) ☐ CRDC ☐ Junk

S800 Trigger Box: (1+) ☐ S800 ☐ Coin. ☐ Ext.1 (☒ pulser ☐ _____) ☐ Ext. 2 (☐ MCP DS __ ☐ _____) ☐ Sec.: _____ DS___

HiRA Trigger: ☐ EF&EB ☐ EF ☐ CsI pulser | Beam: ☐ 34Ar ☐ 46Ar ☐ 36Ar ☐ pdt ☐ _____

Target: ☐ Viewer ☐ CH2 25 um ☐ CH2 75 um ☐ out ☐ Mask ☐ C (17 mg/cm2) ☐ Alpha ☐ Empty

MCP MCP 0 (US): V: _____ I: _____ ☐ foil ☐ mask ☐ out

MCP 1 (DS): V: _____ I: _____ ☐ foil ☐ mask ☐ out

MCP Voltage on? ☐ Yes ☐ No | S800 Segment 8 Brho:

Drive Positions:
_____ mm Target (I251Y-R)
_____ mm MCP 0 (US) (I250Y-R)
_____ mm MCP 1 (DS) (I250X-R)

Vacuum: _____ e- ___ torr

Comments: CsI pulser run. Pulser ramp 0-6V, 31 steps. Taking out CsI 0-15 channels (shape 4#)

---

v.1 | Run # 680 | Date: Dec 24 | Start: | Stop:

Your Name: Xiao | Built data? ☑ Yes ☐ No

Also on Shift: ☐ Andy ☐ Ben ☒ Betty ☒ Bill ☐ Charles ☐ Christoph ☐ Cole ☐ Corinne ☐ Giordano ☐ Han ☐ Iwasaki ☐ Jack ☐ Jenny ☐ Jon ☒ Juan ☐ Justin ☐ Karl ☐ Kyle ☐ Li ☐ Mingbo ☐ Rachel ☐ Sean ☐ Suwat ☒ Xiao ☐ Xu ☐ Yassid ☐ Zibi ☐ _____

Run Type: ☐ Data | Singles: (☐ HiRA ☐ S800 ☐ MCP) | Calib: (☐ HiRA ☐ S800 ☐ MCP) ☐ CRDC ☐ Junk

S800 Trigger Box: (1+) ☐ S800 ☐ Coin. ☐ Ext.1 (☐ pulser ☐ _____) ☐ Ext. 2 (☐ MCP DS __ ☐ _____) ☐ Sec.: _____ DS___

HiRA Trigger: ☐ EF&EB ☐ EF ☐ CsI | Beam: ☐ 34Ar ☐ 46Ar ☐ 36Ar ☐ pdt ☐ _____

Target: ☐ Viewer ☐ CH2 25 um ☐ CH2 75 um ☐ out ☐ Mask ☐ C (17 mg/cm2) ☐ Alpha ☐ Empty

MCP MCP 0 (US): V: _____ I: _____ ☐ foil ☐ mask ☐ out

MCP 1 (DS): V: _____ I: _____ ☐ foil ☐ mask ☐ out

MCP Voltage on? ☐ Yes ☐ No | S800 Segment 8 Brho:

Drive Positions:
_____ mm Target (I251Y-R)
_____ mm MCP 0 (US) (I250Y-R)
_____ mm MCP 1 (DS) (I250X-R)

Vacuum: _____ e- ___ torr

Comments: CsI pulser run. Pulser ramp 0-6 V, 31 steps. Taking out CsI 0-15 & 41-56 channels. ϕ

---

v.1 | Run # 681 | Date: Dec 24 | Start: | Stop:

Your Name: Xiao | Built data? ☑ Yes ☐ No

Also on Shift: ☐ Andy ☐ Ben ☒ Betty ☒ Bill ☐ Charles ☐ Christoph ☐ Cole ☐ Corinne ☐ Giordano ☐ Han ☐ Iwasaki ☐ Jack ☐ Jenny ☐ Jon ☐ Juan ☐ Justin ☐ Karl ☐ Kyle ☐ Li ☐ Mingbo ☐ Rachel ☐ Sean ☐ Suwat ☐ Xiao ☐ Xu ☐ Yassid ☐ Zibi ☐ Chen

Run Type: ☐ Data | Singles: (☐ HiRA ☐ S800 ☐ MCP) | Calib: (☐ HiRA ☐ S800 ☐ MCP) ☐ CRDC ☐ Junk

S800 Trigger Box: (1+) ☐ S800 ☐ Coin. ☐ Ext.1 (☐ pulser ☐ _____) ☐ Ext. 2 (☐ MCP DS __ ☐ _____) ☐ Sec.: _____ DS___

HiRA Trigger: ☐ EF&EB ☐ EF ☐ CsI | Beam: ☐ 34Ar ☐ 46Ar ☐ 36Ar ☐ pdt ☐ _____

Target: ☐ Viewer ☐ CH2 25 um ☐ CH2 75 um ☐ out ☐ Mask ☐ C (17 mg/cm2) ☐ Alpha ☐ Empty

MCP MCP 0 (US): V: _____ I: _____ ☐ foil ☐ mask ☐ out

MCP 1 (DS): V: _____ I: _____ ☐ foil ☐ mask ☐ out

MCP Voltage on? ☐ Yes ☐ No | S800 Segment 8 Brho:

Drive Positions:
_____ mm Target (I251Y-R)
_____ mm MCP 0 (US) (I250Y-R)
_____ mm MCP 1 (DS) (I250X-R)

Vacuum: _____ e- ___ torr

Comments: 0-2V, 21 steps. CsI 1-15 & 40-55 channels taken out. CsI pulser run!

v. 1 | Run # 682	Date: Dec 24	Start:	Stop:
Your Name: Shao		Built data? ☐ Yes ☐ No	

Also on Shift: ☐ Andy ☐ Ben ☐ Betty ☐ Bill ☐ Charles ☐ Christoph ☐ Cole ☐ Corinne ☐ Giordano ☐ Han ☐ Iwasaki ☐ Jack ☐ Jenny ☐ Jon ☐ Juan ☐ Justin ☐ Karl ☐ Kyle ☐ Li ☐ Mingbo ☐ Rachel ☐ Sean ☐ Suwat ☐ Xiao ☐ Xu ☐ Yassid ☐ Zibi ☐ _____

Run Type: ☐ Data Singles: (☐ HiRA ☐ S800 ☐ MCP) Calib: (☐ HiRA ☐ S800 ☐ MCP) ☐ CRDC ☐ Junk

S800 Trigger Box: (1+) ☐ S800 ☐ Coin. ☐ Ext.1 (☐ pulser ☐ _____) ☐ Ext. 2 (☐ MCP DS__ ☐ _____) ☐ Sec.: _____DS___

HiRA Trigger: ☐ EF&EB ☐ EF ☐ CsI | Beam: ☐ 34Ar ☐ 46Ar ☐ 36Ar ☐ pdt ☐ _____

Target: ☐ Viewer ☐ CH2 25 um ☐ CH2 75 um ☐ out ☐ Mask ☐ C (17 mg/cm2) ☐ Alpha ☐ Empty

MCP MCP 0 (US): V: _____ I: _____ ☐ foil ☐ mask ☐ out

MCP 1 (DS): V: _____ I: _____ ☐ foil ☐ mask ☐ out

MCP Voltage on? ☐ Yes ☐ No | S800 Segment 8 Brho:

Drive Positions:

_____ mm Target (I251Y-R)

_____ mm MCP 0 (US) (I250Y-R)

_____ mm MCP 1 (DS) (I250X-R)

Vacuum: _____ e- _____ torr

Comments: CsI pulser run, pulser ramp 0-3V. 31 Steps. 0-15, 40-55 channels removed

v. 1 | Run # 683	Date:	Start:	Stop:
Your Name:		Built data? ☐ Yes ☐ No	

Also on Shift: ☐ Andy ☐ Ben ☐ Betty ☐ Bill ☐ Charles ☐ Christoph ☐ Cole ☐ Corinne ☐ Giordano ☐ Han ☐ Iwasaki ☐ Jack ☐ Jenny ☐ Jon ☐ Juan ☐ Justin ☐ Karl ☐ Kyle ☐ Li ☐ Mingbo ☐ Rachel ☐ Sean ☐ Suwat ☐ Xiao ☐ Xu ☐ Yassid ☐ Zibi ☐ _____

Run Type: ☐ Data Singles: (☐ HiRA ☐ S800 ☐ MCP) Calib: (☐ HiRA ☐ S800 ☐ MCP) ☐ CRDC ☐ Junk

S800 Trigger Box: (1+) ☐ S800 ☐ Coin. ☐ Ext.1 (☐ pulser ☐ _____) ☐ Ext. 2 (☐ MCP DS__ ☐ _____) ☐ Sec.: _____DS___

HiRA Trigger: ☐ EF&EB ☐ EF ☐ CsI | Beam: ☐ 34Ar ☐ 46Ar ☐ 36Ar ☐ pdt ☐ _____

Target: ☐ Viewer ☐ CH2 25 um ☐ CH2 75 um ☐ out ☐ Mask ☐ C (17 mg/cm2) ☐ Alpha ☐ Empty

MCP MCP 0 (US): V: _____ I: _____ ☐ foil ☐ mask ☐ out

MCP 1 (DS): V: _____ I: _____ ☐ foil ☐ mask ☐ out

MCP Voltage on? ☐ Yes ☐ No | S800 Segment 8 Brho:

Drive Positions:

_____ mm Target (I251Y-R)

_____ mm MCP 0 (US) (I250Y-R)

_____ mm MCP 1 (DS) (I250X-R)

Vacuum: _____ e- _____ torr

Comments: CsI pulser run. Pulser ramp 0-2V, 21 steps. CsI 0~31, 40~55 channels Removed.

v. 1 | Run # 684	Date: Dec 24	Start:	Stop:
Your Name: Shao		Built data? ☐ Yes ☐ No	

Also on Shift: ☐ Andy ☐ Ben ☐ Betty ☐ Bill ☐ Charles ☐ Christoph ☐ Cole ☐ Corinne ☐ Giordano ☐ Han ☐ Iwasaki ☐ Jack ☐ Jenny ☐ Jon ☐ Juan ☐ Justin ☐ Karl ☐ Kyle ☐ Li ☐ Mingbo ☐ Rachel ☐ Sean ☐ Suwat ☐ Xiao ☐ Xu ☐ Yassid ☐ Zibi ☐ _____

Run Type: ☐ Data Singles: (☐ HiRA ☐ S800 ☐ MCP) Calib: (☐ HiRA ☐ S800 ☐ MCP) ☐ CRDC ☐ Junk

S800 Trigger Box: (1+) ☐ S800 ☐ Coin. ☐ Ext.1 (☑ pulser ☐ _____) ☐ Ext. 2 (☐ MCP DS__ ☐ _____) ☐ Sec.: _____DS___

HiRA Trigger: ☐ EF&EB ☐ EF ☐ CsI pulser | Beam: ☐ 34Ar ☐ 46Ar ☐ 36Ar ☐ pdt ☐ _____

Target: ☐ Viewer ☐ CH2 25 um ☐ CH2 75 um ☐ out ☐ Mask ☐ C (17 mg/cm2) ☐ Alpha ☐ Empty

MCP MCP 0 (US): V: _____ I: _____ ☐ foil ☐ mask ☐ out

MCP 1 (DS): V: _____ I: _____ ☐ foil ☐ mask ☐ out

MCP Voltage on? ☐ Yes ☒ No | S800 Segment 8 Brho:

Drive Positions:

_____ mm Target (I251Y-R)

_____ mm MCP 0 (US) (I250Y-R)

_____ mm MCP 1 (DS) (I250X-R)

Vacuum: _____ e- _____ torr

Comments: CsI pulser run. pulser ramp 0-3V, 31 Steps.
CsI 0-15, 32-55 channels removed.

v. 1 | Run # 685	Date: Dec 24	Start:	Stop:
Your Name: XIAO		Built data? ☐ Yes ☐ No	

Also on Shift: ☐ Andy ☐ Ben ☒ Betty ☒ Bill ☐ Charles ☐ Christoph ☐ Cole ☐ Corinne ☐ Giordano ☐ Han ☐ Iwasaki ☐ Jack ☐ Jenny ☐ Jon ☐ Juan ☐ Justin ☐ Karl ☐ Kyle ☐ Li ☐ Mingbo ☐ Rachel ☐ Sean ☐ Suwat ☒ Xiao ☐ Xu ☐ Yassid ☐ Zibi ☒ Chen

Run Type: ☐ Data Singles: (☐ HiRA ☐ S800 ☐ MCP) Calib: (☐ HiRA ☐ S800 ☐ MCP) ☐ CRDC ☐ Junk

S800 Trigger Box: (1+) ☐ S800 ☐ Coin. ☐ Ext.1 (☐ pulser ☐ _____) ☐ Ext. 2 (☐ MCP DS __ ☐ _____) ☐ Sec.: _____ DS___

HiRA Trigger: ☐ EF&EB ☐ EF ☐ CsI Beam: ☐ 34Ar ☐ 46Ar ☐ 36Ar ☐ pdt ☐ _____

Target: ☐ Viewer ☐ CH2 25 um ☐ CH2 75 um ☐ out ☐ Mask ☐ C (17 mg/cm2) ☐ Alpha ☐ Empty

MCP MCP 0 (US): V: _____ I: _____ ☐ foil ☐ mask ☐ out

MCP 1 (DS): V: _____ I: _____ ☐ foil ☐ mask ☐ out

Drive Positions:

_____ mm Target (I251Y-R)

_____ mm MCP 0 (US) (I250Y-R)

_____ mm MCP 1 (DS) (I250X-R)

MCP Voltage on? ☐ Yes ☐ No | S800 Segment 8 Brho: | Vacuum: _____ e- torr

Comments: CsI pulser. But junk.

v. 1 | Run # 686	Date: Dec	Start:	Stop:
Your Name: XIAO		Built data? ☐ Yes ☐ No	

Also on Shift: ☐ Andy ☐ Ben ☐ Betty ☐ Bill ☐ Charles ☐ Christoph ☐ Cole ☐ Corinne ☐ Giordano ☐ Han ☐ Iwasaki ☐ Jack ☐ Jenny ☐ Jon ☐ Juan ☐ Justin ☐ Karl ☐ Kyle ☐ Li ☐ Mingbo ☐ Rachel ☐ Sean ☐ Suwat ☐ Xiao ☐ Xu ☐ Yassid ☐ Zibi ☐ _____

Run Type: ☐ Data Singles: (☐ HiRA ☐ S800 ☐ MCP) Calib: (☐ HiRA ☐ S800 ☐ MCP) ☐ CRDC ☐ Junk

S800 Trigger Box: (1+) ☐ S800 ☐ Coin. ☐ Ext.1 (☐ pulser ☐ _____) ☐ Ext. 2 (☐ MCP DS __ ☐ _____) ☐ Sec.: _____ DS___

HiRA Trigger: ☐ EF&EB ☐ EF ☐ CsI Beam: ☐ 34Ar ☐ 46Ar ☐ 36Ar ☐ pdt ☐ _____

Target: ☐ Viewer ☐ CH2 25 um ☒ CH2 75 um ☐ out ☐ Mask ☐ C (17 mg/cm2) ☐ Alpha ☐ Empty

MCP MCP 0 (US): V: _____ I: _____ ☐ foil ☐ mask ☐ out

MCP 1 (DS): V: _____ I: _____ ☐ foil ☐ mask ☐ out

Drive Positions:

_____ mm Target (I251Y-R)

_____ mm MCP 0 (US) (I250Y-R)

_____ mm MCP 1 (DS) (I250X-R)

MCP Voltage on? ☐ Yes ☐ No | S800 Segment 8 Brho: | Vacuum: _____ e- torr

Comments: CsI pulser run. pulser ramp 0–6V, 31 steps. all CsI connected (The title written in the file were wrong!!!) pulser Polarity = Negative.

100 (cont from p. 78) Rack 3 NIM 3

FIFO 2: Bank 1: → In: Coincidence. 3 (Master)
← Out: FIFO 6.3
← Out: Scaler
← Out: FIFO 9.1
← Out: NIM 4 QDC 6.4 ST (ADC Gate)
Bank 2: → In: Conc. 2 (HRA Live)
← Out: Scaler
← Out: Multiplexer
← Out: FIFO 3.2
Bank 3: → In: FIFO 1.1 (External 1)
← Out: empty
Bank 4: → In: 754.1 Out (MCP DS vetoed) External 2
← Out: empty

FIFO 3: Bank 1: → In: Conc. 1 Out (HRA raw)
← Out: Conc. 2 In
← Out: Multiplexer
← Out: Scalers
Bank 2: → In: FIFO 2.2 (HRA Live)
← Out: S800 HRA Trigger (Secondary)
← Out: HRA Live for running HRA DAQ
• this would be inserted to FIFO 5.2
when we ran HRA w/o S800

Bank 3; ~~Out~~ In; NIM4, QDGG.2 Y (CPU Trigger)

← Out: Scaler

← Out: Multiplexer

Bank 4; → In: FIFO 4.1 (Master)

← Out: ENE In.6

← Out: Rack 1, NIM2, FIFO 2.3

← Out: NIM2, ENE2, In 1

← Out: NIM2, ENE2, In 2

← Out: VME, TDC Trigger

FIFO 4; Bank 1: → In: FIFO 2.1 (Master)

← Out: FIFO 3.4

← Out: Splitter In.1 (MB4 Stop)

← Out: NIM3 ENE, In 1

← Out: NIM3, ENE1, In2

Bank 2; → In; ~~FIFO 2.~~ NIM3, FIFO 2.2 (CPU Busy)

→ In: FIFO 5.1 Out (XLM Gbl Enable)

→ In: FIFO 5.3 Out (XLM Gbl Enable)

→ In: FIFO 4.4 (ADC Gate)

← Out: Com.2 Veto

← Out: ~~Multiplexer~~ 800 MRA Busy

← Out: ~~Rack, NIM3 FIFO 4.4 Fast Busy MB0~~

← Out: ~~FIFO 1 Veto~~ FIFO 4.3

Com.3 Veto

Bank 3; → In: FIFO 4.2 (Busy)
← Out: PS710 Veto
← Out: Multiplexer
← Out: Rack 1, NIM3, FIFO 4.4 (Fast for Busy)
← Out: 754.1 Veto
Bank 4; → In: NIM4 GDGG.4 Y (AND Gate)
← Out: FIFO 4.2
← Out: Multiplexer
FIFO5; Bank 1; In: NIM3, ENE Out 11 (XM1 Gbl Enable)
← Out: FIFO 4.2
Bank 2; → In: S800 Trigger
← Out: Con. 3 A
Bank 3; → In: NIM3, ENE2, Out 11 (XM2 Gbl En
← Out: FIFO 4.2
Bank 4; → In: Rack 3, Interlock Box, NC 7
← Out: CAEN Interlock
PS710; Bank 1; → In: Rack 1, NIM3, DB Out.4 (MCP0)
→ ← T: ENE In. 1
← Out: ~~Multiplexer~~ Scaler
Bank 2; → In: Rack 1, NIM3, DB Out.10 (MCP1)
← T: ENE In. 2
← Out: ~~Multiplexer~~ Scaler

Bank 4: → In: NIM4, PS715.3 Out
← Out: Scaler
← T: ENE In. 4

Bank 5: → In: NIM4, FIFO 1.3
← Out: ~~Multiplexer~~ Scaler

Bank 6: → In: NIM4, FIFO 1.4
← Out: Scaler

Bank 7: → In: NIM4, PS715.5 Out
~~←~~ Out: Scaler
← Out: Multiplexer
← T: ENE In. 3

→ Veto: ~~VME~~ FIFO 4.3

ENE: Bank 2: ← Out (R): VME, TDC. C
→ In 1: 710.1 T (MCP 0 T)
→ 2: 710.2 T (MCP 1 T)
→ 3: 710.7 T (A1900 T)
→ 4: 710.4 T (OBJ T)
→ 5: Con. 3 Out ~~(Master)~~ (S800 T.RA)
→ 6: FIFO 3,4 (Master)
→ 7: FIFO 1.1 (E1)

FIFO 6: Bank 1: → In: NIM 2, Splitter 3, 4 (MB 3 BOR)
← Out: NIM 2, FIFO 4.2 (B OR)
← Out: Scaler
Bank 2: → In: Splitter 5 (DE OR)
← Out: DE OR (plugged into Gn. 1 D when DE Prg)
← Out: Multiplexer
← Out: Scaler
Bank 3: → In: FIFO 2.1 (Master)
← Out: NIM 2, Latch. 1 start
← Out: NIM 2, Latch. 2 start
Bank 4: → In: CAMAC Sheper 4 OR
← Out: Scaler
← Out: NIM 4, FIFO 1.4 (CR OR FORs)

Splitter → 0: MB 4 Inspect
← Out 1: FIFO 4.1 (Master)
← 5: FIFO 6.2
← 6: Multiplexer
← 7: Multiplexer

NIM4;

2x ENE 2x Splitter

FIFO: Bank 1: CAMAC Shaper 1: OR (CS 1 OR)

← Out: FIFO.4

← Out: Scaler

Bank 2: CAMAC Shaper 2: OR (CS 2 OR)

← Out: FIFO.4

← Out: Scaler

Bank 3: CAMAC Shaper 3: OR (CS 3 OR)

← Out: FIFO.4

← Out: Scaler

← Out: NIM3; PS715.5

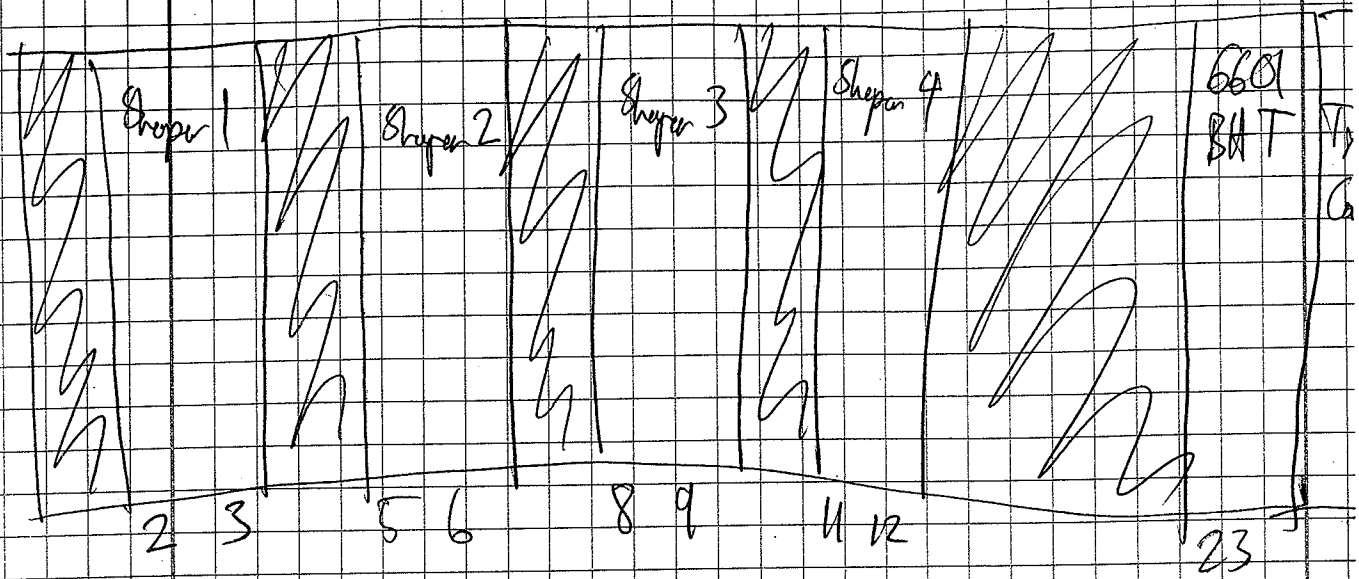
Bank 4: → In: FIFO 0
→ In: FIFO 2
→ In: FIFO 3
→ In: NIM3, FIFO 6.4
← Out: NIM3, FIFO 1.3
← Out: NIM3, FIFO 1.3
← Out: Rack 1, NIM3, [illegible] 4 A
← Out: Multiplexer
← Out: NIM3, PS 710.6
← Out: Scaler

QDC: Bank 1: → ST: Rack 1, NIM3, FIFO 1.1 (QDC Gate)
← X: Rack 1, NIM3, FIFO 4.4 (Fast for Busy MCP)
Bab 2: → ST: NIM3, 754.2 Out (CPU Trigger)
← Y: VME, VMUSB, II
← Y: NIM3, FIFO 3.3
Bank 4: → ST: NIM3, FIFO 2.1 (Master)
← Y: VME, ADC 1, Gate/Comm
← Y: NIM3, FIFO 4.4 (ADC Gate)

PS745: Bank 3: → In: (CBD)
← Out: NIM 3, 710.4
← Out: Scaler
← Delay: 20 ns?
Bank 4: → In: (RF)
Delay: 20 ns?
← Out:
Bank 5: → In: (AND)
← Out: NIM 3, 710.7
← Out: Scaler
Delay: 20 ns?

Scaler: see Map (to VME Scaler)
Multiplexer: see map (to Switcher)
Switcher: see map (to Multiplexer)

CAMAC:



Shaper 1 → $T_{in}^{(A)}$ Plage (Card slot, box 1)

← Lin Out: ADC 1, 0-15

← ECL Disc Out: TDC A

← OR: NIM 4, PSPO 1.1

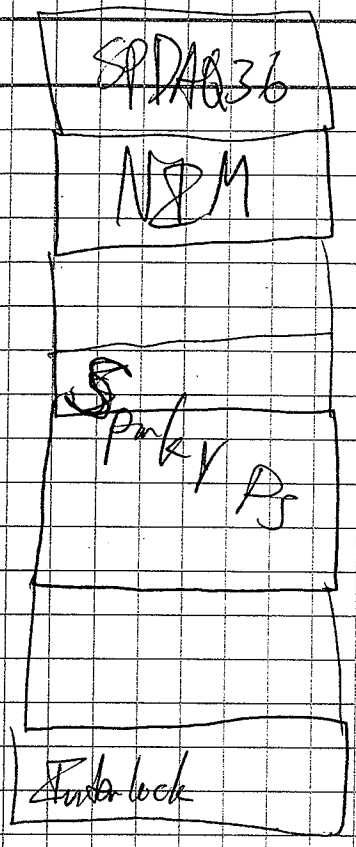
← Lin Test: Multiplexer

Same for all shapers (w/ possible exception of Lin Test)

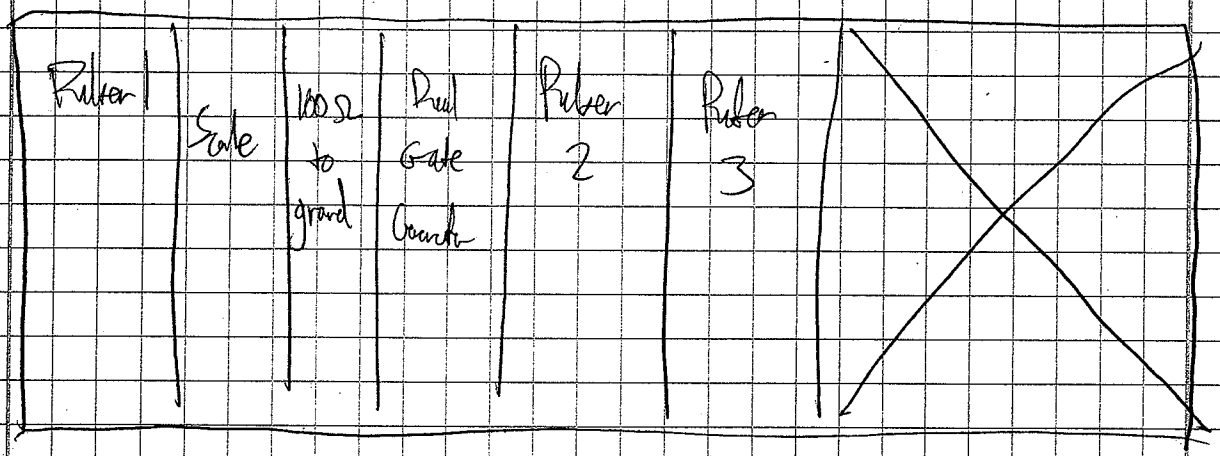
660: Connected to B02

B02: Connected to VME

Rack 3:



N&M:



Pulser 1: Ex Trig: Scale Down (DS (ST)
Trig Out: Rack 2 N&M 3 P&P01
Pulse Out: EF Attn and DE pulser
↳ F pulser

Dual Scale Down;

→ In: Rack 2, NIM 3, FIFO 1,2 (dist OR. for)

Scale Down: 1 × 8 × 16 × 128

← Out: Rubor | Ext Trig

Tower 0: empty (broken)

Portex: Tower 1: Power to MB1, Bias from Rack 3, NIM1, 953A1.1

Tower 2: " " MB2, " " " " 953A1.2

Tower 3: " " MB3, " " " " 953A2.2

CsI Out 1: Power to CsI PAs

TL T5, T6, T7 connected, go to CsI Ruber cable

Interlock → In 7: Out Rack 2, NIM3, FIFO2.4

← NC 1: Sparkx AC control input

← NC 7: Rack 2, NIM3, FIFO 5.4

∴ not sure if this is cabled the way it was for experiment

→ In 9:

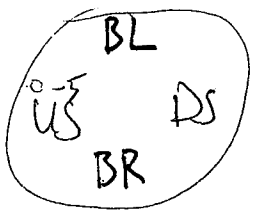
slide	activity (cpm)		Tele (pos)
#1	950	①	0
#2	1300	②	1
#3	600	③	2
#4	480	⑭	3
#5	630	④	4
#6	450		
#7	600	⑤	5
#8	700	⑥	6
#9	2200	⑦	7
#10	~~1000~~	⑧	8
#11	1000	⑨	9
#12	2500	⑩	10
#13	700	⑪	11
#14	2500	⑫	12
#15	300		
#16	500	⑬	13
#17	450		


1000
100
10
1
0.1
0.01
0
23:20
23:24
23:28
23:32
23:36
23:40
23:44
23:48
23:52
23:56
00:00
00:04
00:08
00:12
00:16
00:20
00:24
00:28
Time
Scattering Chamber IG
Scattering Chamber PG

PA

DE Cable #	Length(inch)	Status	Flange position	HiRA position
0	60		US0	
			US1	
14	60		US2	
2	66		US3	P9
3	66		US4	P8
			US5	
8	48		DS0	P5
			DS1	
9	66		DS2	P7
			DS3	
10	58		DS4	P6
ex4	44		DS5	P4
11	60		BR0	P11
			BR1	
12	66		BR2	P13
			BR3	
13	48		BR4	P10
18	60		BR5	P12
4	48		BL0	P0
5	54		BL1	P1
			BL2	
6	60		BL3	P2
7	66		BL4	P3
ex3	48		BL5	

5
6
7
8
9
10
11
12
13
14
15
1



A5
A16
B6
B8
B16

analysis line

SPOD

Last Cabling check

12/26/14 ~10 AM
Justin & Zhigang

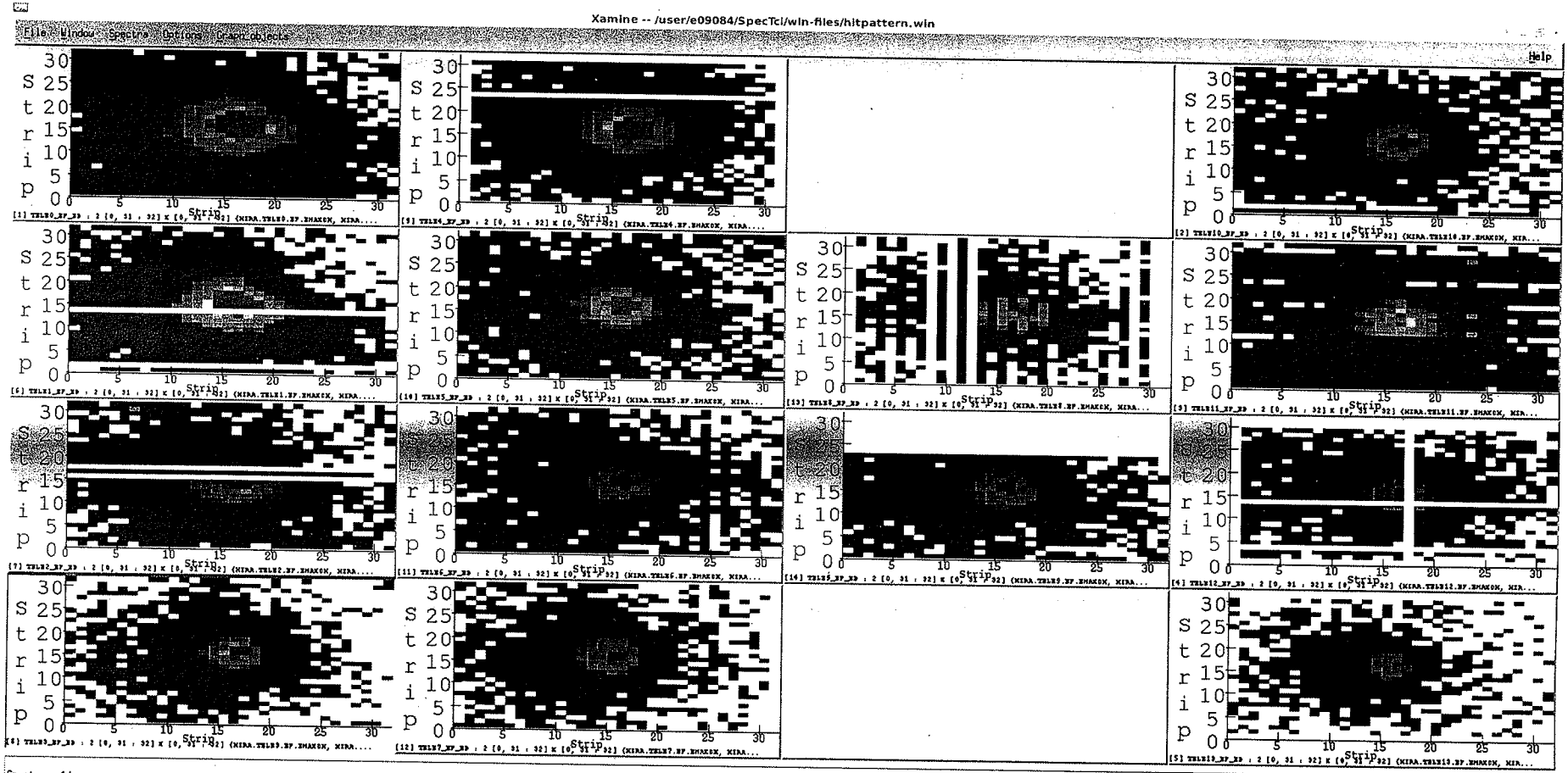
Hira tele pos.

	EF	EB	CsI
P10	X	X	X
P11	X	X	X
P12	X	X	X
P13	X	X	X
P9	~~N/A~~		X
P8	~~N/A~~		X
P7	X	X	X
P6	X	X	X
P5	X	X	X
P4	X	X	X
P3	X	X	X
P2	X	X	X
P1	X	X	X
P0	X	X	X

X means cable was in correct orientation

Juan already took these out

Run 661


Xamine -- /user/e09084/SpecTcl/win-files/hitpattern.win
File Window Spectra Options Gate objects
Help
Strip
Spectrum 14
X 6.50
Y 0.50
Counts 0
Zoom
Update All
Expand
Update Selected
UnExpand
Marker
Cut
Summing Region
Band