

 **National® Brand**

**COMPUTATION NOTEBOOK**

Department e/0011 (WMSMAA)

Subject \_\_\_\_\_

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

Thursday 3:09 PM

Started pumping at 3:09 PM, no cooling on.

400 mT at 3:56

→ 190 mT at 4:45

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Changed DE flange

---

Start pumping: 5:17

280 mT at 6:05

177 mT at 6:22

Turbo turned on at 6:35 (CPU ~~pressure~~ @ 193 mT)

$1.2 \cdot 10^{-4}$  at 6:44

$3.5 \cdot 10^{-5}$  at 7:02

turbo left on overnight

Friday 6/21

$3.4 \cdot 10^{-6}$  at 9:24 AM

• E bias applied: all detectors okay except MBI slot 16  
(tripped at 5  $\mu$ A)

• could be damage from cooling incident or bad connection

• cooling lines tested for leaks; ✓ (no leaks)

WHO:

- WU: RC, LGS, KB,
- MSU: ZC, WL, JM, JW, BT, RAS
- WNU: SB, AN, DGM, AHW
- GVSU: DVS
- UND: STM

Saturday, 6/22/13

Testing Low Voltage cables w/ a Voltmeter

Active Channels

$$S = \{1, 3, 4, 8, 9, 13, 14, 20, 24, 25, 29, 30, 34, 35\}$$

W.W.B. Tower 2:

- Pin 1: ✓
- Pin 3: ✓
- Pin 4: ✓
- Pin 8: ✓
- Pin 9: ✓
- Pin 13: ✓
- Pin 14: ✓

- Pin 1: ✓
- Pin 3: ✓
- Pin 4: ✓
- Pin 9: ✓
- Pin 13: ✓
- Pin 14: ✓

is a resistance of 15 MΩ a problem?

- Pin 20: ✓
- Pin 24: ✓
- Pin 25: ✓
- Pin 29: ✓
- Pin 30: ✓
- Pin 34: ✓
- Pin 35: ✓

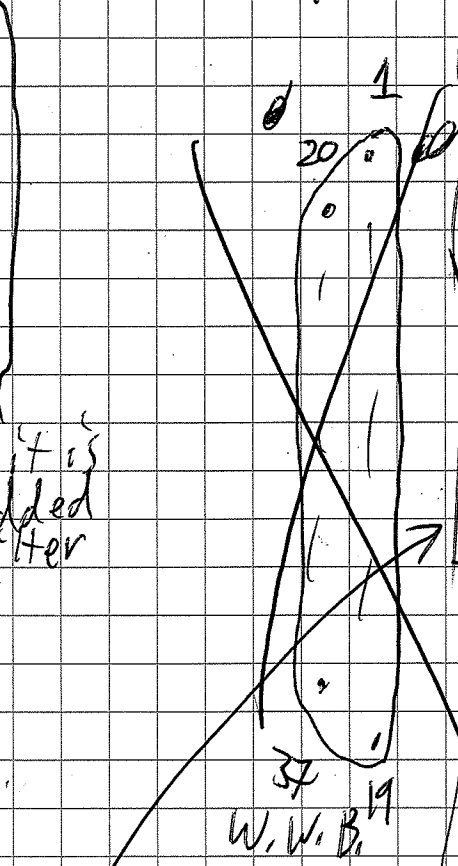
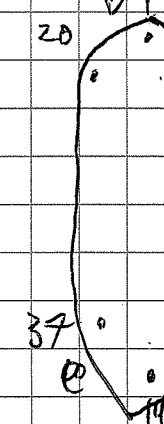
Cable works

For the female end.

Male side

male side

no added filter



Tower 3:

- Pin 1: ✓
- Pin 3: ✓
- Pin 4: ✓
- Pin 8: ✓
- Pin 9: ✓
- Pin 13: ✓
- Pin 14: ✓
- Pin 20: ✓
- Pin 24: ✓
- Pin 25: ✓
- Pin 29: ✓
- Pin 30: ✓
- Pin 34: ✓
- Pin 35: ✓

Tower 0:

- Pin 1: ✓
- Pin 3: ✓
- Pin 4: ✓
- Pin 8: ✓
- Pin 9: ✓
- Pin 13: ✓
- Pin 14: ✓
- Pin 20: ✓
- Pin 24: ✓
- Pin 25: ✓
- Pin 30: ✓
- Pin 34: ✓
- Pin 35: ✓

Unlabelled Female-Male

- Pin 1: ✓
- Pin 3: ✓
- Pin 4: ✓
- Pin 8: ✓
- Pin 9: ✓
- Pin 13: ✓
- Pin 14: ✓
- Pin 20: ✓
- Pin 24: ✓
- Pin 25: ✓
- Pin 29: ✓
- Pin 30: ✓
- Pin 34: ✓
- Pin 35: ✓

Cable works

Cables seem to work

W.W.B.

Matching channels on the power supply to the computer.

Tower 0 ch 4, or slot 5 ch 4, is not connected through filter box

Tower 3 ch 3, slot 3 ch 9 reads a trip all the time.

Tower 3 ch 4, slot 3 ch 10, is not connected through filter box

Monday June 24

· MR powered on w/ 14 CBs (6.53 V)

· regulator voltage at 5.03 V

· CBs tested by pulsing thru PAs: 6.0 V, Neg pol.

(PA signal ~ 200 mV)

· some PA pulser channels look bad (either no signal or flipped polarity)



### Current Mapping for Tele $\leftrightarrow$ PA

Back of PA box

	1*	14	13
	2	7	6
	5	12	4
	8	10	9
		11	3

\* telescope #

TWR3 TWR2 TWR1 TWR0

### Outside of Plage (Facing FROM PA box)

13
10
6

1
2
5
8

4
9
3

14
7
12

### DE MAPS.

ANGE	HEADER	Tel	PA	CB
	1	10	13	19
	2			5
	3	13	10	11
	4			7
	5	6	18	4

Tel	PA	CB	6	7	Tel	PA	CB
1	9	14	✓		1	4	17
2	8	13	✓		2	9	18
					3	3	15
					4		
					5		
					6		

Tel	PA	CB	6
1			
2	14	14	10
3	7	13	9
4	12	12	8
5			
6	11	10	6

1

# Scalars + Switcher

## Scalars

1	CsI 1	OR	17	2FP
2	CsI 2	OR	18	Trig Row
3	CsI 3	OR	19	Trig Live
4	CsI 4	OR	20	
5	MB1 B	OR	21	Test CsI
6	MB2 B	OR	22	CsI OR of ORs
7	MB3 B	OR	23	Random Pulser Row
8	MB1 F	OR	24	Random Pulser Live
9	MB2 F	OR	25	
10	MB3 F	OR	26	
11	MB4	OR	27	
12			28	
13			29	
14			30	
15			31	
16			32	

## Switcher

Comp	Hardware	NTM to ECL	Comp	Hard	NTM to ECL
0	1	CsI Lin	16	17	CsI OR
1	2	CsI Log	17	18	DE OR
2	3	MB1 CSA	18	19	ADC Gate
3	4	MB2 CSA	19	20	FB OR
4	5	MB3 CSA	20	21	EE OR
5	6	MB1	21	22	Comp Busy
6	7	MB2	22	23	End of Event
7	8	MB3	23	24	
8	9	MB1	24	25	Master Busy
9	10	MB2	25	26	Comp Busy
10	11	MB3	26	27	CsI Lin Mult
11	12	MB1	27	28	CsI Log Mult
12	13	MB2	28	29	DE CSA
13	14	MB3	29	30	DE Shaper
14	15	Raw Trig	30	31	
15	16	Live Trig	31	32	

Polarity  
 D dead      A Awful  
 S Satwates      N Noisy

CB 1:  $\emptyset S, \emptyset D, 6D, 29AP$  ←

CB 2:  $\emptyset D, 2P, 14PS, 19PS, 28D$  ←

CB 3:  $\emptyset D?, 2P, 7P, 11P, 13D, 16P$  ←

CB 4:  ~~$\emptyset P, 10P, 13PS, 16PS, 17PS, 21P?, 31D$~~  ← ~~CB?~~

CB 5:  ~~$0PS, 2D, 18D, 19D, 20D, 25S, 30PS$~~

CB 6: B small, 31D. ←

CB 7: ~~2A, 4A, 5A, 6A, 7A, 18 Small, 19A, 20A, 25 small, 24 Noisy~~

CB 8: ~~25 Bad, 27A, 29A, 31D~~ ← !! ~~Ret~~ or Preamp.

CB 8: **NO GOOD** All channels oscillate. ~~CB~~ 10.

Tel 12.. Preamp looks bad. ~~CB~~ Bad? ✓ know.

CB 9:  $4P, 8P, 27PS$  ← Chip Board probs ~~CB~~

B 10: 1A, 15A, 31D. Prob det.

B 11: T small, NOT SO BAD.

B 12: 18A,

B 13: **NO GOOD** All channels oscillate. ~~CB~~ ok now

B 14:  $0D, 8D?$ , Some oscillation, ok now?

CB Jumps JP5 & JP6 IN.

Replace CB 8 ⇒ was ~~36~~ now ~~62~~ (2-062)

Replace CB 13 ⇒ was ~~44~~ now (2-056)

44 → Note "Chip 2 Missing"

Replace CB 4 ⇒ was 2-057, Now 2-058

POLARITY PBS. seem to go with  
 BXT CSA, NOT CB.



Replaced CB8. No more oscillation.

Replaced CB13. "

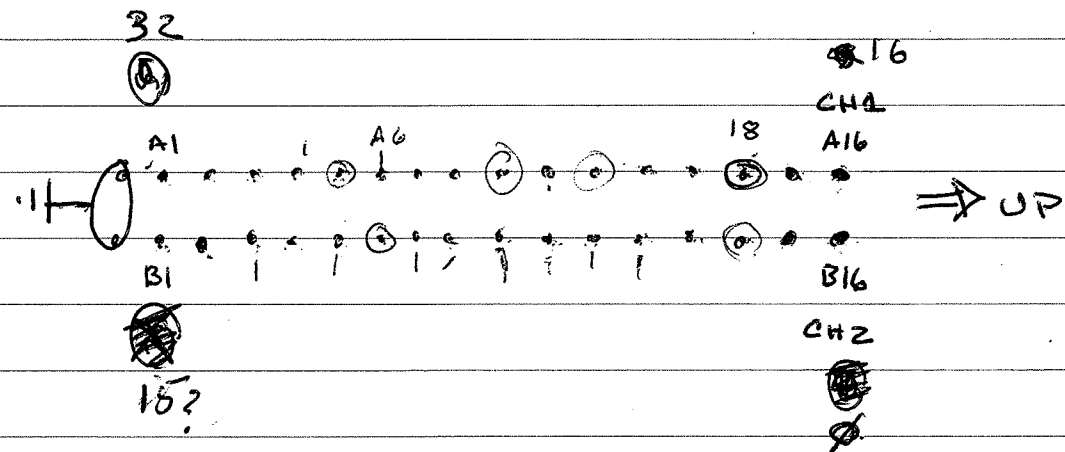
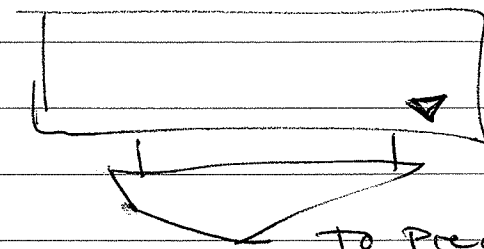
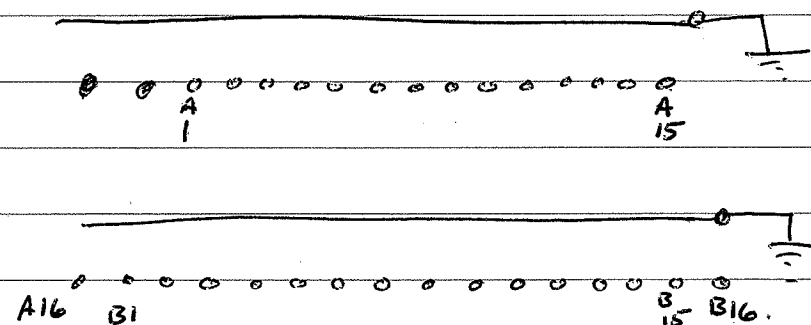
CB8: 4P, 8PS, 27PS,

CB13: 0D, 6D?, 25 Noisy, 31 No sig.

CB4:

Ext Preamp mapping.

B16 →



1 B60, B14, B3, A16, A5, A11,

PREAMP 18 Fix?

Channels 2, 10, 13, 16, 17, 21

PA: ~~A14, A6, A3, B16, B15, B11~~

B6, B14, B3, A16, A15, A11, A9

SN: 1117, 1125, 1114, 1111, 1110, 1106, 1107 OLD PREAMP 18

SN: 2129, 2128, 2115, 2130, 2146, 2131, 2144 NEW PREAMP 18

PREAMP 19: B16, B14, <sup>A14</sup>~~B~~, A<sup>B</sup>, A12, A10, A2,

OLD: 1283, 128?, 1279, 2112, 1273, ?, 1029?

NEW: 2147, 2132, 2148, 2133, 2149, 2134, 2150

PREAMP 16: B16, B14, B2, A13, A5 CB2

OLD: ?, 1189, <sup>1127</sup>~~10~~, 1172, 116?

NEW: 2134, 2151, 2159, 2143, 2153

PREAMP 17: B16, B14, B9, B5, B3, A16 CB3

OLD: 1159, <sup>1157</sup>~~1188~~, <sup>1152</sup>~~1184~~, 1148, 1146, 1143

NEW: ~~2135~~, ~~2157~~, ~~2159~~, ~~2143~~  
2142, 2157, 2141, 2156, 2140, 2155

PREAMP 15: B10, A4 CB1

OLD: ?, 1195

NEW: 2139, 2154

PREAMP 13: B12, B8, A6 CB9

OLD: 1066, 1092, 1074

NEW: 2138, 2153, 2137

RETEST DES AFTER REPLACING  
CB & CSA CARDS.

CB1: 20P, 21P, 22A, 23D?

CB2: 0S, 2S, 14S, 19S, 27S

CB3: 0D, 2S, 11S, 16A,

CB4: 31D.

CB5: 18tiny, 19Tiny,

CB6: 31 small

CB7: 1N, 4A, 8A, 18N, 23tiny, 24N, 27A, 28D, 29A, 31 Tiny.

CB8: 13N, 14strange?

CB9: 3tinyP, 8D, 27P

CB10: 1A, 15A, 31A

CB11: All Good!

CB12: 18N,

CB13: 0D?, 6D?, 7N, 25D?, 31D? Edge telescope

CB14: 8D?, 19N,

43 channels with issues  
448 channels total.

Run 2

$\alpha$ -test, all CBs on MB4 except 7  
(and some strips).

START: 16:50

END: 17:25

06/29

- ASIC changed to "external" mode (from low)

- PA PS tripping before?

Checking the channels while running an  $\alpha$ -source

~~XXXXXXXXXX~~

W.W.B.

N: noisy

CB5: W.W.B.

S: saturated

D: dead

Pulsing at 1V<sub>off</sub>

CB1: 14S, 22D(PA), 23D(PA), 25S

✓ (connector board)

external (SA)

CB2: all good channels good

CB3: all channels good

CB4: 31D

CB5: 2D, 4S, 12 small gain, ✓ (connector board)

CB6: 31D (PA)

CB7: 1D, 4D, 7D, 8D, 18D, 19D, 20D, 23D, 25D, 27 sparking, 28D, 29D, 31D

CB8: all channels good

CB9: all channels good

CB10: 1S, 15S, 31D (PA)

CB11: 8D (PA), 20D (PA)

CB12: all channels are good

CB13: 5D (PA), 31D

CB14: 8D,



Run 7:  $\alpha$ -source, just CB-6  
 start: 2:05 ends

06/30

on MB4  
 Run 10:  $\alpha$ , all CBs <sup>v</sup> except CB7 (bad JE?)  
 START: 11:26 END: 11:51

pulsar input on PA board 15 was shunting  
 temporary solution: tape ... get fixed after experiment

saturating channels fixed by swapping out high density to ribbon  
 connector boards

remaining saturated channels

CB12: 3, 6, 18 ✓

CB10: 1, 15 ✓

Run 12:  $\alpha$ , all CBs on MB4  
 START: 17:55 END: ~~17~~ 18:43

07/01

suspicious dE (tele 12 @ position 13) removed

- bad strips seen in test setup

- replaced with new dE

new dE has 1 bad strip (consistent w/ test)

07/02

Run 14  $\alpha$ , all CBs

START: 11:53 AM

END: 1:03 PM

- slow rate: noisy channel turned off

Run 15  $\alpha$ , all CBs

START: 1:51 PM

END: 2:04 PM

Run 16  $\alpha$ , all CBs (<sup>228</sup>Th moved closer to HRA)

START: 9:27 PM

END: 11:15 PM

Run 17 + 18, short  $\alpha$  runs for B6

~~Run 17~~ Position 5 still has a bad CsI, but

it works under vacuum.

Run 19?

Run 20 Cosmics into CsI.

- (7/15) dE motherboard replaced due to "hanging up"  
 star after readout stopped (fixed by clicking on  
 ASIC GUI)  
 • problem not present w/ new MB

Run 20  $\propto$  run w/ new dE MB  
 START: 2:36 PM      END: 4:13 PM

7/23

Run 22 1.0V Pulse dE, no bias

Run 24 1.0V Pulse dE, w/ bias

Run 25 1.0V Pulse EB no bias

Run 26 1.0V Pulse EF no bias  
 • MB 2, CB 2+8 a little noisy; threh  $\uparrow$  made it better.

Run 27 1.0V Pulse EF w/ bias

Run 30 Pulse EF (MB 3) w/o bias  $\leftarrow$  Junk

Run 31 — " — CB 7 ch #4 100 Hz

Run 32 — " — 10 Hz

Run 33 Pulse EB (MB 3) w/o bias

Run 34 — " — CB 5  $\leftrightarrow$  CB 6

Run 36 CsI Cosmics (w/ bias)

START: 15:49

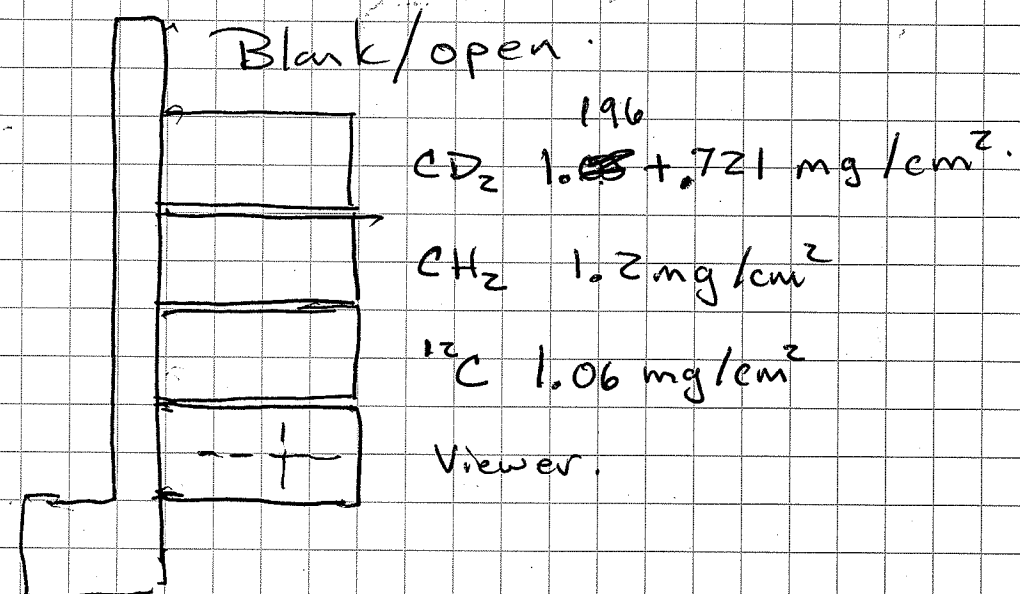
END: 17:19 PM

Run 37: Pulser into Tel 10, DE, EF, EB.

Run 38: CsI trig - with E, CsI biased

Aug 3 2013.

Loading of targets.



Positions

- All the way down - ~~to~~ knob clockwise all the way.
- Blank - First turn align red marks
  - CD<sub>2</sub> - ~~to~~ turn Blank + 1 turn CCW
  - CH<sub>2</sub> - Blank + 2 turns CCW
  - <sup>12</sup>C - Blank + 3 turns CCW
  - Viewer - " " " "



CAEN HV Notes

username: admin

pass: admin

Go to "channels" in the file menu  
 Hit tab to go to the taskbar  
 Go to group mode  
 All relevant numbers are in group 07.

**DO NOT TURN ON "SPARE" or "DE2BAD"**

Switcher

## Computer Name

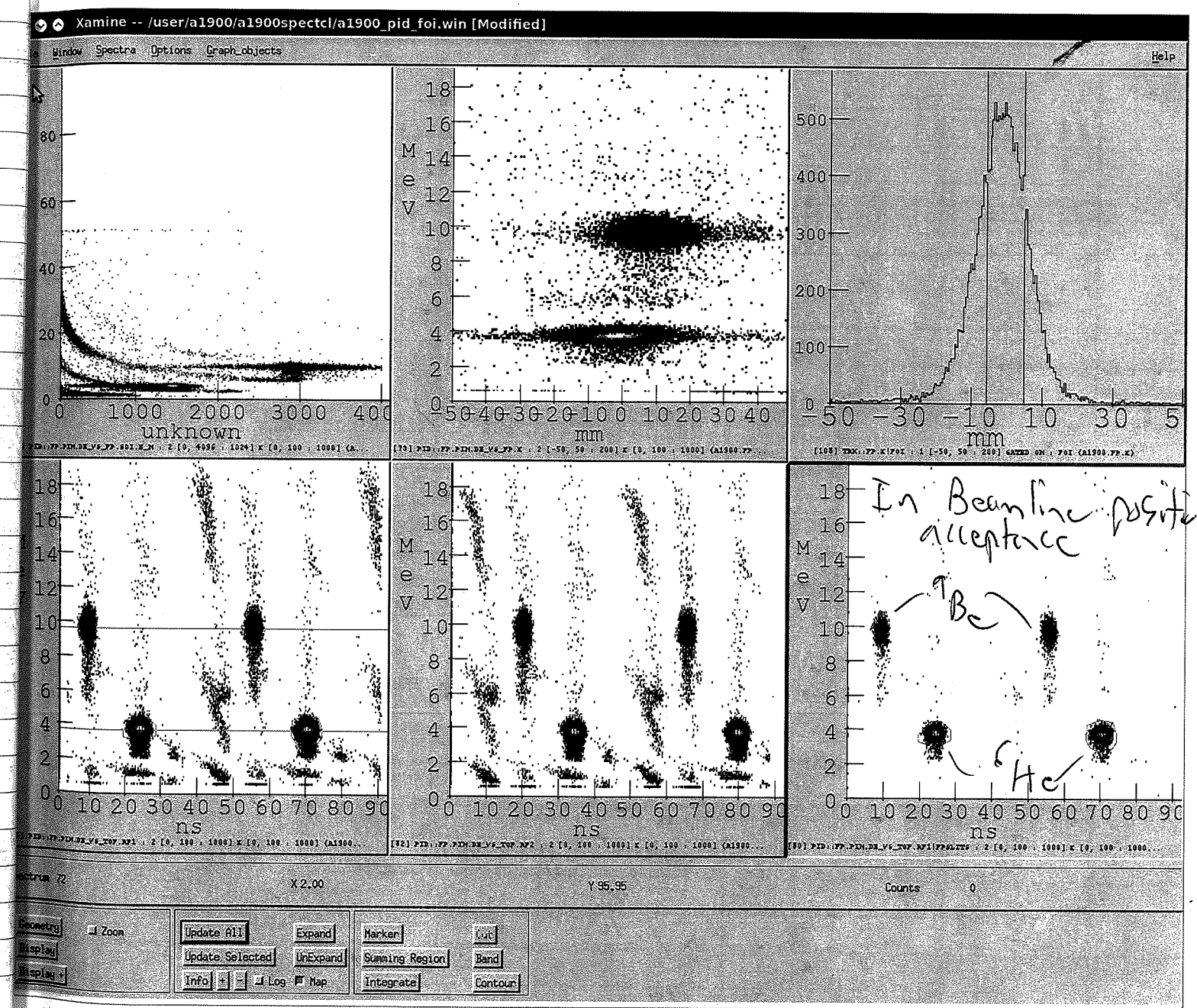
0 Csl Shaper Test  
 1 Csl Disc. Test  
 2 MB1 CSA Test  
 3 MB2 CSA Test  
 4 MB3 CSA Test  
 5 MB1 Shaper Test  
 6 MB2 Shaper Test  
 7 MB3 Shaper Test  
 8 MB1 Back OR  
 9 MB2 Back OR  
 10 MB3 Back OR  
 11 MB1 Front OR  
 12 MB2 Front OR  
 13 MB3 Front OR  
 14 Raw Trigger  
 15 Live Trigger  
 16 Csl OR  
 17 dE OR  
 18  
 19 EB OR  
 20 EF OR  
 21 Comp. Busy  
 22 End-of-Event  
 23  
 24 Master Busy  
 25 Comp. Busy  
 26 Csl Mult. Sum  
 27 Csl Mult. Disc.  
 28 MB4 CSA Test  
 29 MB4 Shaper Test  
 30  
 31



First <sup>4</sup>He @ A1900  
FP.

A1900 RUN 65F

Be 17286  $\mu$ m thick target



Rate in beamline position acceptance  
7100 pps/pnA

A1900 RUN 6518

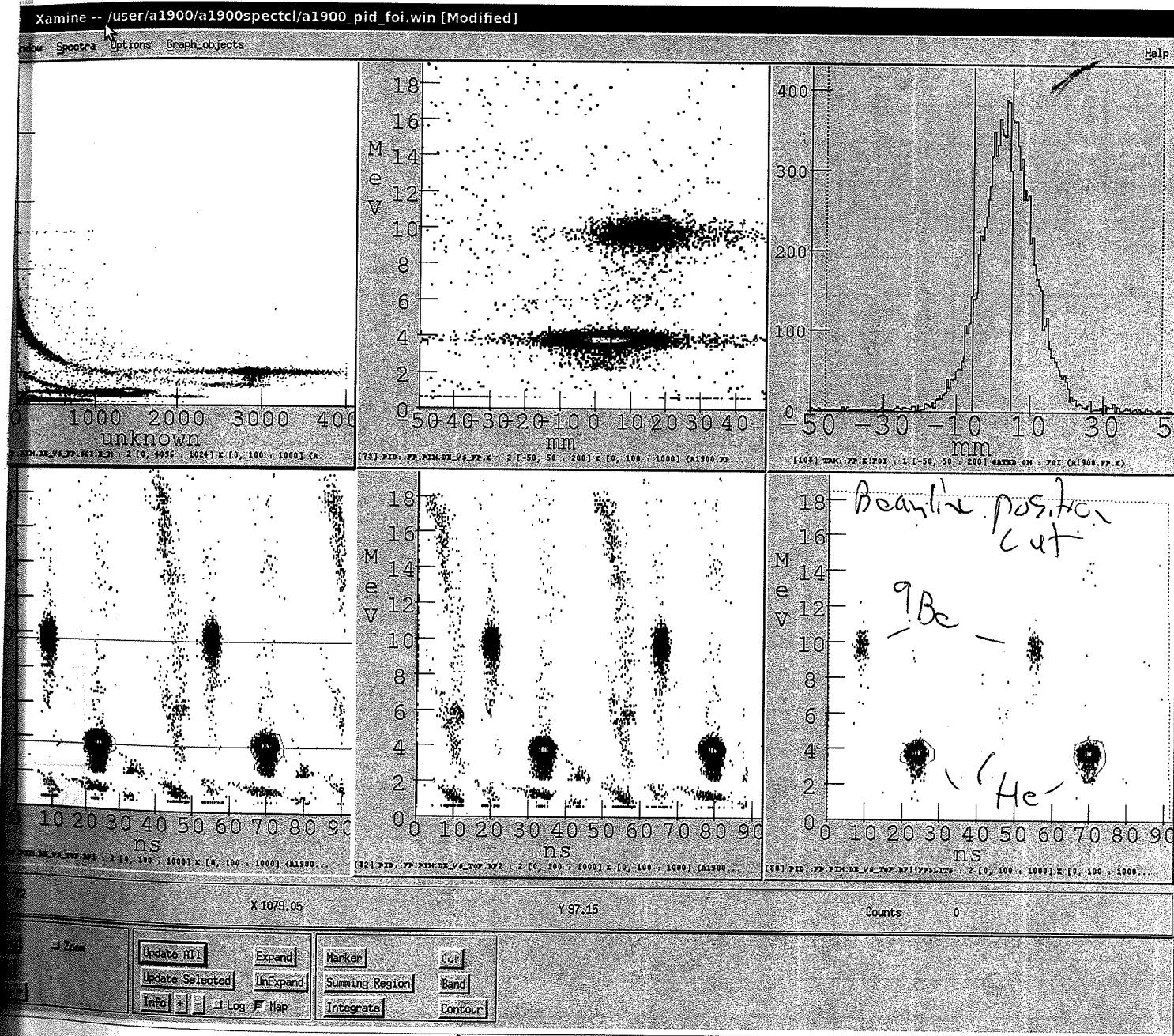
After returning and new target.

<sup>6</sup>He

Target: Be 18536 μm

A1900 "Print04Aug13\_15h42.txt" Sunday 15:42:52 2013-08-04 A1900  
 Moe\_247 \*\*\* 6He to G207 production \*\*\*  
 Expt: 10011 "Study of 5H with 6He(d,3He)5H reaction" [Alan Wuosmaa] Line: RPMS [6]  
 Beam: 18 O 3+ 10.91 MeV/nuc (K500) 8+ 120 MeV/nuc (K1200) Chpr off  
 <Att 1> ECR, Apertures: ARTEMIS 150.0; 15.0; 7.5 mm RHVBI: 22.6300 kV  
 K500 a,b: 628 A, 554 A K1200: 686 A, -71 A RF: 21.82590 MHz

A1900 Optics: L19S1G\_V3b.data  
 Rigidity Field Radius (live) Difference (Field\*Radius)  
 Seg 0: 3.66094 Tm  
 Seg 1: 3.45550 Tm 1.11533 T 3.09829 m 3.09819 m 0.00342 % (3.45562 Tm)  
 Seg 2: 3.45550 Tm 1.11659 T 3.09466 m 3.09469 m -0.00094 % (3.45547 Tm)  
 Seg 3: 3.28400 Tm 1.06289 T 3.08963 m 3.08969 m -0.00193 % (3.28394 Tm)  
 Seg 4: 3.28400 Tm 1.06212 T 3.09181 m 3.09193 m -0.00390 % (3.28387 Tm)  
 Seg 5: 3.26010 Tm  
 Seg 6: -0.00000 Tm  
 A116DS 1.05020 T 3.10367 m 3.10427 m -0.01904 %  
 A132DS -0.03520 T 92.88034 m 92.61648 m 0.28490 %  
 Z001TL: out, Z013TL: out; Z014TL out  
 Z015TL: Be 18536 μm, Z016TL out  
 Z030BC Beam Stop: -127.25 mm  
 Z037L,R: -16.00, 16.00 mm or -0.54, 0.54 width= 1.08 %; Z037DC: out  
 Z057MS: 1%, Z061MS: out  
 Z059DC: out, Z062SC: out, Z059TL: Al 1050  
 Z082 XC,G,YG: 0.16, 216.28, 202.16 mm Z082TL: out  
 Z103DC: out, Z106DC: out, Z107DC U/ L: out/out  
 Z104DC-R -84.995 mm; .IRPOS 0; .STR1 1 mm BC404 #046  
 Z105TL: out, Slits: ; PPACs: ; Z107 outlim: Y  
 Z104 XC,G,YC,G: 0.00, 10.00; -1.01, 89.99 mm  
 G183 Y slits: center -2.7721 mm, gap 97.9544 mm  
 G183PP: out; G184DC: out; G185DC: out



MagName	Ref[kG]	BSet[kG]	Ratio	(live)	Set[A]	Read[A]	DEVI
Z001DV	0.000	-0.691	-18881.62	-18881.62	-300.0000	-300.223	Z001DV
Z002DH	0.000	-1.358	-37098.28	-37098.28	-3.3115	-3.233	read Z002DH
Z003DV	0.000	1.035	28258.83	28258.83	2.5066	2.565	Z003DV
Z004QA	1.685	6.170	1.000000	1.000000	4.3110	4.322	Z004QA
Z005QB	-0.414	-1.515	1.000000	1.000000	-1.0576	-1.037	Z005QB
Z008DS	2.492	8.946	0.980697	0.980697	29.9341	29.910	Z008DS
Z011QA	-2.322	-8.940	1.051561	1.051561	-6.2535	-6.189	Z011QA
Z012QB	3.409	15.507	1.242463	1.242463	11.2521	11.170	Z012QB
Segment 1							
Z017TA	3.539	13.041	1.057000	1.057000	34.2275	34.365	Z017TA
Z019TB	-3.322	-11.664	1.010000	1.010000	-30.7059	-30.760	Z019TB
Z021TC	2.407	8.700	1.043000	1.043000	18.2270	18.313	Z021TC
Z026DS	3.226	11.071	0.993162	0.993162	68.2472	67.959	Z026DS
Z031TA	2.926	10.184	1.000000	1.000000	21.2958	21.365	Z031TA
Z033TB	-3.613	-12.579	1.000000	1.000000	-36.4097	-36.437	Z033TB
Z035TC	3.183	11.109	1.000000	1.000000	23.1952	23.318	Z035TC
Segment 2							
Z039TA	3.183	11.109	1.000000	1.000000	23.2036	23.318	Z039TA
Z041TB	-3.562	-12.399	1.000000	1.000000	-35.8707	-36.009	Z041TB
Z043TC	2.924	10.185	1.000000	1.000000	21.2501	21.304	Z043TC
Z048DS	-3.226	-11.169	1.001988	1.001988	-71.0465	-71.181	Z048DS
Z053TA	2.800	9.689	1.000000	1.000000	20.2809	20.266	Z053TA
Z055TB	-3.665	-12.809	1.000000	1.000000	-34.5721	-34.483	Z055TB
Z057TC	3.264	11.685	1.000000	1.000000	119.2564	119.040	Z057TC
Segment 3							
Z062TA	3.264	11.078	1.000000	1.000000	111.4383	111.295	Z062TA
Z064TB	-3.665	-12.157	1.000000	1.000000	-32.8598	-32.774	Z064TB
Z066TC	2.800	9.206	1.000000	1.000000	19.2771	19.289	Z066TC
Z071DS	-3.226	-10.566	0.997396	0.997396	-65.3070	-65.505	Z071DS
Z076TA	2.924	9.672	1.000000	1.000000	20.2707	20.388	Z076TA
Z078TB	-3.562	-11.773	1.000000	1.000000	-34.1259	-33.995	Z078TB
Z080TC	3.183	10.545	1.000000	1.000000	22.0543	22.036	Z080TC

In Beamline position cut  
<sup>6</sup>He rate = 7200 pos/pnt  
 purity = 92%

8/4/13

Have tuned <sup>4</sup>He through HiRA. Beam on XFP is 1.3 M to 1.5 M. w/o target Hira rate on mouth dets is ~ 500/sec - changes rather little w/ CD<sub>2</sub> target. Outside detectors do see scattering. Rates look very reasonable. Fixed some noise in DE/MB4.

Run 39 - First data run CD<sub>2</sub> target. Start 16:10 End 16:20  
Run 40 - Start 16:23. End 16:26.

Reload CsI settings. (Thresholds).

Run 41. Running with new CsI setup files.

[10011.shp shaper  
.dis discriminators]

Stop. 17:02

Run 42 - Junk  
Run 43 - Start 17:25

Scalers

- Channel Name
- 0 Csl 1 OR
- 1 Csl 2 OR
- 2 Csl 3 OR
- 3 Csl 4 OR
- 4 MB1 Back OR
- 5 MB2 Back OR
- 6 MB3 Back OR
- 7 MB1 Front OR
- 8 MB2 Front OR
- 9 MB3 Front OR
- 10 MB4 OR
- 11
- 12
- 13 Csl Gate?
- 14
- 15
- 16
- 17 XFP
- 18 Raw Trigger
- 19 Live Trigger
- 20
- 21 Csl Test
- 22 Csl OR of Ors
- 23 Random Pulser
- 24
- 25
- 26
- 27
- 28
- 29
- 30
- 31



Run	Start	Stop	File (MB)	Ref ORs	Scalars	(EB)	MB1	MB2	MB3
			FILE	CSI OR	TRIG LIVE				
43	17:25	18:29	1.006 GB	2132312	2062139		405815	97642	1077241
44	18:33	19:43	1.092 GB	2539730	2454943		472851	111387	1278577
45	19:48	20:58	1.05 GB	2439984	2361950		452526	166242	1229764
46	21:04	22:14	1.00 GB	2435001	2358976		452287	105552	1223047
47	22:17	23:31	1.00 GB	2432676	2358363		450444	105272	1220856
48	23:36	00:07	(2)	64877	945539		180432	42059	489946
Run 48 stopped. NOTE: Check to see Telescope 12 for bad channels									
49	00:10	01:22	1.00 GB	160380	2359634		447102	103748	1218367
→ this is CSI OR-3 & not CSI OR OF OR (mistake) → CSI OR OF ORS ~ 2x10 <sup>6</sup> (2129296)									
50	01:27	2:44	1.05 GB	2429296	2359307		447581	102388	1215401
51	2:49	3:41	0.58 GB	1595446	1369268		288088	66403	798126
Stopped run 51 → saw a sudden huge spike in CSI OR ~ 1000 counts → not sure what caused it → started new run									
52	3:44	4:47	~700 MB 792 MB	1920640	1866838		351872	78910	96652
53	4:48	6:12	~1.04 GB	2425059	2359491		441835	99894	1211673
54	6:13	7:23	788 MB	1911591	1861091		348184	78438	953138
→ Restarted RF (control room) after temp. loss of beam. Start new run upon return of beam									
55	7:24	8:40	791 MB	1918372	1871873		353058	79030	955132
56	8:42	9:33	~458 MB	1103496	1079632		203769	45438	547286
STOPPED RUN 56 DUE TO FLUCTUATING / DECREASING CSI COUNTS. START NEW RUN → AFTER RETURNING OF BEAM (RE-TUNING?)									
57	10:22	11:25	868 MB	2111086	2045794		398786	94302	1057936
58	11:25	12:13	555 MB	1344956	1307945		253122	59702	673296
ENDED RUN TO GET BEAM BACK UP & RUNNING									
59	12:15	12:39	234 MB	564805	550958		106822	25270	281704
ENDED RUN DUE TO SOURCE DROP-OUT									
60	15:05	15:24	266 MB	646936	626232		122166	29548	218246
Starting with run 40, Telescope 8 was moved from CBS to CB6. ENDED RUN DUE TO VACUUM SPIKE IN K1200.									
61	15:28								

CHANGED TO 12C TARGET.

TV MONITOR

Pulsor Raw	Pulsor V	I <sub>1</sub>	I <sub>2</sub>	I <sub>3</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	XFP	T <sub>4</sub>
900579	899634	9.06	10.01	4.05	0.379	0.335	0.322	5.092E9	0.344
1045289	1020204	9.21	10.16	4.11	0.379	0.336	0.322	5.812E9	0.344
1047732	1023453	9.32	10.26	4.15	0.379	0.339	0.322	5.574E9	0.342
1087861	1063667	9.42	10.34	4.18	0.379	0.334	0.323	5.523E9	0.344
1107351	1083387	9.48	10.41	4.21	0.380	0.335	0.327	5.496E9	0.345
422279	945539	9.51	10.44	4.22	0.378	0.335	0.322	22.11056E9	0.344
1101629	1077434	9.56	10.50	4.24	0.377	0.335	0.322	5.47E9	0.343
1168206	1144191	9.52	10.53	4.24	0.377	0.336	0.322	5.37E9	0.344
1592597	1369268	9.52	10.55	4.26	0.377	0.336	0.322	3.5E9	0.344
946714	927884	9.56	10.55	4.26	0.375	0.335	0.321	4.2E9	0.343
1255118	2359491	9.56	10.56	4.26	0.376	0.333	0.321	5.3E9	0.344
1040165	1021129	9.72	10.58	4.26	0.375	0.334	0.321	4.1E9	0.342
1146413	1127330	9.75	10.59	4.26	0.375	0.333	0.321	4.173E9	0.343
769743	758734	9.77	10.60	4.26	0.377	0.334	0.323	2.402E9	0.345
943107	922273	9.82	10.62	4.25	0.376	0.333	0.321	4.921E9	0.344
707359	694036	9.85	10.64	4.24	0.375	0.332	0.322	3.126E9	0.345
357356	346062	9.85	10.64	4.24	0.372	0.331	0.322	1.317E9	0.344
303026	300734	8.88	9.72	4.00	0.374	0.328		1.527E9	0.345

Aug 4 23:40

Shift summary - Running ~~CD<sub>2</sub>~~ since ~ 17:00 with 55 MeV/u <sup>6</sup>He on CD<sub>2</sub>. NOTE - beam energy is 55 not 50 MeV/u. Rates are reasonable - XFP at or close to limit w/ 1.5M. Typical trigger rates with CsI trigger about 600 Hz. Run so that each run has file size ~ 1GB, (about 1h 10min). Continue running this until morning and see if ΔE-E PID is ok. E-CsI pid looks ok - certainly <sup>3</sup>H are present.

Aug 5, 16:57

Some interesting things. Controls failure again - replaced breaker on PLC panel. WATCH 5 & MB3 regulated voltage on TV screen. If it goes to ∅ then there has been a trip. Also - looked at problem of malformed events. XLM not sending correct # words. Changed: XLM clear ~~now~~ ~~not~~ was software is now end-of-event to UM3 tch, (in effect starting run 62). Also - changed to <sup>12</sup>C target. Beam rate is back up to maximum, XFP rate ~ 1.5M, CsI or-of-ows is ~ 600 cps.

NOTE: Mapping of DE vs EFRONT seems backwards in telescopes 2 and 8 (from ∅). Cable inside chamber may be reversed.

End of shift - back to running, now on <sup>12</sup>C. First analysis seems to say there is no <sup>3</sup>He with <sup>12</sup>C but there is with CD<sub>2</sub>. Good! Continue to run on <sup>12</sup>C until afternoon 8/6/13.

A lot of messing around trying to understand malformed events. Without success - MB dears left as software - about 10% of bad events.

12Am - 8Am - 08/06:-

- End of shift - still run on <sup>12</sup>C. Smooth runs - no problem during the shift. run 79: there was a loss of beam for about 2 min.



RUN	START	STOP	FILE	CSI OR. OF. ORS	TRIG LINE	MB1 (EB)	MB2 (EB)	MB3 (EB)		
[12C Target]										
62	16:59	18:09	942 M	2294063	2225355	238281	47160	1071634		
63	18:10	18:24	206 M	501393	485401	51631	10159	233895		
64	test of x10 attenuator									
* Restarted VME + reloaded XRM Firmware										
65	6:40	6:45	Test of reloaded firmware							
66	6:45	→ SONIC								
* Added in software clear										
67	6:48	6:53	Test of software clear							
* Added 13µs to trigger										
68	7:21	7:26	Test of trigger delay							
Resume										
69	19:30	20:18	1000MB	2461550	2363899	262810	51954	119486		
70	20:44	21:54	1001MB	2463350	2363565	262470	51660	1194670		
71	21:54	23:04	1001 MB	2462724	2363775	259882	52365	1196634		
72	23:04	00:13	1001 MB	2463580	2363367	241387	522116	1193517		
73	00:13	01:22	1GB	2464396	2363696	263261	52552	1191986		
8/6/13										
74	01:22	02:30	1004MB	2475582	2374417	261842	52463	1196814		
75	02:30	03:38	1000MB	2469639	2363423	262020	51690	1195001		
76	03:38	4:48	1000MB	2463140	2364078	262422	51739	1191762		
77	04:48	05:58	1000MB	2486555	2364044	264100	52141	1203851		
78	05:58	07:08	1000MB	2462550	2364134 267701	261701 52142 1191	52142 1191	1191414		
79	07:08	08:18	1000MB	2462550	2364134	261701	52142	1191414		

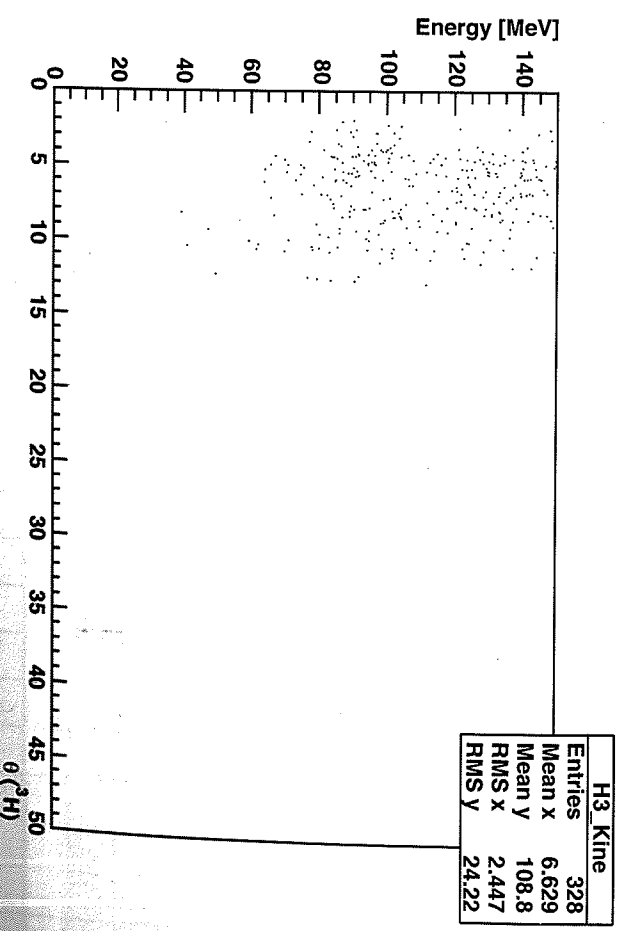
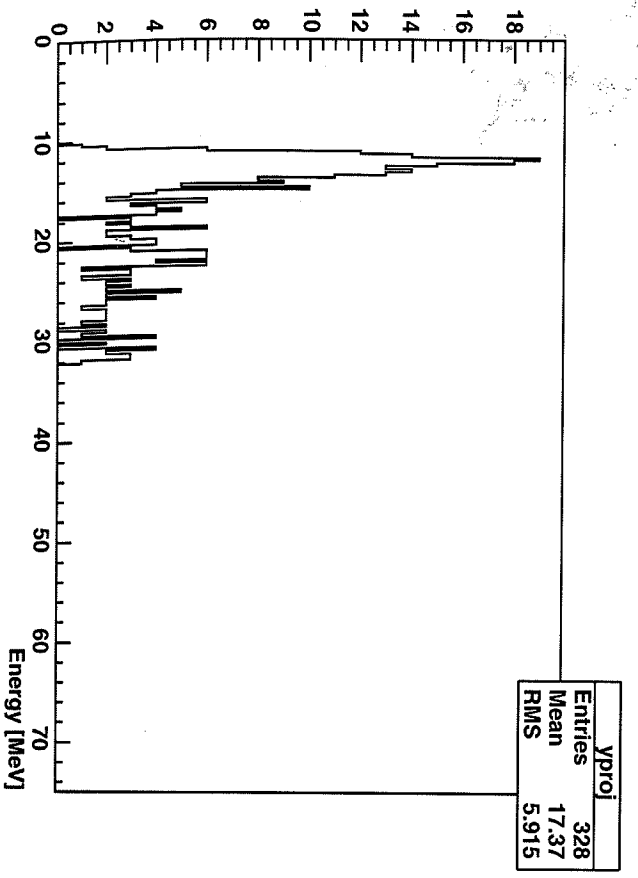
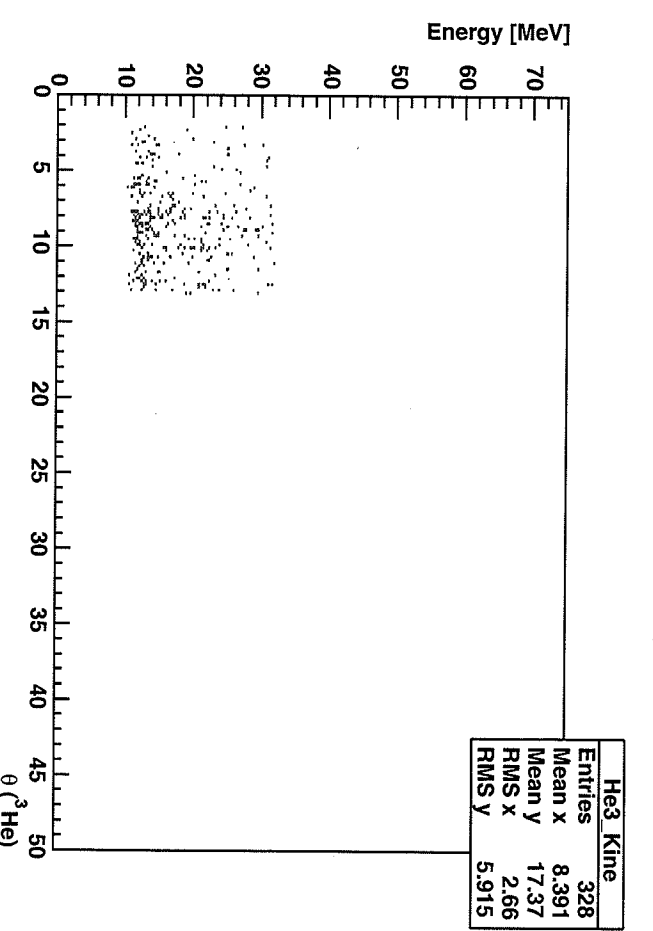
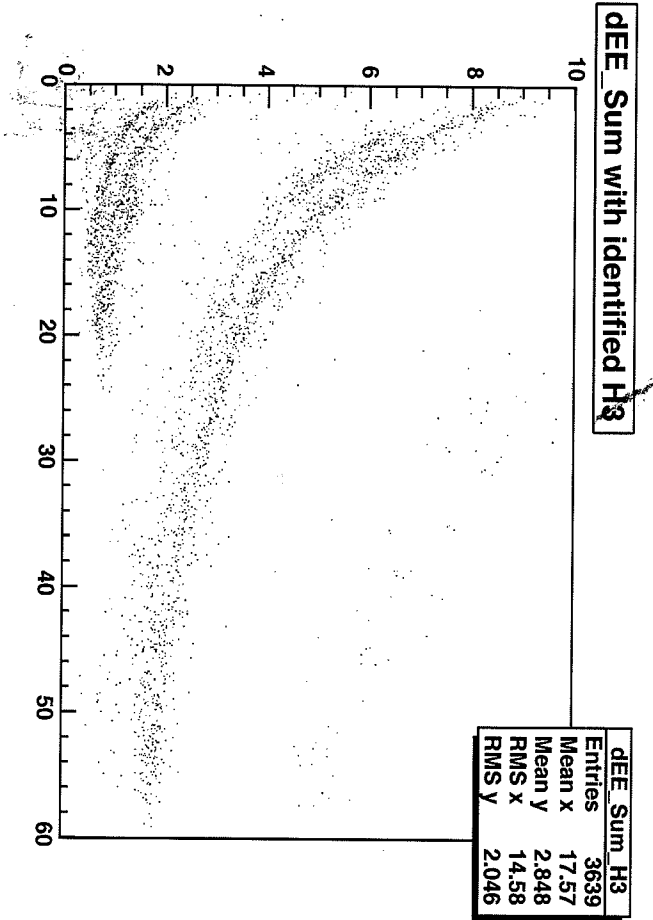
PULSER RAW	PULSER LINE	I <sub>1</sub>	I <sub>2</sub>	I <sub>3</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	T <sub>4</sub>	XFP
1054817	1032333	9.53	10.39	4.27	0.374	0.327		0.345	5.869 E9
212515	207599	9.56	10.41	4.28	0.372	0.323		0.336	1.286 E9
normal running with 12C. (And military time)									
1058508	1034604	9.77	10.58	4.34	0.376	0.328	(5.0)	0.342	6.287 E9
1033540	1009522	9.85	10.64	4.37	0.375	0.327		0.342	6.288 E9
1043838	1019623	9.92	10.68	4.39	0.375	0.327		0.342	6.309 E9
1031041	1006781	9.97	10.69	4.39	0.375	0.328		0.343	6.322 E9
1020698 2460393	996563 2363696	10.01	10.71	4.40	0.374	0.327	(5.0)	0.342	6.3287 x 10 <sup>9</sup>
1024562	1000681	10.06	10.73	4.40	0.375	0.328	(5.0)	0.343	6.323 x 10 <sup>9</sup>
1012245	986140	10.09	10.75	4.42	0.375	0.328	5.0	0.343	6.326 x 10 <sup>9</sup>
1034909	100964	10.11	10.78	4.43	0.375	0.328	5.0	0.344	6.31 x 10 <sup>9</sup>
1040007	1006679	10.14	10.79	4.43	0.375	0.327	5.0	0.343	6.37 x 10 <sup>9</sup>
1036109	1011805	10.17	10.80	4.43	0.374	0.327	5.0	0.342	6.299 x 10 <sup>9</sup>

RUN	START	STOP	FILE SIZE	CSI OR. OP. ORS	TRIG LINE	MB1(EB)	MB2(EB)	MB3(EB)
80	8:22	9:31	1.0GB	2463626	2364727	261333	51952	1194569
BACK TO CD2.								
81	9:44	10:46	1.0GB	2469270	2358496	435614	106664	1175549
82	10:49	11:50	1GB	2470866	235947	438296	106602	1167126
83	11:50	12:52	1GB	2470653	2358853	438615	107224	1165374
84	12:52	13:05	210 MB	515742	492652	91059	22221	243094
ENDED RUN FOR RESTART OF VME CRATE								
85	1:33	2:29	1GB	2483972	236240	417292	99955	1139106
86	2:32	3:27	1GB	2485440	2360887	407743	97096	1133553
87	3:27	4:13	803 MB	2025549	1926781	330985	79031	922126
BEAM WENT DOWN DUE TO UNEXPECTED SOURCE CHANGE								
88	16:33	17:34	1001 MB	2473044	2361404	40504	96428	1135393
89	17:34	18:07	494 MB	1215367	1163408	203287	47294	556926
BEAM DOWN FOR SAME SOURCE ISSUE AS RUN 87								
90	18:30	19:31	1001 MB	2472106	2361089	411783	96704	1139538
91	19:31	20:36	1020 MB	2.78 M	2.65 M	.46 M	.11 M	1.27 M
92	20:36	21:37	1001 MB	2473672	2360881	415346	95432	1137537
<del>ENDED DUE TO K1200 VACUUM PROBLEMS</del>								
93	21:37	22:27	819 MB	2025548	1930494	339614	78462	929757
ENDED DUE TO K1200 VACUUM PROBLEMS								
94	22:28	22:45	271 MB	670568	638356	113835	26046	308155
ENDED DUE TO SOURCE SHIFT								
95	23:29	0:26	1004 MB	2511100	2372359	420127	97163	1148553
8/7/13								
96	0:26	0:55	478 MB	1545785	1134540	255944	984059	812347
100	03:14	04:09	1000 MB	2484407	2360530	414063	94222	1100742
2350876 416203 94654								
101	04:09	05:07	1000 MB	2477147	237263	94654	94982	1098256

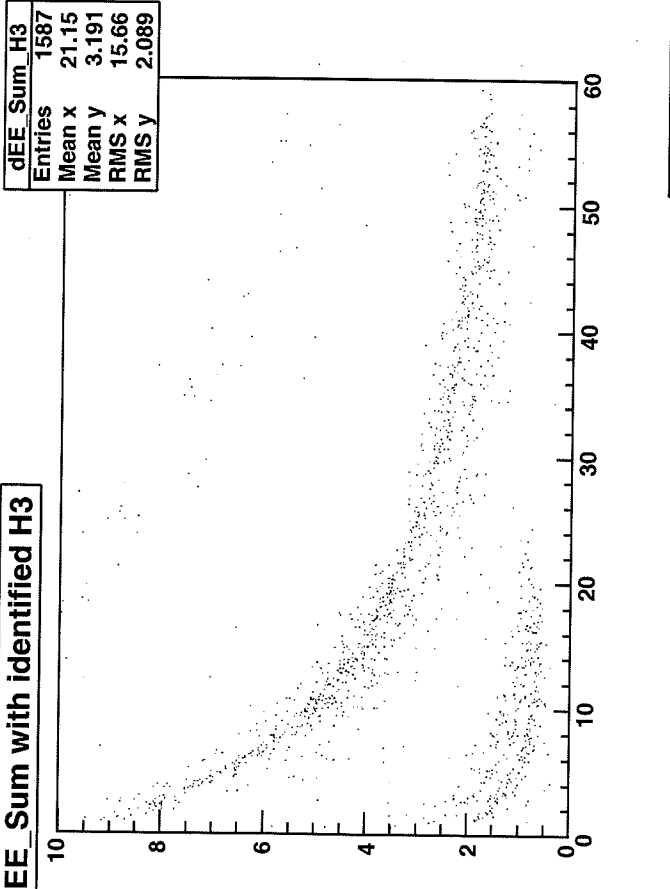
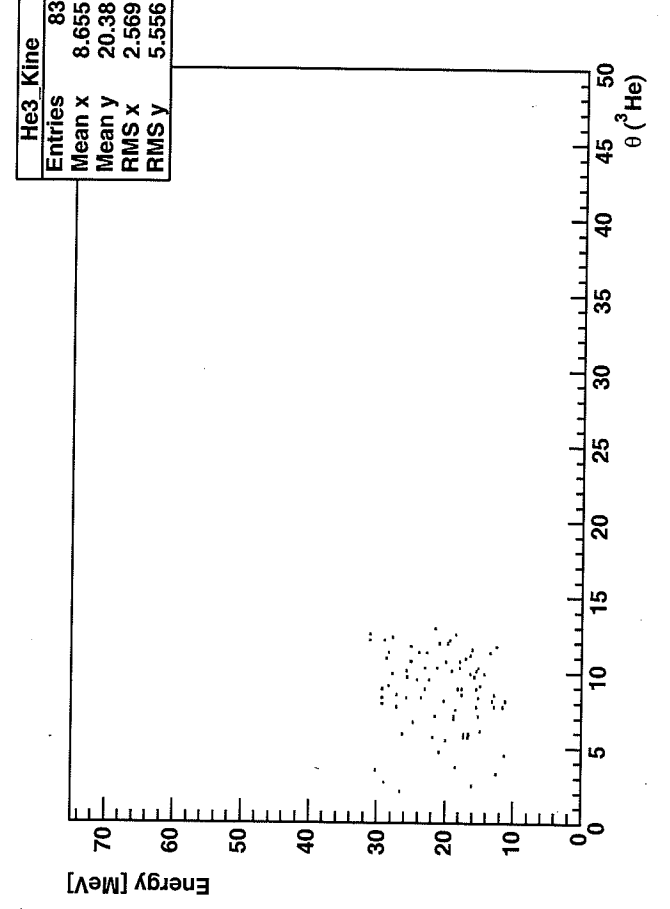
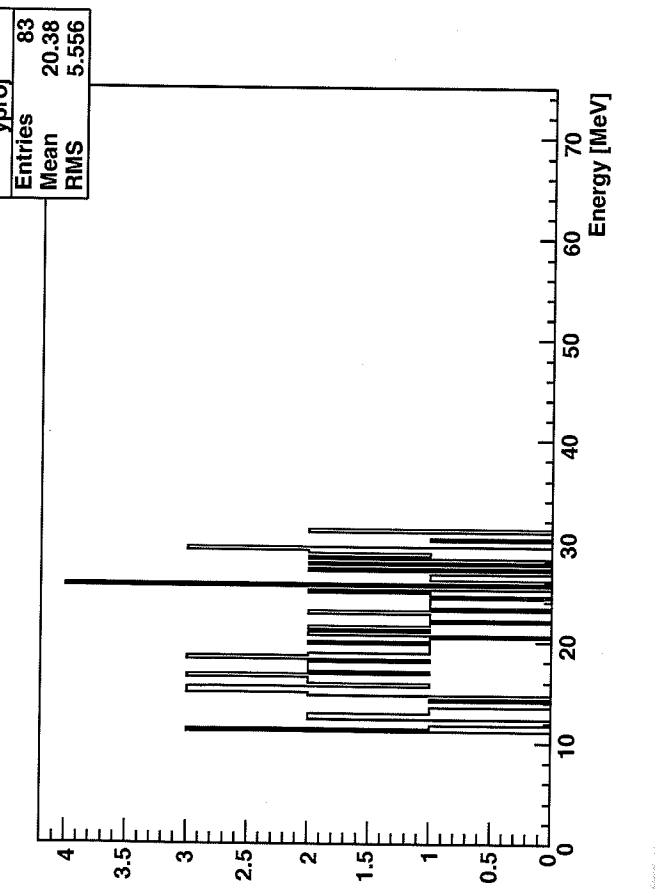
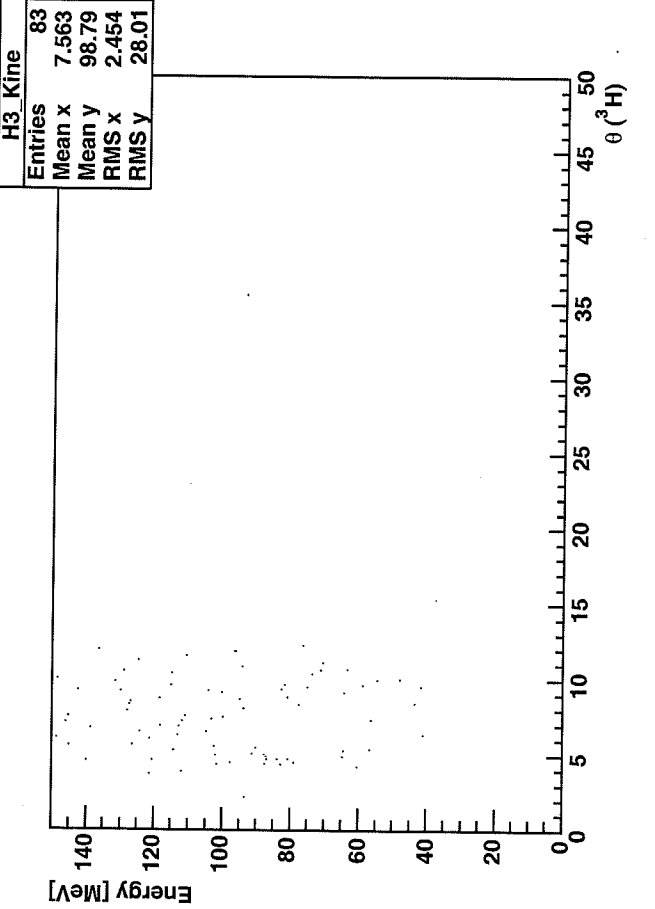
PULSER RAW	PULSER LIVE	I <sub>1</sub>	I <sub>2</sub>	I <sub>3</sub>	T <sub>1</sub>	T <sub>2</sub>	MB3 REG V	T <sub>4</sub>	XFP
1041519	1017617	10.19	10.80	4.42	0.376	0.328	5.02	0.345	6.3 x 10 <sup>9</sup>
926919	902870	10.20	10.80	4.43	0.376	0.330	5.02	0.345	5.5 x 10 <sup>9</sup>
917146	893223	10.21	10.80	4.44	0.374	0.327	5.03	0.342	5.3 x 10 <sup>9</sup>
913015	88963	10.22	10.79	4.42	0.375	0.327	5.03	0.345	5.512 E9
193959	188937	10.22	10.80	4.42	0.375	0.328	5.03	0.343	1.146 E9
838801	814585	10.25	10.8	4.43	0.375	0.328	5.03	0.346	4.97 x 10 <sup>9</sup>
821125	796982	10.25	10.8	4.43	0.375	0.327	5.03	0.345	4.79 x 10 <sup>9</sup>
690140	670474	10.24	10.8	4.43	0.376	0.328	5.03	0.347	3.88 x 10 <sup>9</sup>
912636	888527	10.25	10.81	4.42	0.374	0.330	5.03	0.343	4.802 E9
489531	477603	10.27	10.81	4.43	0.375	0.331	5.03	0.344	2.369 E9
45623	891803	10.29	10.82	4.44	0.374	0.330	5.03	0.343	4.842 E9
.97 M	.95 M	10.29	10.83	4.44	.374	.330	5.027	.343	5.4 B
892880	868876	10.30	10.82	4.45	.374	.328	5.027	.342	4.81 E9
734121	714451	10.31	10.82	4.44	.375	.329	5.027	.343	3.913 E9
251886	245808	10.31	10.83	4.44	.375	.330	5.027	.344	1.298 E9
842111	813696	10.32	10.82	4.44	0.375	0.328	5.027	0.343	4.879 x 10 <sup>9</sup>
534241	390773	10.32	10.83	4.44	0.375	0.328	5.027	0.344	2.98 x 10 <sup>9</sup>
830724	80666	10.32	10.84	4.44	0.375	0.327	5.022	0.344	4.744 x 10 <sup>9</sup>
861402	837174	10.35	10.85	4.44	0.376	0.328	5.022	0.341	4.765 x 10 <sup>9</sup>

08/07/13 \*NEWSHIFT  
 (see page 42)

6 He + CD<sub>2</sub>  
up to run 83.



6 He + C<sub>2</sub>H<sub>2</sub> up to run 83





Aug. 6 23:06.

Beam off due to source problems. Otherwise - shift uneventful. Signal looks good - see plots page 40-41 for  $CD_2 - ^{12}C$  comparison. Will wait to run more  $^{12}C$  (about 1 day). Tom Ginter says that getting a  $^3H$  calibration beam Friday.

Source fixed at 23:29

RUN 96: the data just stop <sup>to</sup> be recorded to the disk, its like the system is not happy! restart the machine (the system reboot!)  
Time from 12:55 AM to 03:14

Note: DQO crashed, so we had to reboot VME.

This meant reloading setup file and bit file, and the config file for the MS Control had been moved, and it took about 2 hours to figure this out and get things working. In general,

DONT MOVE  
FILES DURING  
AN EXPERIMENT!!!

AUG 7 03:54

RELATIVELY NORMAL SHIFT. ONE RUN STOPPED DUE TO VACUUM FAILURE IN CYCLOTRON. XFP HIGH VOLTAGE TRIPPED AT 02:25. OPERATORS BROUGHT IT BACK ONLINE AND SHIFTED IT SLIGHTLY AT ~ 03:00. RUNS 124-126 HAVE NO (OR FEW) XFP READINGS.

RUN#	START	STOP	FILE SIZE	CSI OR OF ORS	TRIG LIVE	MB1	MB2	MB3
103	06:07	07:07	1000MB	2474107	2359751	418082	95101	1102231
104	07:07	07:19	188MB	466910	444396	79159	17942	208573
105	07:19	8:21	1GB	2471242	2362757	417948	95785	1102499
106	8:24	9:36	1.1GB	2870755	2242895	484078	111309	1289750
107	9:36	10:38	1GB	2470273	2360546	415377	95433	1108777
108	10:39	11:43	1GB	2468115	2360321	419896	95745	1102698
109	11:45	12:53	~1GB	2458411	2358520	419390	96765	1101935
110	12:53	1:57	1GB	2466660	2359472	419878	96525	1104467
111	1:57	3:02	1GB	2466561	936921	419921	96580	1105031
112	3:02	4:06	1GB	2466554	2360472	416547	96305	1108109
113	4:06	17:11	1.6GB	2466381	2360039	420049	148262	96389
114	17:12	18:16	1.0GB	2465880	2359093	417315	96175	1107586
115	18:17	18:26	MB	474416	453849	80619	18405	213855
116	18:42	19:46	1.0GB	2465400	2359302	420055	96465	1110019
117	19:46	20:51	1.0GB	2465287	2359446	416992	97016	1109870
118	20:51	21:58	1.0GB	2462905	2359877	421319	96467	1109701
119	21:58	23:04	1.0GB	2463752	2359791	417120	96513	1109444
120	23:04 8/8/13	00:07	1.0 GB	2469879	2359615	421139	95675	1105445
121	00:07	00:14	123 MB	303897	289680	51446	11930	135188
122	00:18	01:16	1.0 GB	2478704	2359964	419266	97710	1109406

R RAW	PULSER ID	I <sub>1</sub>	I <sub>2</sub>	I <sub>3</sub>	T <sub>1</sub>	T <sub>2</sub>	MB3 REG V	T <sub>4</sub>	XFP
06	865521	10.37	10.87	4.43	0.375	0.326	5.023	0.340	4.779 x 10 <sup>9</sup>
034	169405	10.37	10.87	4.43	0.375	0.326	5.023	0.341	0.8 x 10 <sup>9</sup>
5801	911963	10.38	10.87	4.44	0.375	0.328	5.023	0.341	4.8 x 10 <sup>9</sup>
2356	1044369	10.33	10.87	4.45	0.375	0.328	5.024	0.34	5.58 x 10 <sup>9</sup>
755	909914	10.4	10.87	4.45	0.375	0.326	5.024	0.34	4.78 x 10 <sup>9</sup>
016	930990	10.4	10.85	4.44	0.375	0.327	5.024	0.34	4.8 x 10 <sup>9</sup>
3096	999129	10.4	10.87	4.44	0.375	0.327	5.024	0.34	4.8 x 10 <sup>9</sup>
655	927665	10.4	10.88	4.45	0.375	0.327	5.024	0.34	4.8 x 10 <sup>9</sup>
819	936921	10.42	10.87	4.45	0.375	0.328	5.025	0.34	4.8 x 10 <sup>9</sup>
028	937010	10.43	10.88	4.45	0.375	0.329	5.025	0.34	4.8 x 10 <sup>9</sup>
588	937487	10.44	10.89	4.45	.375	.327	5.025	.342	4.85 x 10 <sup>9</sup>
254	928163	10.44	10.88	4.45	.375	.327	5.025	.342	4.82 x 10 <sup>9</sup>
459	177886	10.44	10.88	4.46	.376	.331	5.025	.342	9.29 x 10 <sup>8</sup>
060	934967	10.44	10.89	4.45	.375	.327	5.025	.342	4.85 x 10 <sup>9</sup>
1196	2359446	10.45	10.89	4.45	.374	.329	5.025	.342	4.84 x 10 <sup>9</sup>
454	977421	10.45	10.89	4.45	.375	.328	5.026	.342	4.83 x 10 <sup>9</sup>
38659 1020	954367	10.47	10.90	4.45	.375	.328	5.026	.341	4.83 x 10 <sup>9</sup>
1294	905188	10.47	10.90	4.47	.374	.326	5.026	.341	4.83 E9
23	111973	10.47	10.90	4.46	.375	.327	5.026	.340	5.90 E9
501	834318	10.49	10.91	4.46	.375	.328	5.026	.340	4.882 E9

Run 104  
They ~~may~~ check  
the current  
beam.  
the beam gone  
for less than  
1 min.

Run 115 Stopped  
early to let  
operator's seal/fix  
LN2 pop-off

New sheet

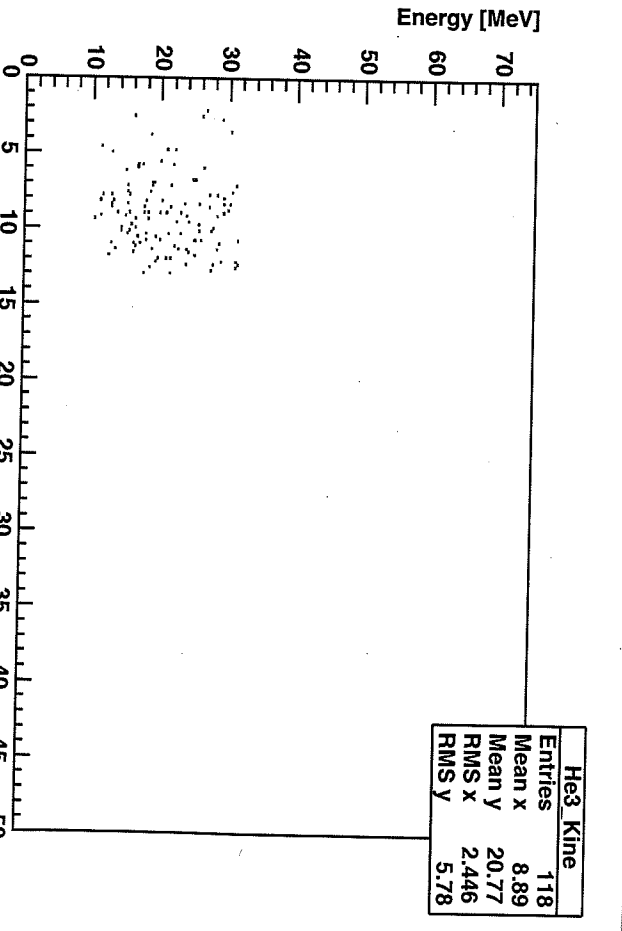
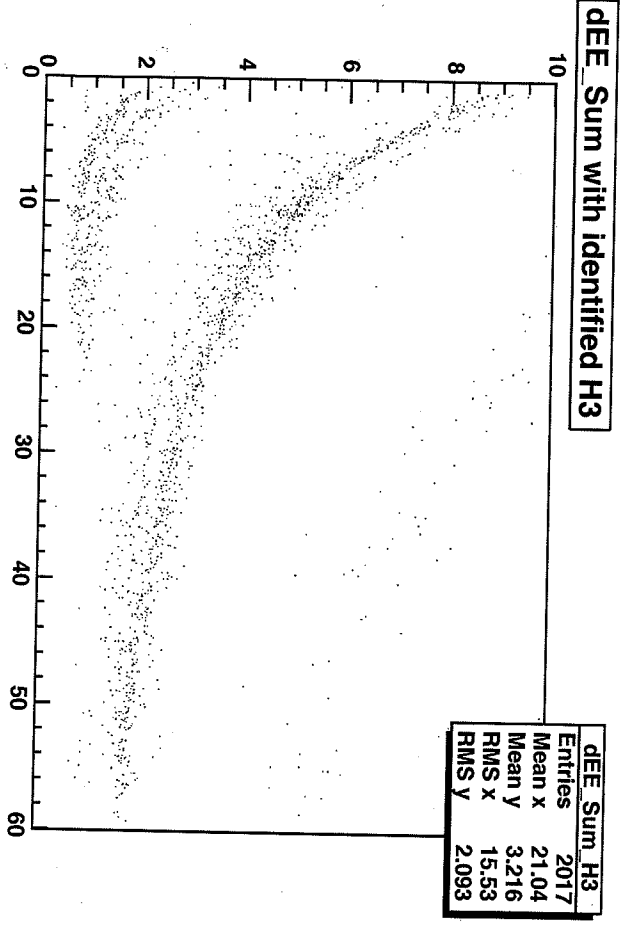
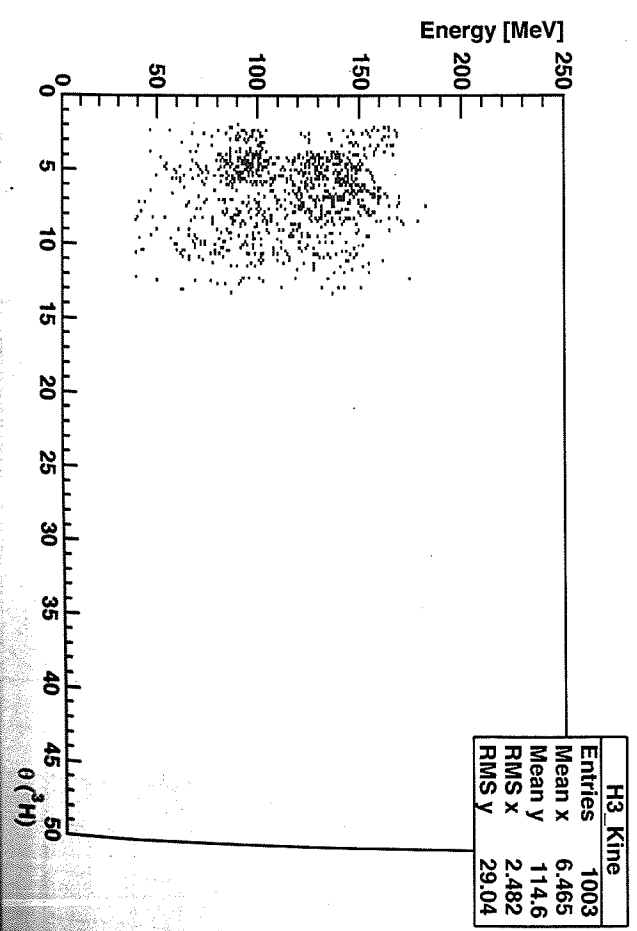
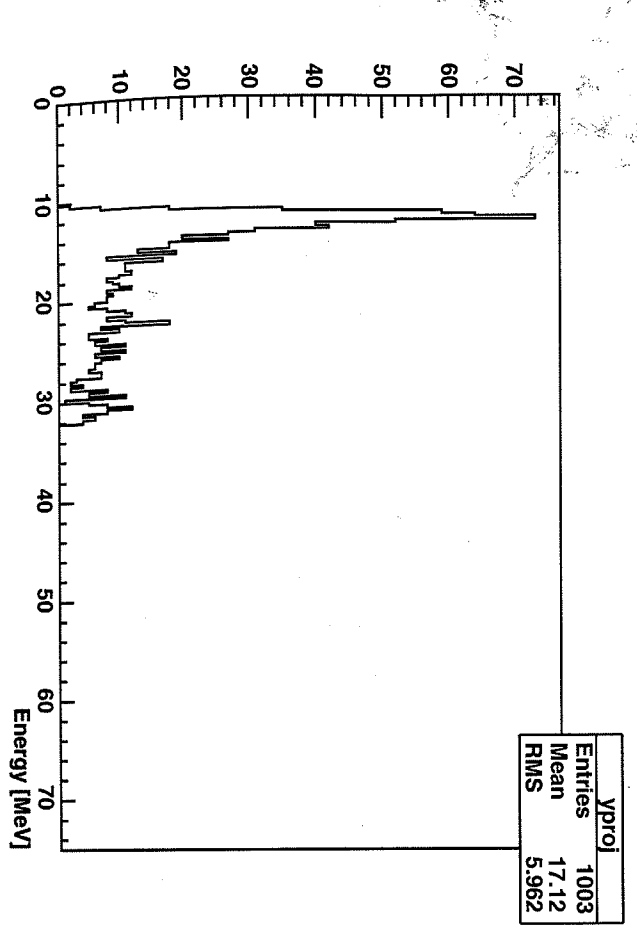
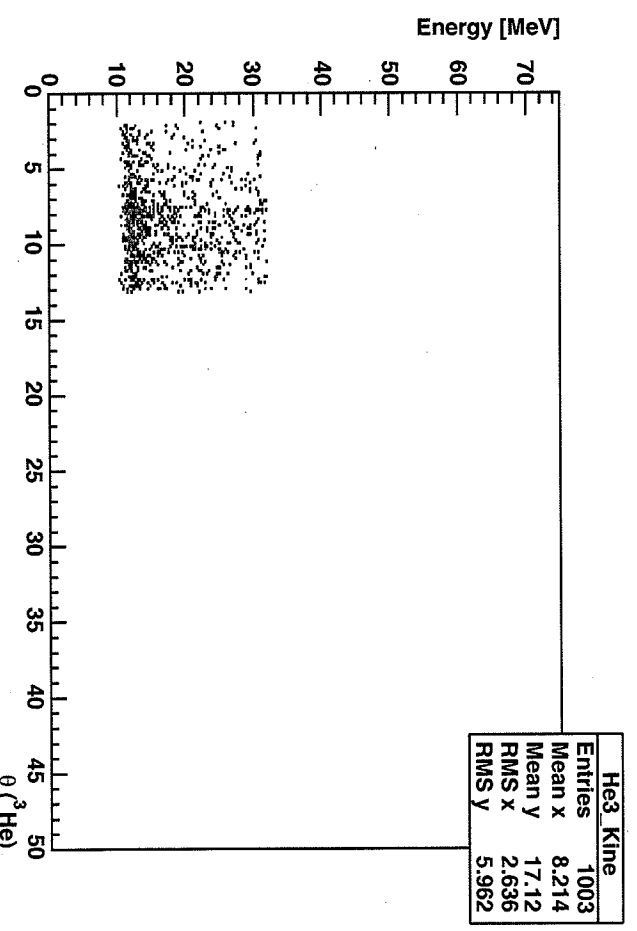
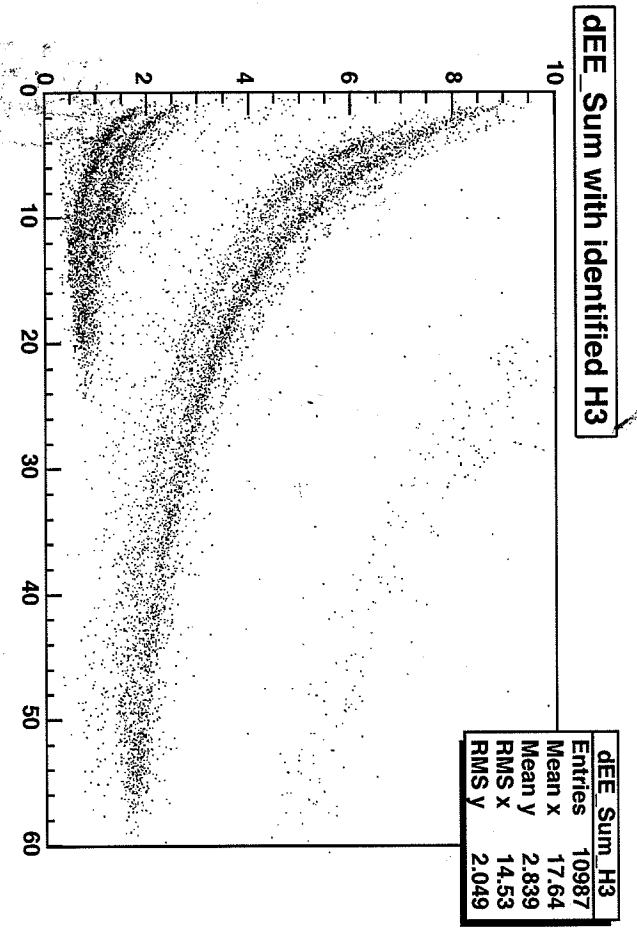
Run 121 STOPPED  
DUE TO VACUUM  
FAILURE IN K120



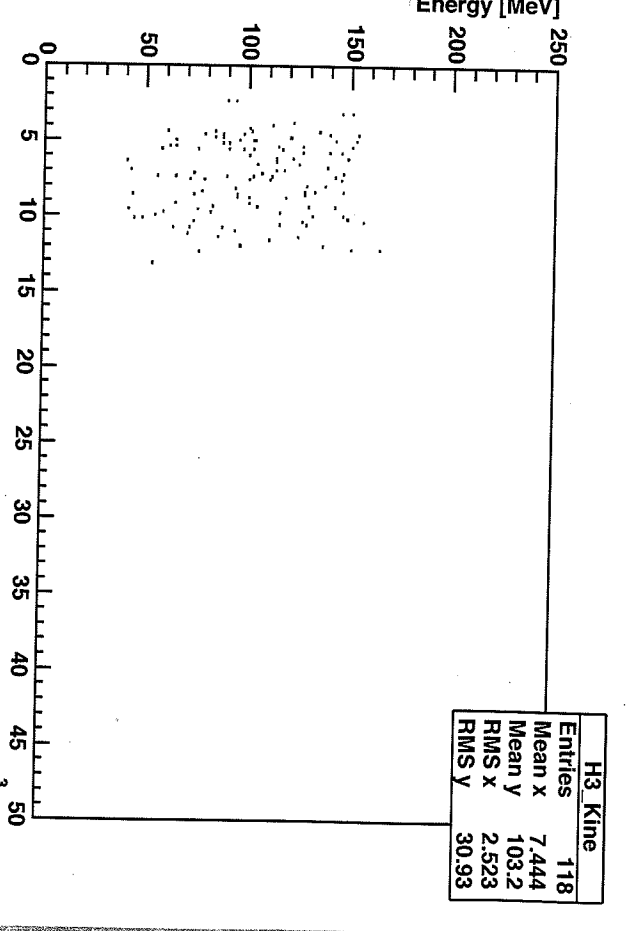
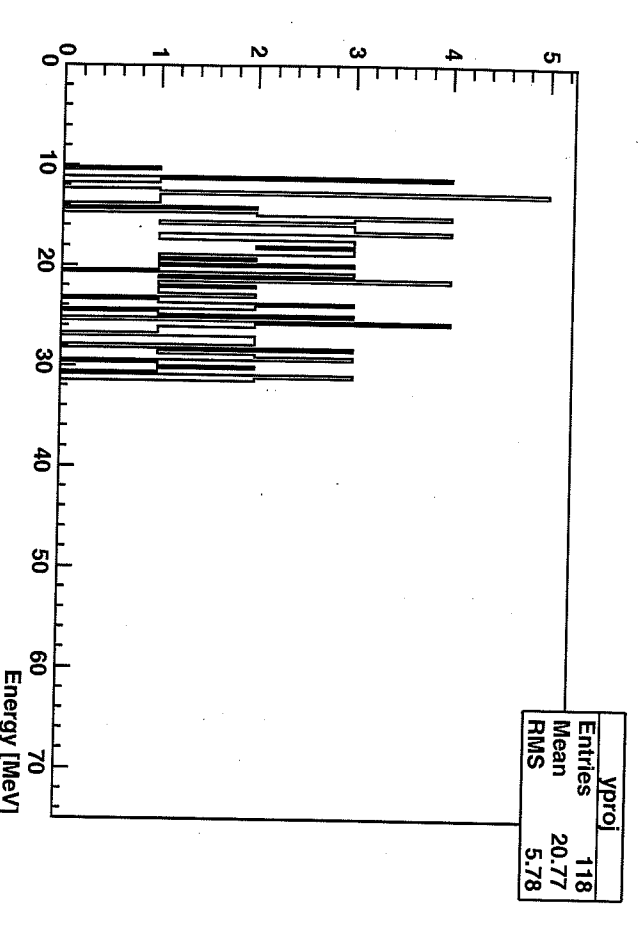
Run#	START	STOP	FILE SIZE	CSI_OR_OP_OR5	TRIG LIVE	MB1	MB2	MB3
123	01:16	02:14	1.0 GB	2478645	2359758	417674	97316	1108009
124	02:14	02:28	245 MB	605075	<del>576538</del> 210231	102236	23584	270224
125	02:37	02:43	94 MB	232334	221179	39207	9612	103997
126	02:47	03:06	532 MB	821087	781583	<del>137544</del> 31840	31840	366075
127	03:07	4:23	1.2 GB	3012754	2881417	<del>512843</del> 512843	<del>17783</del> 118685	1344917
128	4:24	5:37	1.0 GB	2453646	2359182	417360	96160	1097992
129	5:38	6:40	1.0 GB	2490057	2374414	417976	97211	1113374
130	6:40	7:41	1.0 GB	2471834	2359888	421441	96008	1106405
131	7:41	8:37	817 MB	2013299	1928896	342218	77774	897932
SWITCH TO <sup>12</sup> C TARGET								
132	9:09	10:24	1.0 GB	2467527	2375942	263243	45670	1104924
133	10:24	11:39	1.0 GB	2457798	2367416	267190	45620	1089339
134	11:40	12:53	1.0 GB	2461601	2366201	264596	45523	1092594
135	12:53	14:02	1.0 GB	2464464	236508	262736	45836	1096197
136	14:02	15:20	1.0 GB	2565069	2465943	276887	48057	<del>1402</del> 1138315
137	15:21	16:33	1.0 GB	2485987	2386798	268091	47506	1114037
138	16:33	17:39	1.0 GB	246807	2364602	260112	48638	1117741
139	17:39	18:48	1.0 GB	2462825	2364831	255920	47881	1117139
140	18:49	19:58	1.0 GB	2480014	2378961	259549	47879	1119909
141	19:59	21:11	1.1 GB	2789733	2668829	292006	55058	1261107
142	21:11	22:14	1.0 GB	2472806	2364020	257949	48697	1119161

SER RAW	PULSER LINE	I <sub>1</sub>	I <sub>2</sub>	I <sub>3</sub>	T <sub>1</sub>	T <sub>2</sub>	MB3 REG V	T4	XFP	COMMENTS
162153	838347	10.49	10.91	4.46	0.374	0.326	5.026	0.340	4.54E9	
16623	210231	10.49	10.91	4.47	0.371	0.325	5.026	0.348	0	RUN 124 STOPPED BECAUSE XFP READOUT IS AT ZERO.
4741	92366	10.49	10.92	4.47	0.376	0.330	5.026	0.349	0	
80673	272774	10.49	10.92	4.48	0.374	0.327	5.026	0.349	2.076E9	XFP APPEARED MID RUN 126. WENT OFFLINE DUE TO VOLTAGE TRIP.
154697	1125528	10.49	10.92	4.47	.375	.328	5.026	.348	5.95E9	
94038	1069916	10.50	10.93	4.47	.374	.328	5.025	.347	4.84E9	
21659	897395	10.51	10.93	4.48	.374	.329	5.026	.348	4.87E9	short interruption
11379	887318	10.52	10.93	4.47	.374	.329	5.026	.348	4.82E9	
<del>80530</del> 824869	805304	10.51	10.93	4.47	.375	.327	5.026	.348	3.90E9	RF TRIP.
→ Small cyclotron down time.										
<del>11573</del> 25778	1101573	10.53	10.91	4.47	.373	.327	5.027	0.342	5.28E9	2 short dips in beam
27962	1104146	10.51	10.92	4.46	.373	.325	5.027	0.349	5.17E9	
02288	1078024	10.52	10.90	4.46	0.373	.326	5.027	0.348	5.20E9	The beam disappeared for a minute.
27474	1003272	10.52	10.90	4.46	.373	.326	5.027	0.344	5.23E9	short interruption beam returned w/ ~15% more ScITs
58927	1144211	10.53	10.92	4.46	.373	.326	5.027	0.347	5.47E9	
67536	1043258	10.56	10.93	4.46	.373	.325	5.027	.347	5.48E9	
<del>80901</del> <del>65426</del>	986692	10.55	10.94	4.48	.373	.328	5.027	.342	5.62E9	
36857	1012818	10.59	10.92	4.47	.373	.325	5.027	.341	5.58E9	
15837	1021605	10.60	10.92	4.47	.371	.326	5.027	.347	5.56E9	lost beam ~2min @ magnet issue?
82612	1055491	10.58	10.93	4.48	0.374	.327	5.027	.347	6.31E9	
9865	918659	10.58	10.91	4.47	0.372	.326	5.027	.347	5.15E9	

${}^6\text{He} + \text{CD}_2$  through run 131



001 132-134



RUN	START	STOP	FILE SIZE	CSI_OR_OF_OPS	TRIG LIVE	MB1	MB2	MB3
	8/9/13							
144	23:19	00:38	1.1GB	3035551	2610334	314536	59956	1375556
145	00:38	1:43	1.0GB	2491151	2383851	262411	49251	1127204
146	1:43	2:47	1.0GB	2475273	2368682	261616	48818	1120700
147	2:48	3:52	1.0GB	2470397	2364523	260845	48809	1117228
148	3:52	4:57	1.0GB	2470398	2365142	260252	49163	1119721
149	4:58	6:00	1.0GB	2472860	2363799	259279	48721	1118811
150	6:00	6:58	1.0GB	2115757	2024679	223235	41837	956824
PROBLEM WITH ECR PLC - DOES NOT RESPOND.								
151	7:27	7:40	204MB	504386	482268	51208	4900	227808
STOP to switch to 3H plus other stuff.								
LEAVE 12C target in place. Running 3H 167.51 MeV								
152	7:58	8:36	1.7GB	4951820	<del>291439</del> 4141948	<del>302837</del> 791439	<del>1469769</del> 302837	1469769
153	8:36	8:50	1GB	2958836	2382610	462396	175499	862158
154	8:50	9:10	1.5GB	4587246	3695371	244026	273424	1338169
155	9:13	9:30	1.5GB	4531482	<del>3644289</del> <del>27195</del>	<del>453589</del> 703161	272227	1326097
156	9:35	9:49	1GB	2908602	2373139	461658	177676	863533
157	9:49	10:06	1.25GB	3688223	2971014	<del>574653</del> <del>223585</del>	223585	1078525
158	10:06	10:22	1GB	2886327	2376472	460408	181159	858878
159	10:22	10:38	1GB	2835286	2370144	454378	176914	848128
160	10:38	10:55	1GB	2839903	2391283	457748	176283	851570

USER	RAW	PAUSER LIVE	I <sub>1</sub>	I <sub>2</sub>	I <sub>3</sub>	T <sub>1</sub>	T <sub>2</sub>	MBS REC V	T <sub>A</sub>	X10 <sup>9</sup> XFP	COMMENTS
182228	1038015	10.52	10.94	4.47	.373	.327	5.028	.342	6.93		
965447	941086	10.51	10.93	4.46	.373	.325	5.027	.342	5.70		
954008	929860	10.52	10.94	4.47	.374	.327	5.028	.341	5.65		
970140	946090	10.52	10.95	4.47	.373	.327	5.028	.341	5.65		
966420	942327	10.53	10.94	4.48	.373	.326	5.029	.342	5.62		
934478	910474	10.55	10.96	4.48	.374	.325	5.028	.341	5.63		
858053	837288	10.54	10.96	4.48	.375	.329	5.027	.341	4.83		Cyclotron control Problem.
→ FIXED AT 7:25.											
191000	186094	10.54	10.95	4.48	.375	.325	5.027	.341	1.15		
51285	509024	10.54	10.95	4.47	.374	.326	5.028	.341	—		XFP is OUT For calib.
<del>204993</del>	180909	"	"	"	"	"	"	"	—		
16710	279132	10.65	10.95	4.48	.375	.326	5.028	.347	—		
<del>68627</del>	271795	"	"	"	"	"	"	"	—		
6977	173005	"	"	"	.374	0.326	"	"	—		
2889	226826	"	"	"	"	0.325	"	"	—		
5288	201276	"	"	"	"	0.326	"	"	—		
3297	219226	"	"	"	"	0.327	"	"	—		
635	230569	10.65	10.94	4.47	0.374	0.328	5.028	0.348	—		



>

A1900 "Print09Aug13\_07h52.txt" Friday 07:52:42 2013-08-09 A1900  
 Moe\_247 \*\*\* 6He unwedged to G207 \*\*\*  
 Expt: 10011 "Study of 5H with 6He(d,3He)5H reaction" [Alan Wuosmaa] Line: RPMS [6]  
 Beam: 18 O 3+ 10.91 MeV/nuc (K500) 8+ 120 MeV/nuc (K1200) Chpr off  
 <Att 100k> ECR, Apertures: ARTEMIS 150.0; 15.0; 7.5 mm RHVBI: 22.6300 kV  
 K500 a,b: 628 A, 554 A K1200: 686 A, -71 A RF: 21.82590 MHz

A1900 Optics: L19S1G\_V3b.data

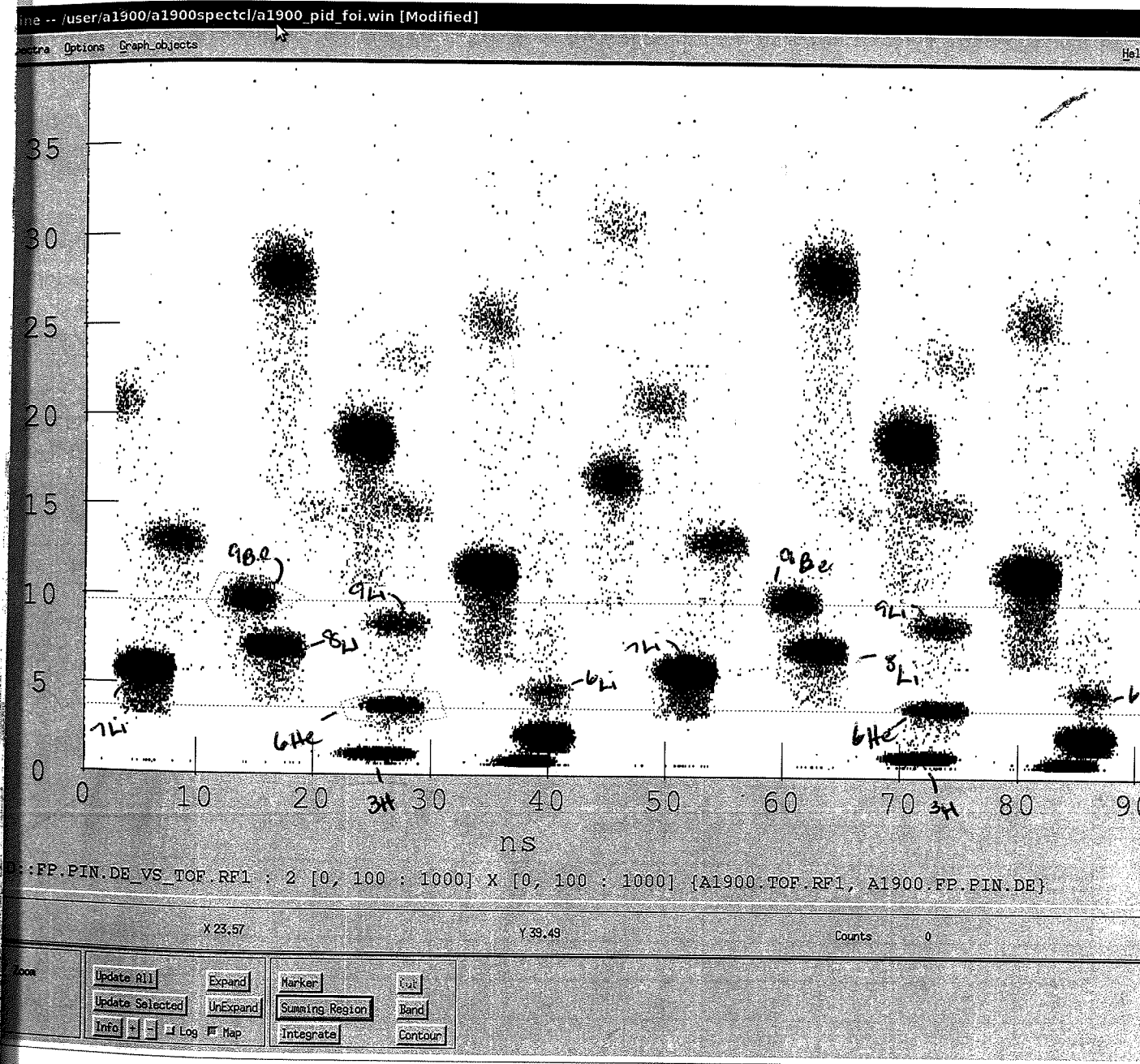
Seg	Rigidity	Field	Radius	(live)	Difference (Field*Radius)
Seg 0:	3.66094 Tm				
Seg 1:	3.28400 Tm	1.05997 T	3.09829 m	3.09821 m	0.00260 % (3.28409 Tm)
Seg 2:	3.28400 Tm	1.06116 T	3.09466 m	3.09473 m	-0.00234 % (3.28392 Tm)
Seg 3:	3.28400 Tm	1.06285 T	3.08963 m	3.08980 m	-0.00556 % (3.28382 Tm)
Seg 4:	3.28400 Tm	1.06213 T	3.09181 m	3.09191 m	-0.00300 % (3.28390 Tm)
Seg 5:	3.28400 Tm				
Seg 6:	-0.00000 Tm				

A116DS 1.05780 T 3.10367 m 3.10456 m -0.02840 %  
 A132DS -0.03535 T 92.88034 m 92.89958 m -0.02070 %  
 Z001TL: out, Z013TL: out; Z014TL out  
 Z015TL: Be 18536 um, Z016TL out  
 Z030BC Beam Stop: -127.25 mm  
 Z037L,R: -16.00, 16.00 mm or -0.54, 0.54 width= 1.08 %; Z037DC: out  
 Z057MS: 1%, Z061MS: out  
 Z059DC: out, Z062SC: out, Z059TL: out  
 Z082 XC,G,YG: 0.16, 216.28, 202.16 mm Z082TL: out  
 Z103DC: out, Z106DC: out, Z107DC U/ L: out/out  
 Z104DC-R -0.121 mm; .IRPOS 0; .STR1 1 mm BC404 #046  
 Z105TL: out, Slits: ; PPACs: ; Z107 outlim: Y  
 Z104 XC,G;YC,G: 0.00, 10.00; -1.00, 89.99 mm  
 G183 Y slits: center -2.7721 mm, gap 97.9544 mm  
 G183PP: out; G184DC: out; G185DC: out

MagName	Ref[kG]	BSet[kG]	Ratio	(live)	Set[A]	Read[A]	DEVI
Z001DV	0.000	-0.691	-18881.62	-18881.62	-300.0000	-300.248	Z001DV
Z002DH	0.000	-1.358	-37098.28	-37098.28	-3.3115	-3.233	read Z002DH
Z003DV	0.000	1.035	28258.83	28258.83	2.5066	2.565	Z003DV
Z004QA	1.685	6.170	1.000000	1.000000	4.3110	4.310	Z004QA
Z005QB	-0.414	-1.515	1.000000	1.000000	-1.0576	-1.049	Z005QB
Z008DS	2.492	8.946	0.980697	0.980697	29.9341	30.032	Z008DS
Z011QA	-2.322	-8.940	1.051561	1.051561	-6.2535	-6.189	Z011QA
Z012QB	3.409	15.507	1.242463	1.242463	11.2521	11.194	Z012QB
----- Segment 1 -----							
Z017TA	3.539	12.379	1.057000	1.057000	32.4805	32.656	Z017TA
Z019TB	-3.322	-11.077	1.010000	1.010000	-29.1558	-29.234	Z019TB
Z021TC	2.407	8.264	1.043000	1.043000	17.3180	17.397	Z021TC
Z026DS	3.226	10.503	0.991425	0.991425	64.6803	64.406	Z026DS
Z031TA	2.926	9.673	1.000000	1.000000	20.2317	20.327	Z031TA
Z033TB	-3.613	-11.943	1.000000	1.000000	-34.5634	-34.667	Z033TB
Z035TC	3.183	10.545	1.000000	1.000000	22.0129	22.097	Z035TC
----- Segment 2 -----							
Z039TA	3.183	10.545	1.000000	1.000000	22.0194	22.097	Z039TA
Z041TB	-3.562	-11.773	1.000000	1.000000	-34.0591	-34.178	Z041TB
Z043TC	2.924	9.672	1.000000	1.000000	20.1806	20.266	Z043TC
Z048DS	-3.226	-10.625	1.002991	1.002991	-67.3823	-67.531	Z048DS
Z053TA	2.800	9.206	1.000000	1.000000	19.2785	19.289	Z053TA
Z055TB	-3.665	-12.157	1.000000	1.000000	-32.8045	-32.713	Z055TB
Z057TC	3.264	11.078	1.000000	1.000000	111.3553	111.213	Z057TC
----- Segment 3 -----							
Z062TA	3.264	11.078	1.000000	1.000000	111.4383	111.295	Z062TA
Z064TB	-3.665	-12.157	1.000000	1.000000	-32.8598	-32.774	Z064TB
Z066TC	2.800	9.206	1.000000	1.000000	19.2771	19.228	Z066TC
Z071DS	-3.226	-10.566	0.997396	0.997396	-65.3070	-65.493	Z071DS
Z076TA	2.924	9.672	1.000000	1.000000	20.2707	20.388	Z076TA
Z078TB	-3.562	-11.773	1.000000	1.000000	-34.1259	-33.995	Z078TB
Z080TC	3.183	10.545	1.000000	1.000000	22.0543	22.097	Z080TC

Cocktail - mostly 3H.  
for calibration.

Run 6516 Be 18536 um unwedged





→ CO2 target in position.

Run	START	STOP	File Size	CSI OR OF ORS	TRIG LIVE	MB1	MB2	MB3
162	11:37	12:19	200MB	575112	564554	100716	21831	255747
163	12:25	13:23	1000.141	2476833	2359711	396845	91920	116300
→ This run (163) return to normal intensity on target								
164	13:23	14:24	1011.0	2500617	2387629	402051	93175	1129054
165	14:25	15:24	1018.1	2521368	24102223	401725	92	1136118
166	15:24	16:22	999.334	2476423	2357598	398149	94056	1118564
167	16:22	17:20	999.988	2479207	2359161	394881	92278	1121911
168	17:20	18:16	1000.0	2481255	2360135	394156	92397	1121503
169	18:16	19:12	996.238	2468968	2350676	394971	92042	1117127
170	19:16	20:10	1.068	2477937	2360597	398368	92097	1121105
171	20:10	21:08	1.068	2479400	2361708	397420	91656	1119405
172	21:08	22:07	1.068	2476144	2360870	400286	91540	1118386
173	22:08	23:06	1.068	2473571	2358501	401613	90892	1115443
174	23:06	00:12	1.168	2758194	2629360	444458	100289	1237162
175	00:12	01:12	1.068	2541689	2423684	407229	92471	1140310
176	01:12	02:11	1.068	2476967	2360665	400562	90349	1110891
177	02:11	03:09	1.068	2476340	2359866	400331	90378	1112572
178	03:09	04:08	1.068	2474747	2359952	398874	90483	1109810
179	04:08	05:07	1.068	2473326	2359259	395404	90940	1113582
180	05:07	06:07	1.068	2473538	2359495	398087	91239	1111877
181	06:07	07:06	1.068	2473673	2359086	395536	90869	1115743
182	07:06	08:05	1.068	2475544	2360149	398535	91816	1110115

USER RAW	PULSER LIVE	I <sub>1</sub>	I <sub>2</sub>	I <sub>3</sub>	T <sub>1</sub>	T <sub>2</sub>	MB3 REGV	T4	XFP	Comments
41988	636075	10.64	10.95	4.43	.375	.329	5.027	.343	1.08	Cannot talk to slits in IOC
37767	853410	10.64	10.94	4.48	.373	.328	5.027	.342	4.60	Running at 1/2 intensity until ECR returns
2939	908075	10.65	10.94	4.48	.373	.328	5.027	.342	4.64	
<del>17288</del>	882826	10.66	10.96	4.49	.374	.329	5.027	.342	4.67	
07617										
76344	852044	10.65	10.95	4.49	.373	.328	5.027	.343	4.58	
51976	837470	10.67	10.95	4.48	.374	.329	5.027	.342	4.59	
61566	836828	10.67	10.96	4.49	.374	.329	5.027	.342	4.60	
61317	836919	10.66	10.95	4.49	.374	.327	5.027	.343	4.60	
76576	852038	10.66	10.94	4.44	.374	.326	5.027	.341	4.62	
880201	855845	10.66	10.96	4.49	.375	.327	5.028	.343	4.60	
893688	869272	10.70	10.97	4.48	.374	.326	5.029	.342	4.57	
87447	863098	10.69	10.98	4.48	.374	.327	5.028	.343	4.54	
990618	963161	10.71	10.99	4.49	.374	.329	5.029	.341	5.05	
915574	890501	10.71	10.99	4.49	.374	.327	5.029	.342	4.66	
881815	857397	10.74	11.00	4.50	.374	.327	5.029	.342	4.52	
840253	865772	10.71	10.98	4.50	.374	.327	5.029	.341	4.58	
897746	873042	10.73	11.00	4.51	.374	.329	5.029	.342	4.54	
889683	865565	10.75	11.00	4.50	.373	.326	5.029	.339	4.54	
898950	874589	10.74	10.99	4.50	.374	.327	5.028	.342	4.56	
892275	867711	10.75	10.98	4.50	.374	.327	5.029	.343	4.56	

RUN	START	STOP	FILE SIZE	CSI_OR_OF_ORIS	TRIG LIVE	MB1	MB2	MB3
183	08:05	9:02	1.06B	2481230	2361403	396424	91469	1122649
184	9:02	9:59	1.6B	2343137	2229472	373739	85305	1060088
185	10:07	11:05	1.6B	2488481	2371576	401739	91498	1123531
186	11:03	12:04	1.6B	2493593	2375697	406914	92393	1118754
187	12:04	13:04	1.004	2538545	2419679	415982	94290	1138448
188	13:04	14:04	99993	2472950	2359559	406720	91348	1113310
189	14:04	15:07	1.044	2593403	2474815	431668	95421	1166565
190	15:07	16:06	1.0055	2487583	2372237	409989	91979	1121542
191	16:06	17:05	1.000	2474023	2358881	401837	90546	1117032
192	17:05	18:04	999.7	2473065	2358085	410816	90794	1111673
193	18:04	19:08	1.168	2716367	2590174	445719	100147	1226189
194	19:08	20:10	1.024	2544037	2425774	416000	93000	1140000
195	20:10	21:19	1.1	2846447	2712256	468500	10335	1281163
196	21:19	22:00	0.765	1896848	1806971	31441	70183	852395

END OF EXPERIMENT

PULSER RAW	PULSER LIVE	I <sub>1</sub>	I <sub>2</sub>	I <sub>3</sub>	T <sub>1</sub>	T <sub>2</sub>	MB3 REG V	T <sub>4</sub>	XFP	COMMENTS
860003	835395	10.73	10.99	4.49	0.374	0.327	5.028	0.343	4.56	
868842	<del>865</del> <sup>845800</sup>	10.75	10.99	4.49	0.375	0.327	5.028	0.345	4.2	Beam went to 0, then returned at ~4% intensity. Ended run early to investigate.
885005	860570	10.77	10.99	4.49	0.374	0.325	5.028	0.342	4.6	
882212	857872	10.74	10.98	4.49	0.374	0.327	5.028	0.343	4.6	
893951	869425	10.71	10.99	4.49	0.374	0.327	5.028	0.324	4.72	
890868	866994	10.74	10.99	4.49	0.374	0.327	5.028	0.342	4.61	
9106644	915455	10.73	10.98	4.49	0.374	0.325	5.028	0.342	4.83	
883673	859524	10.74	10.98	4.49	0.374	0.326	5.028	0.344	4.61	
761375	852316	10.74	10.98	4.50	0.374	0.326	5.028	0.342	4.57	
74388	850316	10.76	10.98	4.48	0.373	0.324	5.028	0.341	4.57	
63723	937184	10.74	10.98	4.48	0.374	0.325	5.028	0.343	5.01	
964914	886095	10.76	10.98	4.48	0.374	0.326	5.029	0.343	4.69	
995592	968030	10.77	10.99	4.49	0.375	0.326	5.029	0.343	5.22	
661533	643179	10.76	10.99	4.49	0.376	0.327	5.029	0.344	3.49	

POST-RUN CALIBRATIONS

Run 197

CSI PULSER RAMP ON ~~TOUR~~ TOWER 1

0-8V

~~NO~~, 41 steps, 15 sec/s

Run 198

CSI PULSER RAMP ON TOWER 2

"

Run 199

CSI PULSER RAMP ON TOWER 3

"

Run 200

~~CSI PULSER RAMP ON TOWER 4~~

JUNK

"

JUNK

Run 201

CSI PULSER RAMP ON TOWER 4

"

Run 202 IGNORE

Run 203

~~CSI~~ PULSER RAMP ON EF MB1 & 2 ONLY

"

Run 204

PULSER RAMP ON EB MB1 & 2 ONLY

"