

**HiRA Lab  
Logbook 1  
Experiment 05133**

# THE GREENSHEET

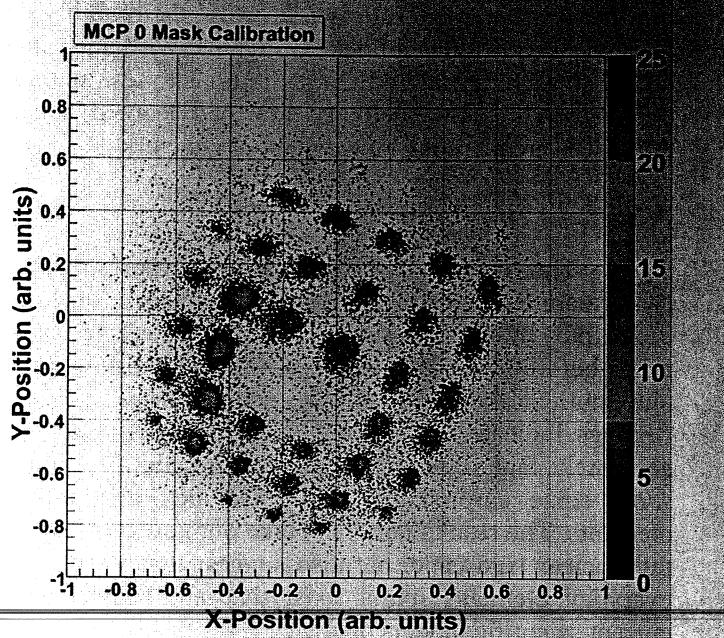


Vol. 25 No. 43 October 26, 2007

## *Experiment of the Week*

Experiment 05133 is the first in a series of single neutron transfer experiments using radioactive beams on a hydrogen target. By measuring angular distributions of the projectile residue after transferring one neutron, experimenters hope to learn the shell structure of the residue. This experiment exploits complete two-body kinematics to study the reaction of argon isotopes on the hydrogen target. The High Resolution Array (HiRA) detector is used to detect the emitted deuterons (hydrogen atoms picking up a neutron from the projectile) and the S800 mass spectrometer is used to detect the recoiled residue.

Sixteen HiRA telescopes are used in the experiment and nearly all 1600 electronic channels are working well. To ensure good position determination at the target, the experiment employs two microchannel plate (MCP) detectors, which can handle high beam rates up to one million particles per second. The figure shows the pattern of the mask used in calibrating the MCP. The more intense dots forming an "L" pattern are images of 2 mm holes. Other dots are images of 1 mm holes. The experimenters have completed two reactions using  $^{34}\text{Ar}$  and  $^{36}\text{Ar}$  beams, with online analysis revealing several excited states. An  $^{46}\text{Ar}$  beam is being developed for the second part of this experiment. This is NSCL student Jenny Lee's thesis experiment.

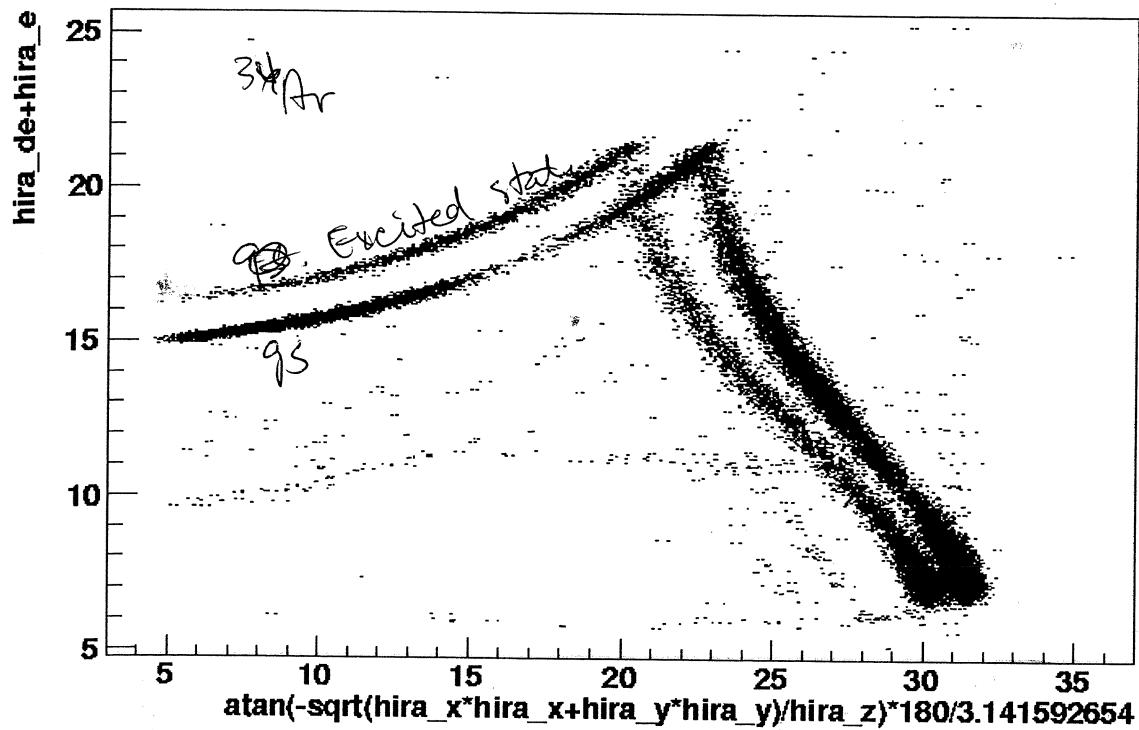


The mask pattern used to calibrate the two microchannel plate for Experiment 05133.

## *Seminars*

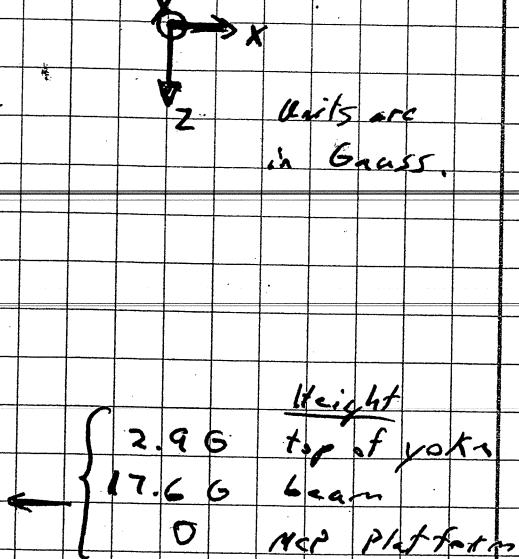
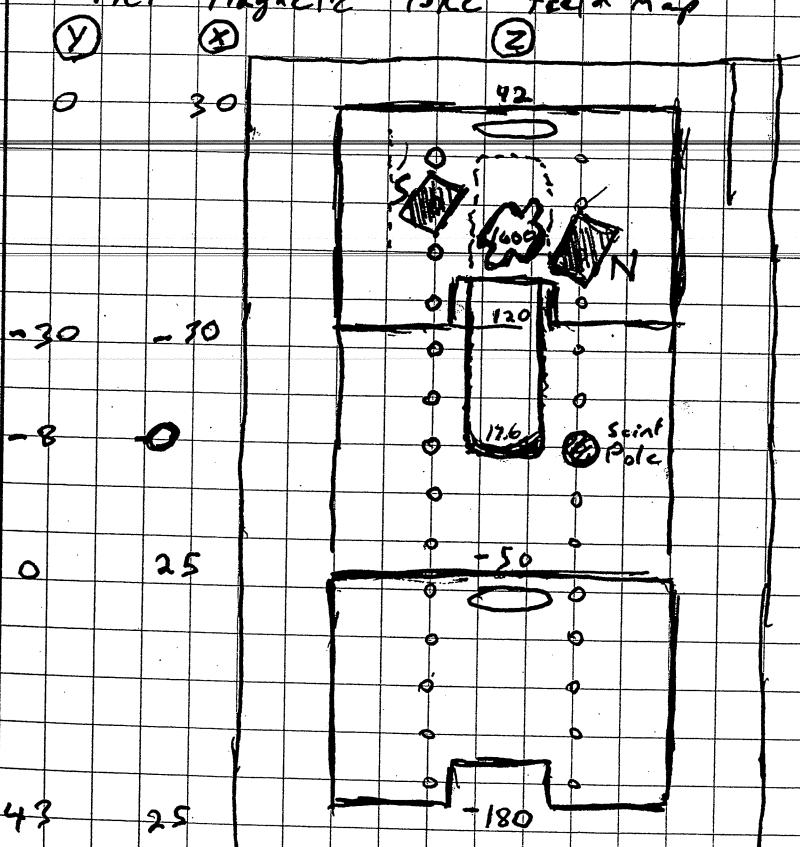
- ❖ Monday, October 29, at 12:30 PM  
JINA Pizza Lunch in room 1400 BPS  
Carla Froehlich (University of Chicago): Title

hire\_de+hire\_e=atan(-sqrt(hira\_x\*hire\_x+hire\_y\*hire\_y)/hire\_z)\*180/3.141592654 {hire\_e>0 && fig==1}



10-16-2007

- MCP Magnetic Yoke field map



MCP (cm)	(kG)
0	5.7
7	1.27
9	1.5
10	1.82
11	2.4
12	3.14
13	4.35

# TOWER 0

CSI 0 S0 C0	CSI 3 S0 C3	CSI 0 S1 C0	CSI 3 S1 C3
<b>0</b>			
EF: T0S15 DE: T4S16	EF: T1S15 DE: T4S13	CSI 1 S1 C1	CSI 2 S1 C2
CSI 1 S0 C1	CSI 2 S0 C2	CSI 0 S1 C1	CSI 2 S1 C2
CSI 0 S0 C4	CSI 3 S0 C7	CSI 0 S1 C4	CSI 3 S1 C7
<b>1</b>			
EF: T0S12 DE: T4S15	EF: T1S9 DE: T4S12	CSI 1 S1 C5	CSI 2 S1 C6
CSI 1 S0 C5	CSI 2 S0 C6	CSI 1 S1 C5	CSI 2 S1 C6
CSI 0 S0 C8	CSI 3 S0 C11	CSI 0 S1 C8	CSI 3 S1 C11
<b>2</b>			
EF: T0S9 DE: T5S15	EF: T1S6 DE: T5S12	CSI 1 S1 C9	CSI 2 S1 C10
CSI 1 S0 C9	CSI 2 S0 C10	CSI 0 S1 C12	CSI 3 S1 C15
CSI 0 S0 C12	CSI 3 S0 C15	CSI 0 S1 C12	CSI 3 S1 C15
<b>3</b>			
EF: T0S6 DE: T5S13	EF: T1S3 DE: T5S10	CSI 1 S1 C13	CSI 2 S1 C14
CSI 1 S0 C13	CSI 2 S0 C14		

# TOWER 1

B 

CSI 0 S2 C0	CSI 3 S2 C3	CSI 0 S2 C4	CSI 3 S2 C7
<b>14</b>			
EF: T2S15 DE: T4S10	EF: T2S12 DE: none	CSI 1 S2 C1	CSI 2 S2 C2
CSI 1 S2 C1	CSI 0 S2 C4	CSI 0 S3 C4	CSI 3 S3 C7
CSI 0 S2 C4	CSI 3 S3 C3	<b>15</b>	
	EF: T3S15 DE: T4S6	EF: T2S12 DE: T4S9	
	CSI 1 S3 C1	CSI 1 S2 C5	CSI 2 S2 C6
	CSI 3 S3 C2	CSI 0 S2 C5	CSI 2 S2 C6
		CSI 0 S2 C8	CSI 3 S2 C11
		<b>17</b>	
		EF: T2S9 DE: T5S9	
		CSI 1 S2 C9	CSI 2 S2 C10
		CSI 0 S2 C12	CSI 3 S2 C15
		<b>16</b>	
		EF: T2S6 DE: T5S7	
		CSI 1 S2 C13	CSI 2 S2 C14

Bad take off  
and strike  
see note on p.4

# TOWER 2

CSI 0 S2 C0	CSI 3 S2 C3	CSI 0 S2 C4	CSI 3 S2 C7
<b>14</b>			
EF: T2S15 DE: T4S10	EF: T2S12 DE: none	CSI 1 S2 C1	CSI 2 S2 C2
CSI 1 S2 C1	CSI 0 S2 C4	CSI 0 S3 C4	CSI 3 S3 C7
CSI 0 S2 C4	CSI 3 S3 C3	<b>15</b>	
	EF: T3S12 DE: T4S9	EF: T2S12 DE: T4S9	
	CSI 1 S3 C1	CSI 1 S2 C5	CSI 2 S2 C6
	CSI 3 S3 C2	CSI 0 S2 C5	CSI 2 S2 C6
		CSI 0 S2 C8	CSI 3 S2 C11
		<b>17</b>	
		EF: T2S9 DE: T5S9	
		CSI 1 S2 C9	CSI 2 S2 C10
		CSI 0 S2 C12	CSI 3 S2 C15
		<b>16</b>	
		EF: T2S6 DE: T5S7	
		CSI 1 S2 C13	CSI 2 S2 C14

# TOWER 3

CSI 0 S2 C0	CSI 3 S2 C3	CSI 0 S2 C4	CSI 3 S2 C7
<b>14</b>			
EF: T2S15 DE: T4S10	EF: T2S12 DE: none	CSI 1 S2 C1	CSI 2 S2 C2
CSI 1 S2 C1	CSI 0 S2 C4	CSI 0 S3 C4	CSI 3 S3 C7
CSI 0 S2 C4	CSI 3 S3 C3	<b>15</b>	
	EF: T3S12 DE: T4S9	EF: T2S12 DE: T4S9	
	CSI 1 S3 C1	CSI 1 S2 C5	CSI 2 S2 C6
	CSI 3 S3 C2	CSI 0 S2 C5	CSI 2 S2 C6
		CSI 0 S2 C8	CSI 3 S2 C11
		<b>17</b>	
		EF: T2S9 DE: T5S9	
		CSI 1 S2 C9	CSI 2 S2 C10
		CSI 0 S2 C12	CSI 3 S2 C15
		<b>16</b>	
		EF: T2S6 DE: T5S7	
		CSI 1 S2 C13	CSI 2 S2 C14

Bad take off  
and strike  
see note on p.4

10/19/07

Calibrating Spectral Hira readout, taking into account Readout order offset.

Comparing with and without ROO:

Run 53, tele 0, 1, 2, 3, 10, 11, 12, 13, 14, 15, 16, 17

Run 58, tele 4, 19

Run 86, tele 5, 6

in general, where there were odd-even effects on EB, which was true on most, they were significantly lessened, generally all resolutions now between 60-75 keV, FWHM, was 60-120+

Some outlying channels brought significantly down. A few brought slightly up, < 10 keV, usually toward the mean.

EF generally unchanged, even-odd effects remain.  
 ↳ if they existed before

Specific Notes:

tele 3. ef. 31 poor resolution, but was worse (undefined)  
 ↳ ~ 100 keV

→ tele 10. ef. 25 & eb. 13 → ~ 100 keV, but EB is better  
 tele 11. ef. crap

tele 12. eb. 23 ~ 85 keV (unchanged)

tele 14. ef range 80-90 keV (unchanged)

tele 16, both faces 60-85;

ef shows unchanged e-o effect

eb shows improved e-o effect

→ tele 10. ef shows strong unchanged e-odd effect

→ tele 17. ef shows strong unchanged e-o effect  
 odds ~ 120 keV, evens ~ 80 keV

tele 10. ef even line slightly better (~ 60-70 keV)

odd line unchanged ~ 80 keV

tele 17. eb. 15 & 17 poor resolution

tele 4. ef. 21 ~ 140 keV resolution. unchanged

tele 19. ef. 2 ~ 115 keV

unchanged

tele 6. ef. 10 ~ 140 keV unchanged

Summary of channels w/ poor resolution /  $\approx 100 \text{ keV}$   
 from pl. 8 FWHM

tele	face	chan
3	EF	31
4	EF	21
6	EF	10
10	EF	25
11	EF	All
17	EF	all odds
17	EB	15, 17
19	EF	2

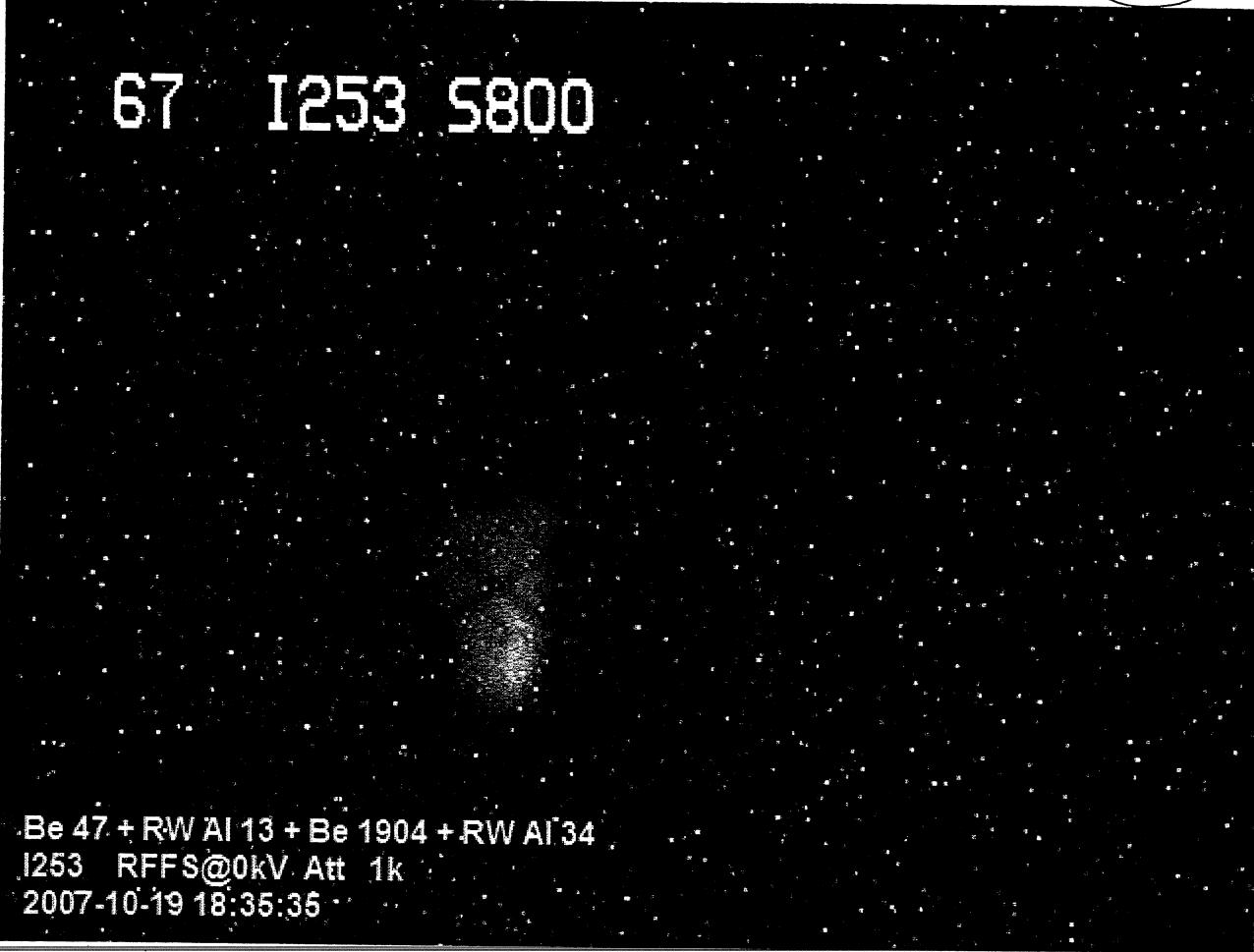
Scalers list (Same channels on each scaler, 1st Line 2nd Raw)

1	CSI 9	Line
2	CSI 2	
3	CSI 3	
4	CSI	new (Tele 18, monitor)
5	CSI	new (PULser trigger, down scaled)
6	OR	T <sub>1</sub>
7	OR	T <sub>3</sub>
8	BLF	BROTHER
9	S800	+ HIRA
10	E	OR
11	EF	OR
12	MCP	O
13	MCP	I
14	A 1900	Focal Plane
16	CSI 1.	Raw etc.

\\Dag1\\a1900\\projects\\05133\\Camps\\05133\_Camps - 20071019-34 Ar.doc

10/19/2007 7:45PM Camera Photos for Exp 05133 35MeV/u 36Ar 18+

67 I253 5800



Be 47 + RW Al 13 + Be 1904 + RW Al 34  
I253 RFFS@0kV Att 1k  
2007-10-19 18:35:35

shortly before beam is tuned into 5800.

Around this time, start biasing.

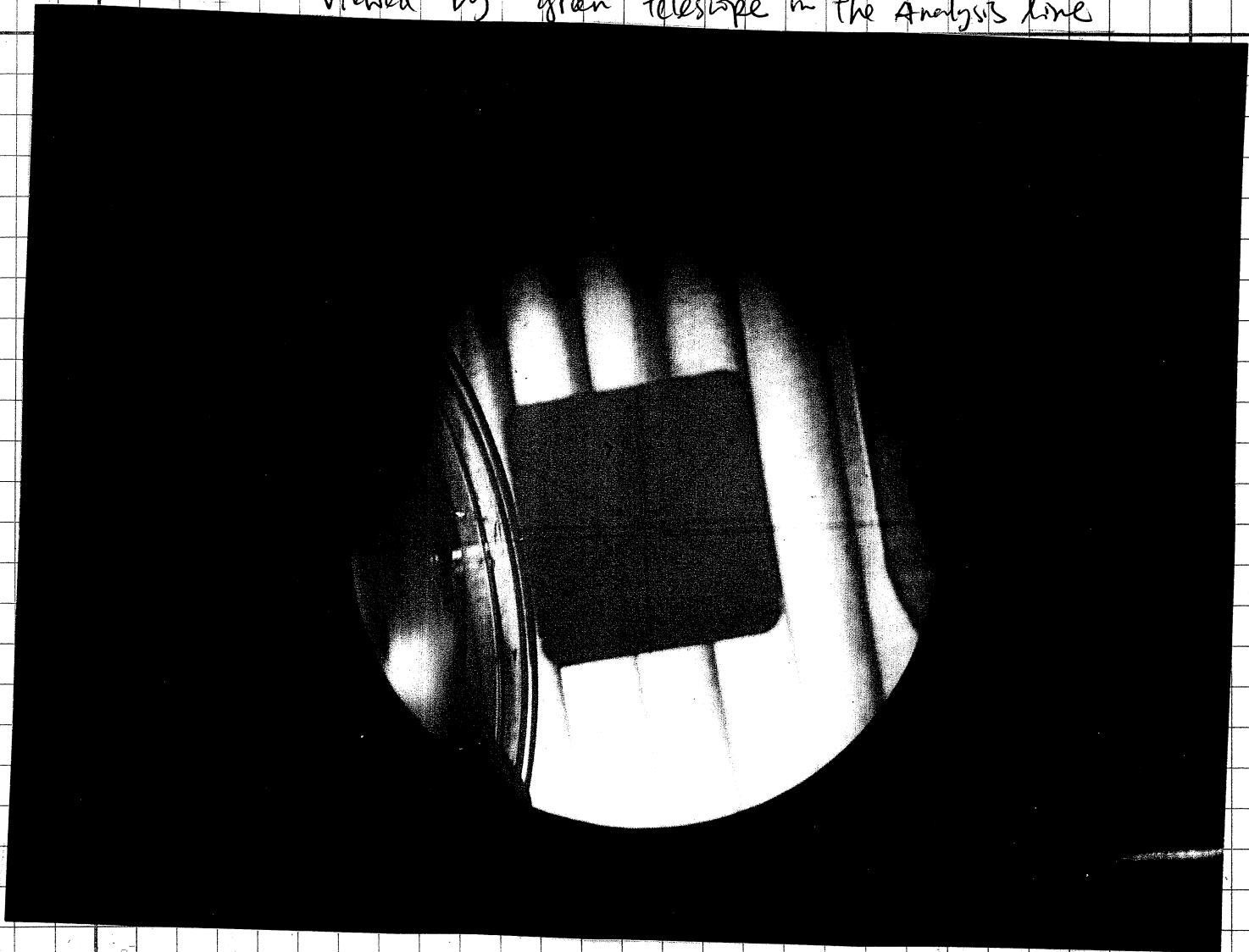
PA on, Sparky off  
biasing EB to 100V  
then all EF on in Caen  
& All CST

All biased (Sparky off) ~ 14:40 10-19-2007

EB Current

T0	4.11	μA
T1	6.18	μA
T2	5.66	μA
T3	6.35	μA

Viewed by "gran" telescope in the Analysis line



### Problems with tele (6,17)

Concerning Tel 16, CB looks good, but the detector makes me worried. To my best judgement it is underbiased by approx. 35-40 Volts, which is affecting some 10-12 Eback channels. On the other hand it also has 3 discharging channels on EF - both edge strips and chn2 on chip 2. I have observed some troubles on these three strips during the tests in the small vacuum chamber few weeks ago, but this time it looks much worse. Moreover two of these channels (plus additional on Eback, which otherwise looks fine) deteriorate quickly with any additional voltage on the detector. Considering the previous tests, all these three strips behaved pretty much the same in small vaccum chamber. Now their respective CSA noise levels are 140mV, 0.6 V and 1.2 Volts, i.e. quite different from one another. Especially the second channel doubles its noise amplitude with rise of voltage already by extra 15V. Just to cut long story short, I want to say that this detector is underbiased but sort of OK as it is right now, but it would be my bet if I should point out a detector I think can go completely bad first. If it is matter of hours or weeks I can not say (so far the detectors were biased couple of times only for a period of 6-8 hours). I am sorry for not-the-best news. Anyway considering our situation and the fact that we will open the chamber once more, we may think of a possibility to do something about the bad EF CB of Tel 17, and possibly exchanging Tel 16 in advance. I am not sure if either is worth the trouble (time and risks involved, loss of preliminary calibration, unsure gains ...). Concerning the possible E exchange we have E from Tel 8, which however seemed to go bad towards the end of the 4pi experiment, but it did not reach the worst state yet, and maybe it never will ..., or we could try to involve the 2nd new detector from Micron. It has not been tested yet, but I can do that during the evening within 3-4 hours, and if good it can be ready for Thursday.

5

10-19-2007 14:40

Year	Mean	SD	Min	Max	Range
1990	20.10	0.0000	20.10	20.10	0.0000
1991	20.02	0.0000	20.02	20.02	0.0000
1992	20.00	0.0000	20.00	20.00	0.0000
1993	20.00	0.0000	20.00	20.00	0.0000

10/19/2007 5:00 PM

	Vbias(V)	I( $\mu$ A)
Back 0	<del>100.1</del>	3.87
Back 1	100.2	5.72
Back 2	100	5.19
Back 3	100.1	6.00

When beam handed back to us.

Issues -

- we don't seem to be triggering
- we aren't sure what Big Brother is  
→ it is the E<sub>3</sub> from telescopes
- we have a very large raw rate on Big Brother sometimes. Very inconsistently.

- 24 -

Alarms Turned off discriminators on all chips  
except EF & EB on tele 4, 11, 12, 19  
now OK note.

→ suggests a CB from tele 10, 13, \$ or 6  
is very noisy

/projSets/proj4/hirz/lise-settings/

**Physical calculator**

<b>Projectile</b>	$^{36}\text{Ar}^{18+}$
<b>Fragment</b>	$^{36}\text{Ar}^{18+}$
<b>Target</b>	Be 1491.32 mg/cm <sup>2</sup>
<b>Stripper</b>	
<b>D1</b>	Brho 2.2729 Tm
<b>D2</b>	Brho 2.2729 Tm
<b>I2_slits</b>	slits $-14.3 \text{ H} +24.9$
<b>I2_wedge</b>	Al 366.885 mg/cm <sup>2</sup>
<b>D3</b>	Brho 1.6230 Tm
<b>D4</b>	Brho 1.6230 Tm
<b>FP_slits</b>	slits $-25 \text{ H} +25$
<b>XFP_SCI</b>	H10C9 127 micron
<b>Dipole 5</b>	Brho 1.5741 Tm

config: A1900\_2006    dtp/p: 0.5%  
option: A1900\_2006    total:  
version: 7.9.10

**Physical calculator**

A Element Z Q	Table of Nuclides	$\xleftarrow{\quad} Z \xrightarrow{\quad}$
34 Ar 18 18	Beta+ decay	$\xleftarrow{\quad} N \xrightarrow{\quad}$
Energy C 32.9588 MeV/u   Energy C 32.9397 AMeV		
Brho C 1.5741 Tm	TKE C 1119.95 MeV	
Erho C 122.479 MJ/C	Velocity C 7.77031 cm/ns	
P C 8494.26 MeV/c	Beta C 0.2591897	
p_trnspt C 0.471903 GeV/c	Gamma C 1.035383	
After C		
Block: Z\Thickness	Energy Remain.   E-Loss	
	MeV/u   MeV   MeV <Q>	

**Equilibrium values for material ""**

Charge State <Q>	17.98
dQ (sigma)	0.14
Thickness	0.72483 mg/cm <sup>2</sup>

**Range and Energy Loss to Si**

Range	dRange (sigma)
C 157.023	0.35554 mg/cm <sup>2</sup>
C 673.921	1.5259 micron
Energy Remain. 0.000 MeV/u	
Material thickness 157.02 mg/cm <sup>2</sup>	
for energy rest 673.92 micron	

**Calculation method of**

Energy Losses	2 Energy straggling
Charge States	3 Angular straggling

**Print** **Help** **Quit**

**Physical calculator**

<b>Projectile</b>	$^{36}\text{Ar}^{18+}$
<b>Fragment</b>	$^{36}\text{Ar}^{18+}$
<b>Target</b>	Be 2012.07 mg/cm <sup>2</sup>
<b>Stripper</b>	
<b>D1</b>	Brho 1.7179 Tm
<b>D2</b>	Brho 1.7179 Tm
<b>I2_slits</b>	slits $-14.3 \text{ H} +24.9$
<b>I2_wedge</b>	
<b>D3</b>	Brho 1.7179 Tm
<b>D4</b>	Brho 1.7179 Tm
<b>FP_slits</b>	slits $-25 \text{ H} +25$
<b>XFP_SCI</b>	
<b>to S800</b>	Brho 1.6691 Tm $-20 \text{ H} +20$ $-20 \text{ V} +20$

config: A1900\_2006    dtp/p: 0.5%  
option: A1900\_2006    total:  
version: 7.9.10

**Physical calculator**

A Element Z Q	Table of Nuclides	$\xleftarrow{\quad} Z \xrightarrow{\quad}$
36 Ar 18 18	Stable	$\xleftarrow{\quad} N \xrightarrow{\quad}$
Energy C 33.0733 MeV/u   Energy C 33.0435 AMeV		
Brho C 1.6691 Tm	TKE C 1189.56 MeV	
Erho C 130.085 MJ/C	Velocity C 7.78311 cm/ns	
P C 9006.91 MeV/c	Beta C 0.2596165	
p_trnspt C 0.500384 GeV/c	Gamma C 1.035506	
After C		
Block: Z\Thickness	Energy Remain.   E-Loss	
	MeV/u   MeV   MeV <Q>	

**Equilibrium values for material ""**

Charge State <Q>	17.98
dQ (sigma)	0.14
Thickness	0.72666 mg/cm <sup>2</sup>

**Range and Energy Loss to Si**

Range	dRange (sigma)
C 167.173	0.36787 mg/cm <sup>2</sup>
C 717.479	1.5768 micron
Energy Remain. 0.000 MeV/u	
Material thickness 167.17 mg/cm <sup>2</sup>	
for energy rest 717.48 micron	

**Calculation method of**

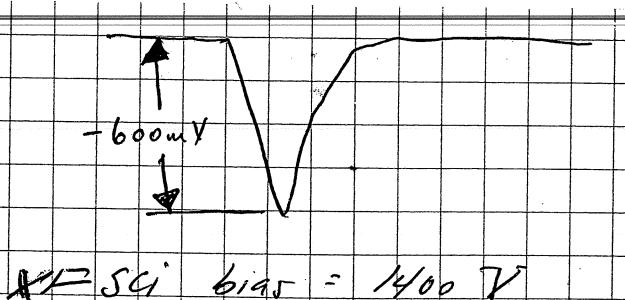
Energy Losses	2 Energy straggling
Charge States	3 Angular straggling

**Print** **Help** **Quit**

A1900 "Print19Oct07\_19h02.txt" Friday 19:02:51 2007-10-19 A1900  
 Moe V3 \*\*\* (36Ar 18+ to S800 target 35Mev/u) \*\*\*

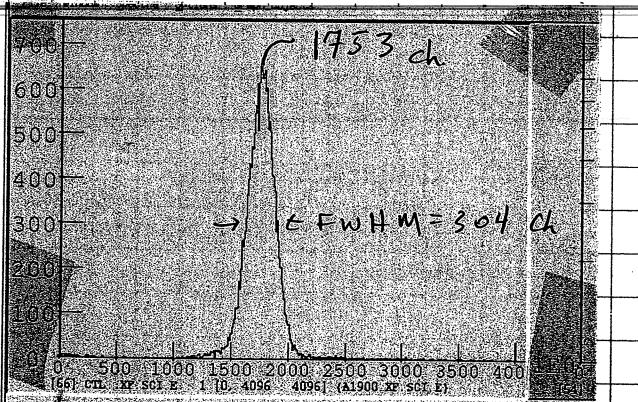
Expt: 05133 "Neutron transf. rxns ... Ar isotopes" [Betty Tsang] Line: S800 [8]  
 Beam: 36 Ar 7+ 13.06 MeV/nuc (K500) 18+ 150.00 MeV/nuc (K1200)  
 <Att 1M> ECR, Apertures: SCECR 150.0; 25.0; 25.0 mm SHVBI: 23.2300 kV  
 K500 a,b: 594 A, 484 A K1200: 724 A, -227 A RF: 23.83840 MHz  
 A1900 Optics: L19S3I\_Focus60x30HiRA.data  
 Rigidity Field Radius (live) Difference (Field\*Radius)

Seg	0:	3.66957 Tm					
Seg 1:	1.71790 Tm	0.55433 T	3.09882 m	3.09904 m	-0.00724 %	(1.71778 Tm)	
Seg 2:	1.71790 Tm	0.55395 T	3.10148 m	3.10119 m	0.00938 %	(1.71806 Tm)	
Seg 3:	1.71790 Tm	0.55530 T	3.09397 m	3.09367 m	0.00973 %	(1.71807 Tm)	
Seg 4:	1.71790 Tm	0.55497 T	3.09547 m	3.09548 m	-0.00015 %	(1.71790 Tm)	
Seg 5:	1.66910 Tm						
Seg 6:	1.66910 Tm						
Seg 7:	1.66910 Tm						
Seg 8:	1.66910 Tm						
A116DS		0.53740 T	3.10539 m	3.10588 m	-0.01588 %		
A132DS		-0.52180 T	3.19847 m	3.19874 m	-0.00819 %		
A165DS		0.28235 T	5.91156 m	5.91146 m	0.00177 %		
I200DS		0.00000 T	3.15406 m	0.00000 m	100.00000 %		
I205DS		0.00000 T	3.14391 m	0.00000 m	100.00000 %		
I223DS		0.00000 T	3.07696 m	0.00000 m	100.00000 %		
I228DS		0.00000 T	3.18622 m	0.00000 m	100.00000 %		
I265DS		0.00000 T	2.80630 m	0.00000 m	100.00000 %		
I269DS		0.00000 T	2.80597 m	0.00000 m	100.00000 %		
Z001TL: out, Z013TL: Be 47, Z014TL RW Al 13							
Z015TL: Be 1904, Z016TL RW Al 34							
Z030BC Beam Stop: -126.88 mm							
Z037L,R: -0.83, 3.50 mm or -0.03, 0.12 width= 0.15 %						Z037DC: out	
Z057MS: out, Z061MS: out							
Z059DC: out, Z062SC: out, Z059TL: out							
Z082 XC,G,YG: 0.16, 203.25, 202.05 mm Z082TL: out							
Z103DC: out, Z104DC: 5 mil BC400, Z106DC: out, Z107DC_U/L: out/out							
Z105TL: out, Slits: nothing installed; PPACs: gas on; Z107 outlim: Y							
Z104 XC,G,YC,G: 0.34, 5.67, -0.00, 2.00 mm							
Slits: I181 XC,G,YC,G: 0.95, 99.29, 0.02, 98.34							
I187: out, I188: out, I189: out, I190: out							
I213: out, I214: out, I215: out, I216: out							
I214DC Detector Drive: out							
I259XM: 0.1045 XP: 0.0000 YM: 0.0000 YP: 1.7182							



$10^6$  pps @ 0.56 mA  
 on Z014/F-C

-40 mV threshold setting



10/19/2007

10:30 pm

Device Name	VSet	ISet	Vmeas	Imeas	Pw	Status	ExA
PA10	8.00 V	2.0 mA	7.60 V	0.0 mA Off	0.00	0.00	
PA12	8.00 V	2.0 mA	7.70 V	0.0 mA On	0.00	0.00	
PA11	8.00 V	2.0 mA	8.10 V	0.0 mA On	0.00	0.00	
PA19	8.00 V	2.0 mA	8.45 V	0.0 mA Off	0.00	0.00	
PA15	8.00 V	2.0 mA	8.10 V	0.0 mA Off	0.00	0.00	
PA1a	8.00 V	2.0 mA	8.25 V	0.0 mA Off	0.00	0.00	
PA16	8.00 V	2.0 mA	8.00 V	0.0 mA Off	0.00	0.00	
PA13	8.00 V	2.0 mA	8.05 V	0.1 mA On	0.00	0.00	
PA17	8.00 V	2.0 mA	7.90 V	0.1 mA On	0.00	0.00	
PA4	7.00 V	2.0 mA	6.95 V	0.0 mA On	0.00	0.00	
PA1	8.00 V	2.0 mA	8.50 V	0.2 mA On	0.00	0.00	
PA3	8.00 V	2.0 mA	8.00 V	0.2 mA On	0.00	0.00	
PA0	7.00 V	2.0 mA	7.00 V	0.3 mA On	0.00	0.00	
PA2	7.00 V	2.0 mA	7.10 V	0.3 mA On	0.00	0.00	
PA18	8.00 V	2.0 mA	7.65 V	0.3 mA On	0.00	0.00	
PA19	7.00 V	2.0 mA	6.95 V	0.3 mA On	0.00	0.00	
PA00	7.00 V	2.0 mA	7.20 V	0.35 mA On	0.00	0.00	
PA01	8.00 V	2.0 mA	7.70 V	0.4 mA On	0.00	0.00	
Prepiledit Group 00							

	Vbias(V)	I(μA)
<b>Back 0</b>	100.1	4.00
<b>Back 1</b>	100.2	5.87
<b>Back 2</b>	100.0	5.33
<b>Back 3</b>	100.1	6.13

10/20/2007

1:37 am

Device Name	VSet	ISet	Vmeas	Imeas	Pw	Status	ExA
PA10	8.00 V	2.0 mA	7.80 V	0.0 mA Off	0.00	0.00	
PA12	8.00 V	2.0 mA	7.75 V	0.0 mA On	0.00	0.00	
PA11	8.00 V	2.0 mA	8.10 V	0.0 mA On	0.00	0.00	
PA19	8.00 V	2.0 mA	8.45 V	0.0 mA Off	0.00	0.00	
PA16	8.00 V	2.0 mA	8.10 V	0.0 mA Off	0.00	0.00	
PA18	8.00 V	2.0 mA	8.25 V	0.0 mA Off	0.00	0.00	
PA15	8.00 V	2.0 mA	8.00 V	0.0 mA Off	0.00	0.00	
PA17	8.00 V	2.0 mA	8.05 V	0.1 mA On	0.00	0.00	
PA12	8.00 V	2.0 mA	7.95 V	1.1 mA On	0.00	0.00	
PA4	7.00 V	2.0 mA	6.55 V	0.0 mA On	0.00	0.00	
PA1	8.00 V	2.0 mA	8.00 V	0.2 mA On	0.00	0.00	
PA3	8.00 V	2.0 mA	8.00 V	0.2 mA On	0.00	0.00	
PA0	7.00 V	2.0 mA	7.05 V	0.3 mA On	0.00	0.00	
PA2	7.00 V	2.0 mA	7.10 V	0.2 mA On	0.00	0.00	
PA18	8.00 V	2.0 mA	7.65 V	0.3 mA On	0.00	0.00	
PA19	7.00 V	2.0 mA	6.95 V	0.2 mA On	0.00	0.00	
PA00	7.00 V	2.0 mA	7.20 V	0.35 mA On	0.00	0.00	
PA01	8.00 V	2.0 mA	7.70 V	0.4 mA On	0.00	0.00	
Prepiledit Group 00							

	Vbias(V)	I(μA)
<b>Back 0</b>	100.1	4.03
<b>Back 1</b>	100.2	5.91
<b>Back 2</b>	100.0	5.36
<b>Back 3</b>	100.1	6.18

94 07 08 09 10 11 12 13 14 15

HiRA Tow4 Reg	LO ALARM	Clrd 19/19:57 P01
HiRA Tow5 Reg	LO ALARM	Clrd 19/19:57 P01
HiRA Tow3 Reg	LO ALARM	Clrd 19/19:57 P01
HiRA Tow2 Reg	LO ALARM	Clrd 19/19:57 P01

HiRA Tow0 Reg	HiRA Tow0 TC0	HiRA Tow0 TC1	HiRA Tow0 TC2	HiRA Tow0 TC3	HiRA Tow0 I
	39.38	22.99	25.79	24.49	-27.80 0.00
0.37		0.21	0.24	0.23	
HiRA Tow1 Reg	HiRA Tow1 TC0	HiRA Tow1 TC1	HiRA Tow1 TC2	HiRA Tow1 TC3	HiRA Tow1 I
	39.94	22.41	25.47	27.91	-28.13 0.00
0.27		0.20	0.22	0.26	
HiRA Tow2 Reg	HiRA Tow2 TC0	HiRA Tow2 TC1	HiRA Tow2 TC2	HiRA Tow2 TC3	HiRA Tow2 I
	33.87	22.02	25.22	24.86	-32.34 0.00
0.32		0.22	0.23	0.24	
HiRA Tow3 Reg	HiRA Tow3 TC0	HiRA Tow3 TC1	HiRA Tow3 TC2	HiRA Tow3 TC3	HiRA Tow3 I
	28.87	22.23	25.67	32.45	-24.27 0.00
0.28		0.22	0.25	0.31	
HiRA Tow4 Reg	HiRA Tow4 TC0	HiRA Tow4 TC1	HiRA Tow4 TC2	HiRA Tow4 TC3	HiRA Tow4 I
	33.74	22.26	23.83	23.99	-27.06 0.00
0.34		0.22	0.24	0.25	
HiRA Tow5 Reg	HiRA Tow5 TC0	HiRA Tow5 TC1	HiRA Tow5 TC2	HiRA Tow5 TC3	HiRA Tow5 I
	34.01	23.10	24.95	23.64	0.00 0.00
0.36		0.24	0.25	0.25	

Tower 0 Lower	Tower 1 Lower	Tower 2 Lower	Tower 3 Lower
25.22	27.12	25.39	25.41
0.22	0.27	0.24	0.26
Tower 0 Upper	Tower 1 Upper	Tower 2 Upper	Tower 3 Upper
24.87	26.09	24.14	24.25
0.24	0.26	0.22	0.25
HiRA Tow8 TC0	HiRA Tow8 TC1	HiRA Tow8 TC2	HiRA Tow8 TC3
0.00	0.00	0.00	0.00
HiRA Tow9 TC0	HiRA Tow9 TC0		
0.00	0.00		

Run# 122	Trigger			Date: 10/20/2007
Beam: $^{40}\text{Ar}$ ; $^{38}\text{Ar}$ E/A=35 MeV Alpha source	HiRA	S800	Coin.	On shift:
Target : (CH <sub>2</sub> )n; 1 mg; 2mg				

Comments: \_\_\_\_\_

Barney printed at \_\_\_\_\_ h \_\_\_\_\_

Detectors Biases and Current file \_\_\_\_\_

Scalers (rate):

CsI 18: 0 \_\_\_\_\_; 1 \_\_\_\_\_; 2 \_\_\_\_\_; 3 \_\_\_\_\_

CsI 19: 0 \_\_\_\_\_; 1 \_\_\_\_\_; 2 \_\_\_\_\_; 3 \_\_\_\_\_

Big brother \_\_\_\_\_ Event accepted \_\_\_\_\_

Master.live \_\_\_\_\_ Master \_\_\_\_\_ Live\_time \_\_\_\_\_

ratio Plastic<sub>XFP</sub>/Plastic<sub>OBJ</sub> \_\_\_\_\_

~~notes~~ • MCPD, 1

- A1900 focal plane scil
- need to be plugged into scalers
- CsT monitor (pulsar trigger) → downscaled by a factor of ~100
- check the dE pulser

>AN CsT gains matched during Run 122

ADC thresholds for ~~CsT~~ CsT set all new (and right) during Run 122

Run# 123	Trigger			Date: 10/ ____ /2007
Beam: $^{40}\text{Ar}$ ; $^{38}\text{Ar}$ E/A=35 MeV Alpha source	HiRA	S800	Coin.	On shift: Vlad Daniela Mire
Target : (CH <sub>2</sub> )n; 1 mg; 2mg				

Comments: \_\_\_\_\_

Barney printed at \_\_\_\_\_ h \_\_\_\_\_

Detectors Biases and Current file \_\_\_\_\_

Scalers (rate):

CsI 18: 0 \_\_\_\_\_; 1 \_\_\_\_\_; 2 \_\_\_\_\_; 3 \_\_\_\_\_

CsI 19: 0 \_\_\_\_\_; 1 \_\_\_\_\_; 2 \_\_\_\_\_; 3 \_\_\_\_\_

Big brother \_\_\_\_\_ Event accepted \_\_\_\_\_

Master.live \_\_\_\_\_ Master \_\_\_\_\_ Live\_time \_\_\_\_\_

03APR RUN126 → taking data after rescaling pulses

Run# 126	Trigger			Date: 10/20/2007
Beam: $^{40}\text{Ar}$ ; $^{38}\text{Ar}$ $^{36}\text{Ar}_{\alpha}$ E/A = 35 MeV 3345 keV Alpha source	(HiRA)	S800	Coin.	
Target : $(\text{CH}_2)_n$ ; 1 mg; 2 mg				
Comments: first taking data with HiRA				
Barney printed at _____ h				
Detectors Biases and Current file				
Scalers (rate):				
CsI 18: 0 <u>✓</u> ; 1 <u>NA</u> ; 2 <u>✓</u> ; 3 <u>✓</u>				
CsI 19: 0 <u>NA</u> ; 1 <u>NA</u> ; 2 <u>✓</u> ; 3 <u>✓</u>				
Big brother _____ Event accepted _____				
Master.live _____ Master _____ Live_time _____				
ratio Plastic <sub>XFP</sub> /Plastic <sub>OBJ</sub> _____				

Stabilization pulses set to 4V for BNC pulses  
and 0.5V for CsI pulses

RUN127 - HiRA singles → looking at CsI Tel 18 searching  
for proton recoil peak

↳ should be broad ~ 600 days around  
~ 1000 ch position

↳ we observe alpha-like structures in all CsI's  
of Tower 3, but nowhere else. Maybe it is bad  
distribution box and cross talk from pulser

↳ we turn off pulser on CsI's and  
start RUN128, but Bill wants to solve  
other problems first

DUN 78 → short FIDA rings

JKT we enter S3 went to publish some signals and realize that up to now we have been doing dE's in the trigger ✓✓  
↳ we removed it cs

8:10 am, 10/20/07

Vacuum still  $\sim 1 \times 10^{-5}$  torr

Had to reset Sparky & VME - power briefly off,  
vacuum  $\rightarrow 9.6 \cdot 10^{-6}$  torr immediately.

Back up when power back on.

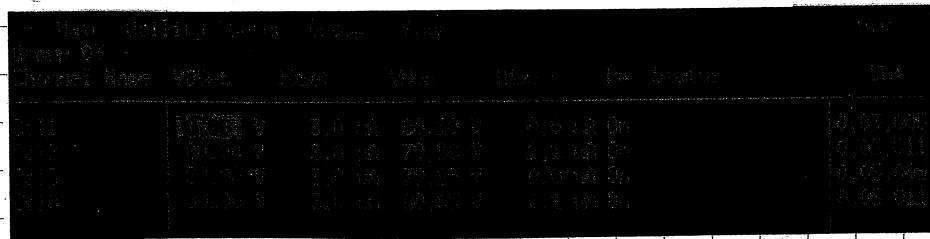
Also, when  $\Delta^2$  Cryo on, dropped quickly to  
 $\sim 8.5 \cdot 10^{-6}$ . Turned off again until needed.

Needed to spend time trying to find a working  
MB setup file and refinding thresholds; the  
most current file was overwritten.

Making serious MB control changes sends a lot  
of noise into system. We had to unplug  
the <sup>B-g</sup> Brother from the CSIT interlock  
otherwise we tripped the interlock with this  
noise.

Bias check @ 8:45 am 10/20/07

	Vbias(V)	I(μA)
Back 0	100.1	4.05
Back 1	100.2	5.49
Back 2	100.0	5.36
Back 3	100.1	6.23



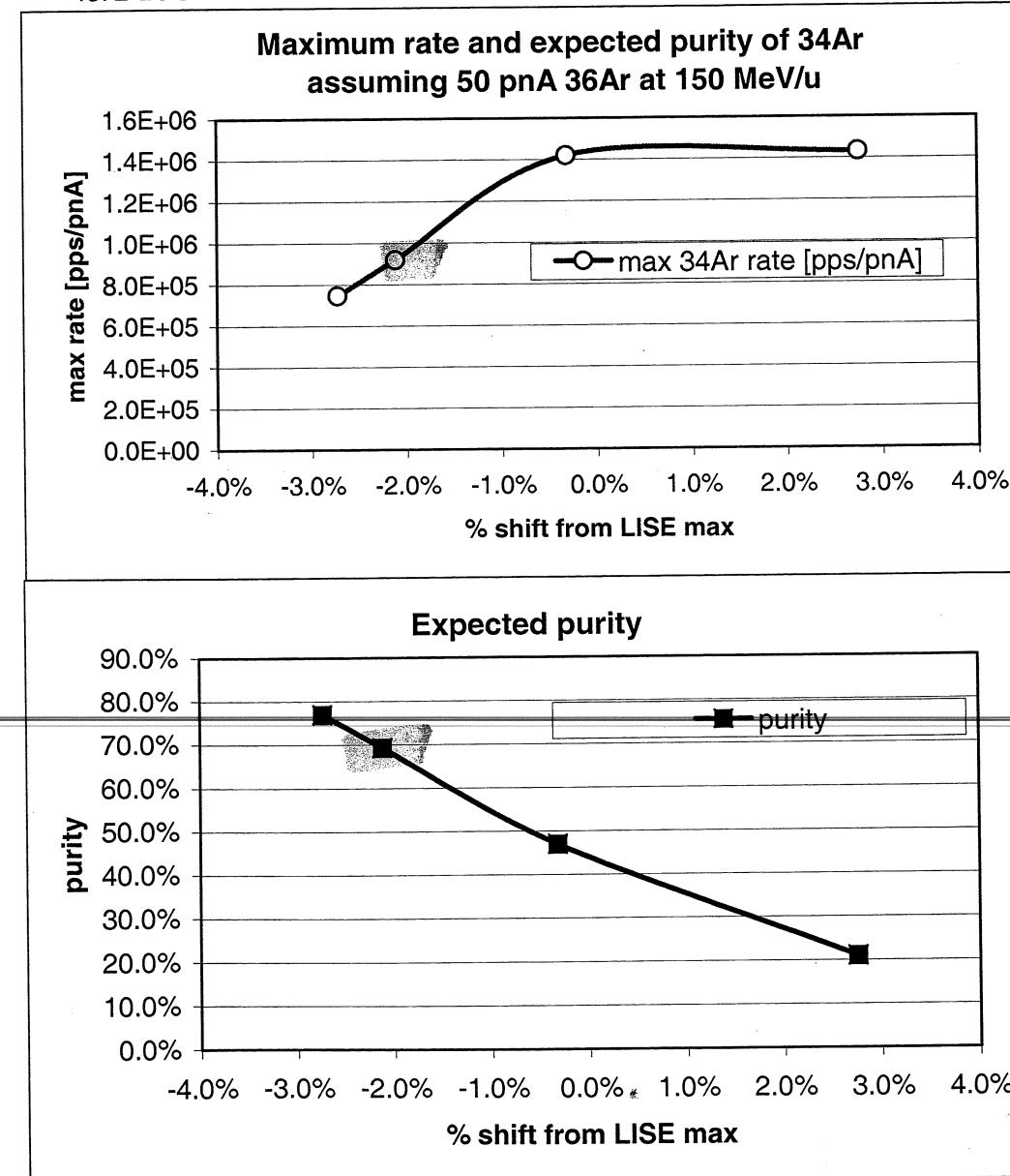
50 pnA - Beam list

Brho34 =  
LISE max

1.623 T-m (fixed for 35/u 34Ar)

LISE max actual

Run #	Brho12 [T-m]	Brho12 [T-m]	shift from LISE max	rate [pps/pnA]	purity	max 34Ar rate
4670 Be 1491 + Al 34	2.3368	2.2729	-2.7%	14900	77.0%	745000
Be 47 + Be 1491	2.3221	2.2729	-2.1%	18349	69.3%	<b>917458</b>
4671 Be 47 + Be 1491 -	2.2803	2.2729	-0.3%	28400	47.0%	1E+06
4672 Be 94 + Be 1491 -	2.212	2.2729	2.8%	28650	21.0%	1E+06



Green highlighted is target Betty & Mauricio agreed on  
purity can be better with slits but you'll lose counts

Bries check @ 8:45 am 10/12/2007, continued from p.13

Main	Utility	Setup	Groups	View				
Group Q2								0.00
Device Name	40Set	10Set	Phase	Imp	Psi	Status		0.00
P001	7.00 V	2.0 1st	7.10 V	0.0 1st	On			0.00,000
P011	7.00 V	2.0 1st	6.70 V	0.1 1st	On			0.00,000
P020	8.00 V	2.0 1st	7.00 V	0.0 1st	On			0.00,000
P021	8.00 V	2.0 1st	7.70 V	0.0 1st	On			0.00,000
P030	6.00 V	2.0 1st	5.60 V	0.0 1st	On			0.00,000
P031	6.00 V	2.0 1st	5.60 V	0.0 1st	On			0.00,000
P040	9.00 V	2.0 1st	9.10 V	0.0 1st	Off			0.00,000
P041	9.00 V	2.0 1st	9.25 V	0.0 1st	Off			0.00,000
P047	8.00 V	2.0 1st	8.05 V	0.1 1st	On			0.00,000
P050	7.00 V	2.0 1st	6.00 V	0.0 1st	On			0.00,000
P060	8.00 V	2.0 1st	8.80 V	0.2 1st	On			0.00,000
P061	8.00 V	2.0 1st	8.00 V	0.2 1st	On			0.00,000
P070	7.00 V	2.0 1st	7.00 V	0.0 1st	On			0.00,000
P071	7.00 V	2.0 1st	6.80 V	0.0 1st	On			0.00,000
P080	8.00 V	2.0 1st	7.90 V	0.4 1st	On			0.00,000
P081	8.00 V	2.0 1st	7.70 V	0.5 1st	On			0.00,000
P097	7.00 V	2.0 1st	6.70 V	0.0 1st	On			0.00,000

Brho34 =  
LISE max

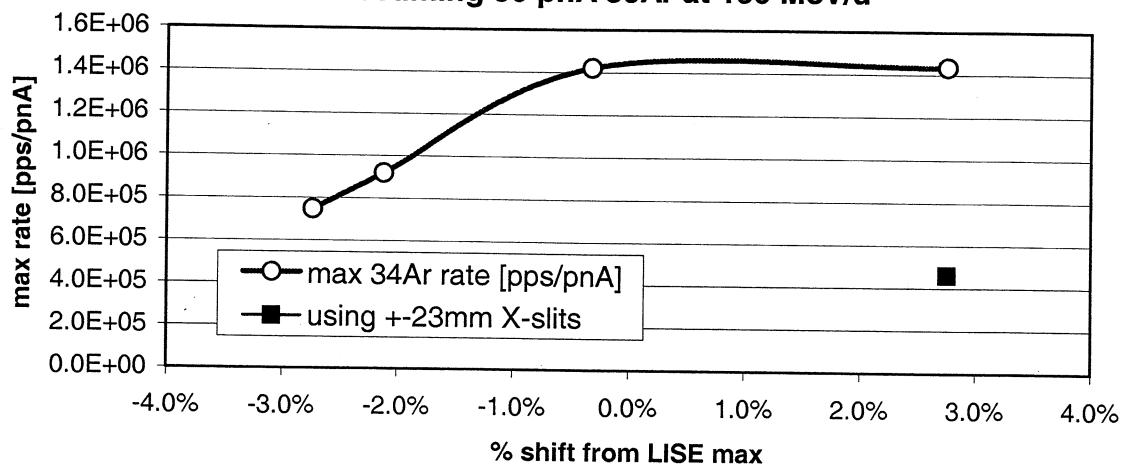
1.623 T-m (fixed for 35/u 34Ar)

50 pA - Beam list

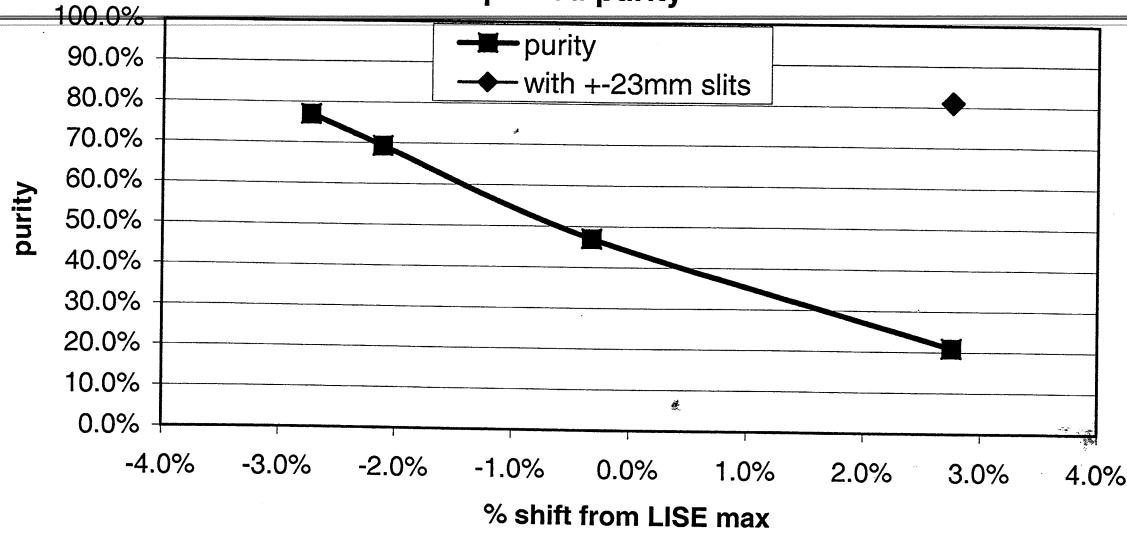
LISE max actual

Run #	Brho12 [T-m]	Brho12 [T-m]	shift from LISE max	rate [pps/pnA]	purity	max 34Ar rate [pps/pnA]
4670 Be 1491 + Al 34	2.3368	2.2729	-2.7%	14900	77.0%	7.45E+05
Be 47 + Be 1491	2.3221	2.2729	-2.1%	18349	69.3%	<b>9.17E+05</b>
4671 Be 47 + Be 1491 -	2.2803	2.2729	-0.3%	28400	47.0%	1.42E+06
4672 Be 94 + Be 1491 -	2.212	2.2729	2.8%	28650	21.0%	1.43E+06
4673 Be 94 + Be 1491 -	2.212	2.2729	2.8%	9230	81.0%	4.62E+05

Maximum rate and expected purity of 34Ar  
assuming 50 pA 36Ar at 150 MeV/u



Expected purity



## TDC timing check for MCP

relative timing with TURA + S800 coincidence

E OR ... 0

XFP ... 184ns

larry ... 726ns

S800 ... 220ns

MCP start ... 270ns → delay

" TURA + S800 coincidence.

in MCP rack

(MCP reward)

XFP by 170ns

S800 by 170ns

E OR by 350ns

TDC elements : 1 MCP

2 MCP

3 MCP

4 XFP

5 S800

6 TURA

TDC range ~ 350 ns

at ~9:40 am, opened up to 2nd Cryo  
 Vacuum dropped to  $\sim 8.6 \cdot 10^{-6}$  Torr  
 Lots of fluctuations, all over  $\delta \sim 9 \times 10^{-6}$   
 $\rightarrow$  something bubbling / boiling / out gassing

Brought HV motor cables patched to data V

EPICaps-32/11c-pd01/meson/1/Panel2/www/HRA/HRA_PIC_NEW.htm									
Page 01: 0-10 V ROC Seg. widths, & 0-5 V ROC Thermocouple US:LV132									
00	07	28	08	16	11	32	13	30	15
High Temp Reg	L0	BLASH			Curd	20/08/12 F01			
High Temp Reg	L0	BLASH			Curd	20/08/12 F01			
High Temp Reg	L0	BLASH			Curd	20/08/12 F01			
High Temp Reg	L0	BLASH			Curd	20/08/12 F01			
RERA Temp 100 V Seg	39.63	23.02	25.79	24.49					
	0.33	0.21	0.24	0.23					
RERA Temp 100 V Seg	31.67	22.53	25.59	26.03					
	0.28	0.21	0.22	0.24					
RERA Temp 100 V Seg	33.63	22.27	25.22	24.86					
	0.32	0.22	0.23	0.24					
RERA Temp 100 V Seg	29.36	22.86	25.67	32.28					
	0.29	0.22	0.25	0.31					
RERA Temp Avg	35.21	23.36	25.50	25.57					
	0.35	0.24	0.24	0.27					
RERA Temp Avg	30.20	24.88	26.70	25.23					
	0.25	0.25	0.23	0.20					

→ 9:47 am

9:55 10/20/07

Put in foils for MCP0 &amp; MCP1

In Spectcl, flipped calibrations for tele 16&17  
 (which were physically flipped a few days ago)

EF-Max vs EB-Max got better, but PID  
 still bad.

Page 02: 0-5 V ADC Thermocouple Temp											09:59:13
	04	07	08	09	10	11	12	13	14	15	
HIBA Tow4 Reg		LO ALARM									Clrd 20/08:12 P01
HIBA Tow5 Reg		LO ALARM									Clrd 20/08:12 P01
HIBA Tow3 Reg		LO ALARM									Clrd 20/08:12 P01
HIBA Tow2 Reg		LO ALARM									Clrd 20/08:12 P01
Tower 0 Lower	25.34	0.22	Tower 1 Lower	27.24	0.27	Tower 2 Lower	25.51	0.24	Tower 3 Lower	25.53	0.26
Tower 0 Upper	24.99	0.24	Tower 1 Upper	26.21	0.26	Tower 2 Upper	24.14	0.22	Tower 3 Upper	24.25	0.25

Beam back into vault at 10:43 am.  
 after MCP work in vault.

Finally got thresholds reset. Backed up  
 as ASIC-IN, setup & OSIB3. Setup

11:30 am  
10/20/07

Customer Name	Order ID	Order Date	Quantity	Unit Price	Total Price	Status	DS
CustomerA	ORD-2023-001	2023-01-01	100	\$100.00	\$10,000.00	Pending	0.00,000
CustomerB	ORD-2023-002	2023-01-02	150	\$150.00	\$22,500.00	Pending	0.00,000
CustomerC	ORD-2023-003	2023-01-03	200	\$200.00	\$40,000.00	Pending	0.00,000
CustomerD	ORD-2023-004	2023-01-04	100	\$100.00	\$10,000.00	Pending	0.00,000
CustomerE	ORD-2023-005	2023-01-05	150	\$150.00	\$22,500.00	Pending	0.00,000
CustomerF	ORD-2023-006	2023-01-06	200	\$200.00	\$40,000.00	Pending	0.00,000
CustomerG	ORD-2023-007	2023-01-07	100	\$100.00	\$10,000.00	Pending	0.00,000
CustomerH	ORD-2023-008	2023-01-08	150	\$150.00	\$22,500.00	Pending	0.00,000
CustomerI	ORD-2023-009	2023-01-09	200	\$200.00	\$40,000.00	Pending	0.00,000
CustomerJ	ORD-2023-010	2023-01-10	100	\$100.00	\$10,000.00	Pending	0.00,000
CustomerK	ORD-2023-011	2023-01-11	150	\$150.00	\$22,500.00	Pending	0.00,000
CustomerL	ORD-2023-012	2023-01-12	200	\$200.00	\$40,000.00	Pending	0.00,000
CustomerM	ORD-2023-013	2023-01-13	100	\$100.00	\$10,000.00	Pending	0.00,000
CustomerN	ORD-2023-014	2023-01-14	150	\$150.00	\$22,500.00	Pending	0.00,000
CustomerO	ORD-2023-015	2023-01-15	200	\$200.00	\$40,000.00	Pending	0.00,000
CustomerP	ORD-2023-016	2023-01-16	100	\$100.00	\$10,000.00	Pending	0.00,000
CustomerQ	ORD-2023-017	2023-01-17	150	\$150.00	\$22,500.00	Pending	0.00,000
CustomerR	ORD-2023-018	2023-01-18	200	\$200.00	\$40,000.00	Pending	0.00,000
CustomerS	ORD-2023-019	2023-01-19	100	\$100.00	\$10,000.00	Pending	0.00,000
CustomerT	ORD-2023-020	2023-01-20	150	\$150.00	\$22,500.00	Pending	0.00,000
CustomerU	ORD-2023-021	2023-01-21	200	\$200.00	\$40,000.00	Pending	0.00,000

Lots of time debugging MCP & trigger.  
We do not have a good HRA singles  
run to analyze

They want to take HIRAD out of coincidence for a while in order to test MCP. The MCP is outputting very few counts right now.

1:20 pm found that the second cryo was ~35R  
shut gate valve lost  
went back to  $9 \cdot 10^{-6} \rightarrow 1 \cdot 10^{-5}$  range

Patch delays

Label

#

E OR

0

Run# 133	Trigger				Date: 10/20/2007
Beam: $^{40}\text{Ar}$ ; $^{38}\text{Ar}$ E/A=35 MeV Alpha source	HiRA	S800	Coin.		On shift: $\text{Ar}^{36}$ Bill, Betty, Sun, Dan, Dan E, Lee
	Target : $(\text{CH}_2)_n$ ; 1 mg; 2mg				

Comments: 15 min, taking data for MCP debug

Barney printed at \_\_\_\_\_ h \_\_\_\_\_

Detectors Biases and Current file \_\_\_\_\_

Scalers (rate):

CsI 18: 0 \_\_\_\_\_ ; 1 \_\_\_\_\_ ; 2 \_\_\_\_\_ ; 3 \_\_\_\_\_

CsI 19: 0 \_\_\_\_\_ ; 1 \_\_\_\_\_ ; 2 \_\_\_\_\_ ; 3 \_\_\_\_\_

Big brother \_\_\_\_\_ Event accepted \_\_\_\_\_

Master.live \_\_\_\_\_ Master \_\_\_\_\_ Live\_time \_\_\_\_\_

ratio Plastic<sub>XFP</sub>/Plastic<sub>OBJ</sub> \_\_\_\_\_

2:00 pm 10/20/07

Put in Carbon target (reduce beam intensity to be sure)  
close off to focal plane (vacuum improves)  
turn off MCP  
play w/ MCP trigger  
switch to HiRA singles trigger didn't save

→ part need to reduce beam intensity to be  
sure low momentum distribution from target doesn't  
impact fp too fast.

Still seeing strange vacuum fluctuations

Unplug big brother so we don't trip during  
change

Plug Big Brother back in.

With no beam, Big Brother still firing ~ 500 Hz  
enable Target drives - kicks up to ~ 1000 Hz  
& CsI monitor goes very high!  
Notice mostly Big Brother for T1

Unplugged target drive - no change

0.

~~1. Turn off MCP~~~~2. Start~~

Change to HIRA SingleS for real  
this time (was still on S800)

Now Big Brother just  $\sim 50$   
Live Trigger  $\sim 150 \dots$

still no change from plugging/unplugging  
target drives

There's some pickup noise on the E-OR's  $\sim 500/\text{s}$  when not in the  
trigger.  $\Delta E\text{-OR}$  have rate  $\sim 30\text{K}$

When E-OR's are in the trigger rate decreases to  $146/\text{s}$ . This is not deadtime  
deadtime is  $400\text{ ns} / \text{event} \Rightarrow \frac{\text{deadtime}}{\text{rate}} = \frac{146 \times 4 \times 10^{-9}}{146 \times 10^3} \approx 6 \times 10^{-2}$

$\Rightarrow$  we can live with 11ns, but this could be eliminated by raising the E<sub>T</sub>  
thresholds

With the beam increased at the target of Carbon, the rate is 485 events/s

A typical Buoy signal is  $400\text{ns} - 700\text{ns}$  with occasional long  
dead times for buffer transfer -

Assume  $\Delta t = 550\text{usec}$   $\frac{\text{deadtime}}{\text{rate}} = \frac{5.5 \times 10^{-4}}{485} \times 10^3 = .26$

$\Rightarrow$  Live time ratio  $\approx .74$  From scales  $\approx .62 \pm .02 \approx 38\%$  dead

Close to scale? XFP XFP. Live downnscale?

We saw a lot of noise in ~~E-OR~~ silicon spectra - we found the bias  
Supply for the backs had tripped for Towers 1 and 3.

Rebias Tower 1 to 100V on E<sub>R</sub>  $I = 5.96\text{mA}$

After resetting the biases, restarting MB control crashed yesterday, when we restarted, we saw much more noise than previously.

This all seems to be coming from T1SISch1 raised threshold on all strips on that ~~channel~~ chip and it looks ok.

4:00 pm 10/20/2007

Main Utility Setup Groups View						
Group #2	Name	VSet	I0Set	Vbias	I0set	Pw Status
P14	100.00 V	2.0 mA	7.10 V	0.0 mA On		0.00,000
P01	7.00 V	2.0 mA	6.90 V	0.1 mA On		0.00,000
P100	8.00 V	2.0 mA	7.80 V	0.0 mA On		0.00,000
P102	8.00 V	2.0 mA	7.70 V	0.0 mA On		0.00,000
P112	8.00 V	2.0 mA	8.40 V	0.0 mA On		0.00,000
P113	8.00 V	2.0 mA	8.10 V	0.0 mA Off		0.00,000
P118	9.00 V	2.0 mA	9.25 V	0.0 mA Off		0.00,000
P117	9.00 V	2.0 mA	8.85 V	0.1 mA On		0.00,000
P11	7.00 V	2.0 mA	6.85 V	0.0 mA On		0.00,000
P13	8.00 V	2.0 mA	8.50 V	0.2 mA On		0.00,000
P15	8.00 V	2.0 mA	8.00 V	0.2 mA On		0.00,000
P10	7.00 V	2.0 mA	7.05 V	0.0 mA On		0.00,000
P16	7.00 V	2.0 mA	6.80 V	0.0 mA On		0.00,000
P19	8.00 V	2.0 mA	7.95 V	0.4 mA On		0.00,000
P15	8.00 V	2.0 mA	7.70 V	0.1 mA On		0.00,000
P17	7.00 V	2.0 mA	6.75 V	0.0 mA On		0.00,000

Main Utility Setup Groups View						
Group #1	Name	VSet	I0Set	Vbias	I0set	Pw Status
TowCard15	100.00 V	4.00 mA	150.25 V	0.65 mA On		0.00,000
TowCard12	200.00 V	4.00 mA	250.50 V	1.20 mA On		0.00,000
TowCard3	100.00 V	4.00 mA	200.75 V	0.70 mA On		0.00,000
TowCard8	200.00 V	4.00 mA	250.00 V	1.30 mA On		0.00,000
TowCard10	100.00 V	4.00 mA	200.75 V	1.35 mA On		0.00,000
TowCard13	200.00 V	4.00 mA	250.00 V	1.25 mA On		0.00,000
TowCard10	200.00 V	4.00 mA	220.00 V	1.62 mA On		0.00,000
TowCard3	200.00 V	4.00 mA	300.75 V	1.50 mA On		0.00,000
TowCard15	210.00 V	4.00 mA	200.75 V	0.72 mA On		0.00,000
TowCard12	100.00 V	4.00 mA	100.00 V	1.00 mA On		0.00,010
TowCard3	200.00 V	4.00 mA	100.50 V	1.70 mA On		0.00,011
TowCard10	100.00 V	4.00 mA	100.00 V	1.10 mA On		0.00,012
TowCard15	200.00 V	4.00 mA	200.00 V	1.40 mA On		0.00,013
TowCard12	200.00 V	5.00 mA	250.75 V	1.40 mA On		0.00,014
TowCard3	300.00 V	4.00 mA	310.00 V	2.10 mA On		0.00,015
TowCard10	210.00 V	4.00 mA	210.00 V	1.45 mA On		0.00,016

	Vbias(V)	I(μA)
Back 0	100.1	3.95
Back 1	100.1	5.80
Back 2	100.0	5.21
Back 3	100.1	6.12

Main Utility Setup Groups View						
Group #3	Name	VSet	I0Set	Vbias	I0set	Pw Status
Cap1	200.00 V	3.0 mA	50.10 V	0.0 mA On		0.00,000
Cap2	200.00 V	3.0 mA	79.90 V	1.1 mA On		0.00,000
Cap3	200.00 V	3.0 mA	79.95 V	0.0 mA On		0.00,000
Cap4	200.00 V	3.0 mA	80.05 V	0.1 mA On		0.00,000

4:15 pm

10/20/2007

Page 02: 0-5 V ADC Thermocouple Temp 16:17:35

04 05 06 07 08 09 10 11 12 13 14 15

Hira Tow4 Reg	LO ALARM	Clrd 20/15:22 P01
Hira Tow2 Reg	LO ALARM	Clrd 20/15:22 P01
Hira Tow5 Reg	LO ALARM	Clrd 20/15:22 P01
Hira Tow3 Reg	LO ALARM	Clrd 20/15:22 P01

Tower 0 Lower	Tower 1 Lower	Tower 2 Lower	Tower 3 Lower
24.98 0.22	26.87 0.26	25.14 0.23	25.16 0.26
Tower 0 Upper	Tower 1 Upper	Tower 2 Upper	Tower 3 Upper
24.74 0.23	25.84 0.26	23.90 0.22	24.60 0.25

Page 02: 0-10 V ADC Reg Volts, & 0-5 V ADC Thermocouple 16:14:54

04 05 06 07 08 09 10 11 12 13 14 15

Hira Tow4 Reg	LO ALARM	Clrd 20/15:22 P01
Hira Tow2 Reg	LO ALARM	Clrd 20/15:22 P01
Hira Tow5 Reg	LO ALARM	Clrd 20/15:22 P01
Hira Tow3 Reg	LO ALARM	Clrd 20/15:22 P01

Hira Tow0 Reg	Hira Tow0 TCE	Hira Tow0 TCA	Hira Tow0 TCE2	Hira Tow0 TCA2	Hira Tow0 TCE3	Hira Tow0 TCA3
5.00 0.00	39.63 0.00	23.02 0.21	25.67 0.24	24.37 0.23	-27.88 0.00	
Hira Tow1 Reg	Hira Tow1 TCE	Hira Tow1 TCA	Hira Tow1 TCE2	Hira Tow1 TCA2	Hira Tow1 TCE3	Hira Tow1 TCA3
5.01 0.01	31.18 0.28	22.41 0.20	25.34 0.22	27.79 0.26	-28.13 0.00	
Hira Tow2 Reg	Hira Tow2 TCE	Hira Tow2 TCA	Hira Tow2 TCE2	Hira Tow2 TCA2	Hira Tow2 TCE3	Hira Tow2 TCA3
5.00 0.00	34.72 0.00	22.02 0.22	25.10 0.23	24.61 0.24	-32.34 0.00	
Hira Tow3 Reg	Hira Tow3 TCE	Hira Tow3 TCA	Hira Tow3 TCE2	Hira Tow3 TCA2	Hira Tow3 TCE3	Hira Tow3 TCA3
5.00 0.00	28.99 0.29	22.23 0.22	25.55 0.25	31.91 0.30	-24.27 0.00	
Hira Tow4 Reg	Hira Tow4 TCE	Hira Tow4 TCA	Hira Tow4 TCE2	Hira Tow4 TCA2	Hira Tow4 TCE3	Hira Tow4 TCA3
5.00 0.00	35.21 0.05	23.36 0.24	25.54 0.26	25.57 0.27	-27.00 0.00	
Hira Tow5 Reg	Hira Tow5 TCE	Hira Tow5 TCA	Hira Tow5 TCE2	Hira Tow5 TCA2	Hira Tow5 TCE3	Hira Tow5 TCA3
5.00 0.00	36.08 0.00	24.83 0.25	26.91 0.27	25.23 0.27	0.00 0.00	

\* When using Carbon target, close the focal plane valve. (P.F in Panelmate) before moving target in position.

Run# 134	Trigger			Date: 10/20/2007
Beam: $^{40}\text{Ar}$ ; $^{38}\text{Ar}$ E/A=35 MeV Alpha source	HiRA	S800	Coin.	On shift:
				Target : (CH <sub>2</sub> )n; 1 mg; 2mg $\sim 250 \mu\text{m}$

Comments: At beginning later noticed T1273 ED  
biases tripped

Barney printed at \_\_\_\_\_ h \_\_\_\_\_

Detectors Biases and Current file \_\_\_\_\_

Scalers (rate):

CsI 18: 0 \_\_\_\_\_; 1 \_\_\_\_\_; 2 \_\_\_\_\_; 3 \_\_\_\_\_

CsI 19: 0 \_\_\_\_\_; 1 \_\_\_\_\_; 2 \_\_\_\_\_; 3 \_\_\_\_\_

Big brother \_\_\_\_\_ Event accepted \_\_\_\_\_

Master.live \_\_\_\_\_ Master \_\_\_\_\_ Live\_time \_\_\_\_\_

Run# 135	Trigger			Date: 10/20/2007
Beam: $^{40}\text{Ar}$ ; $^{38}\text{Ar}$ E/A=35 MeV Alpha source	HiRA	S800	Coin.	On shift:
				Target : (CH <sub>2</sub> )n; 1 mg; 2mg

Comments: Same as previous

Barney printed at \_\_\_\_\_ h \_\_\_\_\_

Detectors Biases and Current file \_\_\_\_\_

Scalers (rate):

CsI 18: 0 \_\_\_\_\_; 1 \_\_\_\_\_; 2 \_\_\_\_\_; 3 \_\_\_\_\_

CsI 19: 0 \_\_\_\_\_; 1 \_\_\_\_\_; 2 \_\_\_\_\_; 3 \_\_\_\_\_

Big brother \_\_\_\_\_ Event accepted \_\_\_\_\_

Master.live \_\_\_\_\_ Master \_\_\_\_\_ Live\_time \_\_\_\_\_

ratio Plastic<sub>XFP</sub>/Plastic<sub>OBJ</sub> \_\_\_\_\_

Run# 136	Trigger			Date: 10/20/2007
Beam: $^{40}\text{Ar}$ ; $^{38}\text{Ar}$ E/A=35 MeV Alpha source	HiRA	S800	Coin.	On shift:
				Target : (CH <sub>2</sub> )n; 1 mg; 2mg $\sim 250 \mu\text{m}$

Comments: Good HiRA singles, with reset EB biases

Barney printed at \_\_\_\_\_ h \_\_\_\_\_

Detectors Biases and Current file \_\_\_\_\_

Scalers (rate):

CsI 18: 0 \_\_\_\_\_; 1 \_\_\_\_\_; 2 \_\_\_\_\_; 3 \_\_\_\_\_

CsI 19: 0 \_\_\_\_\_; 1 \_\_\_\_\_; 2 \_\_\_\_\_; 3 \_\_\_\_\_

Big brother \_\_\_\_\_ Event accepted \_\_\_\_\_

Master.live \_\_\_\_\_ Master \_\_\_\_\_ Live\_time \_\_\_\_\_

ratio Plastic<sub>XFP</sub>/Plastic<sub>OBJ</sub> \_\_\_\_\_

Run# 137	Trigger			Date: 10/1/2007
Beam: $^{40}\text{Ar}$ ; $^{38}\text{Ar}$ $^{36}\text{Ar}$	HiRA	S800	Coin.	On shift: Jenny, Ali, Bill, Sun, Betty, Dan, Micha, Andy, Andy et al
E/A=35 MeV				
Alpha source				
Target : (CH <sub>2</sub> )n; 1 mg; 2mg				
Comments:				
Barney printed at _____ h _____				
Detectors Biases and Current file _____				
Scalers (rate):				
CsI 18: 0 _____; 1 _____; 2 _____; 3 _____				
CsI 19: 0 _____; 1 _____; 2 _____; 3 _____				
Big brother _____ Event accepted _____				
Master.live _____ Master _____ Live_time _____				
ratio Plastic <sub>XF</sub> /Plastic <sub>OBJ</sub> _____				

Run# 138	Trigger			Date: 10/20/2007
Beam: $^{40}\text{Ar}$ ; $^{38}\text{Ar}$ $\circled{41}$	HiRA	S800	Coin.	On shift: Jenny, Ali, Bill, Betty, Andy, Sun, Dan, Micha, et al
E/A=33 MeV				
Alpha source				
Target : (CH <sub>2</sub> )n; 1 mg; 2mg				
Comments: C target MCP & Hira, no S 800; often 100 beam intensity below meas. th. Barney printed at 6 h 30 pm on z1 cup.				
Detectors Biases and Current file _____				
Scalers (rate):				
CsI 18: 0 _____; 1 _____; 2 _____; 3 _____				
CsI 19: 0 _____; 1 _____; 2 _____; 3 _____				
Big brother _____ Event accepted _____				
Master.live _____ Master _____ Live_time _____				
ratio Plastic <sub>XF</sub> /Plastic <sub>OBJ</sub> _____				

10/20/2007

6:35 pm

Main Utility Setup Groups View							User	
Group 01	Channel Name	V0Set	I0Set	Vmon	Imon	Pw	Status	Ch#
	Tov0Card15	100.00 V	4.00 mA	190.25 V	0.66 mA	On		0.00,000
	Tov0Card12	250.00 V	4.00 mA	250.50 V	1.22 mA	On		0.00,001
	Tov0Card9	210.00 V	4.00 mA	209.75 V	0.80 mA	On		0.00,002
	Tov0Card6	295.00 V	4.00 mA	295.00 V	1.32 mA	On		0.00,003
	Tov0Card15	110.00 V	4.00 mA	108.75 V	1.36 mA	On		0.00,005
	Tov0Card9	250.00 V	4.00 mA	250.00 V	1.26 mA	On		0.00,007
	Tov0Card6	320.00 V	4.00 mA	320.00 V	1.66 mA	On		0.00,008
	Tov0Card3	310.00 V	4.00 mA	309.75 V	1.50 mA	On		0.00,009
	Tov0Card15	210.00 V	4.00 mA	209.75 V	0.72 mA	On		0.00,010
	Tov0Card12	100.00 V	4.00 mA	100.00 V	1.60 mA	On		0.00,011
	Tov0Card9	200.00 V	4.00 mA	199.50 V	1.72 mA	On		0.00,012
	Tov0Card6	120.00 V	4.00 mA	120.00 V	1.20 mA	On		0.00,013
	Tov0Card15	200.00 V	4.00 mA	199.75 V	1.50 mA	On		0.00,015
	Tov0Card12	240.00 V	5.00 mA	239.75 V	2.24 mA	On		0.00,016
	Tov0Card9	340.00 V	4.00 mA	340.00 V	1.46 mA	On		0.00,017
	Tov0Card3	210.00 V	4.00 mA	210.00 V	1.00 mA	On		0.00,019

	Vbias(V)	I(μA)
Back 0	100.1	4.02
Back 1	100.1	5.89
Back 2	100.0	5.31
Back 3	100.1	6.21

Main Utility Setup Groups View							User	
Group 02	Channel Name	V0Set	I0Set	Vmon	Imon	Pw	Status	Ch#
	P014	7.00 V	2.0 mA	7.10 V	0.0 mA	On		0.03,000
	P011	7.00 V	2.0 mA	6.90 V	0.1 mA	On		0.03,001
	P010	8.00 V	2.0 mA	7.80 V	0.0 mA	On		0.03,003
	P012	8.00 V	2.0 mA	7.75 V	0.0 mA	On		0.03,004
	P013	8.00 V	2.0 mA	5.45 V	0.0 mA	On		0.03,006
	P016	0.00 V	2.0 mA	0.10 V	0.0 mA	OFF		0.03,007
	P018	0.00 V	2.0 mA	0.25 V	0.0 mA	OFF		0.03,008
	P017	9.00 V	2.0 mA	8.85 V	0.1 mA	On		0.03,010
	P044	7.00 V	2.0 mA	6.85 V	0.0 mA	On		0.05,000
	P01	9.00 V	2.0 mA	8.90 V	0.2 mA	On		0.05,001
	P02	6.00 V	2.0 mA	6.00 V	0.2 mA	On		0.05,002
	P030	7.00 V	2.0 mA	7.05 V	0.6 mA	On		0.05,003
	P028	7.00 V	2.0 mA	6.80 V	0.0 mA	On		0.05,007
	P038	8.00 V	2.0 mA	7.95 V	0.4 mA	On		0.05,008
	P039	8.00 V	2.0 mA	7.70 V	0.1 mA	On		0.05,009
	P037	7.00 V	2.0 mA	6.75 V	0.0 mA	On		0.05,010

	Vbias(V)	I(μA)
Back 0	100.1	4.02
Back 1	100.1	5.89
Back 2	100.0	5.31
Back 3	100.1	6.21

Main Utility Setup Groups View							User	
Group 03	Channel Name	V0Set	I0Set	Vmon	Imon	Pw	Status	Ch#
	s11	80.00 V	3.0 mA	80.10 V	0.0 mA	On		0.03,000
	s12	80.00 V	3.0 mA	79.90 V	1.1 mA	On		0.03,001
	s13	80.00 V	3.0 mA	79.85 V	0.0 mA	On		0.03,002
	s10	80.00 V	3.0 mA	80.05 V	0.1 mA	On		0.05,001

to more mask data

Daniel Berlin

337-1084

go to S800 singles

Insert mask one at a time

↳ 'S800 drive' (poul page) → page 04

1) upstream mask CRDC1

2) downstream mask CRDC2

↳ more intensity (if  $\text{LiRA}$ ) ~~on back - 7~~

↳ max = 5-6K in focal plane

↳ need to look at XY spectrum

↳ pattern of the mask  $(\sim 10-15 \text{ minutes})$  should be seen

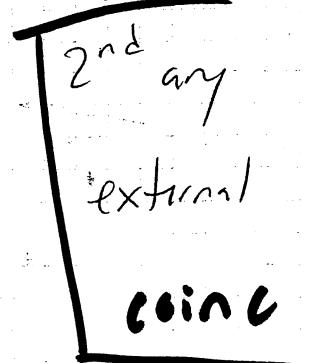
every few days should be performed mask calibration

↳ should be done in the reactions not beam

normal trigger

Horn Singles

Horn or MCP



To do mask calibration  
(analysis) → program

/user/lis800/calibrate

./Calibrate\_S800.tcl

Run# <u>139</u>	Trigger			Date: <u>10/20/2007</u>
Beam: <u><sup>40</sup>Ar; <sup>38</sup>Ar</u>	HiRA	S800	Coin.	On shift:
E/A=35 MeV				
Alpha source <u>✓</u>				
Target : (CH <sub>2</sub> )n; 1 mg; 2mg				
Comments: <u>HiRa singles</u>				
Barney printed at _____ h _____				
Detectors Biases and Current file _____				
Scalers (rate):				
CsI 18: 0 _____; 1 _____; 2 _____; 3 _____				
CsI 19: 0 _____; 1 _____; 2 _____; 3 _____				
Big brother _____ Event accepted _____				
Master.live _____ Master _____ Live_time _____				
ratio Plastic <sub>XFP</sub> /Plastic <sub>OBJ</sub> _____				

8 pm 10/20/2007  
 MCP0 was set to Mask (200.6)  
 Target was set to mask (252.5)

Run# <u>140</u>	Trigger			Date: <u>10/20/2007</u>
Beam: <u><sup>40</sup>Ar; <sup>38</sup>Ar</u>	HiRA	S800	Coin.	On shift:
E/A=35 MeV				
Alpha source <u>✓</u>				
Target : (CH <sub>2</sub> )n; 1 mg; 2mg				
Comments: MCP0 was set to mask (200.6) Target was set to mask (252.5 mm) <u>MCP singles</u> No beam				
Barney printed at _____ h _____				
Detectors Biases and Current file _____				
Scalers (rate):				
CsI 18: 0 _____; 1 _____; 2 _____; 3 _____				
CsI 19: 0 _____; 1 _____; 2 _____; 3 _____				
Big brother _____ Event accepted _____				
Master.live _____ Master _____ Live_time _____				
ratio Plastic <sub>XFP</sub> /Plastic <sub>OBJ</sub> _____				

Run# <u>141</u>	Trigger			Date: <u>10/20/2007</u>
Beam: $^{40}\text{Ar}$ ; $^{38}\text{Ar}$ E/A=35 MeV Alpha source	HiRA	S800	Coin.	On shift:
Target : (CH <sub>2</sub> )n; 1 mg; 2mg				
Comments: <u>Same as 140, with beam</u>				
Barney printed at <u>h</u> Detectors Biases and Current file _____				
Scalers (rate): CsI 18: 0 _____; 1 _____; 2 _____; 3 _____ CsI 19: 0 _____; 1 _____; 2 _____; 3 _____ Big brother _____ Event accepted _____ Master.live _____ Master _____ Live_time _____ ratio Plastic <sub>XFP</sub> /Plastic <sub>OBJ</sub> _____				

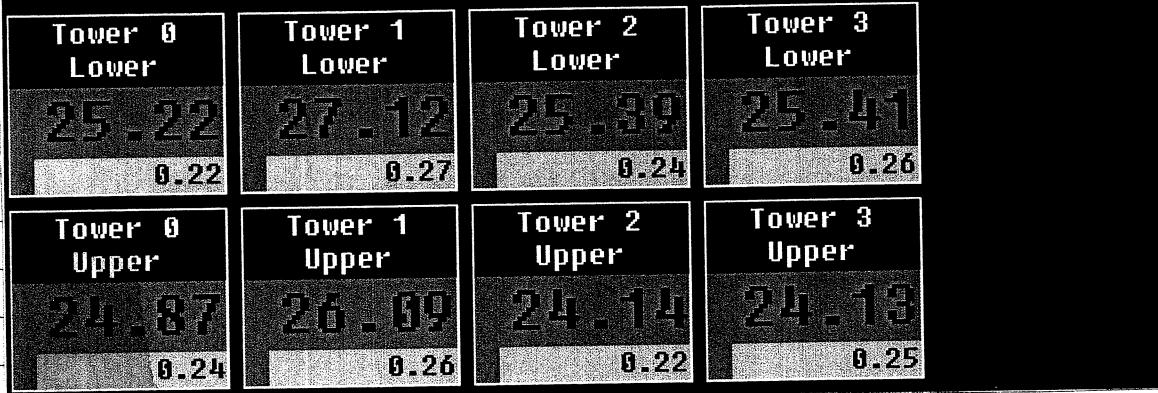
10/20/07

20:48

Page 80: H-1H D ADL Req Units, H-4 U ADC Thermocouple 200-400-44											
00	01	02	03	04	05	06	07	08	09	10	11
H1RA Low1 Req	00 ALARM	00 ALARM	00 ALARM	00 ALARM	00 ALARM	00 ALARM	00 ALARM				
H1RA Low2 Req	00 ALARM	00 ALARM	00 ALARM	00 ALARM	00 ALARM	00 ALARM	00 ALARM				
H1RA Low3 Req	00 ALARM	00 ALARM	00 ALARM	00 ALARM	00 ALARM	00 ALARM	00 ALARM				
H1RA Low4 Req	00 ALARM	00 ALARM	00 ALARM	00 ALARM	00 ALARM	00 ALARM	00 ALARM				
H1RA T0wD Reg	<b>29.38</b> 0.37	<b>28.92</b> 0.21	<b>25.91</b> 0.25	<b>24.49</b> 0.23	<b>-27.60</b> 0.00						
H1RA T0w1 Reg	<b>31.93</b> 0.27	<b>22.47</b> 0.20	<b>25.50</b> 0.22	<b>23.09</b> 0.26	<b>-28.13</b> 0.00						
H1RA T0w2 Reg	<b>34.24</b> 0.32	<b>22.92</b> 0.22	<b>25.16</b> 0.20	<b>24.74</b> 0.24	<b>-32.34</b> 0.06						
H1RA T0w3 Reg	<b>28.99</b> 0.28	<b>22.23</b> 0.22	<b>25.55</b> 0.25	<b>32.28</b> 0.31	<b>-24.27</b> 0.00						
H1RA T0w4 Reg	<b>34.96</b> 0.24	<b>23.29</b> 0.23	<b>25.39</b> 0.26	<b>25.45</b> 0.27	<b>-27.06</b> 0.00						
H1RA T0w5 Reg	<b>35.84</b> 0.38	<b>24.71</b> 0.25	<b>26.66</b> 0.27	<b>24.99</b> 0.26	<b>0.06</b> 0.00						

04 07 08 09 10 11 12 13 14 15

HiRA Tow4 Reg	LO ALARM	Clr d	20/15:22	P01
HiRA Tow2 Reg	LO ALARM	Clr d	20/15:22	P01
HiRA Tow5 Reg	LO ALARM	Clr d	20/15:22	P01
HiRA Tow3 Reg	LO ALARM	Clr d	20/15:22	P01



Run# <u>142</u>	Trigger			Date: 10/ <u>/2007</u>
Beam: $^{40}\text{Ar}$ ; $^{38}\text{Ar}$ E/A=35 MeV Alpha source	HiRA	S800	Coin.	On shift:
Target : (CH <sub>2</sub> )n; 1 mg; 2mg				

Comments: MCP singlesBarney printed at        h

Detectors Biases and Current file \_\_\_\_\_

Scalers (rate):

CsI 18: 0 \_\_\_\_\_; 1 \_\_\_\_\_; 2 \_\_\_\_\_; 3 \_\_\_\_\_

CsI 19: 0 \_\_\_\_\_; 1 \_\_\_\_\_; 2 \_\_\_\_\_; 3 \_\_\_\_\_

Big brother \_\_\_\_\_ Event accepted \_\_\_\_\_

Master.live \_\_\_\_\_ Master \_\_\_\_\_ Live\_time \_\_\_\_\_

ratio Plastic<sub>XFP</sub>/Plastic<sub>OBJ</sub> \_\_\_\_\_

Run# <u>143</u>	Trigger			Date: 10/ <u>/2007</u>
Beam: $^{40}\text{Ar}$ ; $^{38}\text{Ar}$ E/A=35 MeV Alpha source	HiRA	S800	Coin.	On shift:
Target : (CH <sub>2</sub> )n; 1 mg; 2mg				

Comments: MCP singles150 ns added to MCP singlesBarney printed at 21 h 35

Detectors Biases and Current file \_\_\_\_\_

Scalers (rate):

CsI 18: 0 \_\_\_\_\_; 1 \_\_\_\_\_; 2 \_\_\_\_\_; 3 \_\_\_\_\_

CsI 19: 0 \_\_\_\_\_; 1 \_\_\_\_\_; 2 \_\_\_\_\_; 3 \_\_\_\_\_

Big brother \_\_\_\_\_ Event accepted \_\_\_\_\_

Master live \_\_\_\_\_ Live\_time \_\_\_\_\_

16:35pm

10/20/07

User	Setup	Groups	View			
VSet	I0Set	VMon	IMon	Pw	Status	Q#
100.00 V	4.00 μA	190.25 V	0.06 μA	On		0.00,000
100.00 V	4.00 μA	250.25 V	1.22 μA	On		0.00,001
100.00 V	4.00 μA	209.75 V	0.80 μA	On		0.00,002
100.00 V	4.00 μA	295.00 V	1.34 μA	On		0.00,003
100.00 V	4.00 μA	198.75 V	1.36 μA	On		0.00,005
100.00 V	4.00 μA	250.00 V	1.28 μA	On		0.00,007
100.00 V	4.00 μA	320.00 V	1.68 μA	On		0.00,008
100.00 V	4.00 μA	309.75 V	1.52 μA	On		0.00,009
100.00 V	4.00 μA	209.75 V	0.72 μA	On		0.00,010
100.00 V	4.00 μA	100.00 V	1.62 μA	On		0.00,011
100.00 V	4.00 μA	199.50 V	1.72 μA	On		0.00,012
100.00 V	4.00 μA	120.00 V	1.20 μA	On		0.00,013
100.00 V	4.00 μA	200.00 V	1.50 μA	On		0.00,015
240.00 V	5.00 μA	239.75 V	2.20 μA	On		0.00,016
300.00 V	4.00 μA	340.00 V	1.48 μA	On		0.00,017
300.00 V	4.00 μA	210.00 V	1.00 μA	On		0.00,018

	Vbias(V)	I(μA)
Back 0	100.1	4.03
Back 1	100.1	5.44
Back 2	100.0	5.32
Back 3	100.1	6.26

User	Setup	Groups	View			
VSet	I0Set	VMon	IMon	Pw	Status	Q#
100.00 V	2.0 μA	7.10 V	0.0 μA	On		0.00,000
7.00 V	2.0 μA	6.90 V	0.1 μA	On		0.00,001
8.00 V	2.0 μA	7.00 V	0.0 μA	On		0.00,003
8.00 V	2.0 μA	7.75 V	0.0 μA	On		0.00,004
8.00 V	2.0 μA	5.45 V	0.0 μA	On		0.00,006
0.00 V	2.0 μA	0.10 V	0.0 μA	Off		0.00,007
0.00 V	2.0 μA	0.25 V	0.0 μA	Off		0.00,008
9.00 V	2.0 μA	8.85 V	0.2 μA	On		0.00,010
7.00 V	2.0 μA	6.05 V	0.0 μA	On		0.00,009
9.00 V	2.0 μA	8.90 V	0.2 μA	On		0.00,001
6.00 V	2.0 μA	6.00 V	0.2 μA	On		0.00,002
7.00 V	2.0 μA	7.05 V	0.5 μA	On		0.00,003
7.00 V	2.0 μA	6.00 V	0.0 μA	On		0.00,007
8.00 V	2.0 μA	7.95 V	0.5 μA	On		0.00,008
8.00 V	2.0 μA	7.70 V	0.1 μA	On		0.00,009
7.00 V	2.0 μA	6.75 V	0.0 μA	On		0.00,010

User	Setup	Groups	View			
VSet	I0Set	VMon	IMon	Pw	Status	Q#
100.00 V	3.0 μA	80.10 V	0.0 μA	On		0.00,000
80.00 V	3.0 μA	79.95 V	1.1 μA	On		0.00,001
80.00 V	3.0 μA	79.85 V	0.0 μA	On		0.00,002
80.00 V	3.0 μA	80.05 V	0.2 μA	On		0.00,003

LocEn V0 I0 N + CAEN 832527

10:35pm

Changing MCP 0 to Foil (123.85mm)  
 (Unplugged and plugged by brother  
 for position change.)

10:40 pm

10/20/07

Run# 144	Trigger			Date: 10/20/2007
Beam: $^{40}\text{Ar}$ ; $^{38}\text{Ar}$ E/A=35 MeV Alpha source	HiRA	S800	Coin.	On shift:
	Target : (CH <sub>2</sub> )n; 1 mg; 2mg			
Comments: Atten 30k				
Barney printed at _____ h _____				
Detectors Biases and Current file _____				
Scalers (rate):				
CsI 18: 0 _____ ; 1 _____ ; 2 _____ ; 3 _____				
CsI 19: 0 _____ ; 1 _____ ; 2 _____ ; 3 _____				
Big brother _____ Event accepted _____				
Master.live _____ Master _____ Live_time _____				
ratio Plastic <sub>XFP</sub> /Plastic <sub>OBJ</sub> _____				

Run# 145	Trigger			Date: 10/20/2007
Beam: $^{40}\text{Ar}$ ; $^{38}\text{Ar}$ E/A=35 MeV Alpha source	HiRA	S800	Coin.	On shift:
	Target : (CH <sub>2</sub> )n; 1 mg; 2mg			
Comments: MCPD foil in. Atten 300k				
Barney printed at _____ h _____				
Detectors Biases and Current file _____				
Scalers (rate):				
CsI 18: 0 _____ ; 1 _____ ; 2 _____ ; 3 _____				
CsI 19: 0 _____ ; 1 _____ ; 2 _____ ; 3 _____				
Big brother _____ Event accepted _____				
Master.live _____ Master _____ Live_time _____				
ratio Plastic <sub>XFP</sub> /Plastic <sub>OBJ</sub> _____				

Run# 146	Trigger			Date: 10/20/2007
Beam: $^{40}\text{Ar}$ ; $^{38}\text{Ar}$ E/A=35 MeV Alpha source	HiRA	S800	Coin.	On shift:
	Target : (CH <sub>2</sub> ) <sub>n</sub> ; 1 mg; 2mg			
Comments: MCP0 mask in.				
Barney printed at ____ h _____				
Detectors Biases and Current file _____				
Scalers (rate):				
CsI 18: 0 ____ ; 1 ____ ; 2 ____ ; 3 ____				
CsI 19: 0 ____ ; 1 ____ ; 2 ____ ; 3 ____				
Big brother _____ Event accepted _____				
Master.live _____ Master _____ Live_time _____				
ratio Plastic <sub>XFP</sub> /Plastic <sub>OBJ</sub> _____				

11:15 pm MCP mask calibrations

Bill ~~already~~ changed trigger so  
we can do a mask run in coincidence  
with S800.

11:40 pm

~~also~~ Target changed to carbon (26 mg/cm<sup>2</sup>)

Target = viewer, mcp0 = mask, mcp1 = foil

12:12 pm

MCP0 foil in

Target = viewer, mcp0 = foil / , mcp1 = foil /

Scint mismatch on CT crystals

tel.	C8I	max.	tel.	C8I	max
0	0	96	14	0	88
	1	90		1	86
	2	62		2	79
	3	90		3	76
1	0	69	15	0	80
	1	97		1	58
	2	94		2	61
	3	95		3	—
2	0	111	17	0	82
	1	65		1	86
	2	98		2	90
	3	92		3	85
3	0	95	16	0	94
	1	87		1	84
	2	103		2	99
	3	89		3	91
10	0	82	4	0	59
	1	83		1	87
	2	91		2	76
	3	59		3	63
11	0	81	5	0	58
	1	83		1	78
	2	94		2	81
	3	81		3	79
12	0	94	6	0	80
	1	82		1	92
	2	91		2	80
	3	89		3	87
13	0	78	19	0	86
	1	59		1	86
	2	60		2	77
	3	62		3	81

but the max Ed ~ 45 MeV so despite the mismatched

Scint we are fine

note - looks like it is just gain setting due to different  
saturation in the shaper

shaper  
saturation  
gain

12:30 pm 10/21/07

target : Carbon target in

target: carbon ; mcp 0: foil ; mcp1: foil;

1:00 am 10/21/07

	Vbias(V)	I(μA)
Back 0	100.1	4.02
Back 1	100.1	5.96
Back 2	100.0	5.32
Back 3	102.1	6.39

→ increased from  
5.86 at 6:35pm  
10/20/07

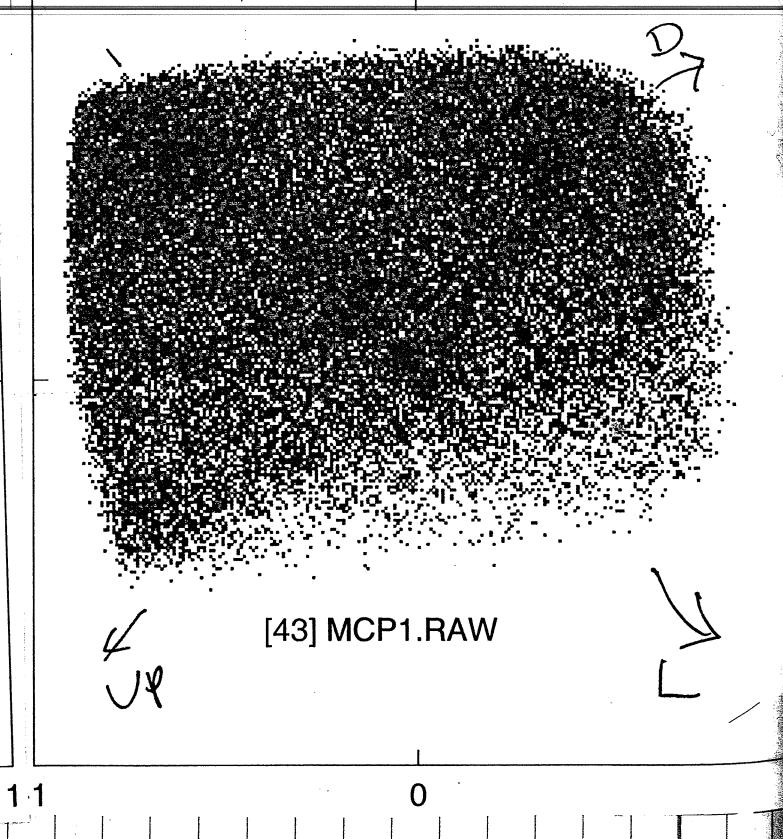
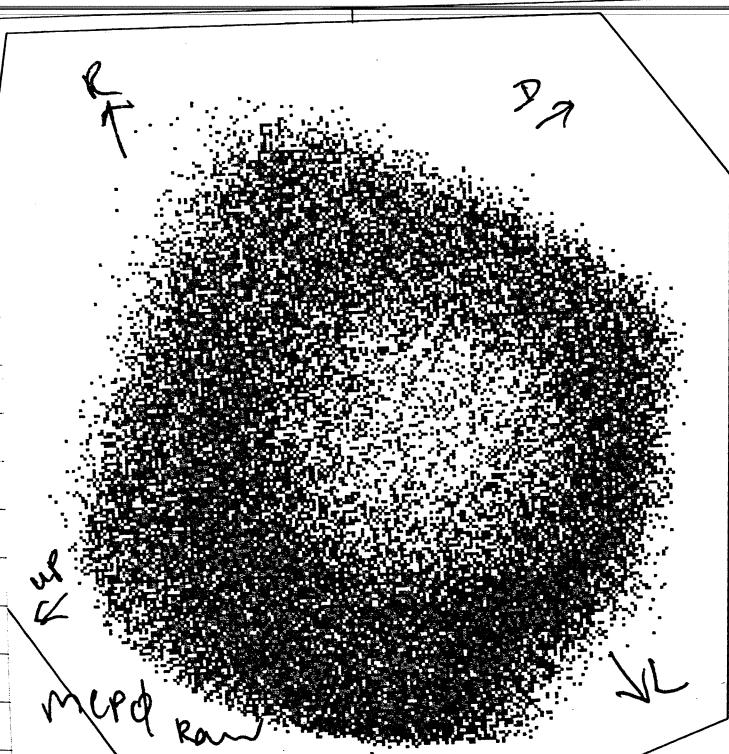
1:30 pm 10/22/07

target : C, mcp0: foil ; Mcp1 foil

Run 147 mcp run with defocussed beam.

Run# 147	Trigger	Date: 10/ /2007
Beam: $^{40}\text{Ar}$ ; $^{38}\text{Ar}$	HiRA (S800) Coin.	On shift:
E/A=35 MeV		
Alpha source	Target : (CH <sub>2</sub> )n; 1 mg; 2 mg 75 μm	
Comments: defocused beam.		
Barney printed at _____ h		
Detectors Biases and Current file		
Scalers (rate):		
CsI 18: 0 _____; 1 _____; 2 _____; 3 _____		
CsI 19: 0 _____; 1 _____; 2 _____; 3 _____		
Big brother 500 Event accepted 110	rate	
Master.live _____ Master _____ Live_time _____		
ratio Plastic <sub>XFP</sub> /Plastic <sub>OBJ</sub> _____		

Print21Oct07\_01h33.txt  
 A1900 "Print21Oct07\_01h33.txt" Sunday 01:33:32 2007-10-21 A1900  
 Moe V3 \*\*\* Detune on MCPs at S800 target \*\*\*  
 Expt: 05133 "Neutron transf. rxns ... Ar isotopes" [Betty Tsang] Line: s800 [8]  
 Beam: 36 Ar 7+ 13.06 MeV/nuc (K500) 18+ 150.00 MeV/nuc (K1200)  
 <Att 3M> ECR, Apertures: SCECR 150.0; 25.0; 25.0 mm SHVBI: 23.2300 kv  
 K500 a,b: 594 A, 484 A K1200: 724 A, -227 A RF: 23.83840 MHz  
 A1900 Optics: L19S3I\_Focus60x30HiRA.data  
 Rigidity Field Radius (live) Difference (Field\*Radius)  
 Seg 0: 3.66957 Tm  
 Seg 1: 1.71790 Tm 0.55432 T 3.09882 m 3.09910 m -0.00897 % (1.71775 Tm)  
 Seg 2: 1.71790 Tm 0.55385 T 3.10148 m 3.10175 m -0.00878 % (1.71775 Tm)  
 Seg 3: 1.71790 Tm 0.55526 T 3.09397 m 3.09384 m 0.00398 % (1.71797 Tm)  
 Seg 4: 1.71790 Tm 0.55497 T 3.09547 m 3.09549 m -0.00072 % (1.71789 Tm)  
 Seg 5: 1.66910 Tm  
 Seg 6: 1.66910 Tm  
 Seg 7: 1.66910 Tm  
 Seg 8: 1.57781 Tm  
 A116DS 0.53740 T 3.10539 m 3.10588 m -0.01588 %  
 A132DS -0.52180 T 3.19847 m 3.19874 m -0.00819 %  
 A165DS 0.28240 T 5.91156 m 5.91041 m 0.01948 %  
 I200DS 0.00000 T 3.15281 m 0.00000 m 100.00000 %  
 I205DS 0.00000 T 3.14172 m 0.00000 m 100.00000 %  
 I223DS 0.00000 T 3.11277 m 0.00000 m 100.00000 %  
 I228DS 0.00000 T 3.22332 m 0.00000 m 100.00000 %  
 I265DS 0.56233 T 2.80630 m 2.80585 m 0.01635 %  
 I269DS 0.56238 T 2.80597 m 2.80560 m 0.01334 %  
 Z001TL: out, Z013TL: Be 47; Z014TL RW Al 13  
 Z015TL: Be 1904, Z016TL RW Al 34  
 Z030BC Beam Stop: -126.88 mm  
 Z037L,R: -0.83, 3.50 mm or -0.03, 0.12 width= 0.15 %; z037DC: out  
 Z057MS: out, Z061MS: out  
 Z059DC: out, Z062SC: out, Z059TL: out  
 Z082 XC,G,YG: 0.16, 203.25, 202.05 mm Z082TL: out  
 Z103DC: out, Z104DC: 5 mil BC400; Z106DC: out, Z107DC\_U/\_L: out/out  
 Z105TL: out, Slits: nothing installed; PPACs: gas on; Z107 outlim: Y  
 Z104 XC,G,YC,G: 0.00, 15.01; -0.00, 10.00 mm  
 Slits: I181 XC,G,YC,G: 0.89, 99.29; 0.02, 98.34  
 I187: out, I188: out, I189: out, I190: out  
 I213: out, I214: out, I215: out, I216: out  
 I214DC Detector Drive: out  
 I259XM: 0.1096 XP: 0.0000 YM: 0.0000 YP: 1.7232



Run# 148

Beam:  $^{40}\text{Ar}$ ;  $^{36}\text{Ar}$ 

E/A=35 MeV

Alpha source

 $^{36}\text{Ar}$   
33 MeV/A

Trigger

HiRA

S800

Coin.

On shift:

Comments: MCP $\phi$  HV 2200

MCP1 2300

Barney printed at \_\_\_\_\_ h viewer image too high

Detectors Biases and Current file \_\_\_\_\_

Scalers (rate): XFP : 75k

CsI 18: 0 \_\_\_\_\_; 1 \_\_\_\_\_; 2 \_\_\_\_\_; 3 \_\_\_\_\_

CsI 19: 0 \_\_\_\_\_; 1 \_\_\_\_\_; 2 \_\_\_\_\_; 3 \_\_\_\_\_

Big brother 65 Event accepted 450

Master.live \_\_\_\_\_ Master \_\_\_\_\_ Live\_time \_\_\_\_\_

ratio Plastic<sub>XFP</sub>/Plastic<sub>OBJ</sub> \_\_\_\_\_

2:05 am

10/21/07

Viewer is m. (Target).  
(beam slightly below X)

67 I253 S800

Be 47 + RW Al 13 + Be 1904 + RW Al 34

I253 RFFS@0kV Att 3k

2007-10-21 02:15:19

2:20 pm

# Carbon foil in (Target).

Run# 149	Trigger			Date: 10/ /2007
Beam: <del>40</del> Ar; Ar <sup>38</sup> Ar <sup>36</sup> Ar E/A = <del>25</del> MeV 33	HiRA	S800	Coin.	On shift:
Alpha source	Target : (CH <sub>2</sub> ) <sub>n</sub> ; 1 mg; 2mg 90 mm			

Comments: \_\_\_\_\_

Barney printed at \_\_\_\_\_ h \_\_\_\_\_

Detectors Biases and Current file \_\_\_\_\_

Scalers (rate):

CsI 18: 0 \_\_\_\_\_; 1 \_\_\_\_\_; 2 \_\_\_\_\_; 3 \_\_\_\_\_

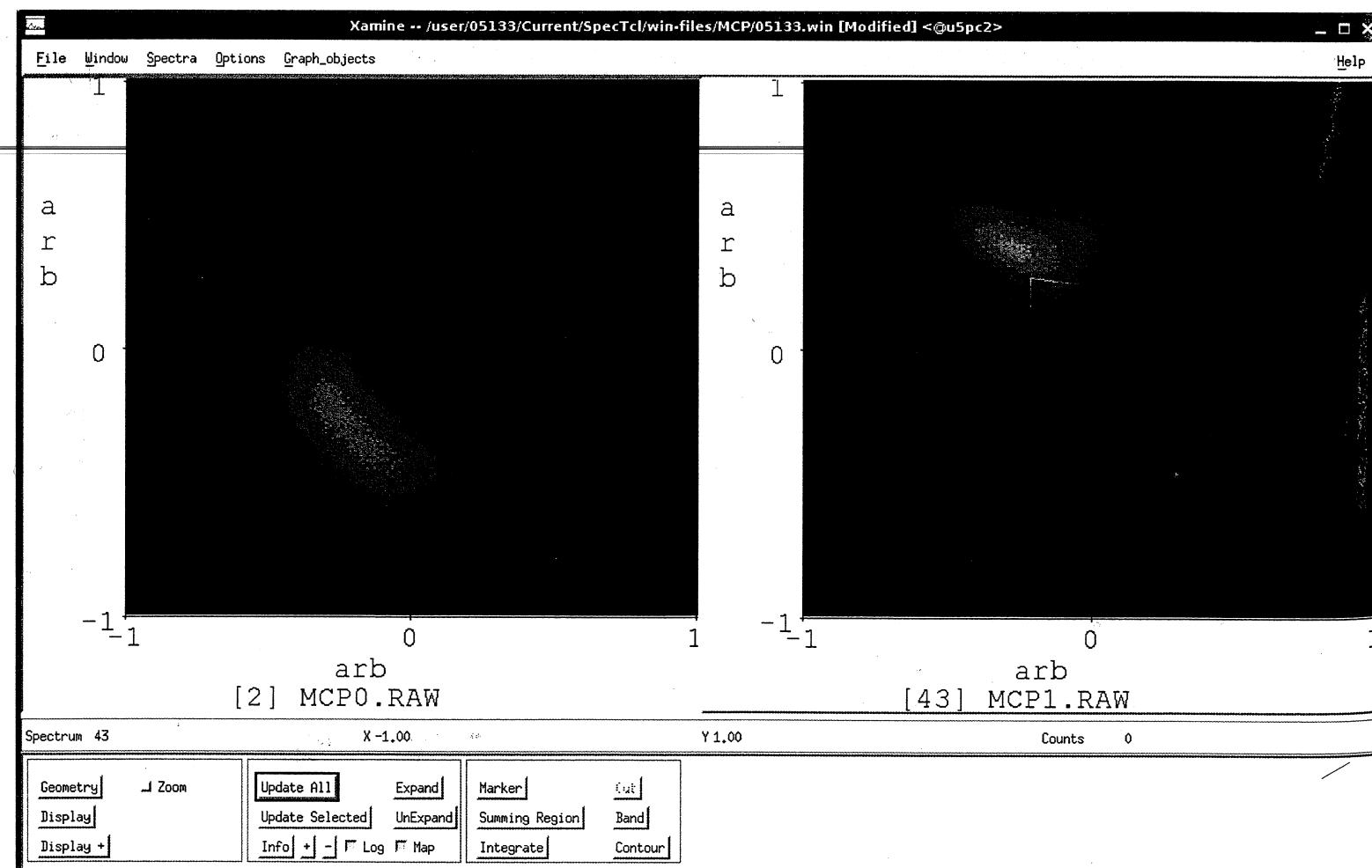
CsI 19: 0 \_\_\_\_\_; 1 \_\_\_\_\_; 2 \_\_\_\_\_; 3 \_\_\_\_\_

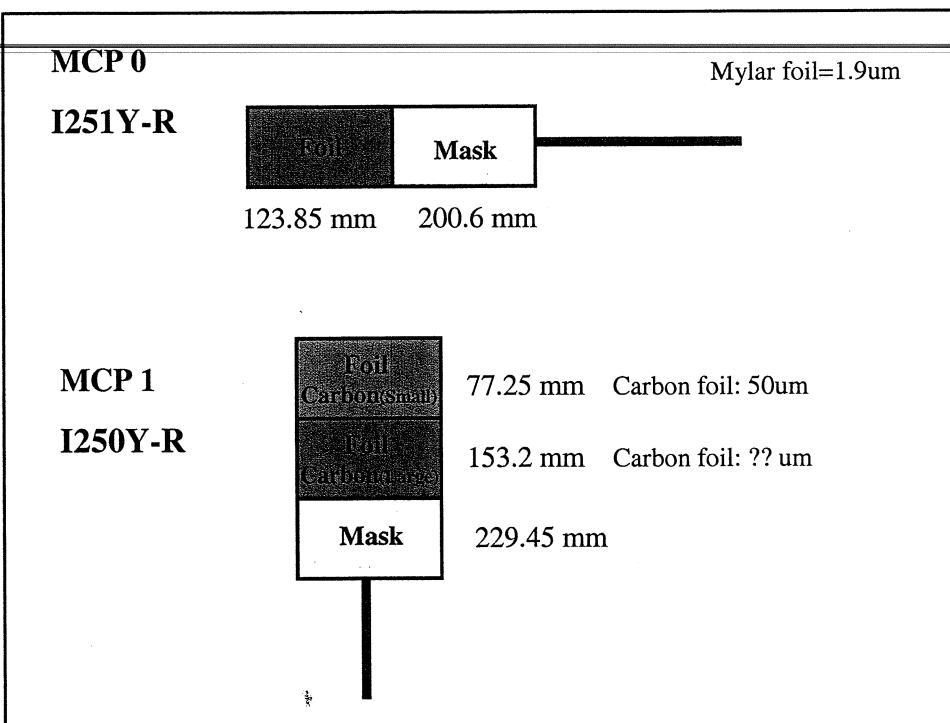
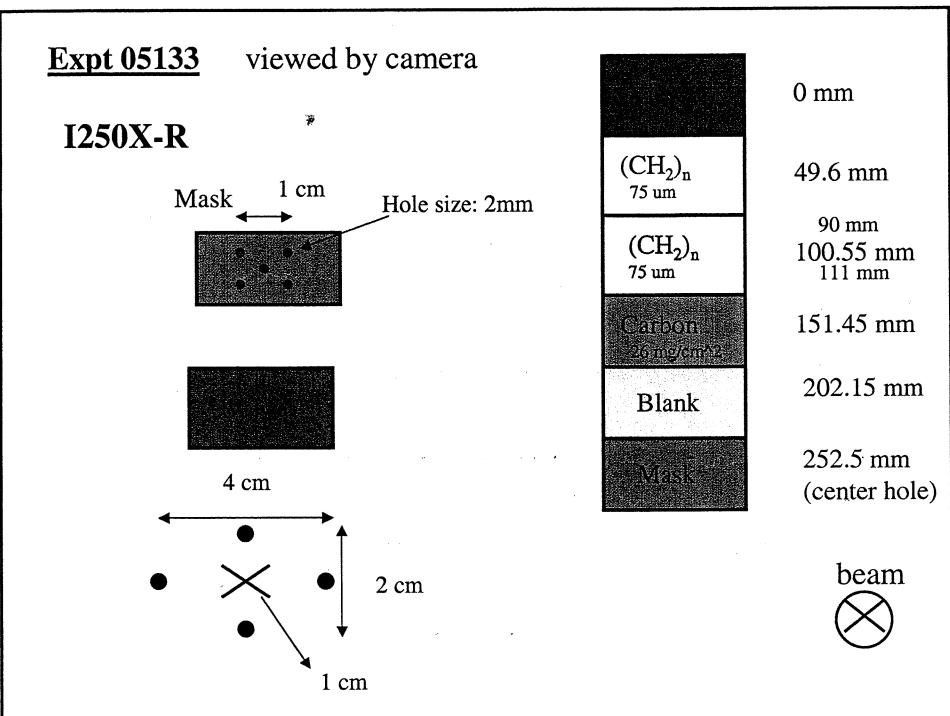
Big brother \_\_\_\_\_ Event accepted \_\_\_\_\_

Master.live \_\_\_\_\_ Master \_\_\_\_\_ Live\_time \_\_\_\_\_

ratio Plastic<sub>XFP</sub>/Plastic<sub>OBJ</sub> \_\_\_\_\_

Change Target - (CH<sub>2</sub>)<sub>n</sub> 75 mm (CH<sub>2</sub>)<sub>n</sub> - 2nd one  
special position → 90 mm





Beam: Ar; Ar  
E/A=33 MeV  
Alpha source

HiRA	S800	Coin.	MCP +CSI monitor
Target : (CH <sub>2</sub> )n-1, (CH <sub>2</sub> )n-2, carbon → position = 90 mm			

On shift:

Comments: With CsI monitor

no data from ADC 5 and 6 ! !

We observed that there are no CSIs from ADC 5 and 6 in data  
but ADC 4 looks OK

↳ S3 entered and bad connection of gate cable found → fixed

We also raised threshold on dE's by 5 ticks and dE OR's drop  
down from ~ 15 kHz to ~ 2 kHz

E thresholds raised by 1 tick and E OR's dropped from 5-600 Hz to 1  
(with beam OPT there is still ~ 60 Hz of E OR's)

Run 151 - we're taking data again

Run# 151

Beam: <sup>36</sup>Ar; <sup>34</sup>Ar  
E/A=33 MeV  
Alpha source

Trigger

Date: 10/ /2007

On shift:

V + 1

HiRA      S800      Coin.      MCP  
+CSI monitor

Target : (CH<sub>2</sub>)n-1, (CH<sub>2</sub>)n-2,  
carbon → position = 90 mm

Comments:

Run# 152

Beam: <sup>36</sup>Ar; <sup>34</sup>Ar  
E/A=33 MeV  
Alpha source

Trigger

Date: 10/ /2007

On shift:

V + 1

HiRA      S800      Coin.      MCP  
+CSI monitor

Target : (CH<sub>2</sub>)n-1, (CH<sub>2</sub>)n-2,  
carbon → position = 90 mm

Comments: <sup>decrease</sup>  
MCP driven pulse added, coincidence trigger dropped  
down to 2-3 counts per sec → decided to remove

Group	Name	Unit	Setup	Groups	View	Help		
Class	Model	Stock	Trans.	Waste	Index	Per.	Status	Cost
PHILL	7.00 V	2.0 kg	7.10 V	0.0 kg	On			0.00 000
PHILL	7.00 V	2.0 kg	6.90 V	0.1 kg	On			0.00 001
PHILL	8.00 V	2.0 kg	7.00 V	0.0 kg	On			0.00 002
PHILL	8.00 V	2.0 kg	7.00 V	0.0 kg	On			0.00 004
PHILL	8.00 V	2.0 kg	6.45 C	0.1 kg	Off			0.00 006
PHILL	8.00 V	2.0 kg	6.10 C	0.0 kg	Off			0.00 007
PHILL	8.00 V	2.0 kg	6.25 V	0.0 kg	On			0.00 008
PHILL	8.00 V	2.0 kg	6.55 V	0.0 kg	On			0.00 009
PHILL	8.00 V	2.0 kg	6.80 V	0.0 kg	On			0.00 010
PHILL	8.00 V	2.0 kg	6.90 V	0.0 kg	On			0.00 011
PHILL	8.00 V	2.0 kg	6.90 V	0.0 kg	On			0.00 012
PHILL	8.00 V	2.0 kg	6.90 V	0.0 kg	On			0.00 013
PHILL	8.00 V	2.0 kg	7.00 V	0.0 kg	On			0.00 014
PHILL	8.00 V	2.0 kg	7.00 V	0.0 kg	On			0.00 015
PHILL	8.00 V	2.0 kg	7.00 V	0.0 kg	On			0.00 016
PHILL	8.00 V	2.0 kg	7.00 V	0.0 kg	On			0.00 017
PHILL	8.00 V	2.0 kg	7.00 V	0.0 kg	On			0.00 018
PHILL	8.00 V	2.0 kg	7.00 V	0.0 kg	On			0.00 019
PHILL	8.00 V	2.0 kg	7.00 V	0.0 kg	On			0.00 020
PHILL	8.00 V	2.0 kg	7.00 V	0.0 kg	On			0.00 021
PHILL	8.00 V	2.0 kg	7.00 V	0.0 kg	On			0.00 022
PHILL	8.00 V	2.0 kg	7.00 V	0.0 kg	On			0.00 023
PHILL	8.00 V	2.0 kg	7.00 V	0.0 kg	On			0.00 024
PHILL	8.00 V	2.0 kg	7.00 V	0.0 kg	On			0.00 025
PHILL	8.00 V	2.0 kg	7.00 V	0.0 kg	On			0.00 026
PHILL	8.00 V	2.0 kg	7.00 V	0.0 kg	On			0.00 027
PHILL	8.00 V	2.0 kg	7.00 V	0.0 kg	On			0.00 028
PHILL	8.00 V	2.0 kg	7.00 V	0.0 kg	On			0.00 029
PHILL	8.00 V	2.0 kg	7.00 V	0.0 kg	On			0.00 030
PHILL	8.00 V	2.0 kg	7.00 V	0.0 kg	On			0.00 031
PHILL	8.00 V	2.0 kg	7.00 V	0.0 kg	On			0.00 032
PHILL	8.00 V	2.0 kg	7.00 V	0.0 kg	On			0.00 033
PHILL	8.00 V	2.0 kg	7.00 V	0.0 kg	On			0.00 034
PHILL	8.00 V	2.0 kg	7.00 V	0.0 kg	On			0.00 035
PHILL	8.00 V	2.0 kg	7.00 V	0.0 kg	On			0.00 036
PHILL	8.00 V	2.0 kg	7.00 V	0.0 kg	On			0.00 037
PHILL	8.00 V	2.0 kg	7.00 V	0.0 kg	On			0.00 038
PHILL	8.00 V	2.0 kg	7.00 V	0.0 kg	On			0.00 039
PHILL	8.00 V	2.0 kg	7.00 V	0.0 kg	On			0.00 040

click to expand  
for CST bias

Run# <u>13</u>	Trigger	Date: 10/ /2007
Beam: $^{36}\text{Ar}$ ; $^{34}\text{Ar}$ E/A=33 MeV Alpha source	HiRA S800 Coin. MCP <i>1/5</i>	On shift: <i>V+D</i>

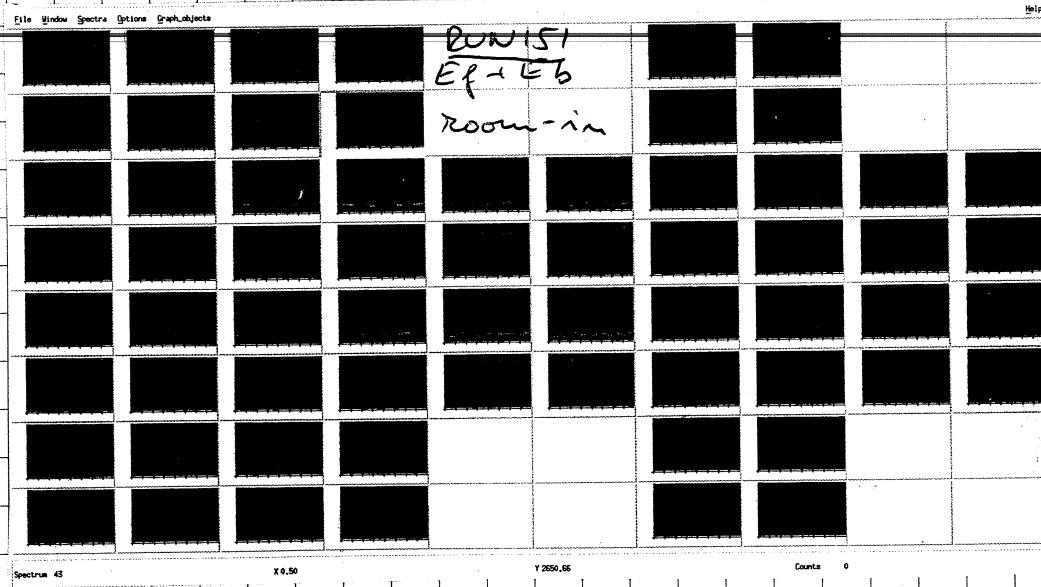
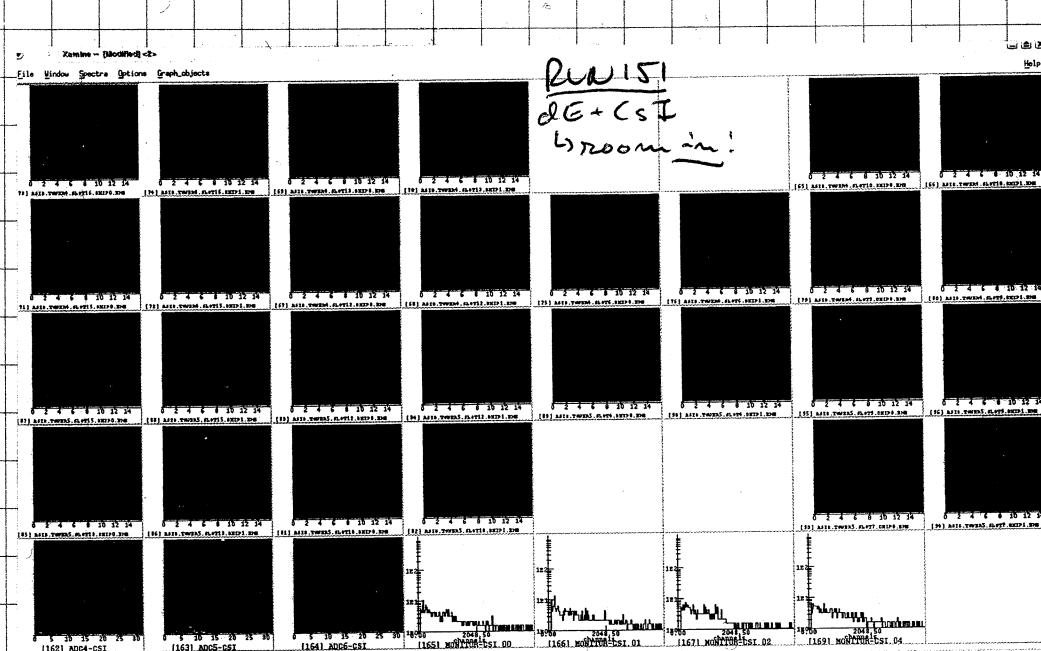
Target :  $(\text{CH}_2)_n$ -1,  $(\text{CH}_2)_n$ -2,  
carbon  $\rightarrow$  position =  $\text{C}_n$   $\text{H}_m$

Comments:

---



---



Spectrum 43 X 0.50 Y 2050.66 Counts 0

File Window Spectra Options Graph Objects

Run 15

Help

c  
h  
a  
n  
e  
l  
s

c  
h  
a  
n  
e  
l  
s

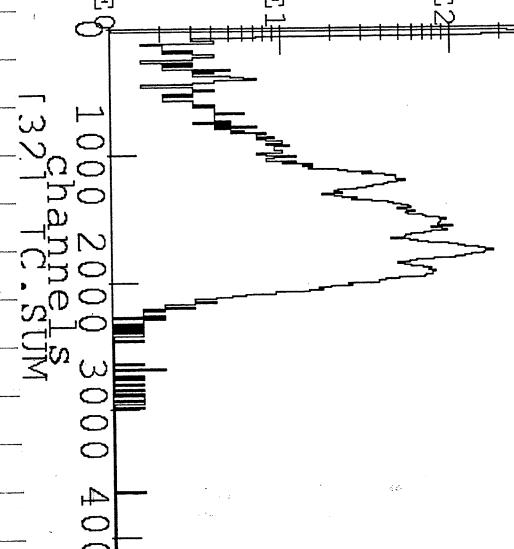
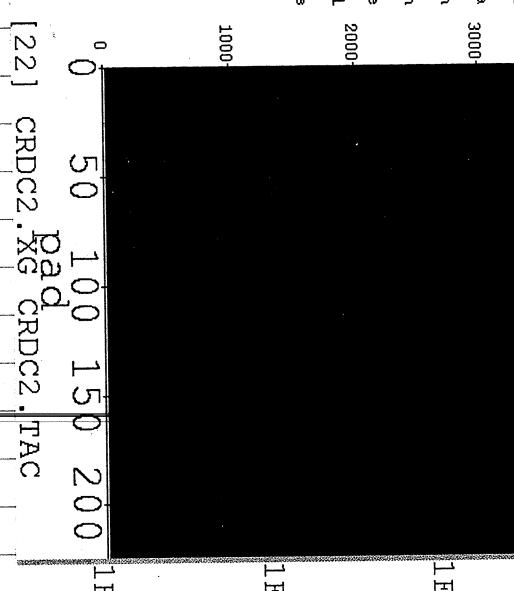
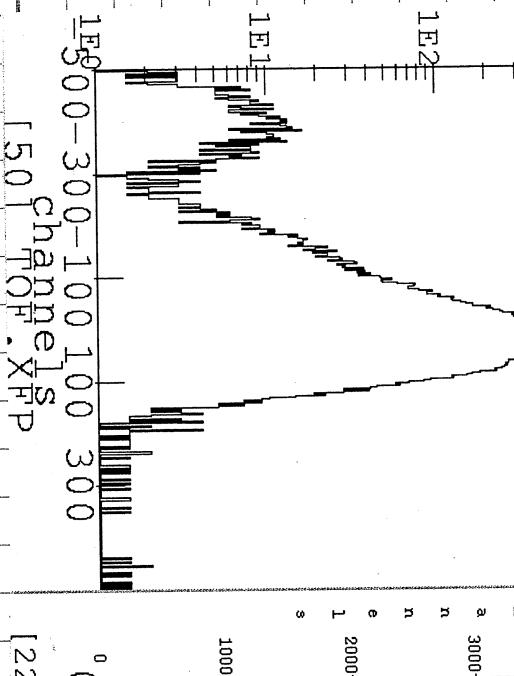
c  
h  
a  
n  
e  
l  
s

-500-300-100 100 300 500  
[52] TOF.XFP Channel 1S.TAC.SUM

0 0 50 100 150 200  
[11] CRDC1.Pad CRDC1.TAC

0 0 500 1000 1500 2000  
[24] E1.DEUP E1.DEDOWN

Run 15



Run# 154	Trigger				Date: 10/ /2007
Beam: $^{36}\text{Ar}$ ; $^{34}\text{Ar}$ E/A=33 MeV Alpha source	HiRA	S800	Coin.	MCP	On shift: U+D
Target : (CH <sub>2</sub> )n-1, (CH <sub>2</sub> )n-2, carbon → position=					
Comments: _____  JUNK					

Run# 155	Trigger				Date: 10/ /2007
Beam: $^{36}\text{Ar}$ ; $^{34}\text{Ar}$ E/A=33 MeV Alpha source	HiRA	S800	Coin.	MCP	On shift: U+D
Target : (CH <sub>2</sub> )n-1, (CH <sub>2</sub> )n-2, carbon → position= 90 mm					
Comments: _____					

Run# 156	Trigger				Date: 10/ /2007
Beam: $^{36}\text{Ar}$ ; $^{34}\text{Ar}$ E/A=33 MeV Alpha source	HiRA	S800	Coin.	MCP	On shift: U+D
Target : (CH <sub>2</sub> )n-1, (CH <sub>2</sub> )n-2, carbon → position= 90 mm					
Comments: _____					

Run# 157	Trigger				Date: 10/21/2007
Beam: $^{36}\text{Ar}$ ; $^{34}\text{Ar}$ E/A=33 MeV Alpha source	HiRA	S800	Coin.	MCP	On shift: Dan, Micha, Sun
Target : (CH <sub>2</sub> )n-1, (CH <sub>2</sub> )n-2, carbon → position= 90 nm					
Comments: Continuing data run					

8:00 AM - we observe few fast channels on dE's no noise adjoint thresholds for them, then rate of dE OR's is lower than E OR's, so we raise most of dE thresholds back a bit (3 ticks)  
 ↳ now dE and E OR rate compatible and all should be fine

8:45 am 10/21/07: Leakage & temperature check

Name	VSet	ISet	Vmon	Imon	Pm	Status	User
0015	120.00 V	4.00 mA	150.25 V	0.66 mA On			0.00,00
0012	200.00 V	4.00 mA	200.25 V	1.22 mA On			
0009	210.00 V	4.00 mA	203.75 V	0.89 mA On			
0006	230.00 V	4.00 mA	230.00 V	1.54 mA On			
0018	110.00 V	4.00 mA	168.75 V	1.35 mA On			
0003	250.00 V	4.00 mA	250.00 V	1.20 mA On			
0008	320.00 V	4.00 mA	320.00 V	1.72 mA On			
0019	310.00 V	4.00 mA	309.75 V	1.52 mA On			
0015	210.00 V	4.00 mA	203.75 V	0.72 mA On			
0012	100.00 V	4.00 mA	150.00 V	1.02 mA On			
0009	200.00 V	4.00 mA	199.50 V	1.74 mA On			
0006	120.00 V	4.00 mA	120.00 V	1.20 mA On			
0016	200.00 V	4.00 mA	200.00 V	1.50 mA On			
0012	240.00 V	4.00 mA	239.75 V	2.30 mA On			
0009	340.00 V	4.00 mA	340.00 V	1.40 mA On			
0015	210.00 V	4.00 mA	210.00 V	1.02 mA On			

	Vbias(V)	I(μA)
Back 0	100.1	4.04
Back 1	100.1	5.99
Back 2	100.0	5.32
Back 3	100.1	6.33
MCP 0	2300	
MCP 1	2300	

Tower 3 Card 3 I leak up .94 → 1.02 mA since 2 days ago.  
 (10/19/07 14:40)

Name	VSet	ISet	Vmon	Imon	Pm	Status	User
0001	7.00 V	2.0 mA	7.10 V	0.8 mA On			0.00,00
0002	7.00 V	2.0 mA	6.90 V	0.1 mA On			0.00,00
0003	6.00 V	2.0 mA	7.05 V	0.6 mA On			0.00,00
0004	6.00 V	2.0 mA	7.05 V	0.6 mA On			0.00,00
0005	6.00 V	2.0 mA	6.05 V	0.6 mA On			0.00,00
0006	6.00 V	2.0 mA	6.05 V	0.6 mA On			0.00,00
0007	6.00 V	2.0 mA	6.05 V	0.6 mA On			0.00,00
0008	6.00 V	2.0 mA	6.05 V	0.6 mA On			0.00,00
0009	6.00 V	2.0 mA	6.05 V	0.6 mA On			0.00,00
0010	6.00 V	2.0 mA	6.05 V	0.6 mA On			0.00,00
0011	6.00 V	2.0 mA	6.05 V	0.6 mA On			0.00,00
0012	6.00 V	2.0 mA	6.05 V	0.6 mA On			0.00,00
0013	6.00 V	2.0 mA	6.05 V	0.6 mA On			0.00,00
0014	6.00 V	2.0 mA	6.05 V	0.6 mA On			0.00,00
0015	6.00 V	2.0 mA	6.05 V	0.6 mA On			0.00,00
0016	6.00 V	2.0 mA	6.05 V	0.6 mA On			0.00,00
0017	6.00 V	2.0 mA	6.05 V	0.6 mA On			0.00,00
0018	6.00 V	2.0 mA	6.05 V	0.6 mA On			0.00,00
0019	6.00 V	2.0 mA	6.05 V	0.6 mA On			0.00,00
0020	6.00 V	2.0 mA	6.05 V	0.6 mA On			0.00,00
0021	6.00 V	2.0 mA	6.05 V	0.6 mA On			0.00,00
0022	6.00 V	2.0 mA	6.05 V	0.6 mA On			0.00,00
0023	6.00 V	2.0 mA	6.05 V	0.6 mA On			0.00,00
0024	6.00 V	2.0 mA	6.05 V	0.6 mA On			0.00,00
0025	6.00 V	2.0 mA	6.05 V	0.6 mA On			0.00,00
0026	6.00 V	2.0 mA	6.05 V	0.6 mA On			0.00,00
0027	6.00 V	2.0 mA	6.05 V	0.6 mA On			0.00,00

↓  
 also seems  
 to be noisiest  
 chip

04 05 06 07 08 09 10 11 12 13 14 15

10/21/07

Hira Tow4 Reg	LO ALARM	Cldrd 20/15:22 P01
Hira Tow2 Reg	LO ALARM	Cldrd 20/15:22 P01
Hira Tow5 Reg	LO ALARM	Cldrd 20/15:22 P01
Hira Tow3 Reg	LO ALARM	Cldrd 20/15:22 P01

Tower 0 Lower	Tower 1 Lower	Tower 2 Lower	Tower 3 Lower
25.22 0.22	27.12 0.27	25.27 0.24	25.41 0.26
Tower 0 Upper	Tower 1 Upper	Tower 2 Upper	Tower 3 Upper
24.87 0.24	26.09 0.26	24.14 0.22	24.13 0.25

04 05 06 07 08 09 10 11 12 13 14 15

Hira Tow4 Reg	LO ALARM	Cldrd 20/15:22 P01
Hira Tow2 Reg	LO ALARM	Cldrd 20/15:22 P01
Hira Tow5 Reg	LO ALARM	Cldrd 20/15:22 P01
Hira Tow3 Reg	LO ALARM	Cldrd 20/15:22 P01

Hira Tow0 Reg	Hira Tow0 TC0	Hira Tow0 TC1	Hira Tow0 TC2	Hira Tow0 TC3
5.00 0	39.38 0.37	23.02 0.21	25.91 0.24	24.49 0.23
Hira Tow1 Reg	Hira Tow1 TC0	Hira Tow1 TC1	Hira Tow1 TC2	Hira Tow1 TC3
5.02 0	36.94 0.27	22.53 0.21	25.59 0.22	28.15 0.26
Hira Tow2 Reg	Hira Tow2 TC0	Hira Tow2 TC1	Hira Tow2 TC2	Hira Tow2 TC3
5.06 0	33.99 0.32	22.27 0.22	25.35 0.23	24.86 0.24
Hira Tow3 Reg	Hira Tow3 TC0	Hira Tow3 TC1	Hira Tow3 TC2	Hira Tow3 TC3
5.05 0	28.75 0.28	22.23 0.22	25.67 0.25	32.40 0.31
Hira Tow4 Reg	Hira Tow4 TC0	Hira Tow4 TC1	Hira Tow4 TC2	Hira Tow4 TC3
5.09 0	34.48 0.35	23.23 0.23	25.54 0.26	25.57 0.27
Hira Tow5 Reg	Hira Tow5 TC0	Hira Tow5 TC1	Hira Tow5 TC2	Hira Tow5 TCDet0
5.09 0	35.84 0.38	24.83 0.25	26.78 0.27	25.11 0.27

Run# 158	Trigger				Date: 10/21/2007
Beam: $^{36}\text{Ar}$ , $^{34}\text{Ar}$ E/A=33 MeV Alpha source	HiRA 1/s	S800	Coin.	MCP +csL	On shift: Rich, Dan, Sun, outside Andy
Target : $(\text{CH}_2)_n - 1$ , $(\text{CH}_2)_n - 2$ , carbon $\rightarrow$ position =					
Comments: same as prev.					

Run# 159	Trigger				Date: 10/21/2007
Beam: $^{36}\text{Ar}$ , $^{34}\text{Ar}$ E/A=33 MeV Alpha source	HiRA 1/s	S800	Coin.	MCP +csL	On shift: Rich, Dan, Sun, other Andy, Betty
Target : $(\text{CH}_2)_n - 1$ , $(\text{CH}_2)_n - 2$ , carbon $\rightarrow$ position =					
Comments: same as prev.					

After run 159 ( $\sim 11:00$ ) handed beam back to operator for tuning. Had noticed XFP scals was slowly going down, and MCP gain relative to that.

want to do CRDC mask calibration.  
 notice CRDC X range  $\sim -300 \rightarrow 300$   
 CRDC Y range  $\sim -100 \rightarrow 3000$   
 $\rightarrow$  pulse on my  $\sim -150$  or -200

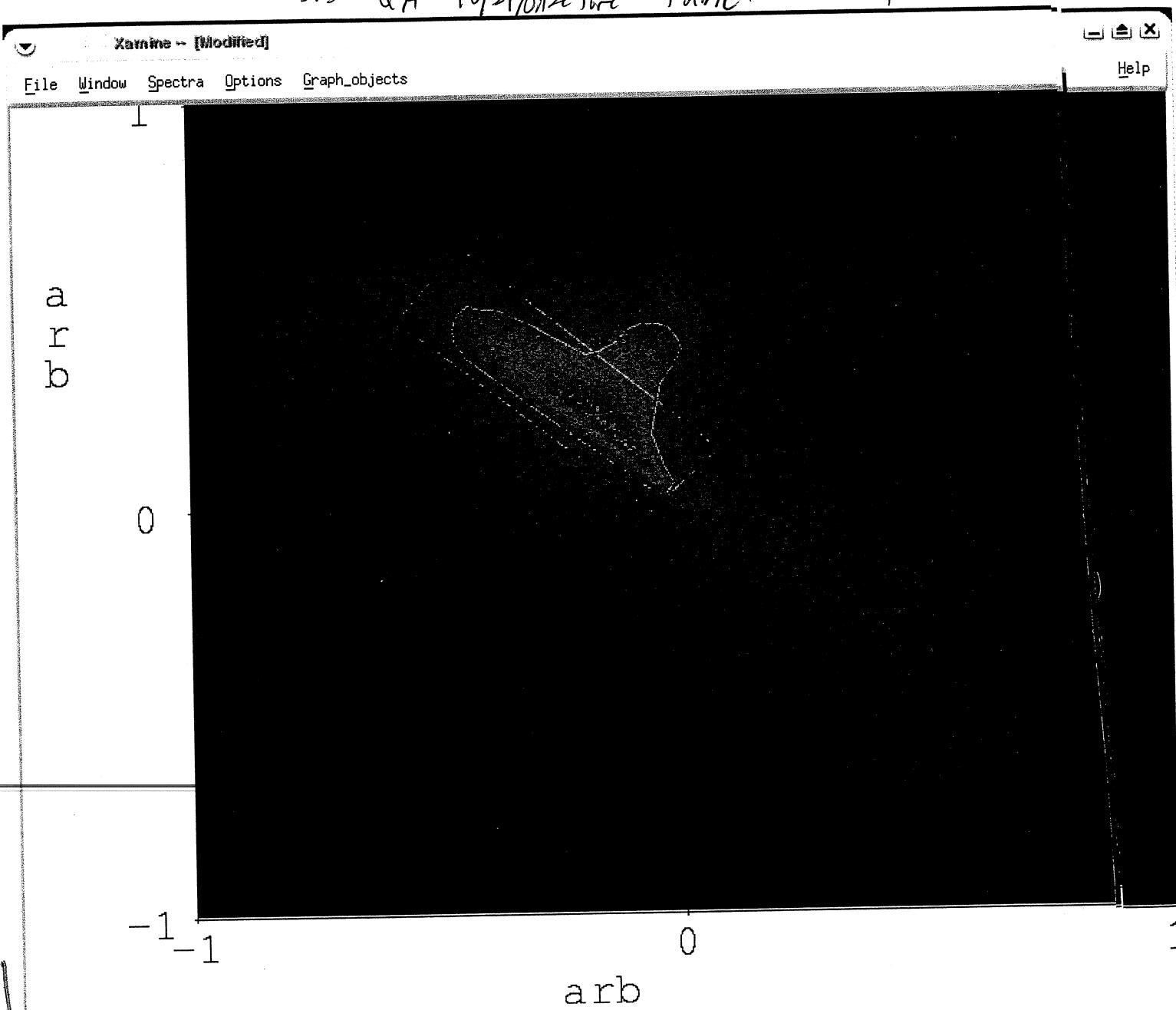
decide to take more data first, after operator tuned beam.

Also notice MCP shifted since printout on p38  
 (I think around 2 am, 9 hours ago?)

Our counts in run 159 were very low. Fixed by cyclotron retuning. MCP still shifted.

5:30 am 10/21/07 Before Tune

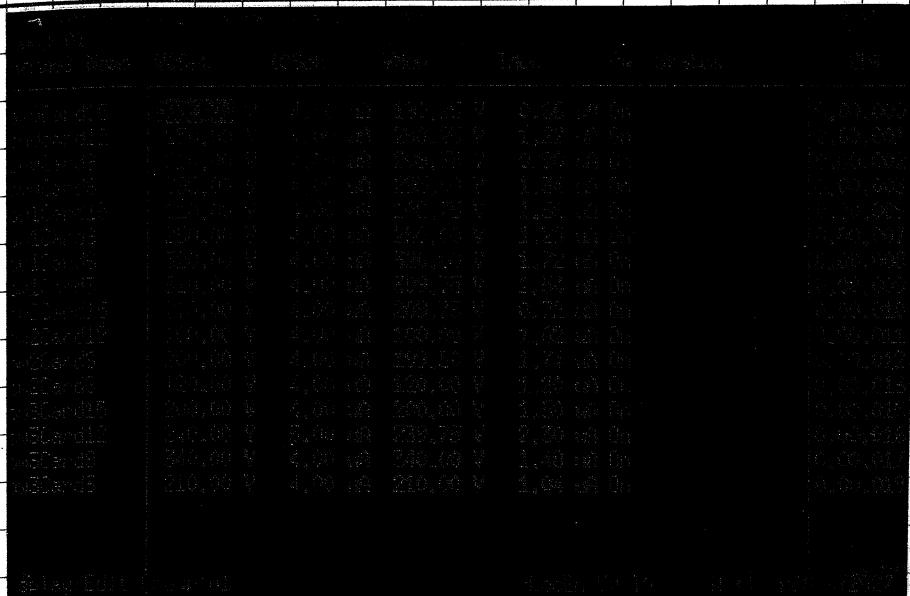
Run 153



[43] MCP1.RAW

Compare to p 3<sup>d</sup>.

Run# 162	Trigger	Date: 10/21/2007
Beam: $^{36}\text{Ar}$ ; $^{34}\text{Ar}$		On shift: Micha
E/A=33 MeV		Dan Sun Betty
Alpha source		
Target : $(\text{CH}_2)^{n-1}$ , $(\text{CH}_2)^{n-2}$ , carbon $\rightarrow$ position =		
Comments: after cyclotron return.		

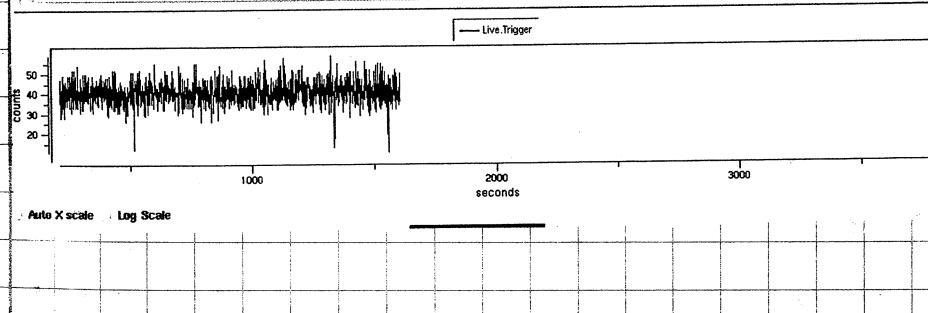


12:15 pm 10/21/07

General Scalars		S800_All S800_Some S800_Alarm HIRA_BigBrother HIRA_All HIRA_All_ratio				BettyTab
Numerator	Denominator	Rate(s)	Total(s)	Ratio	[rate total]	
Live.Trigger	Raw.Trigger	43.0	57405	60705	0.956	0.946
S800.Trigger		0.0		0		
BigBrother		113.0	129858			
S800+Hira		11.0	20604			
CsIMonitor		1.0	4807			
CsIMonitor_pulser_trigger		1.0	4809			
A1900_FP		2140.0	3191200			
XFP.Scint		499070.0	713547493			
MCP0.live	MCP0	92912.0	96301.0	132956314	138684527	0.965
MCP1.live	MCP1	98670.0	102289.0	140520300	146834783	0.965
						0.957

Sample

Scalor Display for  
later Comparison



Run# 161	Trigger	Date: 10/21/2007
Beam: $^{36}\text{Ar}$ ; $^{34}\text{Ar}$		
E/A=33 MeV		
Alpha source		
Target : $(\text{CH}_2)^{n-1}, (\text{CH}_2)^{n-2}$ , carbon → position =		
Comments: Continuing previous Barney printout at 1:29 pm		

Handed beam to Mariko around 13:00

14:00 try to raise rate for CRDC calibration.  
~~Lower attenuation factor not done~~  
 change to S800 singles  
 Lower NEP & foil voltage

Beam rate still very low, and can't raise more for fear of burning plastic target.

Decide to wait until Daniel Buzin can come in.

Back to taking coincidence data

Turn MCP back up

-S800 increase beam by factor of 3

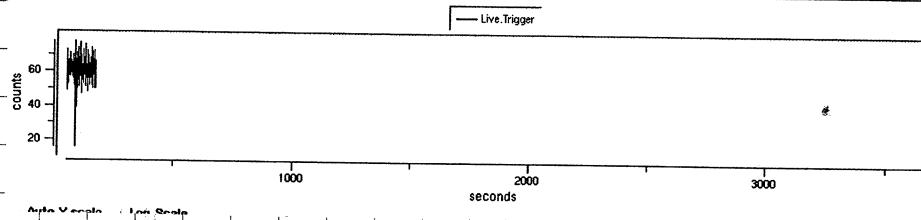
(changing attenu from 10k to 3k  
 had no effect.)

Instead open slits between cyclotrons

ScalarDisplay.rcl

Run Number: 164 Run state: Active						
Length of run: 0:00:02:56 Scaler interval: 1.000000						
Title: >>Unknown<<						
<b>General Scalars</b>						
Numerator	Denominator	Rate(s)	Total(s)	Ratio [rate total]		
Live.Trigger	Raw.Trigger	61.0	64.0	7616	8096	0.953
S800.Trigger		0.0		0		0.941
<b>BigBrother</b>						
S800+HIRA		132.0	17954			
		28.0	3077			
<b>CsIMonitor</b>						
CsIMonitor_pulser_trigger		3.0	507			
		3.0	507			
<b>A1900_FP</b>						
XFP.Scint		15323.0	1921028			
MCP0.live	MCP0	958988.0	120128868			
MCP1.live	MCP1	154720.0	166431.0	19491400	21095961	0.930
		155279.0	166904.0	19636731	21415525	0.930
						0.917

Example of new rates



XFP shimmed to spot 2

Run# 162	Trigger	Date: 10/21/2007
Beam: $^{36}\text{Ar}$ ; $^{34}\text{Ar}$ E/A=33 MeV Alpha source	HiRA S800 Coin. MCP $t_{\text{CsI}}$	On shift:
	Target : $(\text{CH}_2)_n$ -1, $(\text{CH}_2)_n$ -2, carbon $\rightarrow$ position=	
Comments: After A1900 return		

Run# 163	Trigger	Date: 10/21/2007
Beam: $^{36}\text{Ar}$ ; $^{34}\text{Ar}$ E/A=33 MeV Alpha source	HiRA S800 Coin. MCP	On shift:
	Target : $(\text{CH}_2)_n$ -1, $(\text{CH}_2)_n$ -2, carbon $\rightarrow$ position= 90	

Comments: Brief run; too low rate for CRDC mask calibration

Run# 164	Trigger	Date: 10/21/2007
Beam: $^{36}\text{Ar}$ ; $^{34}\text{Ar}$ E/A=33 MeV Alpha source	HiRA S800 Coin. MCP $t_{\text{CsI}}$	On shift:
	Target : $(\text{CH}_2)_n$ -1, $(\text{CH}_2)_n$ -2, carbon $\rightarrow$ position=	

Comments: Higher beam rate. XFP scint signal total overshot and became negative

Noticed during run 164, beam intensity jumped up (40 min into run, 15:00). XFP started  $9 \cdot 10^5$ , jumped towards  $1.5 \cdot 10^6$  Hz, then operator closed some shgs slightly to get us back toward  $1 \cdot 10^6$ . Operator not sure why this happened, but it was mirrored in our trigger rate.

15:00

10/21/07

Compared to  
first records,  
most dropping,  
few steady.

T353      slowly

Run# 165	Trigger	Date: 10/21/2007
Beam: $^{36}\text{Ar}$ ; $^{34}\text{Ar}$ E/A=33 MeV Alpha source	HiRA S800 Coin. MCP	On shift:
	Target : $(\text{CH}_2)_n - 1$ , $(\text{CH}_2)_n - 2$ , carbon $\rightarrow$ position = $E_{0,nn}$	

Runs 166 & 167 are junk.

Run# 168	Trigger	Date: 10/21/2007
Beam: $^{36}\text{Ar}$ ; $^{34}\text{Ar}$		On shift:
E/A=33 MeV	HiRA 115	S800
Alpha source	Coin.	MCP +CSI
	Target : $(\text{CH}_2)_n-1$ , $(\text{CH}_2)_n-2$ , carbon $\rightarrow$ position=	
Comments: Continue prev.		*

Run#	Trigger	Date: 10/12/2007
Beam: $^{36}\text{Ar}$ ; $^{34}\text{Ar}$ E/A=33 MeV Alpha source	HiRA 115      S800      Coin.      MCP +CSJ Target : $(\text{CH}_2)_n-1$ , $(\text{CH}_2)_n-2$ , carbon $\rightarrow$ position =	On shift: Bill, Betty, Alisher, Sun, Jenny, Mica, Dan, Andy, et al

to Rate dropped off from 60  
4:43 pm

Run#	Trigger	Date: 10/21/2007
Beam: $^{36}\text{Ar}$ $^{34}\text{Ar}$ E/A=33 MeV Alpha source	<div style="display: flex; justify-content: space-around;"> <span>HiRA 1/5</span> <span>S800</span> <span>Coin.</span> <span>MCP +CS1</span> </div> <p>Target : <math>(\text{CH}_2)_n-1</math>, <math>(\text{CH}_2)_n-2</math>, carbon <math>\rightarrow</math> position =</p>	<b>On shift:</b> Bill, Betty, Alisher, Sunny, Sun, An, Micha, Lee

6: ~~5~~ 8 pm

10/21/2007

	Vbias(V)	I(μA)
<b>Back 0</b>	100.1	4.04
<b>Back 1</b>	100.1	6.04
<b>Back 2</b>	100.0	5.32
<b>Back 3</b>	100.1	6.38

Channel	Name	Type	Power	Level	Re. Reference	Unit
CH11	ANTENNA	RF	100 W	0.0	0.00	dB
CH12	ANTENNA	RF	100 W	0.0	0.00	dB
CH13	ANTENNA	RF	100 W	0.0	0.00	dB
CH14	ANTENNA	RF	100 W	0.0	0.00	dB

6:55 pm 10/21/07

- Main	Utility	Setup	Groups	View	User	
Group 02						
Channel Name	V0Set	I0Set	Vmon	Imon	Pw Status	Chs
PA14	7.000 V	2.0 mA	7.10 V	0.0 mA	On	0.03,000
PA11	7.00 V	2.0 mA	6.90 V	0.1 mA	On	0.03,001
PA10	8.00 V	2.0 mA	7.80 V	0.0 mA	On	0.03,002
PA12	8.00 V	2.0 mA	7.75 V	0.0 mA	On	0.03,004
PA19	6.00 V	2.0 mA	5.45 V	0.0 mA	On	0.03,006
PA16	0.00 V	2.0 mA	0.10 V	0.0 mA	Off	0.03,007
PA18	0.00 V	2.0 mA	0.25 V	0.0 mA	Off	0.03,008
PA17	9.00 V	2.0 mA	8.85 V	0.2 mA	On	0.03,010
PA4	7.00 V	2.0 mA	6.85 V	0.0 mA	On	0.05,000
PA1	9.00 V	2.0 mA	8.90 V	0.2 mA	On	0.05,001
PA3	6.00 V	2.0 mA	6.00 V	0.2 mA	On	0.05,002
PA0	7.00 V	2.0 mA	7.05 V	0.6 mA	On	0.05,003
PA6	7.00 V	2.0 mA	6.80 V	0.0 mA	On	0.05,007
PA8	8.00 V	2.0 mA	7.95 V	0.5 mA	On	0.05,008
PA9	8.00 V	2.0 mA	7.70 V	0.1 mA	On	0.05,009
PA7	7.00 V	2.0 mA	6.75 V	0.0 mA	On	0.05,010

### Display/Edit Group 02

LocEn VO 10 N+1 DAEN SY2527

6:58 pm

Page	0-10 V ADC Reg Volts.	& 0-5 V ADC Thermocouple	18:59:15							
	04	07	08	09	10	11	12	13	14	15
Hira Tow1 Reg	LO ALARM									
Hira Tow2 Reg	LO ALARM									
Hira Tow1 Req	HI ALARM									
Hira Tow3 Req	LO ALARM									
Hira Tow0 Req	Hira Tow0 TC0	Hira Tow0 TC1	Hira Tow0 TC2	Hira Tow0 TC3						
5.00	39.38	23.14	26.03	24.61						
	0.31	0.21	0.24	0.21						
Hira Tow1 Reg	Hira Tow1 TC0	Hira Tow1 TC1	Hira Tow1 TC2	Hira Tow1 TC3						
5.02	30.94	22.53	25.71	23.15						
	0.27	0.21	0.22	0.26						
Hira Tow2 Reg	Hira Tow2 TC0	Hira Tow2 TC1	Hira Tow2 TC2	Hira Tow2 TC3						
5.03	33.99	22.27	25.35	24.86						
	0.32	0.22	0.23	0.24						
Hira Tow3 Reg	Hira Tow3 TC0	Hira Tow3 TC1	Hira Tow3 TC2	Hira Tow3 TC3						
5.04	28.87	22.36	25.80	32.40						
	0.28	0.22	0.25	0.31						
Hira Tow4 Reg	Hira Tow4 TC0	Hira Tow4 TC1	Hira Tow4 TC2	Hira Tow4 TC3						
5.05	34.48	23.23	25.54	25.57						
	0.30	0.24	0.26	0.27						
Hira Tow5 Reg	Hira Tow5 TC0	Hira Tow5 TC1	Hira Tow5 TC2	Hira Tow5 TC3						
5.06	35.71	24.83	26.91	25.23						
	0.38	0.25	0.27	0.27						

Run# 171, 172, 173	Trigger				Date: 10/21/2007
Beam: $^{36}\text{Ar}$ ; $^{34}\text{Ar}$	HiRA 1/5	S800	Coin.	MCP CSF	On shift: Bill, Betty, Alij, Jenny, Andy, Michael,
E/A=33 MeV					
Alpha source					

Target :  $(\text{CH}_2)_{n-1}$ ,  $(\text{CH}_2)_{n-2}$ ,  
carbon  $\rightarrow$  position = 90 mm

Comments: Same as previous.  
At the end of 173, we changed target spot to  $(\text{CH}_2)_{n-2}$  - 111 mm

Run# 174, 175	Trigger				Date: 10/21/2007
Beam: $^{36}\text{Ar}$ ; $^{34}\text{Ar}$	HiRA	S800	Coin.	MCP CSF	On shift:
E/A=33 MeV					
Alpha source					

Target :  $(\text{CH}_2)_{n-1}$ ,  $(\text{CH}_2)_{n-2}$ ,  
carbon  $\rightarrow$  position = 111 mm

Comments: Same as previous.  
Target position changed.

$X_F p$  becomes negative when it reaches  $2.4 \times 10^{-31}$ . So to take this into account, we take this negative value  $x_n$  and do the following operation:

$x_p$  (positive, correct number).

$$\begin{aligned} x_p &= 2147484000 + (2147484000 - |x_n|) = \\ &= 2147484000 - |x_n| \\ &= 2^{32} - |x_n| \end{aligned}$$

Even more correctly,

$$x_n = 2^{32} + x_n$$

9:00 pm. 10/21/2007

Requirement for the channel glace target was MCP1 & Hira & S800. (Until now.)

Now it is MCP1 & S800.

9:02 pm

Target was changed to carbon,  
For doing CRDC mask calibration  
and background. (Run 176)

Run#	176	Trigger			Date: 10/21/2007
Beam:	$^{36}\text{Ar}$ ; $^{34}\text{Ar}$	HiRA	S800	Coin.	MCP CS1
E/A=33 MeV	Target : (CH <sub>2</sub> )n-1, (CH <sub>2</sub> )n-2, carbon → position=				
Alpha source	On shift:				
Comments:	carbon target in, CRDC 1 mask				

9:36 pm.

Run 177 is for CRDC 2 mask

Run#	177	Trigger			Date: 10/21/2007
Beam:	$^{36}\text{Ar}$ ; $^{34}\text{Ar}$	HiRA	S800	Coin.	MCP CS1
E/A=33 MeV	Target : (CH <sub>2</sub> )n-1, (CH <sub>2</sub> )n-2, carbon → position=				
Alpha source	On shift:				
Comments:	CRDC 2 mask				

9:55 pm. Mask is in. | 10:01 pm Blank in.

Run#	178	Trigger			Date: 10/21/2007
Beam:	$^{36}\text{Ar}$ ; $^{34}\text{Ar}$	HiRA	S800	Coin.	MCP
E/A=33 MeV	Target : (CH <sub>2</sub> )n-1, (CH <sub>2</sub> )n-2, carbon → position=				
Alpha source	On shift:				
Comments:					

Run# 179	Trigger				Date: 10/ /2007
Beam: $^{36}\text{Ar}$ ; $^{34}\text{Ar}$ E/A=33 MeV Alpha source	HiRA	S800	Coin.	MCP	On shift:  202.5
	Target : (CH <sub>2</sub> )n-1, (CH <sub>2</sub> )n-2, carbon → position= blank				
Comments: MCP on, Bf = beam Bf.					

10:23 pm mask in.

(target)

Run# 180	Trigger				Date: 10/ /2007
Beam: $^{36}\text{Ar}$ ; $^{34}\text{Ar}$ E/A=33 MeV Alpha source	HiRA	S800	Coin.	MCP	On shift:
	Target : (CH <sub>2</sub> )n-1, (CH <sub>2</sub> )n-2, carbon → position= mask 252.5				
Comments: MCP on, Bf = beam Bf.					

Run# 181	Trigger				Date: 10/ /2007
Beam: $^{36}\text{Ar}$ ; $^{34}\text{Ar}$ E/A=33 MeV Alpha source	HiRA	S800	Coin.	MCP	On shift:
	Target : (CH <sub>2</sub> )n-1, (CH <sub>2</sub> )n-2, carbon → position= blank				
Comments: MCP mask.					

10:37 pm.

MCP1 mask in, target blank.

10:50 pm

MCP1 at foil (77.25 mm)  
MCP0 at mask (200.6 mm)

Run# 182	Trigger				Date: 10/21/2007
Beam: $^{36}\text{Ar}$ ; $^{34}\text{Ar}$ E/A=33 MeV Alpha source	HiRA	S800	Coin.	MCP	On shift: Bill, Betty, Al, Jenny, Andy
Comments: Target blank mcp 1 foil (77.25 mm)	Target : $(\text{CH}_2)_n - 1$ , $(\text{CH}_2)_n - 2$ , $\text{carbon} \rightarrow \text{position} = 202.15$				

Run# 183	Trigger				Date: 10/21/2007
Beam: $^{36}\text{Ar}$ ; $^{34}\text{Ar}$ E/A=33 MeV Alpha source	HiRA	S800	Coin.	MCP	On shift:
Comments: MCP 0 mask, mcp 1 new foil (57.2 mm)	Target : $(\text{CH}_2)_n - 1$ , $(\text{CH}_2)_n - 2$ , $\text{carbon} \rightarrow \text{position} =$				

Run# 184	Trigger				Date: 10/21/2007
Beam: $^{36}\text{Ar}$ ; $^{34}\text{Ar}$ E/A=33 MeV Alpha source	HiRA	S800	Coin.	MCP	On shift:
Comments: MCP 0 foil, carbon target (151.45)	Target : $(\text{CH}_2)_n - 1$ , $(\text{CH}_2)_n - 2$ , $\text{carbon} \rightarrow \text{position} =$				

12:23 95

10/21/07

	Vbias(V)	I(μA)
Back 0	100.1	4.04
Back 1	100.1	6.05
Back 2	100.0	5.32
Back 3	100.1	6.42
MCP 0		
MCP 1		

Page 01: 0-10 V ADC Reg Volts, & 0-5 V ADC Thermocouple 00:26:28  
 04 07 08 09 10 11 12 13 14 15

HiRA Tow4 Reg	LO ALARM	Clrd 20/15:22 P01
HiRA Tow2 Reg	LO ALARM	Clrd 20/15:22 P01
HiRA Tow5 Reg	LO ALARM	Clrd 20/15:22 P01
HiRA Tow3 Reg	LO ALARM	Clrd 20/15:22 P01

HiRA Tow0 Reg	HiRA Tow0 TC0	HiRA Tow0 TC1	HiRA Tow0 TC2	HiRA Tow0 TC3
39.63	39.63	23.92	25.79	24.49
0.38		0.21	0.24	0.23

HiRA Tow1 Reg	HiRA Tow1 TC0	HiRA Tow1 TC1	HiRA Tow1 TC2	HiRA Tow1 TC3
31.96	31.96	22.53	25.54	28.93
0.27		0.21	0.22	0.26

HiRA Tow2 Reg	HiRA Tow2 TC0	HiRA Tow2 TC1	HiRA Tow2 TC2	HiRA Tow2 TC3
34.11	34.11	22.27	25.22	24.74
0.32		0.22	0.23	0.24

HiRA Tow3 Reg	HiRA Tow3 TC0	HiRA Tow3 TC1	HiRA Tow3 TC2	HiRA Tow3 TC3
33.75	33.75	22.29	25.07	32.16
0.28		0.22	0.25	0.31

HiRA Tow4 Reg	HiRA Tow4 TC0	HiRA Tow4 TC1	HiRA Tow4 TC2	HiRA Tow4 TC3
34.43	34.43	23.23	25.42	25.57
0.35		0.23	0.26	0.27

HiRA Tow5 Reg	HiRA Tow5 TC0	HiRA Tow5 TC1	HiRA Tow5 TC2	HiRA Tow3 TCDet0
35.34	35.34	24.03	26.78	25.11
0.38		0.25	0.27	0.27

## Page 02: 0-5 V ADC Thermocouple Temp

00:25:22

04 07 08 09 10 11 12 13 14 15

HiRA Tow4 Reg	LO ALARM	Clrd 20/15:22 P01
HiRA Tow2 Reg	LO ALARM	Clrd 20/15:22 P01
HiRA Tow5 Reg	LO ALARM	Clrd 20/15:22 P01
HiRA Tow3 Reg	LO ALARM	Clrd 20/15:22 P01

Tower 0 Lower	25.34	Tower 1 Lower	27.12	Tower 2 Lower	25.39	Tower 3 Lower	25.41
	0.22		0.27		0.24		0.26
Tower 0 Upper	24.87	Tower 1 Upper	26.60	Tower 2 Upper	24.54	Tower 3 Upper	24.45
	0.24		0.26		0.22		0.25

Run# 185	Trigger	Date: 10/21/2007
Beam: $^{36}\text{Ar}$ ; $^{34}\text{Ar}$		
E/A=33 MeV		
Alpha source		
	HiRA 1/5 S800 Coin. MCP	On shift: Bill, Betty, Andy, Alis Ker, Jenny, Vlad, Daniela Lee
Comments: Data run MCP & data swapped. probably not good	Target : (CH <sub>2</sub> )n-1, (CH <sub>2</sub> )n-2, carbon → position=	Bp = 1.8778

1:40 am 10/21/07

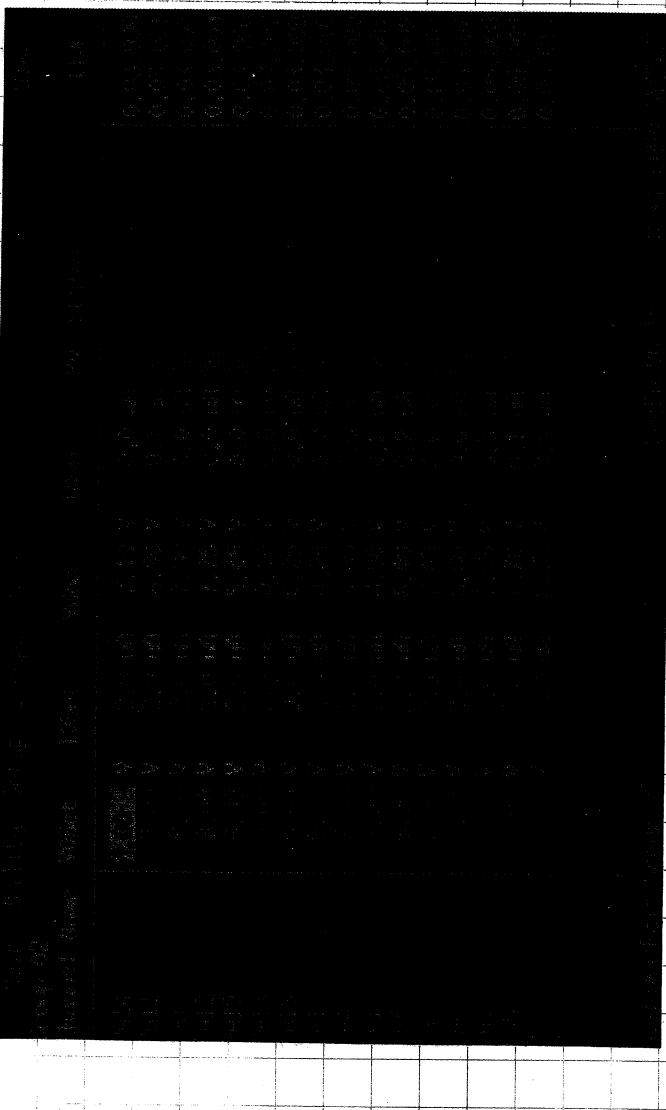
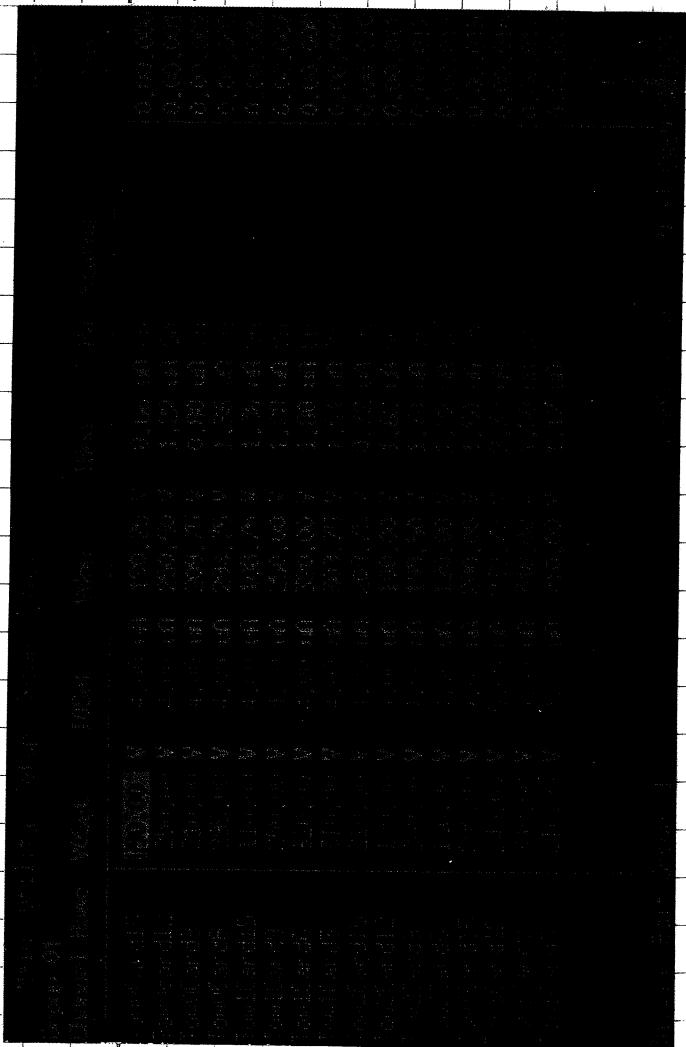
Group	Setup	Groups	View	Reset
Group G1				
Device Name	WNet	Other	View	(Row)
LowCard1	250.00 V	4.00 A	120.00 V	0.00 A
LowCard12	250.00 V	4.00 A	250.00 V	1.22 A
LowCard3	210.00 V	4.00 A	250.00 V	0.00 A
LowCard5	250.00 V	4.00 A	250.00 V	1.00 A
LowCard15	100.00 V	4.00 A	100.00 V	1.00 A
LowCard32	250.00 V	4.00 A	250.00 V	1.00 A
LowCard33	250.00 V	4.00 A	250.00 V	1.25 A
LowCard35	250.00 V	4.00 A	250.00 V	1.00 A
LowCard36	250.00 V	4.00 A	250.00 V	0.75 A
LowCard41	100.00 V	4.00 A	100.00 V	0.75 A
LowCard43	200.00 V	4.00 A	200.00 V	1.25 A
LowCard48	100.00 V	4.00 A	100.00 V	1.00 A
LowCard49	250.00 V	4.00 A	250.00 V	1.00 A
LowCard50	250.00 V	4.00 A	250.00 V	1.00 A
LowCard51	250.00 V	4.00 A	250.00 V	1.00 A
LowCard52	250.00 V	4.00 A	250.00 V	1.00 A
LowCard53	250.00 V	4.00 A	250.00 V	1.00 A
LowCard54	250.00 V	4.00 A	250.00 V	1.00 A
LowCard55	250.00 V	4.00 A	250.00 V	1.00 A
LowCard56	250.00 V	4.00 A	250.00 V	1.00 A
LowCard57	250.00 V	4.00 A	250.00 V	1.00 A
LowCard58	250.00 V	4.00 A	250.00 V	1.00 A
LowCard59	250.00 V	4.00 A	250.00 V	1.00 A
LowCard60	250.00 V	4.00 A	250.00 V	1.00 A
LowCard61	250.00 V	4.00 A	250.00 V	1.00 A
LowCard62	250.00 V	4.00 A	250.00 V	1.00 A
LowCard63	250.00 V	4.00 A	250.00 V	1.00 A
LowCard64	250.00 V	4.00 A	250.00 V	1.00 A
LowCard65	250.00 V	4.00 A	250.00 V	1.00 A
LowCard66	250.00 V	4.00 A	250.00 V	1.00 A
LowCard67	250.00 V	4.00 A	250.00 V	1.00 A
LowCard68	250.00 V	4.00 A	250.00 V	1.00 A
LowCard69	250.00 V	4.00 A	250.00 V	1.00 A
LowCard70	250.00 V	4.00 A	250.00 V	1.00 A
LowCard71	250.00 V	4.00 A	250.00 V	1.00 A
LowCard72	250.00 V	4.00 A	250.00 V	1.00 A
LowCard73	250.00 V	4.00 A	250.00 V	1.00 A
LowCard74	250.00 V	4.00 A	250.00 V	1.00 A
LowCard75	250.00 V	4.00 A	250.00 V	1.00 A
LowCard76	250.00 V	4.00 A	250.00 V	1.00 A
LowCard77	250.00 V	4.00 A	250.00 V	1.00 A
LowCard78	250.00 V	4.00 A	250.00 V	1.00 A
LowCard79	250.00 V	4.00 A	250.00 V	1.00 A
LowCard80	250.00 V	4.00 A	250.00 V	1.00 A
LowCard81	250.00 V	4.00 A	250.00 V	1.00 A
LowCard82	250.00 V	4.00 A	250.00 V	1.00 A
LowCard83	250.00 V	4.00 A	250.00 V	1.00 A
LowCard84	250.00 V	4.00 A	250.00 V	1.00 A
LowCard85	250.00 V	4.00 A	250.00 V	1.00 A
LowCard86	250.00 V	4.00 A	250.00 V	1.00 A
LowCard87	250.00 V	4.00 A	250.00 V	1.00 A
LowCard88	250.00 V	4.00 A	250.00 V	1.00 A
LowCard89	250.00 V	4.00 A	250.00 V	1.00 A
LowCard90	250.00 V	4.00 A	250.00 V	1.00 A
LowCard91	250.00 V	4.00 A	250.00 V	1.00 A
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LowCard93	250.00 V	4.00 A	250.00 V	1.00 A
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LowCard95	250.00 V	4.00 A	250.00 V	1.00 A
LowCard96	250.00 V	4.00 A	250.00 V	1.00 A
LowCard97	250.00 V	4.00 A	250.00 V	1.00 A
LowCard98	250.00 V	4.00 A	250.00 V	1.00 A
LowCard99	250.00 V	4.00 A	250.00 V	1.00 A
LowCard100	250.00 V	4.00 A	250.00 V	1.00 A
LowCard101	250.00 V	4.00 A	250.00 V	1.00 A
LowCard102	250.00 V	4.00 A	250.00 V	1.00 A
LowCard103	250.00 V	4.00 A	250.00 V	1.00 A
LowCard104	250.00 V	4.00 A	250.00 V	1.00 A
LowCard105	250.00 V	4.00 A	250.00 V	1.00 A
LowCard106	250.00 V	4.00 A	250.00 V	1.00 A
LowCard107	250.00 V	4.00 A	250.00 V	1.00 A
LowCard108	250.00 V	4.00 A	250.00 V	1.00 A
LowCard109	250.00 V	4.00 A	250.00 V	1.00 A
LowCard110	250.00 V	4.00 A	250.00 V	1.00 A
LowCard111	250.00 V	4.00 A	250.00 V	1.00 A
LowCard112	250.00 V	4.00 A	250.00 V	1.00 A
LowCard113	250.00 V	4.00 A	250.00 V	1.00 A
LowCard114	250.00 V	4.00 A	250.00 V	1.00 A
LowCard115	250.00 V	4.00 A	250.00 V	1.00 A
LowCard116	250.00 V	4.00 A	250.00 V	1.00 A
LowCard117	250.00 V	4.00 A	250.00 V	1.00 A
LowCard118	250.00 V	4.00 A	250.00 V	1.00 A
LowCard119	250.00 V	4.00 A	250.00 V	1.00 A
LowCard120	250.00 V	4.00 A	250.00 V	1.00 A
LowCard121	250.00 V	4.00 A	250.00 V	1.00 A
LowCard122	250.00 V	4.00 A	250.00 V	1.00 A
LowCard123	250.00 V	4.00 A	250.00 V	1.00 A
LowCard124	250.00 V	4.00 A	250.00 V	1.00 A
LowCard125	250.00 V	4.00 A	250.00 V	1.00 A
LowCard126	250.00 V	4.00 A	250.00 V	1.00 A
LowCard127	250.00 V	4.00 A	250.00 V	1.00 A
LowCard128	250.00 V	4.00 A	250.00 V	1.00 A
LowCard129	250.00 V	4.00 A	250.00 V	1.00 A
LowCard130	250.00 V	4.00 A	250.00 V	1.00 A
LowCard131	250.00 V	4.00 A	250.00 V	1.00 A
LowCard132	250.00 V	4.00 A	250.00 V	1.00 A
LowCard133	250.00 V	4.00 A	250.00 V	1.00 A
LowCard134	250.00 V	4.00 A	250.00 V	1.00 A
LowCard135	250.00 V	4.00 A	250.00 V	1.00 A
LowCard136	250.00 V	4.00 A	250.00 V	1.00 A
LowCard137	250.00 V	4.00 A	250.00 V	1.00 A
LowCard138	250.00 V	4.00 A	250.00 V	1.00 A
LowCard139	250.00 V	4.00 A	250.00 V	1.00 A
LowCard140	250.00 V	4.00 A	250.00 V	1.00 A
LowCard141	250.00 V	4.00 A	250.00 V	1.00 A
LowCard142	250.00 V	4.00 A	250.00 V	1.00 A
LowCard143	250.00 V	4.00 A	250.00 V	1.00 A
LowCard144	250.00 V	4.00 A	250.00 V	1.00 A
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LowCard146	250.00 V	4.00 A	250.00 V	1.00 A
LowCard147	250.00 V	4.00 A	250.00 V	1.00 A
LowCard148	250.00 V	4.00 A	250.00 V	1.00 A
LowCard149	250.00 V	4.00 A	250.00 V	1.00 A
LowCard150	250.00 V	4.00 A	250.00 V	1.00 A
LowCard151	250.00 V	4.00 A	250.00 V	1.00 A
LowCard152	250.00 V	4.00 A	250.00 V	1.00 A
LowCard153	250.00 V	4.00 A	250.00 V	1.00 A
LowCard154	250.00 V	4.00 A	250.00 V	1.00 A
LowCard155	250.00 V	4.00 A	250.00 V	1.00 A
LowCard156	250.00 V	4.00 A	250.00 V	1.00 A
LowCard157	250.00 V	4.00 A	250.00 V	1.00 A
LowCard158	250.00 V	4.00 A	250.00 V	1.00 A
LowCard159	250.00 V	4.00 A	250.00 V	1.00 A
LowCard160	250.00 V	4.00 A	250.00 V	1.00 A
LowCard161	250.00 V	4.00 A	250.00 V	1.00 A
LowCard162	250.00 V	4.00 A	250.00 V	1.00 A
LowCard163	250.00 V	4.00 A	250.00 V	1.00 A
LowCard164	250.00 V	4.00 A	250.00 V	1.00 A
LowCard165	250.00 V	4.00 A	250.00 V	1.00 A
LowCard166	250.00 V	4.00 A	250.00 V	1.00 A
LowCard167	250.00 V	4.00 A	250.00 V	1.00 A
LowCard168	250.00 V	4.00 A	250.00 V	1.00 A
LowCard169	250.00 V	4.00 A	250.00 V	1.00 A
LowCard170	250.00 V	4.00 A	250.00 V	1.00 A
LowCard171	250.00 V	4.00 A	250.00 V	1.00 A
LowCard172	250.00 V	4.00 A	250.00 V	1.00 A
LowCard173	250.00 V	4.00 A	250.00 V	1.00 A
LowCard174	250.00 V	4.00 A	250.00 V	1.00 A
LowCard175	250.00 V	4.00 A	250.00 V	1.00 A
LowCard176	250.00 V	4.00 A	250.00 V	1.00 A
LowCard177	250.00 V	4.00 A	250.00 V	1.00 A
LowCard178	250.00 V	4.00 A	250.00 V	1.00 A
LowCard179	250.00 V	4.00 A	250.00 V	1.00 A
LowCard180	250.00 V	4.00 A	250.00 V	1.00 A
LowCard181	250.00 V	4.00 A	250.00 V	1.00 A
LowCard182	250.00 V	4.00 A	250.00 V	1.00 A
LowCard183	250.00 V	4.00 A	250.00 V	1.00 A
LowCard184	250.00 V	4.00 A	250.00 V	1.00 A
LowCard185	250.00 V	4.00 A	250.00 V	1.00 A
LowCard186	250.00 V	4.00 A	250.00 V	1.00 A
LowCard187	250.00 V	4.00 A	250.00 V	1.00 A
LowCard188	250.00 V	4.00 A	250.00 V	1.00 A
LowCard189	250.00 V	4.00 A	250.00 V	1.00 A
LowCard190	250.00 V	4.00 A	250.00 V	1.00 A
LowCard191	250.00 V	4.00 A	250.00 V	1.00 A
LowCard192	250.00 V	4.00 A	250.00 V	1.00 A
LowCard193	250.00 V	4.00 A	250.00 V	1.00 A
LowCard194	250.00 V	4.00 A	250.00 V	1.00 A
LowCard195	250.00 V	4.00 A	250.00 V	1.00 A
LowCard196	250.00 V	4.00 A	250.00 V	1.00 A
LowCard197	250.00 V	4.00 A	250.00 V	1.00 A
LowCard198	250.00 V	4.00 A	250.00 V	1.00 A
LowCard199	250.00 V	4.00 A</td		

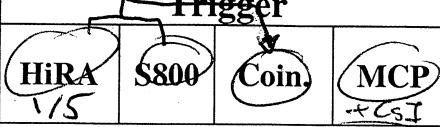
Period	Revenue	Cost of Goods Sold	Gross Profit	Sales Tax	Net Income	EPS
Q1	\$100,000	\$60,000	\$40,000	\$2,000	\$38,000	\$1.00
Q2	\$120,000	\$72,000	\$48,000	\$2,400	\$43,600	\$1.20
Q3	\$150,000	\$90,000	\$60,000	\$3,000	\$57,000	\$1.50
Q4	\$180,000	\$108,000	\$72,000	\$3,600	\$63,400	\$1.60

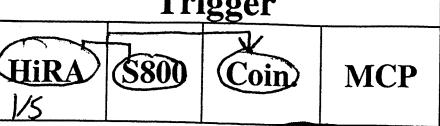
Run# 186, 187, 188, 189	Trigger	Date: 10/22/2007
Beam: $^{36}\text{Ar}$ ; $^{34}\text{Ar}$		On shift:
E/A=33 MeV	HiRA $\pi$	V+D
Alpha source	S800 Coin.	Leev Andy

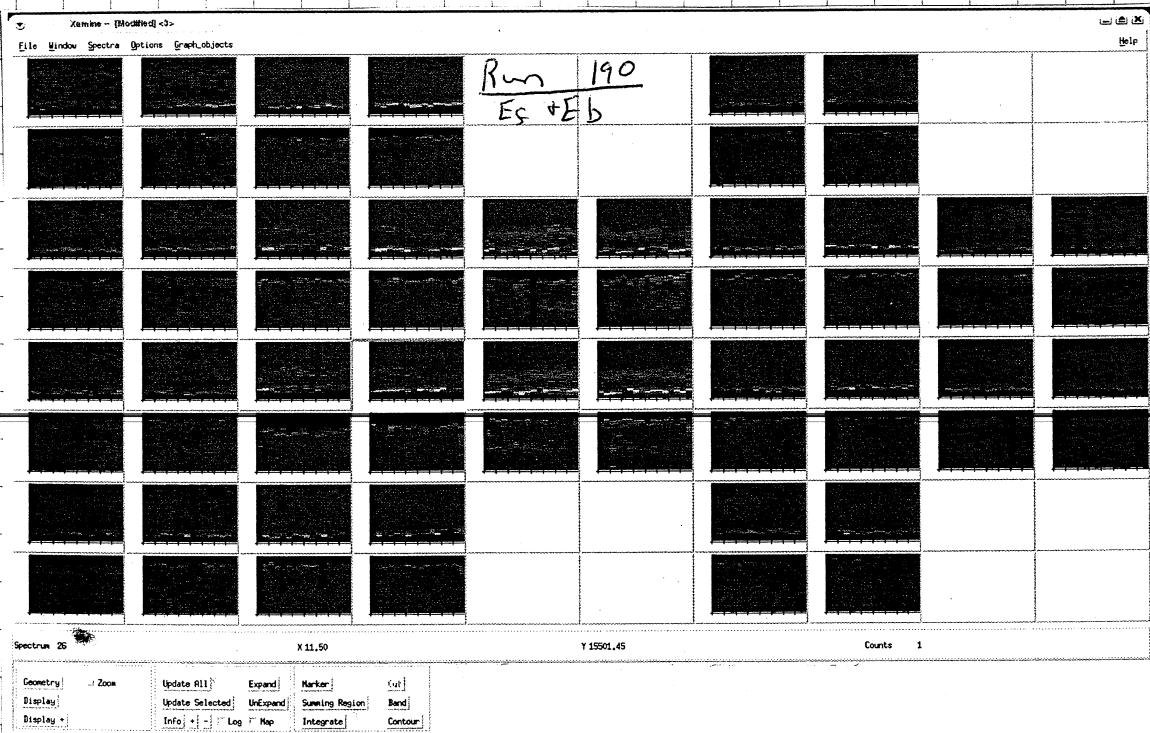
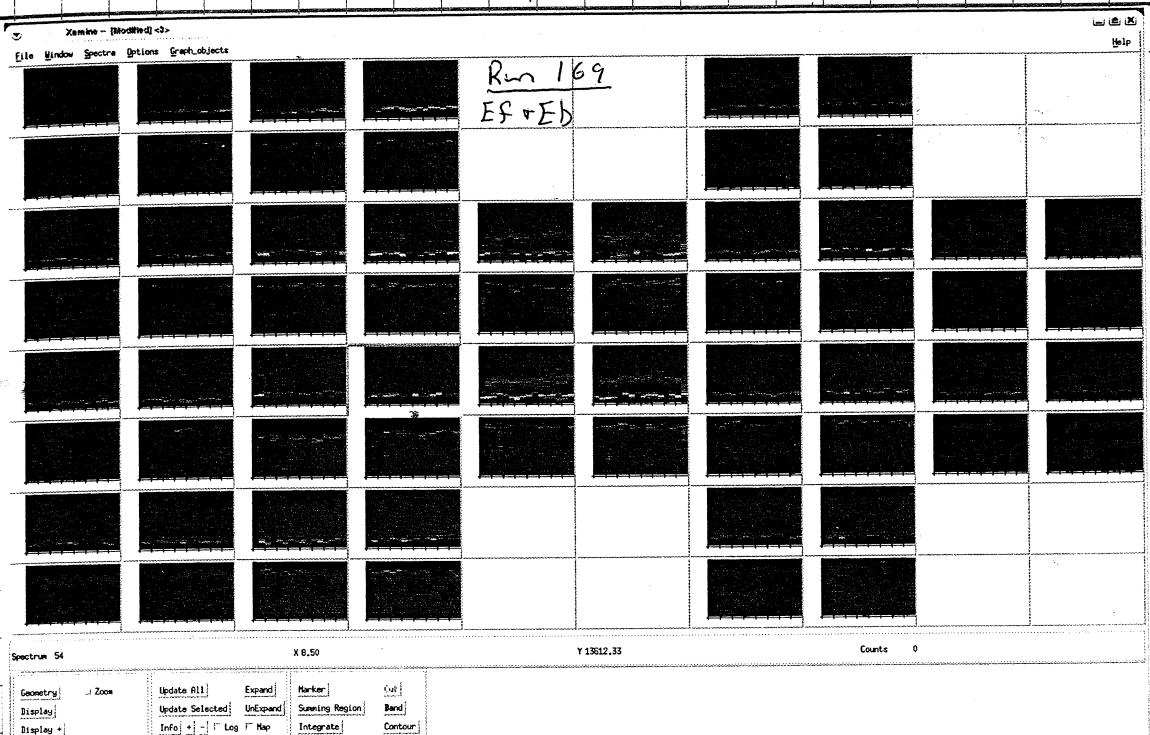
Run# 190	Trigger			Date: 10/24/2007
Beam: $^{36}\text{Ar}$ ; $^{34}\text{Ar}$ E/A=33 MeV Alpha source	HiRA 115	S800	Coin.	MCP $^{10}\text{Cm}$
	Target : $(\text{CH}_2)_n$ -1, $(\text{CH}_2)_n$ -2, carbon $\rightarrow$ position=			
Comments:				

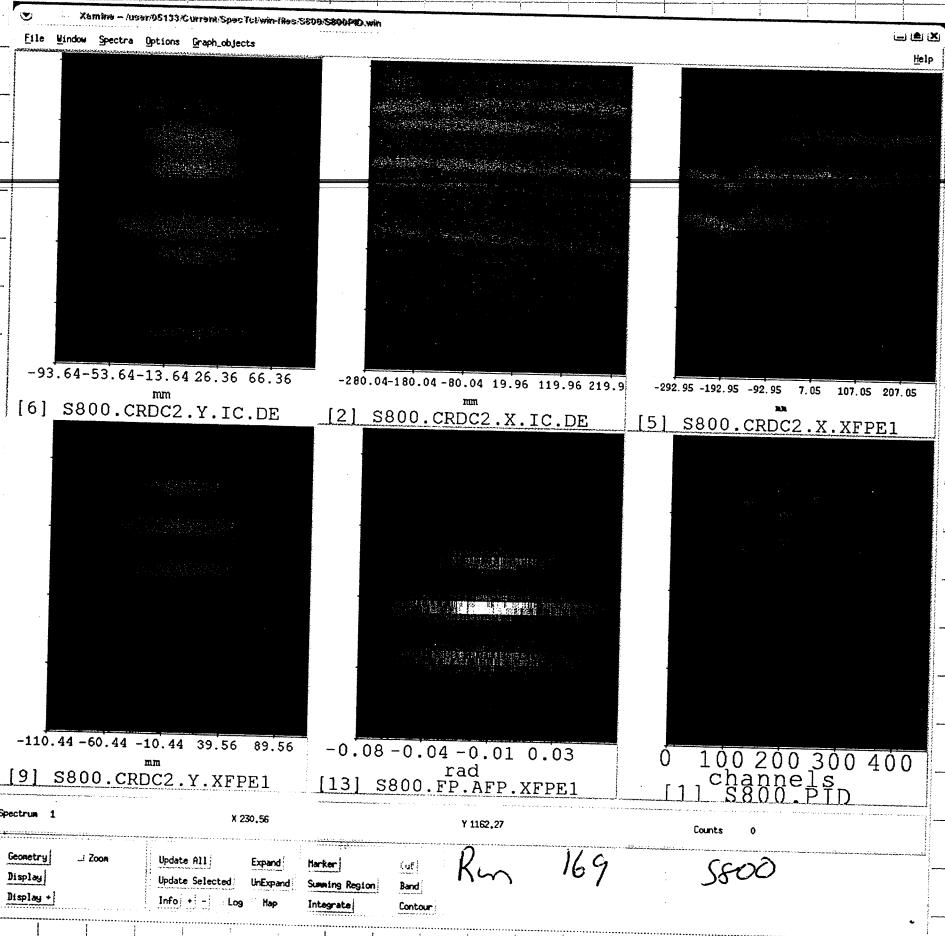
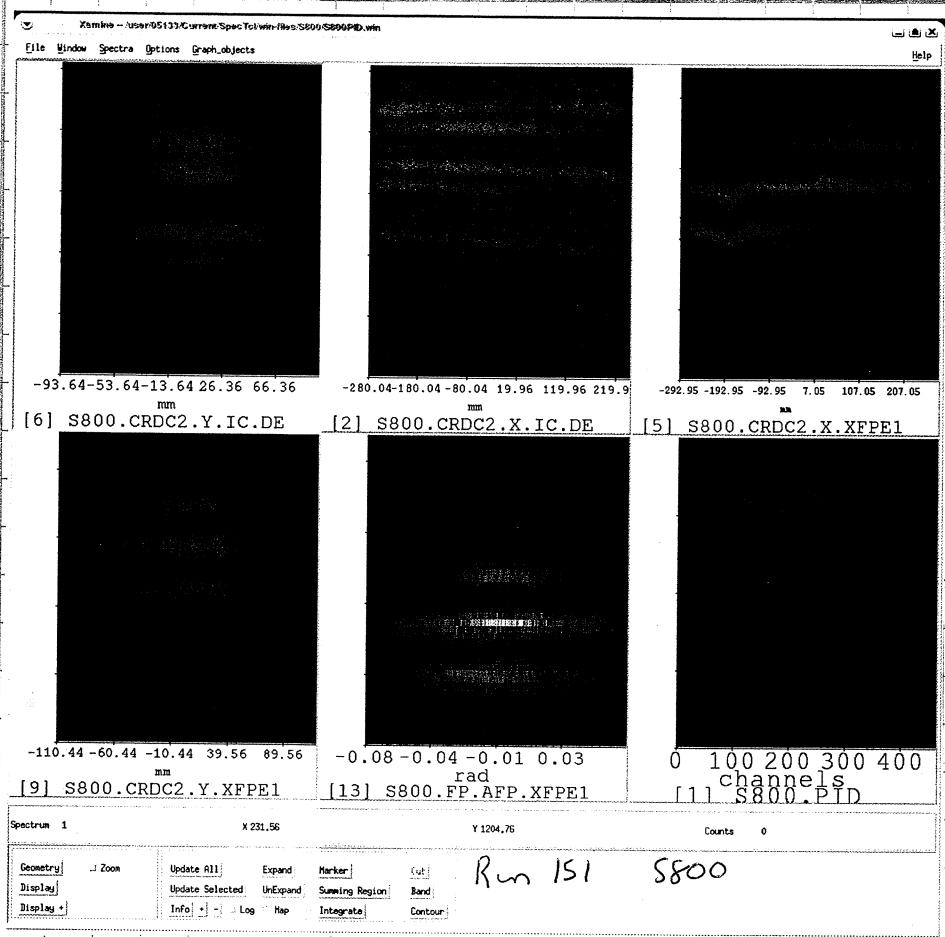
leakage currents at 5.50 Atn (22/10/2007)

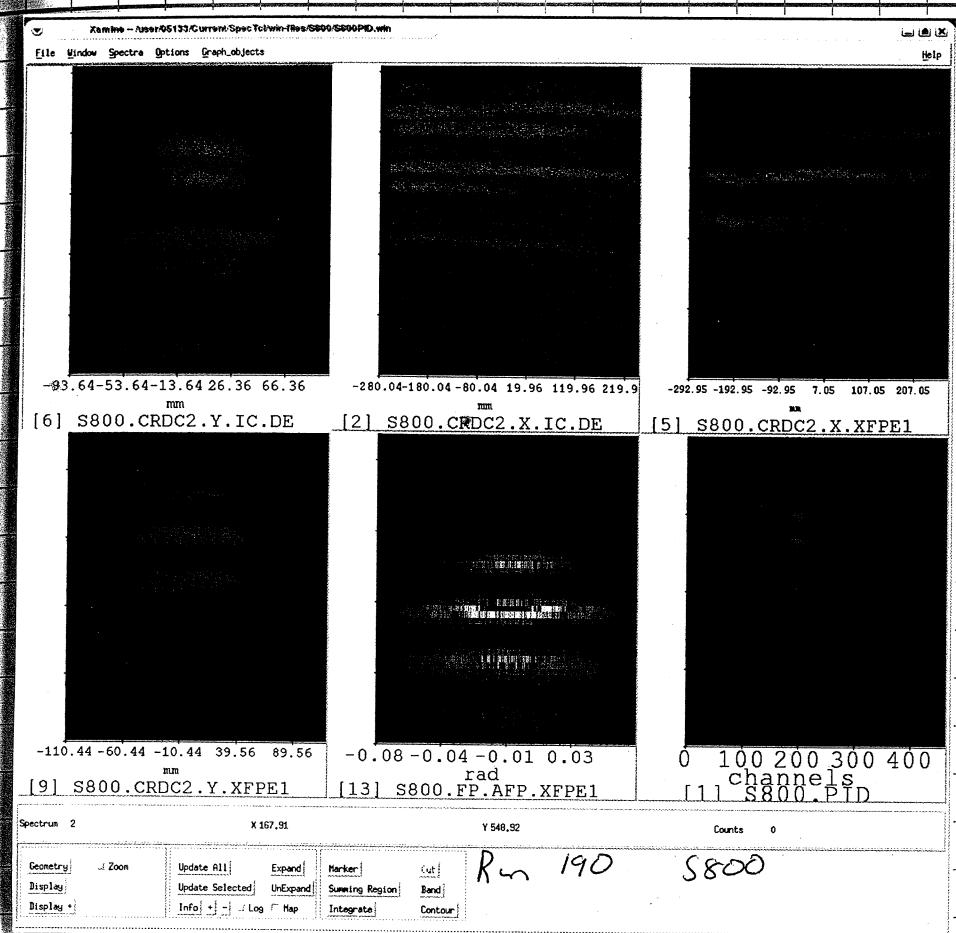


Run# 191, 192	Trigger  Target : (CH <sub>2</sub> )n-1, (CH <sub>2</sub> )n-2, carbon → position= 110mm	Date: 10/ /2007 On shift: V+D + Mike
Comments: first heling data		

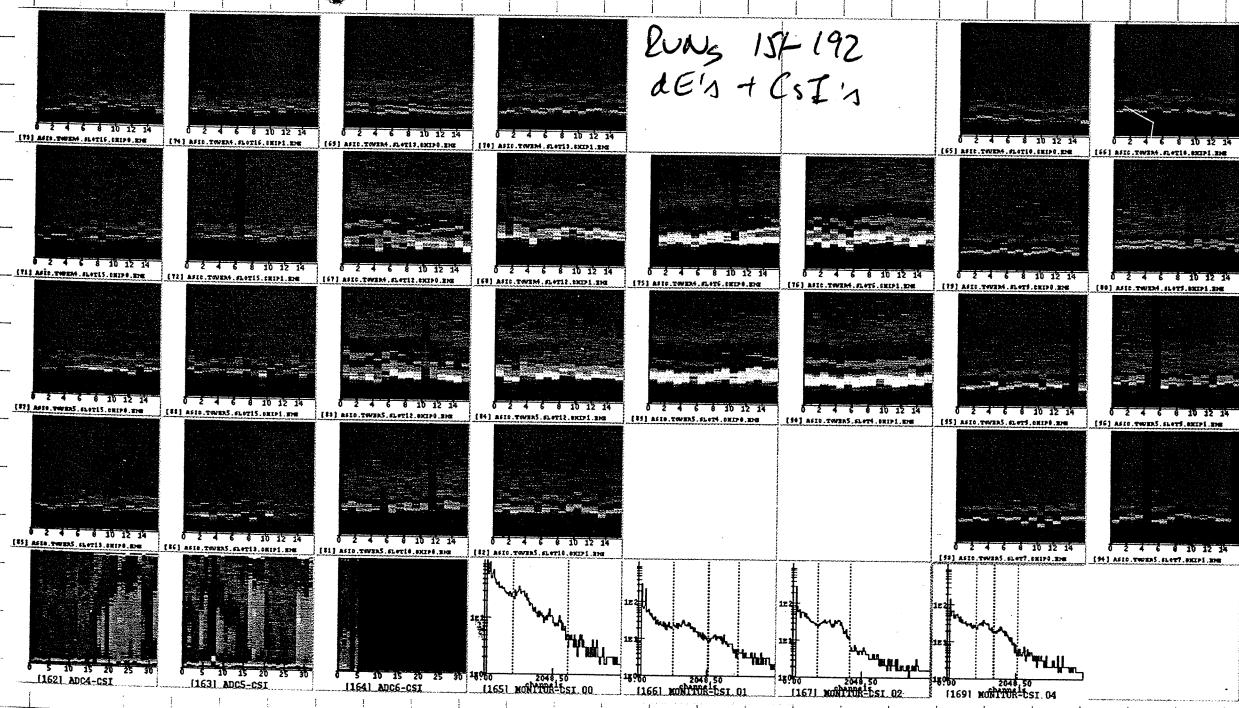
Run# 193, 194	Trigger  Target : (CH <sub>2</sub> )n-1, (CH <sub>2</sub> )n-2, carbon → position= 110mm	Date: 10/ /2007 On shift: D + V + Mike
Comments: more data		

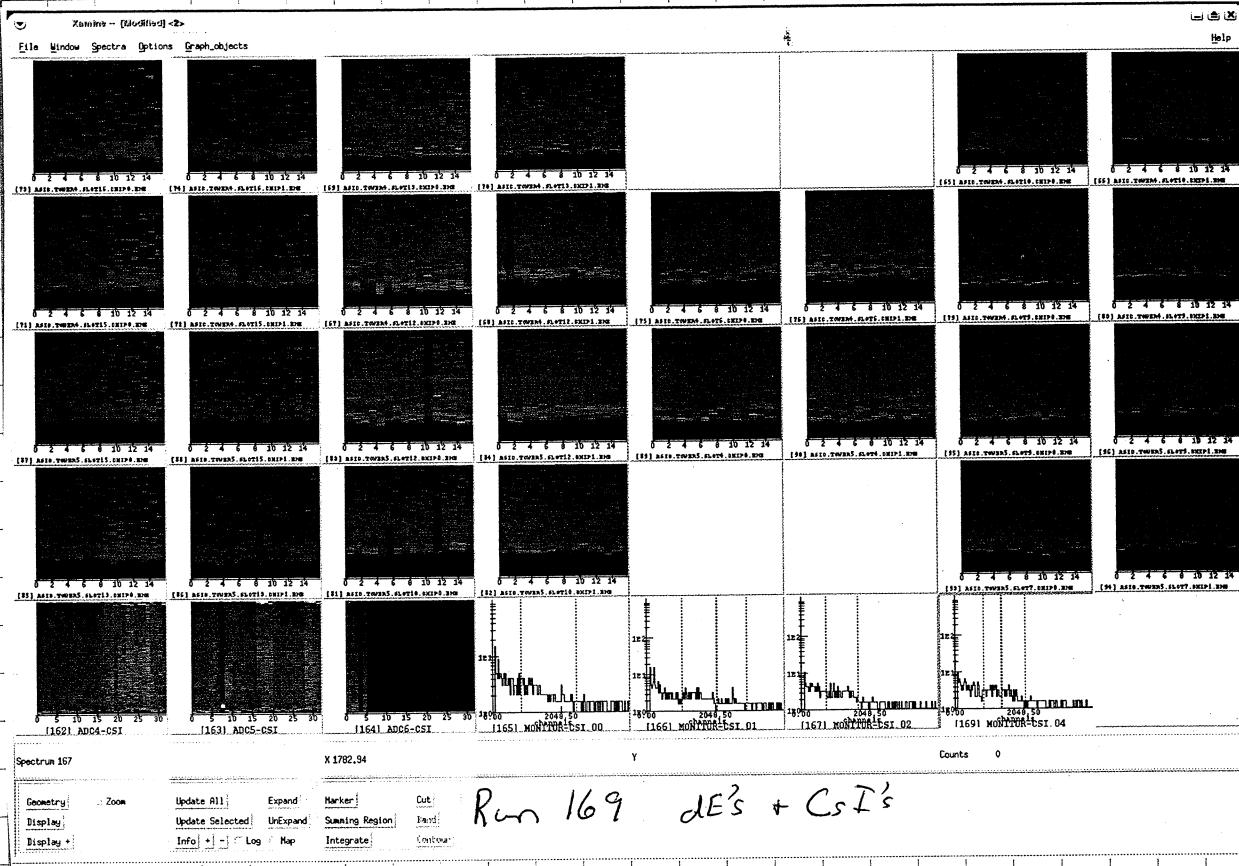




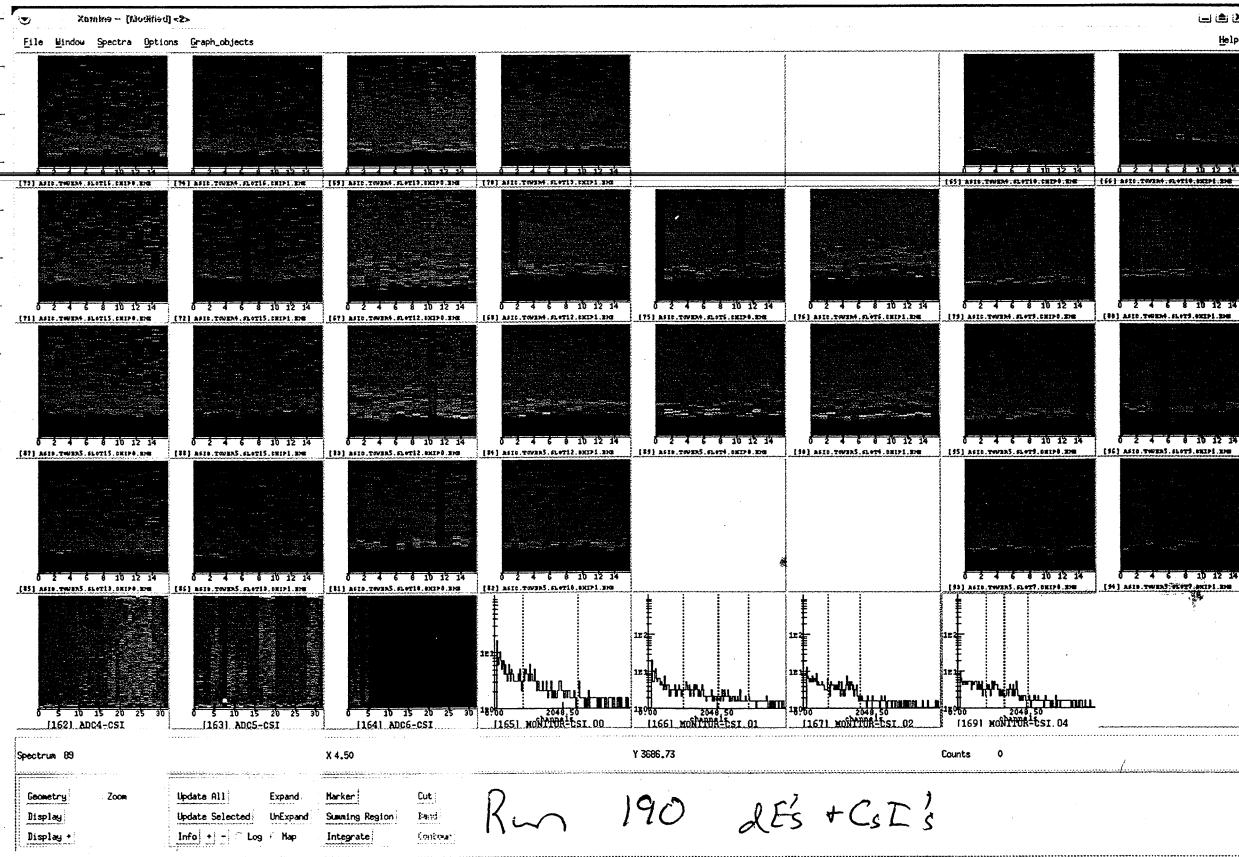


AT: Data for CsI Tel 18 1D spectra sorted from RCNS 151-192 and target scanning regions have been set in SpecTel for proton recoils





Run 169 dE's + CsI's



Run 190  $dE's + CsI's$

HiRA Tow4 Reg		LO ALARM												
HiRA Tow2 Reg		LO ALARM												
HiRA Tow5 Reg		LO ALARM												
HiRA Tow3 Reg		LO ALARM												
HiRA Tow0 Reg	5.95	HiRA Tow0 TC0	39.38	0.37	HiRA Tow0 TC1	23.14	0.21	HiRA Tow0 TC2	26.03	0.24	HiRA Tow0 TC3	24.61	0.23	OY
HiRA Tow1 Reg	5.92	HiRA Tow1 TC0	31.06	0.27	HiRA Tow1 TC1	22.65	0.21	HiRA Tow1 TC2	25.71	0.22	HiRA Tow1 TC3	28.15	0.26	
HiRA Tow2 Reg	5.09	HiRA Tow2 TC0	33.87	0.32	HiRA Tow2 TC1	22.27	0.22	HiRA Tow2 TC2	25.35	0.23	HiRA Tow2 TC3	24.86	0.24	
HiRA Tow3 Reg	5.06	HiRA Tow3 TC0	28.75	0.28	HiRA Tow3 TC1	22.36	0.22	HiRA Tow3 TC2	25.80	0.25	HiRA Tow3 TC3	32.52	0.31	
HiRA Tow4 Reg	5.65	HiRA Tow4 TC0	34.48	0.35	HiRA Tow4 TC1	23.36	0.24	HiRA Tow4 TC2	25.54	0.26	HiRA Tow4 TC3	25.57	0.27	
HiRA Tow5 Reg	5.95	HiRA Tow5 TC0	35.71	0.37	HiRA Tow5 TC1	24.95	0.25	HiRA Tow5 TC2	26.91	0.27	HiRA Tow3 TCDet0	25.23	0.27	

Page 02: 0-5 V ADC Thermocouple Temp														08:15:24
04	07	08	09	10	11	12	13	14	15					

HiRA Tow4 Reg	LO ALARM	Clrd 20/15:22 P01
HiRA Tow2 Reg	LO ALARM	Clrd 20/15:22 P01
HiRA Tow5 Reg	LO ALARM	Clrd 20/15:22 P01
HiRA Tow3 Reg	LO ALARM	Clrd 20/15:22 P01

Tower 0 Lower	Tower 1 Lower	Tower 2 Lower	Tower 3 Lower
25.47 0.22	27.24 0.27	25.39 0.24	25.41 0.26
Tower 0 Upper	Tower 1 Upper	Tower 2 Upper	Tower 3 Upper
24.99 0.24	26.21 0.26	24.14 0.22	24.13 0.25

10/22/07

Due to problems w/ MCP, trying to find vertical size of beam. changed to target mask, tuned very attenuated beam directly onto S800 fp, and take several short runs

Run# 196	Trigger				Date: 10/22/2007
Beam: $^{36}\text{Ar}$ ; $^{34}\text{Ar}$	HiRA 1/5	S800	Coin.	MCP +CsI	On shift: V+D Micha, Dan, Sun, Betty
E/A=33 MeV Alpha source	Target : $(\text{CH}_2)_n$ -1, $(\text{CH}_2)_n$ -2, carbon $\rightarrow$ position= mask				
Comments: mask @ 0.0 mm (258,5)					

Run# 197	Trigger				Date: 10/22/2007
Beam: $^{36}\text{Ar}$ ; $^{34}\text{Ar}$	HiRA 1/5	S800	Coin.	MCP +CsI	On shift: Same
E/A=33 MeV Alpha source	Target : $(\text{CH}_2)_n$ -1, $(\text{CH}_2)_n$ -2, carbon $\rightarrow$ position= mask				
Comments: mask @ 1.0 mm (253,5)					

Run# 198	Trigger				Date: 10/ /2007
Beam: $^{36}\text{Ar}$ ; $^{34}\text{Ar}$	HiRA	S800	Coin.	MCP	On shift: Same
E/A=33 MeV Alpha source	Target : $(\text{CH}_2)_n$ -1, $(\text{CH}_2)_n$ -2, carbon $\rightarrow$ position= mask				
Comments: mask @ 2.0 nm (254,5)					

Run# 199	Trigger				Date: 10/ /2007
Beam: $^{36}\text{Ar}$ ; $^{34}\text{Ar}$	HiRA	S800	Coin.	MCP	On shift: Same
E/A=33 MeV Alpha source	Target : $(\text{CH}_2)_n$ -1, $(\text{CH}_2)_n$ -2, carbon $\rightarrow$ position= mask				
Comments: mask @ 3.0 nm (255,5)					

Beam:  $^{36}\text{Ar}$ ;  $^{34}\text{Ar}$   
E/A=33 MeV  
Alpha source

	HiRA	S800	Coin.	MCP
--	------	------	-------	-----

Date: 10/10/2007

On shift:

Target : (CH<sub>2</sub>)<sub>n</sub>-1, (CH<sub>2</sub>)<sub>n</sub>-2,  
carbon → position=

Comments: mask @ 4 mm (256.S), same.

when trying to start run 201, readout gave a  
string exception and would not start. Exiting  
the shell and logging back in worked.

Run# 201

Beam:  $^{36}\text{Ar}$ ;  $^{34}\text{Ar}$   
E/A=33 MeV  
Alpha source

Trigger

Date: 10/24/2007

On shift: V+D

HiRA	S800	Coin.	MCP
------	------	-------	-----

Target : (CH<sub>2</sub>)<sub>n</sub>-1, (CH<sub>2</sub>)<sub>n</sub>-2,  
carbon → position= Mask

Comments: mask @ -2 mm (250.S) same.

Run# 202

Beam:  $^{36}\text{Ar}$ ;  $^{34}\text{Ar}$   
E/A=33 MeV  
Alpha source

Trigger

Date: 10/10/2007

On shift:

HiRA	S800	Coin.	MCP
------	------	-------	-----

Target : (CH<sub>2</sub>)<sub>n</sub>-1, (CH<sub>2</sub>)<sub>n</sub>-2,  
carbon → position=

Comments: mask @ -4 mm (248.S) . Same.

Run# 203

Beam:  $^{36}\text{Ar}$ ;  $^{34}\text{Ar}$   
E/A=33 MeV  
Alpha source

Trigger

Date: 10/10/2007

On shift:

HiRA	S800	Coin.	MCP
------	------	-------	-----

Target : (CH<sub>2</sub>)<sub>n</sub>-1, (CH<sub>2</sub>)<sub>n</sub>-2,  
carbon → position=

Comments: mask @ -1 mm (251.S) , otherwise same

Run# 204	Trigger				Date: 10/ /2007
Beam: $^{36}\text{Ar}$ ; $^{34}\text{Ar}$ E/A=33 MeV Alpha source	HiRA	S800	Coin.	MCP	On shift:
Target : (CH <sub>2</sub> )n-1, (CH <sub>2</sub> )n-2, carbon → position=					
Comments: mask @ -3 mm (241.5). Continue mask runs.					

Run# 205	Trigger				Date: 10/ /2007
Beam: $^{36}\text{Ar}$ ; $^{34}\text{Ar}$ E/A=33 MeV Alpha source	HiRA	S800	Coin.	MCP	On shift:
Target : (CH <sub>2</sub> )n-1, (CH <sub>2</sub> )n-2, carbon → position=					
Comments: mask @ -5 mm (247.5) Continue mask runs					

Run# 206	Trigger				Date: 10/ /2007
Beam: $^{36}\text{Ar}$ ; $^{34}\text{Ar}$ E/A=33 MeV Alpha source	HiRA	S800	Coin.	MCP	On shift:
Target : (CH <sub>2</sub> )n-1, (CH <sub>2</sub> )n-2, carbon → position=					
Comments: mask @ 0 mm (252.5) - Change to HiRA singles					

Run# 207	Trigger				Date: 10/ /2007
Beam: $^{36}\text{Ar}$ ; $^{34}\text{Ar}$ E/A=33 MeV Alpha source	HiRA	S800	Coin.	MCP	On shift:
Target : (CH <sub>2</sub> )n-1, (CH <sub>2</sub> )n-2, carbon → position=					
Comments: mask @ 2 mm (254.5) big brother tripping in run @ 5000 Hz					

Run# 208	Trigger				Date: 10/ /2007
Beam: $^{36}\text{Ar}$ ; $^{34}\text{Ar}$ E/A=33 MeV Alpha source	HiRA	S800	Coin.	MCP	On shift:
Target : (CH <sub>2</sub> )n-1, (CH <sub>2</sub> )n-2, carbon → position=					
Comments: mask @ 4 mm (256.5) - Inconsistency big brother.					

Run# 209	Trigger				Date: 10/ /2007
Beam: $^{36}\text{Ar}$ ; $^{34}\text{Ar}$ E/A=33 MeV Alpha source	HiRA	S800	Coin.	MCP	On shift:
	Target : (CH <sub>2</sub> )n-1, (CH <sub>2</sub> )n-2, carbon → position=				

Comments: mask @ -2 mm (250.5)

Run# 210	Trigger				Date: 10/ /2007
Beam: $^{36}\text{Ar}$ ; $^{34}\text{Ar}$ E/A=33 MeV Alpha source	HiRA	S800	Coin.	MCP	On shift:
	Target : (CH <sub>2</sub> )n-1, (CH <sub>2</sub> )n-2, carbon → position=				

Comments: mask @ -4 mm (248.5)

Run# 211	Trigger				Date: 10/ /2007
Beam: $^{36}\text{Ar}$ ; $^{34}\text{Ar}$ E/A=33 MeV Alpha source	HiRA	S800	Coin.	MCP	On shift:
	Target : (CH <sub>2</sub> )n-1, (CH <sub>2</sub> )n-2, carbon → position=				

Comments: mask @ ~6 (246.5). Title is wrong.

Run# 212	Trigger				Date: 10/ /2007
Beam: $^{36}\text{Ar}$ ; $^{34}\text{Ar}$ E/A=33 MeV Alpha source	HiRA	S800	Coin.	MCP	On shift:
	Target : (CH <sub>2</sub> )n-1, (CH <sub>2</sub> )n-2, carbon → position=				

Comments: mask @ -5 (247.5). A 9<sup>th</sup> spike  
on Es & Big Brother.

Run# 213	Trigger				Date: 10/ /2007
Beam: $^{36}\text{Ar}$ ; $^{34}\text{Ar}$ E/A=33 MeV Alpha source	HiRA	S800	Coin.	MCP	On shift:
	Target : (CH <sub>2</sub> )n-1, (CH <sub>2</sub> )n-2, carbon → position=				

Comments: mask @ -3 mm (249.5)

Run# 214	Trigger				Date: 10/ /2007
Beam: $^{36}\text{Ar}$ ; $^{34}\text{Ar}$ E/A=33 MeV Alpha source	HiRA	S800	Coin.	MCP	On shift:
	Target : (CH <sub>2</sub> )n-1, (CH <sub>2</sub> )n-2, carbon → position=				

Comments: mask @ -1 mm (251.5)

10:10 · 10/22/07

Blow up beam to test MCP I. Start by looking with mask & S800 singles until we can see 2 holes from mask

When we were tripping the Big Brother scalers  $\sim 5000$ , we were getting nearly the same rate as on the XRF. Scint  $\sim 6500$ . Most of this came from TI. It came in spurts.

The Big Brother rate that will trip the RF is 25,000.

Run# 215	Trigger				Date: 10/ /2007
Beam: $^{36}\text{Ar}$ ; $^{34}\text{Ar}$ E/A=33 MeV Alpha source	HiRA	S800	Coin.	MCP +CS	On shift:
Target : $(\text{CH}_2)^{n-1}$ , $(\text{CH}_2)^{n-2}$ , carbon $\rightarrow$ position =					

Comments: Beam blown up to test MCP, blank target.  
Changing attenuation. Noise in Big Brother at beginning, suddenly dropped off. Noise in lab?

testing

more beam  $\rightarrow$  .1 M attenuating factor - BB noise goes away  
.3 M attenuating factor - BB noise strong

Looks like a hole in MCP D (known)  
a big cavity in side of MCP I (not known)

although previously, noise with no beam and the profile was different

put stop in

.1M - Large noise, spiky. around 1000 Hz  
.1M - no change  
.3M - no change  
.5M - no change

take stop back out - major decrease  
but n ~ increase

Run# 216

Beam:  $^{36}\text{Ar}$ ;  $^{34}\text{Ar}$   
 E/A=33 MeV  
 Alpha source

Trigger

Date: 10/22/2007

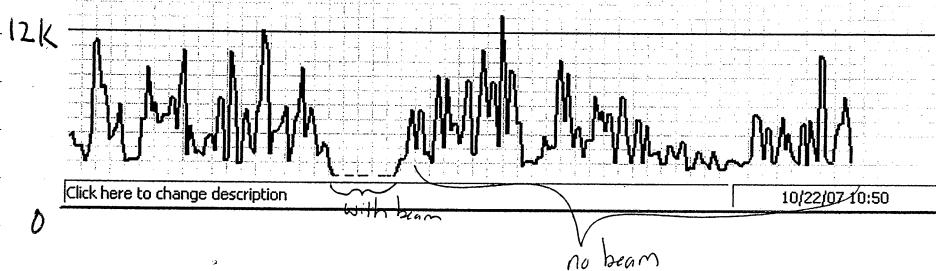
On shift:

HiRA	S800	Coin.	MCP +CS
------	------	-------	------------

Target : (CH<sub>2</sub>)<sub>n-1</sub>, (CH<sub>2</sub>)<sub>n-2</sub>,  
 carbon → position= blank

Comments: Beam still blown up & lost ref, MCP mask  
 in

graph of Big Brother with beam stop in and out



Run# 217, 220, 221, 220

Beam:  $^{36}\text{Ar}$ ;  $^{34}\text{Ar}$   
 E/A=33 MeV  
 Alpha source

Trigger

Date: 10/22/2007

On shift:

HiRA	S800	Coin.	MCP +CS
------	------	-------	------------

Target : (CH<sub>2</sub>)<sub>n-1</sub>, (CH<sub>2</sub>)<sub>n-2</sub>,  
 carbon → position= blank

Comments: Continue previous; MCP mask.

Run# 21P

Beam:  $^{36}\text{Ar}$ ;  $^{34}\text{Ar}$   
 E/A=33 MeV  
 Alpha source

Trigger

Date: 10/22/2007

On shift:

HiRA	S800	Coin.	MCP +CS
------	------	-------	------------

Target : (CH<sub>2</sub>)<sub>n-1</sub>, (CH<sub>2</sub>)<sub>n-2</sub>,  
 carbon → position=

Comments: MCPD mask instead of previous MCPI.  
 Getting like previous

dE rate drifting up in Run 21P  
 others not steady in 21P,

Readout string exception again trying to start  
 run 21P, EXIT & restart shell.

Ram 4 Tower DE EF BB Range Steps

223	0	✓	✓	0-10V	51
224	1	✓	✓	0-11	11
225	2	✓	✓	11	11
226	3	✓	✓	11	11

slot 2, chip 0 - only every other channel works

6:49 pm

10/22/07

Page 01: 0-10 V ADC Reg Volts, & 0-5 V ADC Thermocouple 18:49:07

04	07	08	09	10	11	12	13	14	15
----	----	----	----	----	----	----	----	----	----

HiRA Tow4 Reg	LO ALARM	Clrd 20/15:22 P01
HiRA Tow2 Reg	LO ALARM	Clrd 20/15:22 P01
HiRA Tow5 Reg	LO ALARM	Clrd 20/15:22 P01
HiRA Tow3 Reg	LO ALARM	Clrd 20/15:22 P01

HiRA Tow0 Reg	HiRA Tow0 TC0	HiRA Tow0 TC1	HiRA Tow0 TC2	HiRA Tow0 TC3
29.63	0.38	28.92	25.79	24.49
		0.21	0.24	0.23

HiRA Tow1 Reg	HiRA Tow1 TC0	HiRA Tow1 TC1	HiRA Tow1 TC2	HiRA Tow1 TC3
31.55	0.28	22.59	25.59	28.63
		0.21	0.22	0.26

HiRA Tow2 Reg	HiRA Tow2 TC0	HiRA Tow2 TC1	HiRA Tow2 TC2	HiRA Tow2 TC3
34.72	0.33	22.27	25.22	24.74
		0.22	0.23	0.24

HiRA Tow3 Reg	HiRA Tow3 TC0	HiRA Tow3 TC1	HiRA Tow3 TC2	HiRA Tow3 TC3
28.99	0.29	22.36	25.86	32.28
		0.22	0.25	0.31

HiRA Tow4 Reg	HiRA Tow4 TC0	HiRA Tow4 TC1	HiRA Tow4 TC2	HiRA Tow4 TC3
34.43	0.35	23.36	25.54	25.70
		0.24	0.26	0.27

HiRA Tow5 Reg	HiRA Tow5 TC0	HiRA Tow5 TC1	HiRA Tow5 TC2	HiRA Tow3 TCDet0
35.80	0.38	24.05	26.91	25.24
		0.25	0.27	0.27

Page 02: 0-5 V ADC Thermocouple Temp 18:51:26

04 05 06 07 08 09 10 11 12 13 14 15

H1RA	Tow4 Reg	LO ALARM	Clrd 20/15:22 P01
H1RA	Tow2 Reg	LO ALARM	Clrd 20/15:22 P01
H1RA	Tow5 Reg	LO ALARM	Clrd 20/15:22 P01
H1RA	Tow3 Reg	LO ALARM	Clrd 20/15:22 P01

Tower 0 Lower	Tower 1 Lower	Tower 2 Lower	Tower 3 Lower
25.34	27.24	25.39	25.53
0.22	0.27	0.24	0.26
Tower 0 Upper	Tower 1 Upper	Tower 2 Upper	Tower 3 Upper
24.99	26.21	24.14	24.25
0.24	0.26	0.22	0.25

7:00 pm 10/22/07

Main Utility Setup Groups View							User
Group 01							
Channel Name	V0Set	I0Set	Vmon	Imon	Pw	Status	Chg
Tow0Card15	250.00 V	4.00 mA	190.25 V	0.66 mA	On	0.00,000	
Tow0Card12	250.00 V	4.00 mA	250.25 V	1.22 mA	On	0.00,000	
Tow0Card9	210.00 V	4.00 mA	209.75 V	0.80 mA	On	0.00,000	
Tow0Card6	295.00 V	4.00 mA	294.75 V	1.36 mA	On	0.00,000	
Tow1Card15	110.00 V	4.00 mA	108.75 V	1.38 mA	On	0.00,000	
Tow1Card9	250.00 V	4.00 mA	250.00 V	1.30 mA	On	0.00,000	
Tow1Card6	320.00 V	4.00 mA	320.00 V	1.84 mA	On	0.00,000	
Tow1Card3	310.00 V	4.00 mA	309.75 V	1.54 mA	On	0.00,000	
Tow2Card15	210.00 V	4.00 mA	209.75 V	0.72 mA	On	0.00,000	
Tow2Card12	100.00 V	4.00 mA	100.00 V	1.62 mA	On	0.00,000	
Tow2Card9	200.00 V	4.00 mA	199.50 V	1.74 mA	On	0.00,000	
Tow2Card6	120.00 V	4.00 mA	120.00 V	1.22 mA	On	0.00,000	
Tow3Card15	200.00 V	4.00 mA	200.00 V	1.50 mA	On	0.00,000	
Tow3Card12	240.00 V	5.00 mA	239.75 V	2.34 mA	On	0.00,000	
Tow3Card9	340.00 V	4.00 mA	340.00 V	1.50 mA	On	0.00,000	
Tow3Card3	210.00 V	4.00 mA	210.00 V	1.20 mA	On	0.00,000	

Display/Edit Group 01 LocEn V0 I0 N+ DAEN SY2327

Main Utility Setup Groups View							User
Group 02							
Channel Name	V0Set	I0Set	Vmon	Imon	Pw	Status	Chg
PA14	250.00 V	2.0 mA	7.10 V	0.0 mA	On	0.03,000	
PA11	7.00 V	2.0 mA	6.90 V	0.1 mA	On	0.03,000	
PA10	8.00 V	2.0 mA	7.80 V	0.0 mA	On	0.03,000	
PA12	8.00 V	2.0 mA	7.75 V	0.0 mA	On	0.03,000	
PA19	6.00 V	2.0 mA	5.45 V	0.0 mA	On	0.03,000	
PA16	0.00 V	2.0 mA	0.10 V	0.0 mA	Off	0.03,000	
PA18	0.00 V	2.0 mA	0.25 V	0.0 mA	Off	0.03,000	
PA17	9.00 V	2.0 mA	8.85 V	0.2 mA	On	0.03,000	
PA4	7.00 V	2.0 mA	6.85 V	0.0 mA	On	0.03,000	
PA1	9.00 V	2.0 mA	8.90 V	0.2 mA	On	0.03,000	
PA3	6.00 V	2.0 mA	6.00 V	0.2 mA	On	0.03,000	
PA0	7.00 V	2.0 mA	7.05 V	0.6 mA	On	0.03,000	
PA6	7.00 V	2.0 mA	6.90 V	0.0 mA	On	0.03,000	
PA8	8.00 V	2.0 mA	7.95 V	0.5 mA	On	0.03,000	
PA5	8.00 V	2.0 mA	7.70 V	0.1 mA	On	0.03,000	
PA7	7.00 V	2.0 mA	6.75 V	0.0 mA	On	0.03,000	

Tow3 Card  
has increased  
from 1.70 to  
1.20 μA since  
6 am.

	Vbias(V)	I(μA)
Back 0	100.1	4.05
Back 1	100.0	6.15
Back 2	100.0	5.33
Back 3	100.1	6.56
MCP 0	100.2	10.00
MCP 1	100.0	0.00

→ increased from  
6:42 at 12 am.

962.  $^{36}\text{Ar}$  beam purity -

Run# 219	Trigger	Date: 10/ /2007
Beam: $^{36}\text{Ar}$ ; $^{34}\text{Ar}$ E/A=33 MeV Alpha source	HiRA <input checked="" type="checkbox"/> S800 <input type="checkbox"/> Coin. <input checked="" type="checkbox"/> MCP	On shift:
	Target : $(\text{CH}_2)_n$ -1, $(\text{CH}_2)_n$ -2, carbon → position=	
Comments: On shift		

Run# 220, 221, 222	Trigger	Date: 10/ /2007
Beam: $^{36}\text{Ar}$ ; $^{34}\text{Ar}$ E/A=33 MeV Alpha source	HiRA <input checked="" type="checkbox"/> S800 <input type="checkbox"/> Coin. <input checked="" type="checkbox"/> MCP	On shift:
	Target : $(\text{CH}_2)_n$ -1, $(\text{CH}_2)_n$ -2, carbon → position= 202.15	
Comments: MCP 1 mask calibration		

Run# <u>224</u>	Trigger			Date: 10/ /2007
Beam: $^{36}\text{Ar}$ ; $^{34}\text{Ar}$	HiRA	S800	Coin.	MCP
E/A=33 MeV				
Alpha source	Target : (CH <sub>2</sub> ) <sub>n-1</sub> , (CH <sub>2</sub> ) <sub>n-2</sub> , carbon → position=			
Comments: <u>pulse</u>				

Run# <u>225</u>	Trigger			Date: 10/ /2007
Beam: $^{36}\text{Ar}$ ; $^{34}\text{Ar}$	HiRA	S800	Coin.	MCP
E/A=33 MeV				
Alpha source	Target : (CH <sub>2</sub> ) <sub>n-1</sub> , (CH <sub>2</sub> ) <sub>n-2</sub> , carbon → position=			
Comments: <u>pulse</u>				

Run# <u>226</u>	Trigger			Date: 10/ /2007
Beam: $^{36}\text{Ar}$ ; $^{34}\text{Ar}$	HiRA	S800	Coin.	MCP
E/A=33 MeV				
Alpha source	Target : (CH <sub>2</sub> ) <sub>n-1</sub> , (CH <sub>2</sub> ) <sub>n-2</sub> , carbon → position=			
Comments: <u>pulse</u>				

Run# <u>227</u>	Trigger			Date: 10/ /2007
Beam: $^{36}\text{Ar}$ ; $^{34}\text{Ar}$	HiRA	S800	Coin.	MCP
E/A=33 MeV				
Alpha source	Target : (CH <sub>2</sub> ) <sub>n-1</sub> , (CH <sub>2</sub> ) <sub>n-2</sub> , carbon → position=			
Comments:				

Run# 228	Trigger				Date: 10/ /2007
Beam: $^{36}\text{Ar}$ ; $^{34}\text{Ar}$ E/A=33 MeV Alpha source	HiRA	S800	Coin.	MCP	On shift:
Target : $(\text{CH}_2)_n$ -1, $(\text{CH}_2)_n$ -2, carbon $\rightarrow$ position=					
<u>Comments: Change MCP1 signals to new config. with 2X QDC channels</u>					

Run# 231	Trigger				Date: 10/ /2007
Beam: $^{36}\text{Ar}$ ; $^{34}\text{Ar}$ E/A=33 MeV Alpha source	HiRA	S800	Coin.	MCP	On shift:
Target : $(\text{CH}_2)_n$ -1, $(\text{CH}_2)_n$ -2, carbon $\rightarrow$ position= 202.15					
<u>Comments: Target is at blank <del>102.15</del> Barney printout at 3:07pm 13741</u>					

Run# 232	Trigger				Date: 10/ /2007
Beam: $^{36}\text{Ar}$ ; $^{34}\text{Ar}$ E/A=33 MeV Alpha source	HiRA	S800	Coin.	MCP	On shift:
Target : $(\text{CH}_2)_n$ -1, $(\text{CH}_2)_n$ -2, carbon $\rightarrow$ position= 49.6 <sup>min</sup>					
<u>Comments: AC coupled channel 3 MCP1, corner New Bg setting 1.49 Target back to <math>(\text{CH}_2)_n</math>-1</u>					

XPP Scintillator shimmed during Ar<sup>34</sup> tuning

Run# 223  
 Beam:  $^{36}\text{Ar}$ ;  $^{34}\text{Ar}$   
 E/A=33 MeV  
 Alpha source

### Trigger

HiRA	S800	Coin.	MCP
------	------	-------	-----

Target : (CH<sub>2</sub>)n-1, (CH<sub>2</sub>)n-2,  
 carbon → position=

Date: 10/ / 2007

On shift:

Comments: Very Very short run, courtesy of Andy  
 Secondary trigger in

Run# 234  
 Beam:  $^{36}\text{Ar}$ ;  $^{34}\text{Ar}$   
 E/A=33 MeV  
 Alpha source

### Trigger

HiRA	S800	Coin.	MCP
------	------	-------	-----

Target : (CH<sub>2</sub>)n-1, (CH<sub>2</sub>)n-2,  
 carbon → position= 49.6 mm.

Date: 10/ / 2007

On shift:

Comments: Can't see half the CSJ.  
 Data run  
 secondary trigger only

Found the CSJ's in sets ADC 5 and ADC 6 were not  
 working while

Run# 235  
 Beam:  $^{36}\text{Ar}$ ;  $^{34}\text{Ar}$   
 E/A=33 MeV  
 Alpha source

### Trigger

HiRA	S800	Coin.	MCP
------	------	-------	-----

Target : (CH<sub>2</sub>)n-1, (CH<sub>2</sub>)n-2,  
 carbon → position= 49.6

Date: 10/ / 2007

On shift:  
 Bill, Betty,  
 Andy, Jerry  
 Alisher

Comments: Hira singles No downscaler  
 External 12 and secondary trigger  
 + coin

11:12 pm  
 10/22/07

	Vbias(V)	I(μA)
Back 0	100.1	5.06
Back 1	100.0	6.18
Back 2	100.0	5.35
Back 3	100.1	6.61
MCP 0	100.0	0.00
MCP 1	100.1	0.00

increased  
 from 6.56  
 at 7 pm

Run# 236	Trigger				Date: 10/ /2007
Beam: $^{36}\text{Ar}$ ; $^{34}\text{Ar}$ E/A=33 MeV Alpha source	HiRA	S800	Coin.	MCP	On shift: Bill, Betty, Vlad, Daniela, Jenny, Alisher, others
Target: $(\text{CH}_2)^n-1$ , $(\text{CH}_2)^n-2$ , carbon $\rightarrow$ position=					
Comments: Continuation of prev.  Data $\Rightarrow$ Coin + Secondary + Extended 2					

Run# 237	Trigger				Date: 10/ /2007
Beam: $^{36}\text{Ar}$ ; $^{34}\text{Ar}$ E/A=33 MeV Alpha source	HiRA	S800	Coin.	MCP	On shift:
Target: $(\text{CH}_2)^n-1$ , $(\text{CH}_2)^n-2$ , carbon $\rightarrow$ position= 49.6 mm					
Comments: Trigger conditions $\rightarrow$ Secondary + <del>Coin</del> + Extended 2 Beam increases by 20% (turned)					

Note: Thresholds on  $\Delta E$  of Tel 15 raised by 1 keV between runs 236 and 237.

$$\text{Gyration frequency is about } 23,84 \text{ MHz} \Rightarrow T = \frac{1}{23,84 \times 10^6} = 41.95 \text{ ns}$$

Run# 238, 239	Trigger				Date: 10/ 27/2007
Beam: $^{36}\text{Ar}$ ; $^{34}\text{Ar}$ E/A=33 MeV Alpha source	HiRA	S800	Coin.	MCP + CO	On shift: V+D
Target: $(\text{CH}_2)^n-1$ , $(\text{CH}_2)^n-2$ , carbon $\rightarrow$ position=					
Comments: 238 short, before 239 set ADC threshold for channel 0 in all three ADCs to 0, to allow checking of initial signal pressure					

Run# 240	Trigger				Date: 10/ /2007
Beam: $^{36}\text{Ar}$ ; $^{34}\text{Ar}$ E/A=33 MeV Alpha source	HiRA	S800	Coin.	MCP + CO	On shift: V+D
Target: $(\text{CH}_2)^n-1$ , $(\text{CH}_2)^n-2$ , carbon $\rightarrow$ position=					
Comments:					

Run# 241

**Beam:**  $^{36}\text{Ar}$ ;  $^{34}\text{Ar}$   
**E/A=33 MeV**  
**Alpha source**

## Trigger

Date: 10/2/2007

On shift:

$\sqrt{+1}$

### **Comments:**

HiRA S800 Coin. MCP  
+CSI

Device	Driver	Version	Module	Major	Minor	Size	Status	Usage
PCI\VEN_10DE&DEV_0A0A	PCI\VEN_10DE&DEV_0A0A	6.10	V	0,0	10	3,1	OK	0,05,000
PCI\VEN_10DE&DEV_0A0A	PCI\VEN_10DE&DEV_0A0A	6,20	V	0,0	10	3,1	OK	0,05,001
PCI\VEN_10DE&DEV_0A0A	PCI\VEN_10DE&DEV_0A0A	6,30	V	0,0	10	3,1	OK	0,05,005
PCI\VEN_10DE&DEV_0A0A	PCI\VEN_10DE&DEV_0A0A	7,00	V	0,0	10	3,1	OK	0,05,004
PCI\VEN_10DE&DEV_0A0A	PCI\VEN_10DE&DEV_0A0A	7,10	V	0,0	10	3,1	OK	0,05,006
PCI\VEN_10DE&DEV_0A0A	PCI\VEN_10DE&DEV_0A0A	7,20	V	0,0	10	3,1	OK	0,05,007
PCI\VEN_10DE&DEV_0A0A	PCI\VEN_10DE&DEV_0A0A	7,30	V	0,0	10	3,1	OK	0,05,008
PCI\VEN_10DE&DEV_0A0A	PCI\VEN_10DE&DEV_0A0A	7,40	V	0,0	10	3,1	OK	0,05,010
PCI\VEN_10DE&DEV_0A0A	PCI\VEN_10DE&DEV_0A0A	7,50	V	0,0	10	3,1	OK	0,05,011
PCI\VEN_10DE&DEV_0A0A	PCI\VEN_10DE&DEV_0A0A	7,60	V	0,0	10	3,1	OK	0,05,012
PCI\VEN_10DE&DEV_0A0A	PCI\VEN_10DE&DEV_0A0A	7,70	V	0,0	10	3,1	OK	0,05,013
PCI\VEN_10DE&DEV_0A0A	PCI\VEN_10DE&DEV_0A0A	7,80	V	0,0	10	3,1	OK	0,05,014
PCI\VEN_10DE&DEV_0A0A	PCI\VEN_10DE&DEV_0A0A	7,90	V	0,0	10	3,1	OK	0,05,015
PCI\VEN_10DE&DEV_0A0A	PCI\VEN_10DE&DEV_0A0A	8,00	V	0,0	10	3,1	OK	0,05,016
PCI\VEN_10DE&DEV_0A0A	PCI\VEN_10DE&DEV_0A0A	8,10	V	0,0	10	3,1	OK	0,05,017
PCI\VEN_10DE&DEV_0A0A	PCI\VEN_10DE&DEV_0A0A	8,20	V	0,0	10	3,1	OK	0,05,018
PCI\VEN_10DE&DEV_0A0A	PCI\VEN_10DE&DEV_0A0A	8,30	V	0,0	10	3,1	OK	0,05,019
PCI\VEN_10DE&DEV_0A0A	PCI\VEN_10DE&DEV_0A0A	8,40	V	0,0	10	3,1	OK	0,05,020
PCI\VEN_10DE&DEV_0A0A	PCI\VEN_10DE&DEV_0A0A	8,50	V	0,0	10	3,1	OK	0,05,021
PCI\VEN_10DE&DEV_0A0A	PCI\VEN_10DE&DEV_0A0A	8,60	V	0,0	10	3,1	OK	0,05,002
PCI\VEN_10DE&DEV_0A0A	PCI\VEN_10DE&DEV_0A0A	8,70	V	0,0	10	3,1	OK	0,05,003
PCI\VEN_10DE&DEV_0A0A	PCI\VEN_10DE&DEV_0A0A	8,80	V	0,0	10	3,1	OK	0,05,007
PCI\VEN_10DE&DEV_0A0A	PCI\VEN_10DE&DEV_0A0A	8,90	V	0,0	10	3,1	OK	0,05,006
PCI\VEN_10DE&DEV_0A0A	PCI\VEN_10DE&DEV_0A0A	9,00	V	0,0	10	3,1	OK	0,05,005
PCI\VEN_10DE&DEV_0A0A	PCI\VEN_10DE&DEV_0A0A	9,10	V	0,0	10	3,1	OK	0,05,010

Taken  
at around  
5:05 AM  
on Tue  
10/23/07

HiRA Tow4 Reg		LO ALARM									Clrd	20/15:22	P01	
HiRA Tow2 Reg		LO ALARM									Clrd	20/15:22	P01	
HiRA Tow5 Reg		LO ALARM									Clrd	20/15:22	P01	
HiRA Tow3 Reg		LO ALARM									Clrd	20/15:22	P01	
HiRA Tow0 Reg	HiRA Tow0 TC0	HiRA Tow0 TC1	HiRA Tow0 TC2	HiRA Tow0 TC3										
5.66	39.14	23.02	26.03	24.61										
U	0.37	0.21	0.24	0.23										
HiRA Tow1 Reg	HiRA Tow1 TC0	HiRA Tow1 TC1	HiRA Tow1 TC2	HiRA Tow1 TC3										
5.62	31.31	22.53	25.59	28.15										
U	0.28	0.21	0.22	0.26										
HiRA Tow2 Reg	HiRA Tow2 TC0	HiRA Tow2 TC1	HiRA Tow2 TC2	HiRA Tow2 TC3										
5.69	34.11	22.27	25.35	24.86										
U	0.32	0.22	0.23	0.24										
HiRA Tow3 Reg	HiRA Tow3 TC0	HiRA Tow3 TC1	HiRA Tow3 TC2	HiRA Tow3 TC3										
5.69	28.75	22.36	25.80	32.40										
U	0.28	0.22	0.25	0.31										
HiRA Tow4 Reg	HiRA Tow4 TC0	HiRA Tow4 TC1	HiRA Tow4 TC2	HiRA Tow4 TC3										
5.69	34.48	23.36	25.66	25.70										
U	0.35	0.24	0.26	0.27										
HiRA Tow5 Reg	HiRA Tow5 TC0	HiRA Tow5 TC1	HiRA Tow5 TC2	HiRA Tow3 TC3det0										
5.69	35.84	24.95	26.91	25.23										
U	0.38	0.25	0.27	0.27										

Page 02: 0-5 V ADC Thermocouple Temp 04:59:35

HiRA Tow4 Reg		LO ALARM									Clrd	20/15:22	P01	
HiRA Tow2 Reg		LO ALARM									Clrd	20/15:22	P01	
HiRA Tow5 Reg		LO ALARM									Clrd	20/15:22	P01	
HiRA Tow3 Reg		LO ALARM									Clrd	20/15:22	P01	

Tower 0 Lower	Tower 1 Lower	Tower 2 Lower	Tower 3 Lower
25.34	27.24	25.39	25.53
0.22	0.27	0.24	0.26
Tower 0 Upper	Tower 1 Upper	Tower 2 Upper	Tower 3 Upper
24.99	26.21	24.27	24.25
0.24	0.26	0.22	0.25

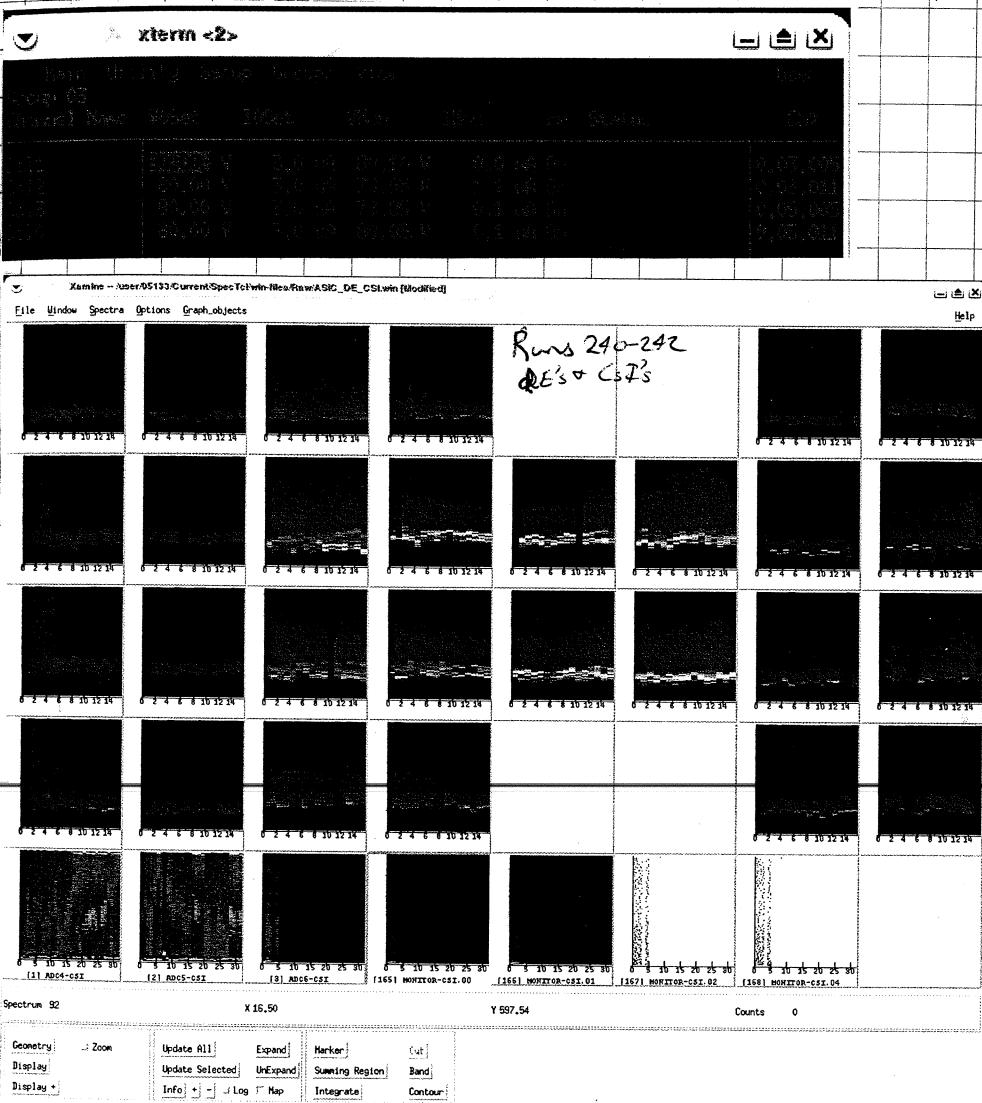
	Vbias(V)	I(μA)
Back 0	100.1	4.07
Back 1	100.0	6.72
Back 2	100.0	5.35
Back 3	100.1	6.66
MCP 0	2300	~1/8
MCP 1	2300	~1/8

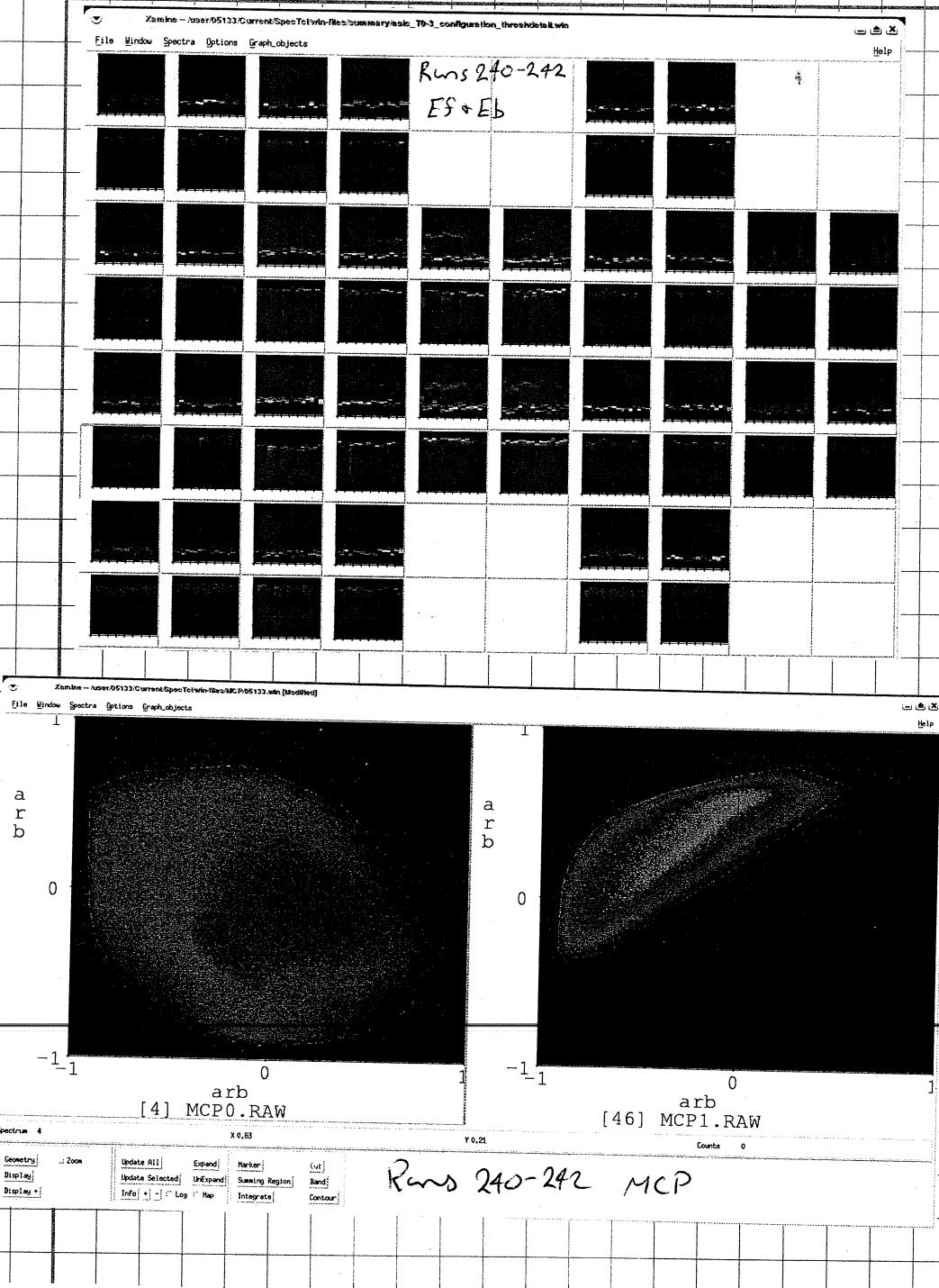
Taken at about 5:20 AM

Tuesday 10/23/07

up from 6.18

up from 6.61





**Run# 243, 244, 245, 246, 247**

**Beam:**  $^{36}\text{Ar}$ ;  $^{34}\text{Ar}$

E/A=33 MeV

## Alpha source

**Trigger**

Date: 10/23/2007

\* On shift:  
V+D,  
Mike

**Comments:** More data.

BAT  
Noticed Hira Singler were not down scaled. Down scales

↳ Hira singlers were not supposed to be down scaled.  
For comparison w/<sup>34</sup>Ar secondary beam note 24/10/07  
0.10487

A1900 "Print23Oct07\_04h58.txt" Tuesday 04:58:05 2007-10-23 A1900  
Moe V3 \*\*\*  
05133 \*\*\*

Expt: 05133 "Neutron transf. rxns ... Ar isotopes" [Betty Tsang] Line: S800 [8]

Beam: 36 Ar 7+ 13.06 MeV/nuc (K500) 18+ 150.00 MeV/nuc (K1200)

tt 1> ECR, Apertures: SCECR 150.0; 25.0; 25.0 mm SHVBI: 23.2300 kV

K500 a,b: 594 A, 484 A K1200: 724 A, -227 A RF: 23.83840 MHz

A1900 Optics: L19S3I\_Focus60x30HiRA.data

Rigidity	Field	Radius	(live)	Difference	(Field*Radius)
Seg 0:	3.66957 Tm				
Seg 1:	2.27293 Tm	0.73353 T	3.09882 m	3.09862 m	0.00644 % (2.27308 Tm)
Seg 2:	2.27293 Tm	0.73288 T	3.10148 m	3.10138 m	0.00320 % (2.27300 Tm)
Seg 3:	1.62300 Tm	0.52453 T	3.09397 m	3.09421 m	-0.00778 % (1.62287 Tm)
Seg 4:	1.62300 Tm	0.52433 T	3.09547 m	3.09540 m	0.00250 % (1.62304 Tm)
Seg 5:	1.57410 Tm				
Seg 6:	1.57410 Tm				
Seg 7:	1.57410 Tm				
Seg 8:	1.49000 Tm				

12:20 pm 10/23/07 bias check

Since start of  
expt.

Main Utility Setup Groups View								Exit
Device ID	Channel Name	VOut	IOut	Watt	Temp	Fan	Status	Ctrl
TvOutCard1	100.00 V	4.00	4A	199.50	V	0.00	00.00	0.00
TvOutCard2	100.00 V	4.00	4A	200.00	V	1.21	00.00	0.00
TvOutCard3	100.00 V	4.00	4A	200.75	V	0.49	00.00	0.00
TvOutCard4	100.00 V	4.00	4A	204.75	V	1.36	00.00	0.00
TvOutCard5	100.00 V	4.00	4A	100.75	V	1.49	00.00	0.00
TvOutCard6	100.00 V	4.00	4A	200.00	V	1.21	00.00	0.00
TvOutCard7	100.00 V	4.00	4A	200.00	V	1.21	00.00	0.00
TvOutCard8	100.00 V	4.00	4A	200.75	V	1.26	00.00	0.00
TvOutCard9	100.00 V	4.00	4A	200.75	V	1.26	00.00	0.00
TvOutCard10	100.00 V	4.00	4A	200.00	V	1.21	00.00	0.00
TvOutCard11	100.00 V	4.00	4A	200.00	V	1.21	00.00	0.00
TvOutCard12	100.00 V	4.00	4A	200.75	V	1.26	00.00	0.00
TvOutCard13	100.00 V	4.00	4A	100.00	V	1.02	00.00	0.00
TvOutCard14	100.00 V	4.00	4A	199.50	V	1.74	00.00	0.00
TvOutCard15	100.00 V	4.00	4A	200.00	V	1.22	00.00	0.00
TvOutCard16	100.00 V	4.00	4A	200.00	V	1.22	00.00	0.00
TvOutCard17	100.00 V	5.00	4A	200.75	V	1.26	00.00	0.00
TvOutCard18	100.00 V	4.00	4A	340.00	V	1.04	00.00	0.00
TvOutCard19	100.00 V	4.00	4A	210.00	V	1.09	00.00	0.00

	Vbias(V)	I(µA)
12.20		
Back 0	100.1	4.08
Back 1	100.0	6.25
Back 2	100.0	5.36
Back 3	100.1	6.74
MCP 0	100.2	
MCP 1	100.1	

Channel Name	WOL	TGEL	WON	IBON	PW	BLDG		
PAL4	8:00 AM	2.0	0.10	7.10	V	0.0	12	00
PAL11	8:00 AM	2.0	0.10	6.90	V	0.1	11	00
PAL10	8:00 V	2.0	0.10	7.00	V	0.0	10	00
PAL12	8:00 V	2.0	0.10	7.75	V	0.0	12	00
PAL13	8:00 V	2.0	0.10	5.45	V	0.0	13	00
PAL15	8:00 V	2.0	0.10	0.10	V	0.0	15	00
PAL16	8:00 V	2.0	0.10	0.25	V	0.0	16	00
PAL17	8:00 V	2.0	0.10	0.85	V	0.2	17	00
PAL18	8:00 V	2.0	0.10	6.65	V	0.0	18	00
PAL19	8:00 V	2.0	0.10	9.90	V	0.2	19	00
PAL20	8:00 V	2.0	0.10	6.00	V	0.2	20	00
PAL21	7:00 AM	2.0	0.10	7.05	V	0.5	21	00
PAL22	7:00 AM	2.0	0.10	6.80	V	0.0	22	00
PAL23	7:00 AM	2.0	0.10	7.95	V	0.5	23	00
PAL24	7:00 AM	2.0	0.10	7.70	V	0.1	24	00
PAL25	7:00 AM	2.0	0.10	5.75	V	0.0	25	00

Group	Channel	Phase	V0Set	I0Set	Vmon	Imon	Flux	Status
Grp1	Ch1	A	120.00 V	0.0 mA	80.10 V	0.0 mA	On	
Grp1	Ch2	B	120.00 V	0.0 mA	79.90 V	1.1 mA	On	
Grp1	Ch3	C	120.00 V	0.0 mA	79.95 V	0.0 mA	On	
Grp1	Ch4	D	120.00 V	0.0 mA	80.05 V	0.2 mA	On	

Run#240	Trigger *				Date:10/23/2007
Beam: $^{36}\text{Ar}$ ; $^{34}\text{Ar}$ E/A=33 MeV Alpha source	HiRA	S800	Coin.	MCP +CSI	On shift: $\text{MoCa}$ , $\text{D}_{\alpha}$ , Sun Both
	Target: $(\text{CH}_2)_n-1$ , $(\text{CH}_2)_n-2$ , carbon $\rightarrow$ position=				
Comments: increased momentum acceptance in image 2, decreased S800 slits					

Run# 249

Beam:  $^{36}\text{Ar}$ ;  $^{34}\text{Ar}$ 

E/A=33 MeV

Alpha source

**Trigger**

Date: 10/23/2007

HiRA  
1/3

S800

Coin.

MCP

On shift:

Target :  $(\text{CH}_2)_n$ -1,  $(\text{CH}_2)_n$ -2,  
carbon  $\rightarrow$  position =

Comments: Downscaled HiRA

Run# 250-256

Beam:  $^{36}\text{Ar}$ ;  $^{34}\text{Ar}$ 

E/A=33 MeV

Alpha source

**Trigger**

Date: 10/23/2007

HiRA

S800

Coin.

MCP

On shift:

Target :  $(\text{CH}_2)_n$ -1,  $(\text{CH}_2)_n$ -2,  
carbon  $\rightarrow$  position =Comments: did not down scale HiRA welding in  
lab throughout 252, 255.

Run# 257

Beam:  $^{36}\text{Ar}$ ;  $^{34}\text{Ar}$ 

E/A=33 MeV

Alpha source

**Trigger**

Date: 10/23/2007

HiRA

S800

Coin.

MCP

On shift: Dan

Mike, Betty, Sun,  
BillTarget :  $(\text{CH}_2)_n$ -1,  $(\text{CH}_2)_n$ -2,  
carbon  $\rightarrow$  position =

Comments: returned beam before 257

Run# 258-263

Beam:  $^{36}\text{Ar}$ ;  $^{34}\text{Ar}$ 

E/A=33 MeV

Alpha source

**Trigger**

Date: 10/24/2007

HiRA

S800

Coin.

MCP

On shift:

Target :  $(\text{CH}_2)_n$ -1,  $(\text{CH}_2)_n$ -2,  
carbon  $\rightarrow$  position = 49.6

Comments: Data, same as previous after Beam tuning.

6:00 pm

10/23/07 K

Main Utility Setup Groups View							User
Group 01							
Channel Name	V0Set	I0Set	VMon	IMon	Pw	Status	Ch#
cou0Card15	120.00 V	4.00 mA	190.25 V	0.66 mA	On		0.00.000
cou0Card12	250.00 V	4.00 mA	250.25 V	1.24 mA	On		0.00.001
cou0Card9	210.00 V	4.00 mA	209.75 V	0.80 mA	On		0.00.002
cou0Card6	295.00 V	4.00 mA	294.75 V	1.36 mA	On		0.00.003
cou1Card15	110.00 V	4.00 mA	109.25 V	1.40 mA	On		0.00.004
cou1Card9	250.00 V	4.00 mA	250.00 V	1.30 mA	On		0.00.005
cou1Card6	320.00 V	4.00 mA	320.00 V	1.90 mA	On		0.00.006
cou1Card3	310.00 V	4.00 mA	309.75 V	1.56 mA	On		0.00.009
cou2Card15	210.00 V	4.00 mA	209.75 V	0.72 mA	On		0.00.010
cou2Card12	100.00 V	4.00 mA	100.00 V	1.62 mA	On		0.00.011
cou2Card9	200.00 V	4.00 mA	199.50 V	1.74 mA	On		0.00.012
cou2Card6	120.00 V	4.00 mA	120.00 V	1.22 mA	On		0.00.013
cou3Card15	200.00 V	4.00 mA	200.00 V	1.52 mA	On		0.00.015
cou3Card12	240.00 V	5.00 mA	239.75 V	2.38 mA	On		0.00.016
cou3Card9	340.00 V	4.00 mA	340.00 V	1.50 mA	On		0.00.017
cou3Card3	210.00 V	4.00 mA	210.00 V	1.36 mA	On		0.00.019

Display/Edit Group 01

LocEn V0 I0 N + CAEN SY2527

Main Utility Setup Groups View							User
Group 02							
Channel Name	V0Set	I0Set	VMon	IMon	Pw	Status	Ch#
H14	120.00 V	2.0 mA	7.10 V	0.0 mA	On		0.03.000
H11	7.00 V	2.0 mA	6.90 V	0.1 mA	On		0.03.001
H10	8.00 V	2.0 mA	7.80 V	0.0 mA	On		0.03.003
H12	8.00 V	2.0 mA	7.70 V	0.0 mA	On		0.03.004
H13	6.00 V	2.0 mA	5.45 V	0.0 mA	On		0.03.006
H15	0.00 V	2.0 mA	0.10 V	0.0 mA	Off		0.03.007
H18	0.00 V	2.0 mA	0.25 V	0.0 mA	Off		0.03.008
H17	9.00 V	2.0 mA	8.85 V	0.1 mA	On		0.03.010
H16	7.00 V	2.0 mA	6.85 V	0.0 mA	On		0.05.000
H1	9.00 V	2.0 mA	8.90 V	0.2 mA	On		0.05.001
H3	6.00 V	2.0 mA	6.00 V	0.2 mA	On		0.05.002
H0	7.00 V	2.0 mA	7.05 V	0.6 mA	On		0.05.003
H6	7.00 V	2.0 mA	6.80 V	0.0 mA	On		0.05.007
H8	8.00 V	2.0 mA	7.95 V	0.4 mA	On		0.05.008
H5	8.00 V	2.0 mA	7.70 V	0.1 mA	On		0.05.009
H7	7.00 V	2.0 mA	6.75 V	0.0 mA	On		0.05.010

Display/Edit Group 02

LocEn V0 I0 N + CAEN SY2527

Main Utility Setup Groups View							User
Group 03							
Channel Name	V0Set	I0Set	VMon	IMon	Pw	Status	Ch#
s11	120.00 V	3.0 mA	80.05 V	0.0 mA	On		0.03.005
s12	80.00 V	3.0 mA	79.90 V	1.1 mA	On		0.03.011
s13	80.00 V	3.0 mA	79.85 V	0.0 mA	On		0.05.005
s14	80.00 V	3.0 mA	80.05 V	0.1 mA	On		0.05.011

# CRDC Calibrations

<u>CRDC 1</u>	<u>Run # 176.</u>		<u>CRDC 2</u>	<u>Run # 177</u>	
S points	Y	Hole #	S points $\Rightarrow$	Y	Hole #
0.99689	1393.2	33		1493.8	33
Corr: 0.99863	1399.5	34	Corr: 0.99989	1487.4	34
-0.11106	1192.4	57	slope: 0.082466	953.0	45
slope: 0.05757	1982.1	28	offset: -137.8988	2038.3	28
offset: -70.74	1147.8	36		1699.7	56
154.1817					

Note: For CRDC 1, the map is upside down. So one should pick the hole #'s as if it's upside down. The ~~number~~ X values are correct. See Andy.

Beam:  $^{36}\text{Ar}$ ;  $^{34}\text{Ar}$   
E/A=33 MeV  
Alpha source

Trigger			
HiRA	S800	Coin	MCP
Target: $(\text{CH}_2)_n-1$ , $(\text{CH}_2)_n-2$ , carbon $\rightarrow$ position = $49.6$			

Date: 10/24/2007

On shift:

Comments: All EB + Foils (MCP) biases are tripped (when??)  
CAEN ~~so far freeze~~, ~~but~~ froze, restart everything.  
Went to the vault and restart the CAEN

\* FILE Oct 23.dat - the last motherboard control file (before we reloaded)  
were saved as Oct 23.dat

10/23/07 11:06 pm

	Vbias(V)	I( $\mu\text{A}$ )
Back 0	100.0	3.82
Back 1	100.2	5.82
Back 2	100.0	5.05
Back 3	100.1	6.50
MCP 0	100.0	
MCP 1	100.0	

Run# 265  
Beam:  $^{36}\text{Ar}$ ;  $^{34}\text{Ar}$   
E/A=33 MeV  
Alpha source

Trigger			
HiRA	S800	Coin	MCP
Target: $(\text{CH}_2)_n-1$ , $(\text{CH}_2)_n-2$ , carbon $\rightarrow$ position =			

Date: 10/24/2007

On shift: B, 11,

Comments: Restarted everything  $\rightarrow$  Data coming back

The motherboard control file (before we reloaded the program)

was saved as "05133-10232007-2200.setup".

We could not discover the reason why the biases tripped. We put the interlock signal into a latch and a beeper. It is was an interlock tripp the beeper will go off.

Just now, the interlock did trip off again. It occurred right as we inserted the key into the red box. There seems to be a sensitivity to static electricity.

We think this might be a factor, but are not sure.

Run# <i>266</i>	Trigger			Date: 10/24/2007
Beam: $^{36}\text{Ar}$ ; $^{34}\text{Ar}$	HiRA	S800	Coin.	MCP
E/A = 33 MeV				
Alpha source	Target: $(\text{CH}_2)_n$ -1, $(\text{CH}_2)_n$ -2, carbon $\rightarrow$ position = 49.6 mm			
Comments:				

We checked coincidence rate and compared it to the numbers for  $^{36}\text{Ar}$ :

Combining RATE/MCP.LIVE

$$^{36}\text{Ar} : \frac{\text{Coincidencerate}}{\text{Mcp.Live}} = \frac{5.6 \times 10^{-4}}{4.2 \times 10^{-8}} = 1.3 \times 10^{-4}$$

$$^{34}\text{Ar} : \frac{\text{Coincidencerate}}{\text{Mcp.Live}} = \frac{3.6 \times 10^{-5}}{4.7 \times 10^{-8}} = 7.9 \times 10^{-5}$$

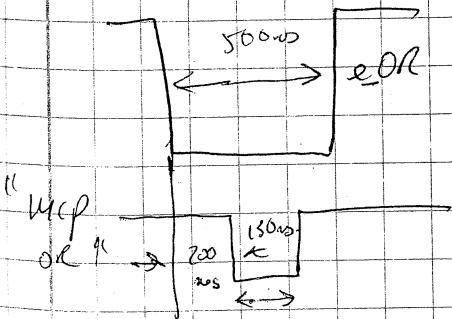
The ratio of  $\frac{\text{Mcp.Live}}{\text{Mcp.Live}} = \frac{1}{2.2}$  so the rate with

$$\frac{\text{Mcp}}{\text{Mcp}} = .65$$

$$\text{The ratio of } \frac{\text{Mcp}}{\text{Mcp}} = \frac{1.76 \times 10^{-5}}{5.82 \times 10^{-5}} = .22$$

trigger: coincidence / ext 2  
secondary / dsc = 1)

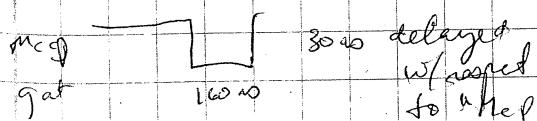
We checked the MCP coincidence circuit. The time relationship



with a rate of  $2 \times 10^5$  / s

the random noise in the gated is

$$\text{about } 2 \times 10^5 \text{ s} \times 2 \times 10^{-5} = 6.6 \times 10^0 \text{ or } 6.6\%$$



useful to have in order to correct for bad hardware complete up

Run# 267	Trigger				Date: 10/28/2007
Beam: 34Ar E/A=33MeV alpha source	HiRA	S800	Coinc.	MCP+Cs	ON shift: 24 v+D
	target : $(CH_2)_{n-1}, (CH_2)_{n-2}$ carbon->position=				
comments: _____					

Run# 268	Trigger				Date: 10/28/2007
Beam: 34Ar E/A=33MeV alpha source	HiRA	S800	Coinc.	MCP+Cs	ON shift: 24 v+D
	target : $(CH_2)_{n-1}, (CH_2)_{n-2}$ carbon->position=				
comments: _____					

- ~3:15 • became to operable for therapy → became intensity at K200 started to exceed radiation limits  
operator exchanged foil + reduced beam  
• H<sub>2</sub> gas added into C<sub>0</sub> + odd E<sub>x</sub> and E<sub>b</sub>

Run# 269	Trigger				Date: 10/28/2007
Beam: 34Ar E/A=33MeV alpha source	HiRA	S800	Coinc.	MCP+Cs	ON shift: 24 v+D
	target : $(CH_2)_{n-1}, (CH_2)_{n-2}$ carbon->position=				
comments: continuation of data taking after therapy polar in C <sub>0</sub> , E <sub>x</sub> , E <sub>b</sub> odds					

Run# 270	Trigger				Date: 10/28/2007
Beam: 34Ar E/A=33MeV alpha source	HiRA	S800	Coinc.	MCP+Cs	ON shift: 24 v+D
	target : $(CH_2)_{n-1}, (CH_2)_{n-2}$ carbon->position=				
comments: continuation of data taking					

Channel Name	Vbias(V)	I0Set	Vmon	IMon	Pw	Status	Chk
Back 0	100.0	4.00	200.00 V	0.04 mA On	10.00 mW	OK	
Back 1	100.0	4.00	200.00 V	1.22 mA On	10.00 mW	OK	
Back 2	100.0	4.00	200.75 V	0.75 mA On	10.00 mW	OK	
Back 3	100.0	4.00	201.50 V	1.04 mA On	10.00 mW	OK	
MCP 0	2300	4.00	100.00 V	1.00 mA On	10.00 mW	OK	
MCP 1	2300	4.00	240.75 V	5.20 mA On	10.00 mW	OK	
Front End 0	310.00	4.00	320.00 V	1.78 mA On	10.00 mW	OK	
Front End 1	310.00	4.00	300.50 V	1.82 mA On	10.00 mW	OK	
Front End 2	310.00	4.00	200.75 V	0.76 mA On	10.00 mW	OK	
Front End 3	310.00	4.00	200.75 V	1.80 mA On	10.00 mW	OK	
Front End 4	310.00	4.00	199.75 V	1.58 mA On	10.00 mW	OK	
Front End 5	310.00	4.00	120.00 V	1.20 mA On	10.00 mW	OK	
Front End 6	310.00	4.00	100.75 V	1.80 mA On	10.00 mW	OK	
Front End 7	310.00	4.00	240.00 V	2.00 mA On	10.00 mW	OK	
Front End 8	310.00	4.00	340.00 V	1.48 mA On	10.00 mW	OK	
Front End 9	310.00	4.00	200.75 V	1.14 mA On	10.00 mW	OK	

Taken at  
5:30 AM 10/24/07

Channel Name	Vbias(V)	I0Set	Vmon	IMon	Pw	Status	Chk
Back 0	100.1	4.00	190.00 V	0.04 mA On	10.00 mW	OK	
Back 1	100.2	4.00	250.00 V	1.22 mA On	10.00 mW	OK	
Back 2	100.0	4.00	200.75 V	0.75 mA On	10.00 mW	OK	
Back 3	100.1	4.00	201.50 V	1.04 mA On	10.00 mW	OK	
MCP 0	2300	4.00	100.00 V	1.00 mA On	10.00 mW	OK	
MCP 1	2300	4.00	240.75 V	5.20 mA On	10.00 mW	OK	
Front End 0	310.00	4.00	320.00 V	1.78 mA On	10.00 mW	OK	
Front End 1	310.00	4.00	300.50 V	1.82 mA On	10.00 mW	OK	
Front End 2	310.00	4.00	200.75 V	0.76 mA On	10.00 mW	OK	
Front End 3	310.00	4.00	200.75 V	1.80 mA On	10.00 mW	OK	
Front End 4	310.00	4.00	199.75 V	1.58 mA On	10.00 mW	OK	
Front End 5	310.00	4.00	120.00 V	1.20 mA On	10.00 mW	OK	
Front End 6	310.00	4.00	100.75 V	1.80 mA On	10.00 mW	OK	
Front End 7	310.00	4.00	240.00 V	2.00 mA On	10.00 mW	OK	
Front End 8	310.00	4.00	340.00 V	1.48 mA On	10.00 mW	OK	
Front End 9	310.00	4.00	200.75 V	1.14 mA On	10.00 mW	OK	

Channel Name	Vbias(V)	I0Set	Vmon	IMon	Pw	Status	Chk
Back 0	100.0	3.0	30.05 V	0.0 mA On	0.00 mW	OK	
Back 1	100.0	3.0	70.05 V	1.1 mA On	10.00 mW	OK	
Back 2	100.0	3.0	70.05 V	0.0 mA On	0.00 mW	OK	

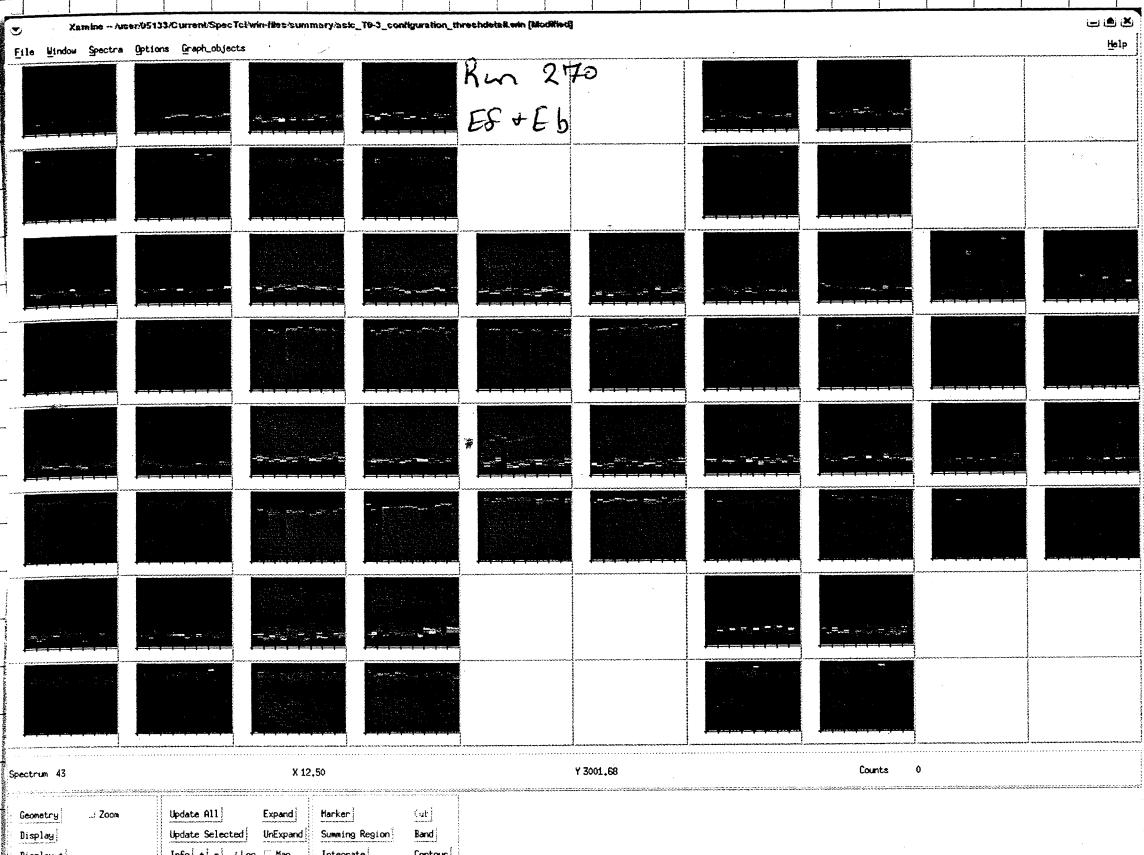
Run# 271,272,273	Trigger	Date: 10/24/2007
Beam: 34Ar E/A=33MeV alpha source	HiRA S800 Coinc MCP+Cs	ON shift: V + D, Mike
target : (CH <sub>2</sub> ) <sub>n-1</sub> ,(CH <sub>2</sub> ) <sub>n-2</sub> carbon->position=		
comments: some data taking as test run		

Note, Readout  
crossed  
on Run  
273.

Note: checked E\_02 all vs. T0\_E\_02 to T3\_E\_02  
- everything looks fine, for every E\_02 there  
is always OR from at least one of T0-T3

HiRA Tow5 Reg	LO ALARM	Clrd 23/23:18 P01
HiRA Tow3 Reg	LO ALARM	Clrd 23/23:18 P01
HiRA Tow2 Reg	LO ALARM	Clrd 23/23:18 P01
HiRA Tow0 Reg	LO ALARM	Clrd 23/23:18 P01
<b>HiRA Tow0 Reg</b>	<b>HiRA Tow0 TC0</b>	<b>HiRA Tow0 TC1</b>
<b>5.00</b>	<b>39.14</b>	<b>23.02</b>
	0.37	0.21
<b>HiRA Tow1 Reg</b>	<b>HiRA Tow1 TC0</b>	<b>HiRA Tow1 TC1</b>
<b>5.01</b>	<b>31.43</b>	<b>22.53</b>
	0.28	0.21
<b>HiRA Tow2 Reg</b>	<b>HiRA Tow2 TC0</b>	<b>HiRA Tow2 TC1</b>
<b>5.05</b>	<b>34.36</b>	<b>22.27</b>
	0.33	0.22
<b>HiRA Tow3 Reg</b>	<b>HiRA Tow3 TC0</b>	<b>HiRA Tow3 TC1</b>
<b>5.09</b>	<b>28.87</b>	<b>22.23</b>
	0.28	0.22
<b>HiRA Tow4 Reg</b>	<b>HiRA Tow4 TC0</b>	<b>HiRA Tow4 TC1</b>
<b>5.09</b>	<b>34.48</b>	<b>23.36</b>
	0.35	0.24
<b>HiRA Tow5 Reg</b>	<b>HiRA Tow5 TC0</b>	<b>HiRA Tow5 TC1</b>
<b>5.09</b>	<b>35.71</b>	<b>24.95</b>
	0.37	0.25
<b>HiRA Tow0 TC2</b>	<b>HiRA Tow0 TC3</b>	<b>HiRA Tow1 TC2</b>
<b>25.91</b>	<b>24.49</b>	<b>25.59</b>
0.24	0.23	0.22
<b>HiRA Tow1 TC3</b>	<b>HiRA Tow2 TC2</b>	<b>HiRA Tow2 TC3</b>
<b>28.03</b>	<b>24.74</b>	<b>24.74</b>
0.26	0.24	0.24
<b>HiRA Tow2 TC3</b>	<b>HiRA Tow3 TC2</b>	<b>HiRA Tow3 TC3</b>
<b>32.28</b>	<b>25.80</b>	<b>32.28</b>
0.31	0.25	0.31
<b>HiRA Tow3 TC3</b>	<b>HiRA Tow4 TC2</b>	<b>HiRA Tow4 TC3</b>
<b>25.70</b>	<b>25.54</b>	<b>25.70</b>
0.27	0.26	0.27
<b>HiRA Tow4 TC3</b>	<b>HiRA Tow5 TC2</b>	<b>HiRA Tow5 TCdet0</b>
<b>25.23</b>	<b>26.91</b>	<b>25.23</b>
0.27	0.27	0.27

	04	05	06	07	08	09	10	11	12	13	14	15	
HiRA Tow5 Reg				LO ALARM						Clrd	23/23:18	P01	
HiRA Tow3 Reg				LO ALARM						Clrd	23/23:18	P01	
HiRA Tow2 Reg				LO ALARM						Clrd	23/23:18	P01	
HiRA Tow0 Reg				LO ALARM						Clrd	23/23:18	P01	
Tower 0 Lower													
<b>25.34</b>				<b>27.12</b>			<b>25.39</b>			<b>25.41</b>			
0.22				0.27			0.24			0.26			
Tower 0 Upper													
<b>24.99</b>				<b>26.09</b>			<b>24.14</b>			<b>24.13</b>			
0.24				0.26			0.22			0.25			



Run# 274	Trigger				Date: 10/24/2007
Beam: 34Ar E/A=33MeV alpha source	HiRA	S800	Coinc.	MCP+Cs	ON shift: D+V, Dan, Mike, Mike, Betty
	target : <u>(CH<sub>2</sub>)n-1</u> (CH <sub>2</sub> )n-2				
	carbon->position=				
comments: More data after Recdat crashed in Run 273.					

channel	Name	Voltage	10shot	Ymin	Ymax	T1S6	T3S6	Per
an0Card15		0.75000 V	4.00 0.04	192.00 V	2.04 0.04	On		
an0Card12		250.00 V	4.00 0.40	250.00 V	1.24 0.40	On		
an0Card9		210.00 V	4.00 0.04	201.00 V	0.76 0.04	On		
an0Card6		205.00 V	4.00 0.08	196.00 V	0.90 0.08	On		
an1Card15		110.00 V	4.00 0.07	105.00 V	1.00 0.07	On		
an1Card9		250.00 V	4.00 0.05	240.00 V	0.20 0.05	On		
an1Card6		300.00 V	4.00 0.07	300.00 V	0.30 0.07	On		
an1Card3		310.00 V	4.00 0.07	301.00 V	0.52 0.07	On		
an2Card15		210.00 V	4.00 0.07	200.00 V	0.74 0.07	On		
an2Card12		200.00 V	4.00 0.07	195.00 V	0.76 0.07	On		
an2Card9		200.00 V	4.00 0.07	190.00 V	0.62 0.07	On		
an2Card6		190.00 V	4.00 0.07	180.00 V	0.70 0.07	On		
an3Card15		200.00 V	4.00 0.07	190.00 V	0.22 0.07	On		
an3Card12		240.00 V	5.00 0.07	240.00 V	2.34 0.07	On		
an3Card9		340.00 V	4.00 0.07	340.00 V	1.50 0.07	On		
an3Card3		210.00 V	4.00 0.07	208.00 V	1.50 0.07	On		

back up to Tweak  
as before bias reset  
last night. Doing that  
line, out of the channels  
to watch, T1S6 & T3S12  
decreased (TSS6 not back  
up the way yet)

T3S3 still increasing.  
even after bias reset  
Now up 0.5% since  
beginning of exp.

Beam: 34Ar  
E/A=33MeV  
alpha source

276, 277  
HiRA S800 Coinc. MCP+Cs  
target : (CH<sub>2</sub>)<sub>n-1</sub>, (CH<sub>2</sub>)<sub>n-2</sub>  
carbon->position=

ON shift: Betty  
Dan, Sun.

comments: Readout crashed at end of run, Data run

Eric Kasten attached the debugger to the readout  
and DAP is no longer crashing after  
~~then the crash~~

Run# 278	Trigger				Date: 10/24/2007
Beam: 34Ar E/A=33MeV alpha source	HiRA	S800	Coinc.	MCP+Cs	ON shift: Dan, Betty
	target : (CH <sub>2</sub> ) <sub>n-1</sub> , (CH <sub>2</sub> ) <sub>n-2</sub> carbon->position= 49.6				
comments: DAP did not crash after 1 hr. Stop run 5, Restart Run 279.					

Run# 279	Trigger				Date: 10/24/2007
Beam: 34Ar E/A=33MeV alpha source	HiRA	S800	Coinc.	MCP+Cs	ON shift: Dan, Betty
	target : (CH <sub>2</sub> ) <sub>n-1</sub> , (CH <sub>2</sub> ) <sub>n-2</sub> carbon->position= 49.6				
comments: DAP crashed after 40 min of data Run is here					

Ren said crashes is due to over sized buffer ??  
and he put a trap in the program.

Run# 280	Trigger				Date: 10/24/2007
Beam: 34Ar E/A=33MeV alpha source	HiRA	S800	Coinc.	MCP+Cs	ON shift: <del>Betty</del> Betty
	target : (CH <sub>2</sub> ) <sub>n-1</sub> , (CH <sub>2</sub> ) <sub>n-2</sub> carbon->position= 49.6				
comments: DAP <del>crashed</del> crashed.					

Run# 281	Trigger				Date: 10/24/2007
Beam: 34Ar E/A=33MeV alpha source	HiRA	S800	Coinc.	MCP+Cs	ON shift: <i>Sus, Betty</i>
					target : (CH <sub>2</sub> )n-1, (CH <sub>2</sub> )n-2 carbon->position = 151.45 mm.
comments:					CRDC wash calibration <del>Same Bf setting as Data target = 146 does not matter</del>

Run# 282	Trigger				Date: 10/24/2007
Beam: 34Ar E/A=33MeV alpha source	HiRA	S800	Coinc.	MCP+Cs	ON shift: <i>Sus, Betty</i>
					target : (CH <sub>2</sub> )n-1, (CH <sub>2</sub> )n-2 carbon->position =
comments:					CRDC2 wash calib. <del>Same Bf as Data 146 (does not matter)</del>

Run# 283	Trigger				Date: 10/24/2007
Beam: 34Ar E/A=33MeV alpha source	HiRA	S800	Coinc.	MCP+Cs	ON shift: <i>Sus, Betty, Dan, Bill</i>
					target : (CH <sub>2</sub> )n-1, (CH <sub>2</sub> )n-2 carbon->position =
comments:					MCP1 wash calibration; 229.45

Run# 284 +285	Trigger				Date: 10/24/2007
Beam: 34Ar E/A=33MeV alpha source	HiRA	S800	Coinc.	MCP+Cs	ON shift:
					target : (CH <sub>2</sub> )n-1, (CH <sub>2</sub> )n-2 carbon->position =
comments:					MCP6 wash calibration 200.6 mm.

Run#	Trigger	Date:
286	secondary Cherenkov	10/24/2007
Beam: 34Ar	HiRA	ON shift:
E/A=33MeV	S800	Betty
alpha source	Coin	
	MCP+Cs	
	target : (CH <sub>2</sub> )n-1, (CH <sub>2</sub> )n-2	
	(carbon) > position =	
comments: Engel Motor Drive	I250X-R: 151.45	S800 value
	F251Y-L: 123.85	Closed fan
	I250Y-R 153.2	Chkd rdin

Run# 288	Trigger				Date: 10/24/2007
Beam: 34Ar E/A=33MeV alpha source	HiRA	S800	Coinc.	MCP+Cs	ON shift: Bill, Betty, Dan 8mm, Jerry
	target : $(CH_2)_{n-1}, (CH_2)_{n-2}$ carbon->position = 49.6 mm				
comments: Back to plastic target, Coin + Secondary + External 2					

Run# 289	Trigger				Date: 10/24/2007
Beam: 34Ar E/A=33MeV alpha source	HiRA	S800	Coinc.	MCP+Cs	ON shift: Bill, Betty, Jenny, Andrew, Aloishe, Zh. Yu
	target : $(CH_2)_n-1, (CH_2)_n-2$ carbon > position =				
comments: Problems with data Ron said the run was "squirrely."					

5

	Vbias(V)	I(µA)
Back 0	100.1	4,04
Back 1	100.2	6,23
Back 2	100.0	5-32
Back 3	100.1	6,97

Run 290, 291 (Data?)?

Run# 293	Trigger				Date: 10/24/2007
Beam: 34Ar E/A=33MeV alpha source	HiRA	S800	Secondary Circ.	MCP+Cs	ON shift: Betty, Andy, Jen, Patrick
target : $(CH_2)_n - 1, (CH_2)_n - 2$					
carbon $\rightarrow$ position = 151.45					
comments: background, Stop because the EB bias dropped. Restart <del>another run</del>					

	Vbias(V)	I(μA)
Back 0	100.1	10.4.1
Back 1	100.2	6.28
Back 2	100.1	5.37
Back 3	100.1	7.05
MCP 0		
MCP 1		

Run# 294	Trigger				Date: 10/24/2007
Beam: 34Ar E/A=33MeV alpha source	HiRA	S800	Secondary Circ.	MCP+Cs	ON shift:
target : $(CH_2)_n - 1, (CH_2)_n - 2$					
carbon $\rightarrow$ position =					
comments: Carbon, background.					

~10PM chamber vented and opened to exchange targets  
(ask ANDY + BETTY for details)

↳ door frame + O' rings cleaned before closing

~11PM pumping again

vacuum  $\sim 5.0 \times 10^{-5}$  Torr

3AM vacuum  $\sim 1.0 \times 10^{-5}$  Torr

Run# 295	Trigger					Date: 10/27/07 2007
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source pulser	Coin	Secondary	Ext 2	Ext 1	S800	On shift: $V+D$
	Target = (CH <sub>2</sub> )n: 25um; 75um; 100um, carbon, viewer, mask, blank → position: Target drive (if moved) :					
MCP 1: _____	XFP: _____	Live trigger: _____				
B $\rho$ : _____	Attenuation: _____					
Comments: _____	<i>pulser views on T4,5</i>					

Run# 296	Trigger					Date: 10/27/07 2007
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source pulser	Coin	Secondary	Ext 2	Ext 1	S800	On shift: $V+D$
	Target = (CH <sub>2</sub> )n: 25um; 75um; 100um, carbon, viewer, mask, blank → position: Target drive (if moved) :					
MCP 1: _____	XFP: _____	Live trigger: _____				
B $\rho$ : _____	Attenuation: _____					
Comments: _____	<i>pulser views on T3</i>					

Run# 297	Trigger					Date: 10/27/07 2007
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source pulser	Coin	Secondary	Ext 2	Ext 1	S800	On shift: $V+D$
	Target = (CH <sub>2</sub> )n: 25um; 75um; 100um, carbon, viewer, mask, blank → position: Target drive (if moved) :					
MCP 1: _____	XFP: _____	Live trigger: _____				
B $\rho$ : _____	Attenuation: _____					
Comments: _____	<i>pulser views on T2</i>					

Run# 298	Trigger					Date: 10/27/07 2007
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source pulser	Coin	Secondary	Ext 2	Ext 1	S800	On shift: $V+D$
	Target = (CH <sub>2</sub> )n: 25um; 75um; 100um, carbon, viewer, mask, blank → position: Target drive (if moved) :					
MCP 1: _____	XFP: _____	Live trigger: _____				
B $\rho$ : _____	Attenuation: _____					
Comments: _____	<i>pulser views on T1</i>					

CPT

Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source <i>pulser</i>	Coin	Secondary	Ext 2	Ext 1	S800	On shift: <i>V+D</i>
	Target = (CH <sub>2</sub> )n: 25um; 75um; 100um, carbon, viewer, mask, blank → position: Target drive (if moved) :					
MCP 1: _____	XFP: _____	Live trigger: _____				
B $\rho$ : _____	Attenuation: _____					
Comments: <i>pulser run up on TO</i>						

Run# 300	Trigger					Date: 10/21/07 2007
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1	S800	On shift: <i>V+D</i>
	Target = (CH <sub>2</sub> )n: 25um; 75um; 100um, carbon, viewer, mask, blank → position: Target drive (if moved) :					
MCP 1: _____	XFP: _____	Live trigger: _____				
B $\rho$ : _____	Attenuation: _____					
Comments: <i>- calibration</i>						

Run# 301	Trigger					Date: 10/21/07 2007
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1	S800	On shift: <i>V+D</i>
	Target = (CH <sub>2</sub> )n: 25um; 75um; 100um, carbon, viewer, mask, blank → position: Target drive (if moved) :					
MCP 1: _____	XFP: _____	Live trigger: _____				
B $\rho$ : _____	Attenuation: _____					
Comments: _____						

Run# 302	Trigger					Date: 10/21/07 2007
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1	S800	On shift: <i>V+D</i>
	Target = (CH <sub>2</sub> )n: 25um; 75um; 100um, carbon, viewer, mask, blank → position: Target drive (if moved) :					
MCP 1: _____	XFP: _____	Live trigger: _____				
B $\rho$ : _____	Attenuation: _____					
Comments: _____						

Note:

Tel19 should be from now on biased to 300 Volts only  
 instead of original 310V  
 ↳ resolution and overall performance should improve

10/25/07 12:00 noon.

B.11 tried to use a voltmeter on the  
 rack with the MCP and EB bias supplies, and  
 the EB's tripped. Watch for shocks, discharge  
 yourself before touching.

1:45 pm

Main Utility Setup Groups View						
Group #	External Name	VSet	ISet	Vbias	Ibias	Rs Status
PIN1		7.00 V	2.0 mA	7.10 V	0.0 mA On	
PIN2		7.00 V	2.0 mA	6.90 V	0.1 mA On	
PIN3		8.00 V	2.0 mA	7.90 V	0.0 mA On	
PIN4		8.00 V	2.0 mA	7.70 V	0.0 mA On	
PIN5		8.00 V	2.0 mA	5.45 V	0.0 mA On	
PIN6		0.00 V	2.0 mA	0.10 V	0.0 mA Off	
PIN7		0.00 V	2.0 mA	0.25 V	0.0 mA Off	
PIN8		8.00 V	2.0 mA	8.80 V	0.2 mA On	
PIN9		7.00 V	2.0 mA	6.90 V	0.0 mA On	
PIN10		8.00 V	2.0 mA	8.90 V	0.1 mA On	
PIN11		5.00 V	2.0 mA	6.05 V	0.2 mA On	
PIN12		7.00 V	2.0 mA	7.10 V	0.5 mA On	
PIN13		7.00 V	2.0 mA	6.80 V	0.0 mA On	
PIN14		8.00 V	2.0 mA	7.95 V	0.4 mA On	
PIN15		8.00 V	2.0 mA	7.75 V	0.0 mA On	
PIN16		7.00 V	2.0 mA	6.70 V	0.0 mA Off	

Main Utility Setup Groups View						
Group #	External Name	VSet	ISet	Vbias	Ibias	Rs Status
LowCard1B		250.00 V	4.00 mA	165.75 V	0.00 mA Off	
LowCard1D		250.00 V	4.00 mA	250.75 V	1.14 mA On	
LowCard2B		210.00 V	4.00 mA	209.50 V	0.70 mA On	
LowCard2D		230.00 V	4.00 mA	230.50 V	1.22 mA On	
LowCard3B		110.00 V	4.00 mA	110.00 V	1.28 mA On	
LowCard3D		250.00 V	4.00 mA	250.25 V	1.18 mA On	
LowCard4B		310.00 V	4.00 mA	310.75 V	1.56 mA On	
LowCard4D		310.00 V	4.00 mA	310.25 V	1.42 mA On	
LowCard5B		210.00 V	4.00 mA	209.50 V	0.66 mA Off	
LowCard5D		210.00 V	4.00 mA	100.50 V	1.48 mA On	
LowCard6B		250.00 V	4.00 mA	199.75 V	1.55 mA On	
LowCard6D		120.00 V	4.00 mA	120.50 V	1.10 mA On	
LowCard7B		250.00 V	4.00 mA	200.25 V	1.44 mA On	
LowCard7D		240.00 V	4.00 mA	240.50 V	2.01 mA On	
LowCard8B		350.00 V	4.00 mA	340.50 V	1.38 mA On	
LowCard8D		250.00 V	4.00 mA	249.50 V	1.12 mA On	

1:50	Vbias(V)	I( $\mu$ A)
Back 0	100.0	3.75
Back 1	100.02	5.60
Back 2	100.0	4.88
Back 3	100.8	6.10
MCP 0		
MCP 1		

Main Utility Setup Groups View						
Group #	External Name	VSet	ISet	Vbias	Ibias	Rs Status
Cell1		50.00 V	3.0 mA	50.00 V	0.0 mA On	
Cell2		50.00 V	3.0 mA	50.00 V	1.1 mA On	
Cell3		50.00 V	3.0 mA	50.00 V	0.0 mA On	
Cell4		50.00 V	3.0 mA	50.00 V	0.0 mA On	

View is currently off to the left beam, 90° of view X.

Run#	303	Trigger				Date: 10/25/07 2007
Beam:	$^{46}\text{Ar}$	Coin	Secondary	Ext 2	Ext 1	S800
E/A=	33 MeV	On shift: everyone				
Alpha source	Target = (CH2)n: 25um; 75um; 100um, carbon, viewer, mask, blank → position: 49.6 Target drive (if moved):					
MCP 1:	153.471	XFP:	123.837	Live trigger:	280.0	
Bp:	2.128	Attenuation:	1k			
Comments:	beam at S800 focal plane, calibration					

Run#	304	Trigger				Date: 10/25/07 2007
Beam:	$^{46}\text{Ar}$	Coin	Secondary	Ext 2	Ext 1	S800
E/A=	33 MeV	On shift: everyone				
Alpha source	Target = (CH2)n: 25um; 75um; 100um, carbon, viewer, mask, blank → position: Target drive (if moved):					
MCP 1:	153.471	XFP:	123.837	Live trigger:	268.00	
Bp:	2.128	Attenuation:	1k			
Comments:	beam at S800 focal plane, calibration					

Run#	305	Trigger				Date: 10/25/07 2007
Beam:	$^{46}\text{Ar}$	Coin	Secondary	Ext 2	Ext 1	S800
E/A=	33 MeV	On shift: everyone				
Alpha source	Target = (CH2)n: 25um; 75um; 100um, carbon, viewer, mask, blank → position: 27.6 Target drive (if moved):					
MCP 1:	153.471	XFP:	123.837	Live trigger:	100	
Bp:	2.1308	Attenuation:	1			
Comments:	Mask gun central hole (trigger S800) calibration					

Run# 306	Trigger				Date: 10/28/07
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1 S800	On shift:
Target = (CH <sub>2</sub> )n: 25um; 75um; 100um, carbon, viewer, mask, blank → position: 262.5 mm (shown in program)					
MCP 1: _____ XFP: _____	Live trigger: _____			I250X-R Reaction	I251Y-R MCP0
Bp: _____ (segment 8)	Attenuation: _____			I250Y-R MCP1	
Comments: Target mask (upper one) 5mm down (162.5mm)					

Run# 307	Trigger				Date: 10/28/07
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1 S800	On shift:
Target = (CH <sub>2</sub> )n: 25um; 75um; 100um, carbon, viewer, mask, blank → position: 267.5 mm (shown in program)					
MCP 1: _____ XFP: _____	Live trigger: _____			I250X-R Reaction	I251Y-R MCP0
Bp: _____ (segment 8)	Attenuation: _____			I250Y-R MCP1	
Comments: Mask calibration after beam is turned.					

Run# 308	Trigger				Date: 10/28/07
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1 S800	On shift:
Target = (CH <sub>2</sub> )n: 25um; 75um; 100um, carbon, viewer, mask, blank → position: _____ (shown in program)					
MCP 1: _____ XFP: _____	Live trigger: _____			I250X-R Reaction	I251Y-R MCP0
Bp: _____ (segment 8)	Attenuation: _____			I250Y-R MCP1	
Comments: Mask calibration upper 2 holes.					

Run# 309	Trigger				Date: 10/28/07
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1 S800	On shift:
Target = (CH <sub>2</sub> )n: 25um; 75um; 100um, carbon, viewer, mask, blank → position: 300.6 (shown in program)					
MCP 1: _____ XFP: _____	Live trigger: 125			I250X-R Reaction	I251Y-R MCP0
Bp: 2.069 (segment 8)	Attenuation: 3			I250Y-R MCP1	180.6
Comments: MCP0 mask calibration					153.9

10/25

67 I253 S800

out + out + Be 1763 + out  
 I253 RFFS@0kV Att 30  
 2007-10-25 17:43:17

Run# 310	Trigger					Date: 10/ / 07
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	<input checked="" type="checkbox"/> Coin	<input checked="" type="checkbox"/> Secondary	<input checked="" type="checkbox"/> Ext 2	Ext 1	<input checked="" type="checkbox"/> S800	On shift: Bettie, Sean, Patrick Bill, Andy
	Target = $(\text{CH}_2)_n$ : 25um; 75um; 100um, carbon, viewer, mask, blank → position: _____ (shown in program)					
MCP 1: _____ XFP: _____	Live trigger: <del>00</del> 270				I250X-R Reaction I250Y-R MCP0	I251Y-R
Bp: $2.069$ (segment 8)	Attenuation: 1				I250Y-R MCP1	123.85
Comments: MCP1 mask calibration						229.44

<del>7:40 pm</del>	Vbias(V)	I( $\mu\text{A}$ )
Back 0	100	5.02
Back 1	100	5.98
Back 2	100	5.26
Back 3	100	6.85
MCP 0	100	0
MCP 1	100	0

Run# 311	Trigger					Date: 10/ / 07
Beam: $^{46}\text{Ar}$	Coin	Secondary	Ext 2	Ext 1	S800	On shift:
E/A=33 MeV						
Alpha source						
Target = (CH <sub>2</sub> )n: 25um; 75um; 100um, carbon, viewer, mask, blank → position.						(shown in program)
MCP 1: _____	XFP: _____	Live trigger: 72			I250X-R Reaction	I251Y-R MCP0
Bp: 2.0696 (segment 8)	Attenuation: 1	99.6			I250Y-R MCP1	123.85
Comments: data run				<del>123.85</del>		

A1900 "Print25Oct07\_18h45.txt" Thursday 18:45:43 2007-10-25 A1900  
 Moe V3 \*\*\* 46Ar +18 secondary beam \*\*\*  
 Expt: 05133 "Neutron transf. rxns ... Ar isotopes" [Betty Tsang] Line: S800 [8]  
 Beam: 48 Ca 8+ 12.30 MeV/nuc (K500) 20+ 140.00 MeV/nuc (K1200)  
 <Att 3> ECR, Apertures: RTECR 150.0; 50.0; 25.0 mm R HVBI: 25.6500 kV  
 K500 a,b: 664 A, 618 A K1200: 814 A, -15 A RF: 23.15950 MHz  
 A1900 Optics: L19S3I\_Focus60x30HiRA.data  
 Rigidity Field Radius (live) Difference (Field\*Radius)  
 Seg 0: 4.25870 Tm  
 Seg 1: 2.89580 Tm 0.93450 T 3.09882 m 3.09878 m 0.00125 % (2.89584 Tm)  
 Seg 2: 2.89580 Tm 0.93368 T 3.10148 m 3.10149 m -0.00040 % (2.89579 Tm)  
 Seg 3: 2.18010 Tm 0.70460 T 3.09397 m 3.09410 m -0.00417 % (2.18001 Tm)  
 Seg 4: 2.18010 Tm 0.70425 T 3.09547 m 3.09565 m -0.00589 % (2.17997 Tm)  
 Seg 5: 2.13080 Tm  
 Seg 6: 2.13080 Tm  
 Seg 7: 2.13080 Tm  
 Seg 8: 2.06964 Tm  
 A116DS 0.68640 T 3.10539 m 3.10431 m 0.03461 %  
 A132DS -0.66640 T 3.19847 m 3.19748 m 0.03110 %  
 A165DS 0.36070 T 5.91156 m 5.90740 m 0.07042 %  
 I200DS 0.67533 T 3.15484 m 3.15520 m -0.01133 %  
 I205DS 0.67806 T 3.14172 m 3.14249 m -0.02475 %  
 I223DS 0.73520 T 2.89822 m 2.89826 m -0.00136 %  
 I228DS 0.64995 T 3.27820 m 3.27841 m -0.00615 %  
 I265DS 0.73719 T 2.80630 m 2.80748 m -0.04178 %  
 I269DS 0.73749 T 2.80597 m 2.80633 m -0.01300 %  
 Z001TL: out, Z013TL: out; Z014TL out  
 Z015TL: Be 1763, Z016TL out  
 Z030BC Beam Stop: -127.01 mm  
 Z037L,R: -18.00, 18.00 mm or -0.61, 0.61 width= 1.22 %; Z037DC: out  
 Z057MS: out, Z061MS: 1.0%  
 Z059DC: out, Z062SC: out, Z059TL: Al 375  
 Z082 XC,G,YG: 0.16, 203.25, 202.05 mm Z082TL: out  
 Z103DC: out, Z104DC: 5 mil BC400; Z106DC: out, Z107DC\_U\_L: out/out  
 Z105TL: out, Slits: nothing installed; PPACs: gas on; Z107 outlim: Y  
 Z104 XC,G,YC,G: 0.00, 10.00; 0.00, 6.00 mm  
 Slits: I181 XC,G,YC,G: 0.95, 99.29; -0.04, 50.05  
 I187: out, I188: out, I189: out, I190: out  
 I213: out, I214: out, I215: out, I216: out

E/A=33 MeV  
Alpha source

Target = (CH<sub>2</sub>)n: 25um; 75um; 100um, carbon, viewer,  
mask, blank → position: (shown in program)

MCP 1: _____	XFP: _____	Live trigger: _____	I250X-R Reaction	I251Y-R MCP0
Bp: _____	(segment 8)	Attenuation: _____	I250Y-R MCP1	
Comments:	continuation of prev At 9pm run stopped for beam tuning			

Run# 314	Trigger					Date: 10/25/01
Beam: <sup>46</sup> Ar E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1	S800	On shift:
Target = (CH <sub>2</sub> )n: 25um; 75um; 100um, carbon, viewer, mask, blank → position: (shown in program)						
MCP 1: 237995	XFP: 709877	Live trigger: 83	I250X-R Reaction	I251Y-R MCP0		
Bp: _____	(segment 8)	Attenuation: 1	I250Y-R MCP1			
Comments: After beam tuned						

Run# 315	Trigger					Date: 10/25/01
Beam: <sup>46</sup> Ar E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1	S800	On shift:
Target = (CH <sub>2</sub> )n: 25um; 75um; 100um, carbon, viewer, mask, blank → position: (shown in program)						
MCP 1: 203472	XFP: 598300	Live trigger: 72	I250X-R Reaction	I251Y-R MCP0		
Bp: 2.0696	(segment 8)	Attenuation: 1	I250Y-R MCP1			
Comments: continuation of prev. Run						

Run# 316	Trigger					Date: 10/25/01
Beam: <sup>46</sup> Ar E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1	S800	On shift:
Target = (CH <sub>2</sub> )n: 25um; 75um; 100um, carbon, viewer, mask, blank → position: (shown in program)						
MCP 1: 209818	XFP: 637500	Live trigger: 96	I250X-R Reaction	I251Y-R MCP0		
Bp: 2.0696	(segment 8)	Attenuation: 1	I250Y-R MCP1			
Comments: continuation of the prev. run						

Run# 317	Trigger					Date: 10/25/01
Beam: <sup>46</sup> Ar E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1	S800	On shift:
Target = (CH <sub>2</sub> )n: 25um; 75um; 100um, carbon, viewer, mask, blank → position: (shown in program)						
MCP 1: 2071099	XFP: 644391	Live trigger: 83	I250X-R Reaction	I251Y-R MCP0		
Bp: 2.0696	(segment 8)	Attenuation: 1	I250Y-R MCP1			
Comments: continuation of prev. run.						

Run  
313 → junk

Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1	S800	On shift: $V+D$
Target = $(\text{CH}_2)\text{n}$ : 25um; 75um; 100um, carbon, viewer, mask, blank						

MCP 1: \_\_\_\_\_ ; XFP: \_\_\_\_\_ ; Live trigger: \_\_\_\_\_

Bp: \_\_\_\_\_ (segment 8); Attenuation: \_\_\_\_\_

Comments: *continuation of data taking  
pulsar into E, D turned back ON*

I250X-R Target 49.599	I251Y-R MCP 0 123.837
I250Y-R MCP 1 153.173	Position (mm)

Run# 319	Trigger	Date: 10/26/07
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin Secondary Ext 2 Ext 1 S800	On shift: $V+D$

MCP 1: \_\_\_\_\_ ; XFP: \_\_\_\_\_ ; Live trigger: \_\_\_\_\_

Bp: \_\_\_\_\_ (segment 8); Attenuation: \_\_\_\_\_

Comments: *continuation of data*

I250X-R Target 49.599	I251Y-R MCP 0 122.837
I250Y-R MCP 1 153.173	Position (mm)

Run# 320	Trigger	Date: 10/26/07 2007
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin Secondary Ext 2 Ext 1 S800	On shift: $V+D$

MCP 1: \_\_\_\_\_ XFP: \_\_\_\_\_ Live trigger: \_\_\_\_\_

Bp: \_\_\_\_\_ Attenuation: \_\_\_\_\_

Comments: *continuation of data*

Run# 321	Trigger	Date: 10/26/07 2007
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin Secondary Ext 2 Ext 1 S800	On shift: $V+D$

MCP 1: \_\_\_\_\_ XFP: \_\_\_\_\_ Live trigger: \_\_\_\_\_

Bp: \_\_\_\_\_ Attenuation: \_\_\_\_\_

Comments: *continuation of data taking*

Run# 322  
 Beam:  $^{46}\text{Ar}$   
 E/A=33 MeV  
 Alpha source

### Trigger



Date: 10/26/07

On shift:

V+Y T Mike

Target =  $(\text{CH}_2)_n$ : 25um; 75um; 100um, carbon, viewer, mask, blank

MCP 1: \_\_\_\_\_ ; XFP: \_\_\_\_\_ ; Live trigger: \_\_\_\_\_

Bp: \_\_\_\_\_ (segment 8); Attenuation: \_\_\_\_\_

Comments: \_\_\_\_\_

I250X-R Target	I251Y-R MCP 0
I250Y-R MCP 1	Position (mm)

xterm

File Edit View Insert Select Help

Line	Vbias	I
1	0.00	0.00
2	0.00	0.00
3	0.00	0.00
4	0.00	0.00
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34	0.00	0.00
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40	0.00	0.00
41	0.00	0.00
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43	0.00	0.00
44	0.00	0.00
45	0.00	0.00
46	0.00	0.00
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48	0.00	0.00
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50	0.00	0.00
51	0.00	0.00
52	0.00	0.00
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56	0.00	0.00
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58	0.00	0.00
59	0.00	0.00
60	0.00	0.00
61	0.00	0.00
62	0.00	0.00
63	0.00	0.00
64	0.00	0.00
65	0.00	0.00
66	0.00	0.00
67	0.00	0.00
68	0.00	0.00
69	0.00	0.00
70	0.00	0.00
71	0.00	0.00
72	0.00	0.00
73	0.00	0.00
74	0.00	0.00
75	0.00	0.00
76	0.00	0.00
77	0.00	0.00
78	0.00	0.00
79	0.00	0.00
80	0.00	0.00
81	0.00	0.00
82	0.00	0.00
83	0.00	0.00
84	0.00	0.00
85	0.00	0.00
86	0.00	0.00
87	0.00	0.00
88	0.00	0.00
89	0.00	0.00
90	0.00	0.00
91	0.00	0.00
92	0.00	0.00
93	0.00	0.00
94	0.00	0.00
95	0.00	0.00
96	0.00	0.00
97	0.00	0.00
98	0.00	0.00
99	0.00	0.00
100	0.00	0.00
101	0.00	0.00
102	0.00	0.00
103	0.00	0.00
104	0.00	0.00
105	0.00	0.00
106	0.00	0.00
107	0.00	0.00
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109	0.00	0.00
110	0.00	0.00
111	0.00	0.00
112	0.00	0.00
113	0.00	0.00
114	0.00	0.00
115	0.00	0.00
116	0.00	0.00
117	0.00	0.00
118	0.00	0.00
119	0.00	0.00
120	0.00	0.00
121	0.00	0.00
122	0.00	0.00
123	0.00	0.00
124	0.00	0.00
125	0.00	0.00
126	0.00	0.00
127	0.00	0.00
128	0.00	0.00
129	0.00	0.00
130	0.00	0.00
131	0.00	0.00
132	0.00	0.00
133	0.00	0.00
134	0.00	0.00
135	0.00	0.00
136	0.00	0.00
137	0.00	0.00
138	0.00	0.00
139	0.00	0.00
140	0.00	0.00
141	0.00	0.00
142	0.00	0.00
143	0.00	0.00
144	0.00	0.00
145	0.00	0.00
146	0.00	0.00
147	0.00	0.00
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161	0.00	0.00
162	0.00	0.00
163	0.00	0.00
164	0.00	0.00
165	0.00	0.00
166	0.00	0.00
167	0.00	0.00
168	0.00	0.00
169	0.00	0.00
170	0.00	0.00
171	0.00	0.00
172	0.00	0.00
173	0.00	0.00
174	0.00	0.00
175	0.00	0.00
176	0.00	0.00
177	0.00	0.00
178	0.00	0.00
179	0.00	0.00
180	0.00	0.00
181	0.00	0.00
182	0.00	0.00
183	0.00	0.00
184	0.00	0.00
185	0.00	0.00
186	0.00	0.00
187	0.00	0.00
188	0.00	0.00
189	0.00	0.00
190	0.00	0.00
191	0.00	0.00
192	0.00	0.00
193	0.00	0.00
194	0.00	0.00
195	0.00	0.00
196	0.00	0.00
197	0.00	0.00
198	0.00	0.00
199	0.00	0.00
200	0.00	0.00
201	0.00	0.00
202	0.00	0.00
203	0.00	0.00
204	0.00	0.00
205	0.00	0.00
206	0.00	0.00
207	0.00	0.00
208	0.00	0.00
209	0.00	0.00
210	0.00	0.00
211	0.00	0.00
212	0.00	0.00
213	0.00	0.00
214	0.00	0.00
215	0.00	0.00
216	0.00	0.00
217	0.00	0.00
218	0.00	0.00
219	0.00	0.00
220	0.00	0.00
221	0.00	0.00
222	0.00	0.00
223	0.00	0.00
224	0.00	0.00
225	0.00	0.00
226	0.00	0.00
227	0.00	0.00
228	0.00	0.00
229	0.00	0.00
230	0.00	0.00
231	0.00	0.00
232	0.00	0.00
233	0.00	0.00
234	0.00	0.00
235	0.00	0.00
236	0.00	0.00
237	0.00	0.00
238	0.00	0.00
239	0.00	0.00
240	0.00	0.00
241	0.00	0.00
242	0.00	0.00
243	0.00	0.00
244	0.00	0.00
245	0.00	0.00
246	0.00	0.00
247	0.00	0.00
248	0.00	0.00
249	0.00	0.00
250	0.00	0.00
251	0.00	0.00
252	0.00	0.00
253	0.00	0.00
254	0.00	0.00
255	0.00	0.00
256	0.00	0.00
257	0.00	0.00
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259	0.00	0.00
260	0.00	0.00
261	0.00	0.00
262	0.00	0.00
263	0.00	0.00
264	0.00	0.00
265	0.00	0.00
266	0.00	0.00
267	0.00	0.00
268	0.00	0.00
269	0.00	0.00
270	0.00	0.00
271	0.00	0.00
272	0.00	0.00
273	0.00	0.00
274	0.00	0.00
275	0.00	0.00
276	0.00	0.00
277	0.00	0.00
278	0.00	0.00
279	0.00	0.00
280	0.00	0.00
281	0.00	0.00
282	0.00	0.00
283	0.00	0.00
284	0.00	0.00
285	0.00	0.00
286	0.00	0.00
287	0.00	0.00
288	0.00	0.00
289	0.00	0.00
290	0.00	0.00
291	0.00	0.00
292	0.00	0.00
293	0.00	0.00
294	0.00	0.00
295	0.00	0.00
296	0.00	0.00
297	0.00	0.00
298	0.00	0.00
299	0.00	0.00
300	0.00	0.00
301	0.00	0.00
302	0.00	0.00
303	0.00	0.00
304	0.00	0.00
305	0.00	0.00
306	0.00	0.00
307	0.00	0.00
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323	0.00	0.00
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327	0.00	0.00
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329	0.00	0.00
330	0.00	0.00
331	0.00	0.00
332	0.00	0.00
333	0.00	0.00
334	0.00	0.00
335	0.00	0.00
336	0.00	0.00
337	0.00	0.00
338	0.00	0.00
339	0.00	0.00
340	0.00	0.00
341	0.00	0.00
342	0.00	0.00
343	0.00	0.00
344	0.00	0.00
345	0.00	0.00
346	0.00	0.00
347	0.00	0.00
348	0.00	0.00

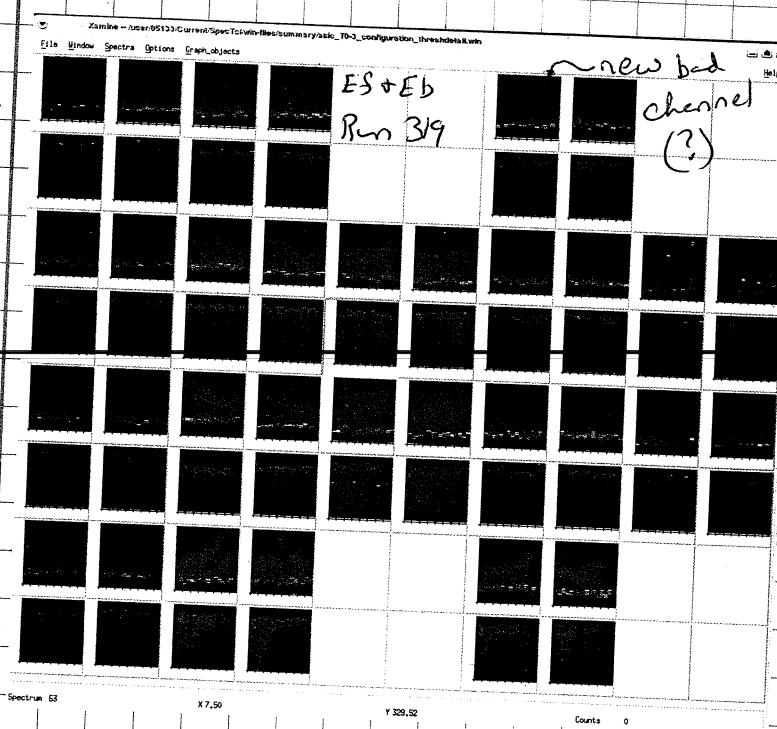
6:30 am - because to operator for turning up the intensity

7:00 am - beam back

Run# 323, 324, 325, 326	Trigger	Date: 10/26/01
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin Secondary Ext 2 Ext 1 S800	On shift: U+D, Mike
	Target = $(\text{CH}_2)_n$ : 25um; 75um; 100um, carbon, viewer, mask, blank	

MCP 1: \_\_\_\_\_ ; XFP: \_\_\_\_\_ ; Live trigger: \_\_\_\_\_  
Bp: \_\_\_\_\_ (segment 8); Attenuation: \_\_\_\_\_  
Comments: continuation

I250X-R Target 49.799	I251Y-R MCP 0 123.83
I250Y-R MCP 1 1T2.173	Position (mm)



-	1			
-	s			
-	6			
-	t			
-	t	11		
-	r			
-	r	16		
-	i			
-	i	21		
-	p			
-	p	26		
-	[1]	HIRA.TELEZIPEB.EMAXCH		
-	310	5 10 15 20 25 30		
-	[2]	HIRA.TELEZIPEB.EMAXCH		
-	310	5 10 15 20 25 30		
-	[3]	HIRA.TELEZIPEB.EMAXCH		
-	310	5 10 15 20 25 30		
-	1			
-	s			
-	6			
-	t			
-	t	11		
-	r			
-	r	16		
-	i			
-	i	21		
-	p			
-	p	26		
-	310	5 10 15 20 25 30		
-	[4]	HIRA.TELEZIPEB.EMAXCH		
-	310	5 10 15 20 25 30		
-	1			
-	s			
-	6			
-	t			
-	t	11		
-	r			
-	r	16		
-	i			
-	i	21		
-	p			
-	p	26		
-	310	5 10 15 20 25 30		
-	[5]	HIRA.TELEZIPEB.EMAXCH		
-	310	5 10 15 20 25 30		
-	1			
-	s			
-	6			
-	t			
-	t	11		
-	r			
-	r	16		
-	i			
-	i	21		
-	p			
-	p	26		
-	310	5 10 15 20 25 30		
-	[6]	HIRA.TELEZIPEB.EMAXCH		
-	310	5 10 15 20 25 30		
-	[13]	HIRA.TELEZIPEB.EMAXCH		

Ask the operator for a factor of 2 more beam.  
 Operator (Ken) return the cyclotron (<sup>1500</sup><sub>100</sub>) that it can take more beams later. After returning, beam intensity did not increase. Operator will heat up even to get more beam from source and will take a couple more iterations in drift.

Betty

Run# 327	Trigger					Date: 10/26/01
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	<input checked="" type="checkbox"/> Coin <input checked="" type="checkbox"/> Secondary <input checked="" type="checkbox"/> Ext 2 <input type="checkbox"/> Ext 1 <input type="checkbox"/> S800					On shift:
Target = (CH <sub>2</sub> )n: 25um; 75um; 100um, carbon, viewer, mask, blank						
Scatter rate MCP 1: 181C ; XFP: 62K ; Live trigger: 80 Bp: 2.07 (segment 8); Attenuation: 1 Comments: ECR source over heating up					I250X-R Target 49.6	I251Y-R MCP 0 123.8
					I250Y-R MCP 1 153.2	Position (mm)

Stop run to return!

Run# 328	Trigger					Date: 10/26/01
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	<input checked="" type="checkbox"/> Coin <input checked="" type="checkbox"/> Secondary <input checked="" type="checkbox"/> Ext 2 <input type="checkbox"/> Ext 1 <input type="checkbox"/> S800					On shift: morning shift, Patrick
Target = (CH <sub>2</sub> )n: 25um; 75um; 100um, carbon, viewer, mask, blank						
MCP 1: _____ ; XFP: _____ ; Live trigger: 78.04 Bp: _____ (segment 8); Attenuation: 1 Comments: first run after a day of tuning					I250X-R Target 49.6	I251Y-R MCP 0 123.85
					I250Y-R MCP 1 153.2	Position (mm)

Run# 329	Trigger					Date: 10/26/01
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	<input checked="" type="checkbox"/> Coin <input checked="" type="checkbox"/> Secondary <input checked="" type="checkbox"/> Ext 2 <input type="checkbox"/> Ext 1 <input type="checkbox"/> S800					On shift: Andy, Jenny, Alishef, Betty
Target = (CH <sub>2</sub> )n: 25um; 75um; 100um, carbon, viewer, mask, blank						
MCP 1: 537 ; XFP: 1241 ; Live trigger: 211.29 Bp: _____ (segment 8); Attenuation: _____ Comments: Carbon target uniformity					I250X-R Target 49.88	I251Y-R MCP 0 123.85
					I250Y-R MCP 1 153.2	Position (mm)

Run# 350	Trigger					Date: 10/26/07
Beam: $^{46}\text{Ar}$	Coin	Secondary	Ext 2	Ext 1	S800	On shift:
E/A=33 MeV						
Alpha source	Target = (CH <sub>2</sub> )n: 25um; 75um; 100um, carbon, viewer, mask, blank					
MCP 1: 24861; XFP: 75023; Live trigger: 210	I250X-R Target 151.45	I251Y-R MCP 0 143.85				
Bp: 2.0357 (segment 8); Attenuation: 1	I250Y-R MCP 1 153.2	Position (mm)				
Comments: Data taking						

A1900 "Print26Oct07\_17h43.txt" Friday 17:43:52 2007-10-26 A1900  
Moe V3 \*\*\* 46Ar\_100um target \*\*\*

Expt: 05133 "Neutron transf. rxns ... Ar isotopes" [Betty Tsang] Line: S800 [8]  
Beam: 48 Ca 8+ 12.30 MeV/nuc (K500) 20+ 140.00 MeV/nuc (K1200)  
<Att 1> ECR, Apertures: RTECR 150.0; 50.0; 25.0 mm RHVBI: 25.6500 kV  
K500 a,b: 664 A, 619 A K1200: 814 A, -15 A RF: 23.15950 MHz  
A1900 Optics: L19S3I\_Focus60x30HiRA.data  
Rigidity Field Radius (live) Difference (Field\*Radius)

Seg 0:	4.25870 Tm				
Seg 1:	2.89580 Tm	0.93449 T	3.09882 m	3.09879 m	0.00097 % (2.89583 Tm)
Seg 2:	2.89580 Tm	0.93365 T	3.10148 m	3.10160 m	-0.00380 % (2.89569 Tm)
Seg 3:	2.18010 Tm	0.70463 T	3.09397 m	3.09398 m	-0.00053 % (2.18009 Tm)
Seg 4:	2.18010 Tm	0.70426 T	3.09547 m	3.09558 m	-0.00350 % (2.18002 Tm)
Seg 5:	2.13080 Tm				
Seg 6:	2.13080 Tm				
Seg 7:	2.13080 Tm				
Seg 8:	2.03573 Tm				
A116DS	0.68640 T	3.10539 m	3.10431 m	0.03461 %	
A132DS	-0.66640 T	3.19847 m	3.19748 m	0.03110 %	
A165DS	0.36050 T	5.91156 m	5.91068 m	0.01493 %	
I200DS	0.67529 T	3.15484 m	3.15539 m	-0.01725 %	
I205DS	0.67808 T	3.14172 m	3.14240 m	-0.02180 %	
I223DS	0.73519 T	2.89822 m	2.89830 m	-0.00272 %	
I228DS	0.65002 T	3.27820 m	3.27805 m	0.00462 %	
I265DS	0.72602 T	2.80630 m	2.80396 m	0.08377 %	
I269DS	0.00000 T	2.80597 m	0.00000 m	100.00000 %	
Z001TL: out, Z013TL: out, Z014TL out					
Z015TL: Be 1763, Z016TL out					
Z030BC Beam Stop: -127.01 mm					
Z037L,R: -18.00, 18.00 mm or -0.61, 0.61 width= 1.22 %; Z037DC: out					
Z057MS: out, Z061MS: 1.0%					
Z059DC: out, Z062SC: out, Z059TL: Al 375					
Z082 XC,G,YG: 0.16, 203.25, 202.05 mm Z082TL: out					
Z103DC: out, Z104DC: 5 mil BC400; Z106DC: out, Z107DC_U/_L: out/out					
Z105TL: out, Slits: nothing installed; PPACs: gas on; Z107 outlim: Y					
Z104 XC,G,YC,G: 0.00, 10.00; 0.00, 6.00 mm					
Slits: I181 XC,G,YC,G: 0.95, 99.29; -0.04, 50.05					
I187: out, I188: out, I189: out, I190: out					
I213: out, i214: out, I215: out, I216: out					
I214DC Detector Drive: out					
I259XM: 0.1096 XP: 0.0000 YM: 0.0000 YP: 1.7182					

Run# 331	Trigger					Date: 10/26/07
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1	S800	On shift:
Target = (CH <sub>2</sub> )n: 25um; 75um; 100um, carbon, viewer, mask, blank						

MCP 1: \_\_\_\_\_ ; XFP: \_\_\_\_\_ ; Live trigger: 204  
Bp: 5cm (segment 8); Attenuation: 4  
Comments: Data taking stopped for  
XFP efficiency optimization

I250X-R Target 151.45	I251Y-R MCP 0 123.85
I250Y-R MCP 1 153.2	Position (mm)

	Vbias(V)	I(μA)
Back 0	100.1	4.06
Back 1	100.2	6.20
Back 2	100.0	5.32
Back 3	100.1	6.71
MCP 0	22.86	71.1
MCP 1	22.86	85

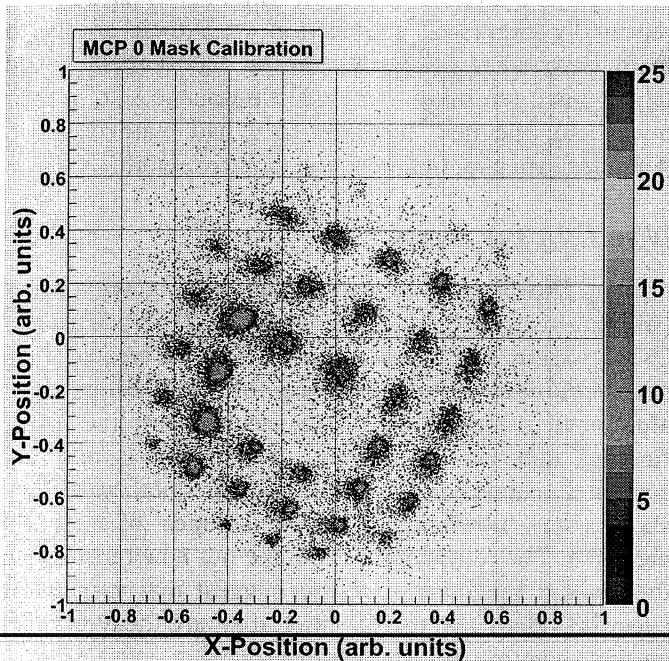
Run# 332	Trigger					Date: 10/ / 2007
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1	S800	On shift:
Target = (CH <sub>2</sub> )n: 25um; 75um; 100um, carbon, viewer, mask, blank → position: Target drive (if moved) :						
MCP 1: 21549 XFP: 732370 Live trigger: 218						
Bp: 2.0357 Attenuation: 7 Comments: Data run after XFP is moved						

Run# 333	Trigger					Date: 10/26/2007
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1	S800	On shift:
Target = (CH <sub>2</sub> )n: 25um; 75um; 100um, carbon, viewer, mask, blank → position: Target drive (if moved) :						
MCP 1: _____ XFP: 653167 Live trigger: 200						
Bp: _____ Attenuation: _____						
Comments: Data run						

Run# 334	Trigger					Date: 10/26/07
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1	S800	On shift:
Target = (CH <sub>2</sub> )n: 25um; 75um; 100um carbon, viewer, mask, blank						
<b>MCP 1:</b> _____ ; <b>XFP:</b> _____ ; <b>Live trigger:</b> _____						
<b>B<math>\beta</math>:</b> _____ (segment 8); <b>Attenuation:</b> _____						
<b>Comments:</b> Continuation of data taking. <i>(Was stopped for beam tune.)</i>						
			I250X-R Target 151.45	I251Y-R MCP 0 123.85		
			I250Y-R MCP 1 153.2	Position (mm)		

10:00 pm 10/26/07

NJCL green sheet  
of the week.



The mask pattern used to calibrate the two microchannel plate for Experiment 05133.

Run# 335	Trigger					Date: 10/26/07
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1	S800	On shift:
Target = (CH <sub>2</sub> )n: 25um; 75um; 100um carbon, viewer, mask, blank → position: (shown in program)						
<b>MCP 1:</b> _____ <b>XFP:</b> _____ <b>Live trigger:</b> _____						
<b>B<math>\beta</math>:</b> _____ (segment 8) <b>Attenuation:</b> _____						
<b>Comments:</b> first data run after beam tune.						
			I250X-R Reaction	I251Y-R MCP0		
			I250Y-R MCP1	Same		

Run# <u>336</u>	Trigger					Date: <u>10/24/07</u>
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1	S800	On shift:
	Target = $(\text{CH}_2)_n$ : 25um; 75um; 100um, carbon, viewer, mask, blank					
MCP 1: <u>337</u> ; XFP: _____; Live trigger: _____	I250X-R Target	I251Y-R MCP 0				
B $\beta$ : _____ (segment 8); Attenuation: _____	I250Y-R MCP 1	Position (mm)				
Comments: <u>I'll make something and entered in the notes (elog). (J.mh)</u>						

Run# <u>337</u>	Trigger					Date: <u>10/21/2007</u>
Beam: <sup>46</sup> Ar E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1	S800	On shift:
	Target = (CH <sub>2</sub> ) <sub>n</sub> : 25um; 75um; 100um, carbon, viewer, mask, blank → position: Target drive (if moved) :					
MCP 1: _____	XFP: _____	Live trigger: _____				
Bp: _____	Attenuation: _____					
Comments: _____						

Run#	Trigger					Date: 10/27/07 2007					
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1	S800	On shift:					
	Target = (CH <sub>2</sub> ) <sub>n</sub> : 25um; 75um; 100um, carbon, viewer, mask, blank → position: Target drive (if moved) :										
MCP 1: _____	XFP: _____	Live trigger: _____									
Bp: _____	Attenuation: _____										
Comments: _____	Increase the threshold on Tels DES, raised by one tick before this run. Data										

Run#	339,340	Trigger				Date: 10/29/07
Beam:	$^{46}\text{Ar}$	Coin	Secondary	Ext 2	Ext 1	S800
E/A=	33 MeV					On shift: V4D
Alpha source		Target = $(\text{CH}_2)_n$ : 25um; 75um; 100um, carbon, viewer, mask, blank				
MCP 1:	_____ ; XFP: _____ ; Live trigger: _____					
Bp:	_____ (segment 8); Attenuation: _____	I250X-R Target 15.449	I251Y-R MCP 0 123.832			
Comments:	continuation of data	I250Y-R MCP 1 15.449	Position (mm)			

Added TTL signals into channels 16-20 of the Peak Sensing ADC of slot 6. and lowered the thresholds of channels 16-31 to 280. This was done during Run 336. But we don't see any hits there yet (as of Run 339) we need to go downstairs to see what is wrong.

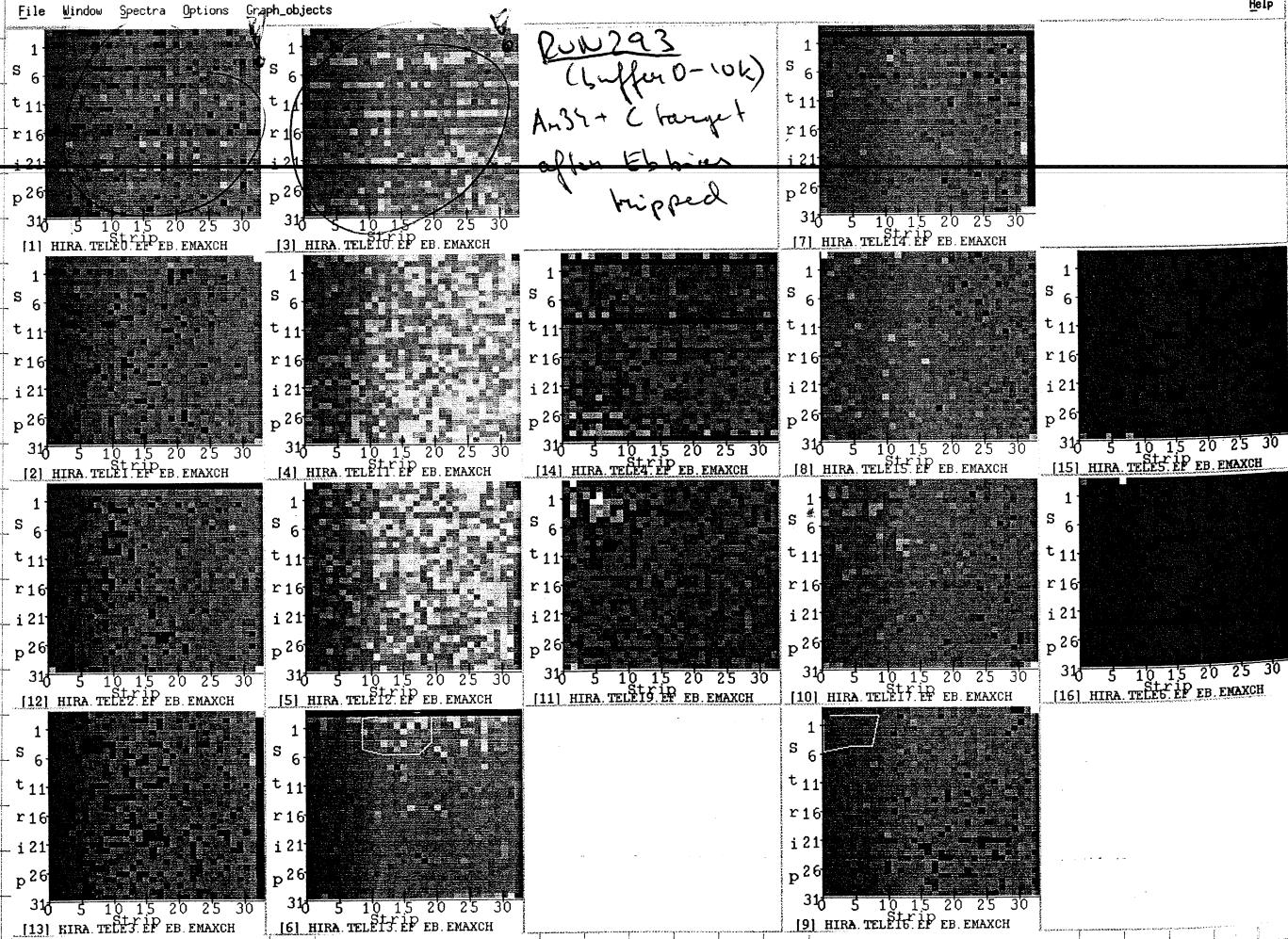
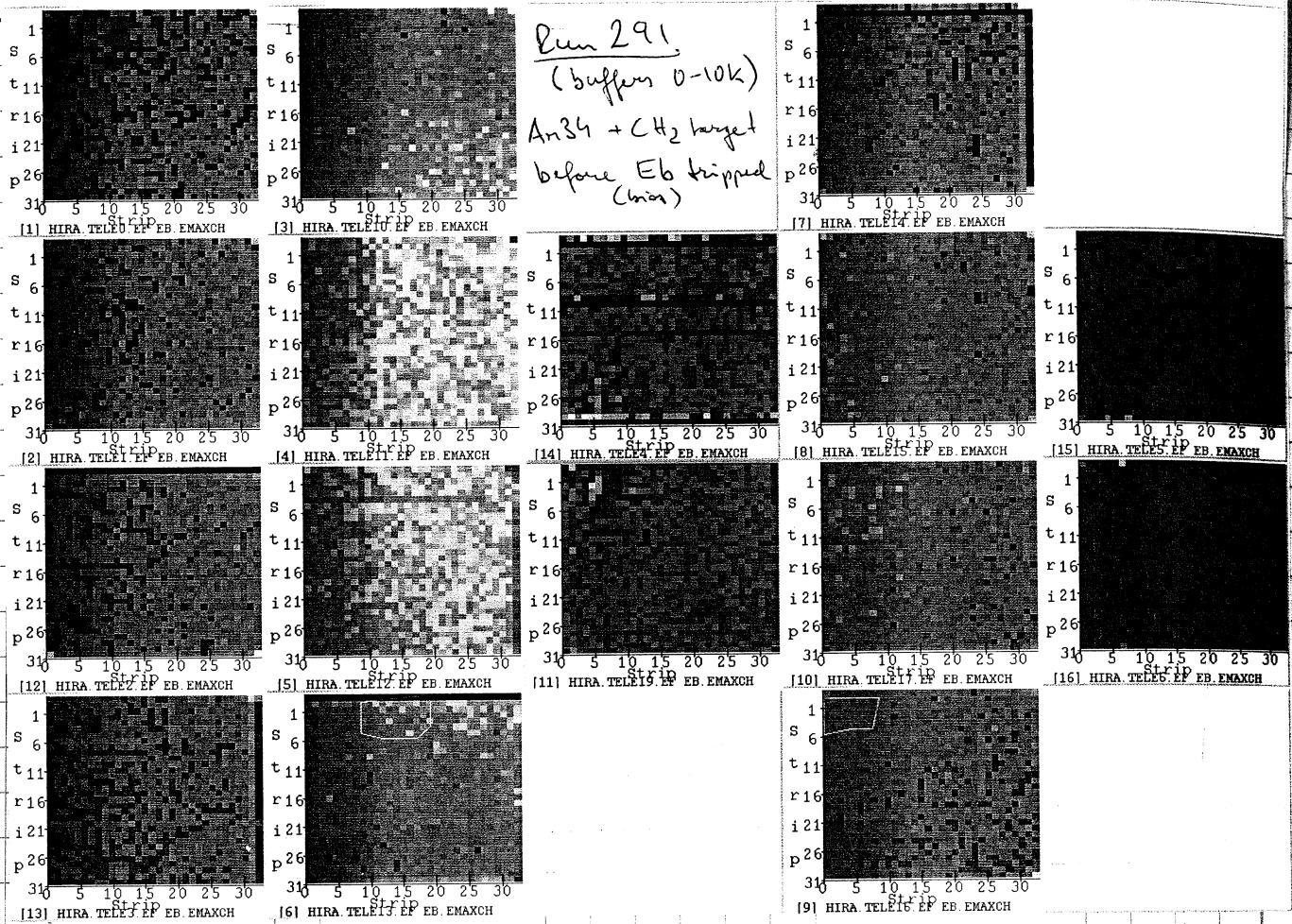
before run 341 added 5 TTL signals into ADC module

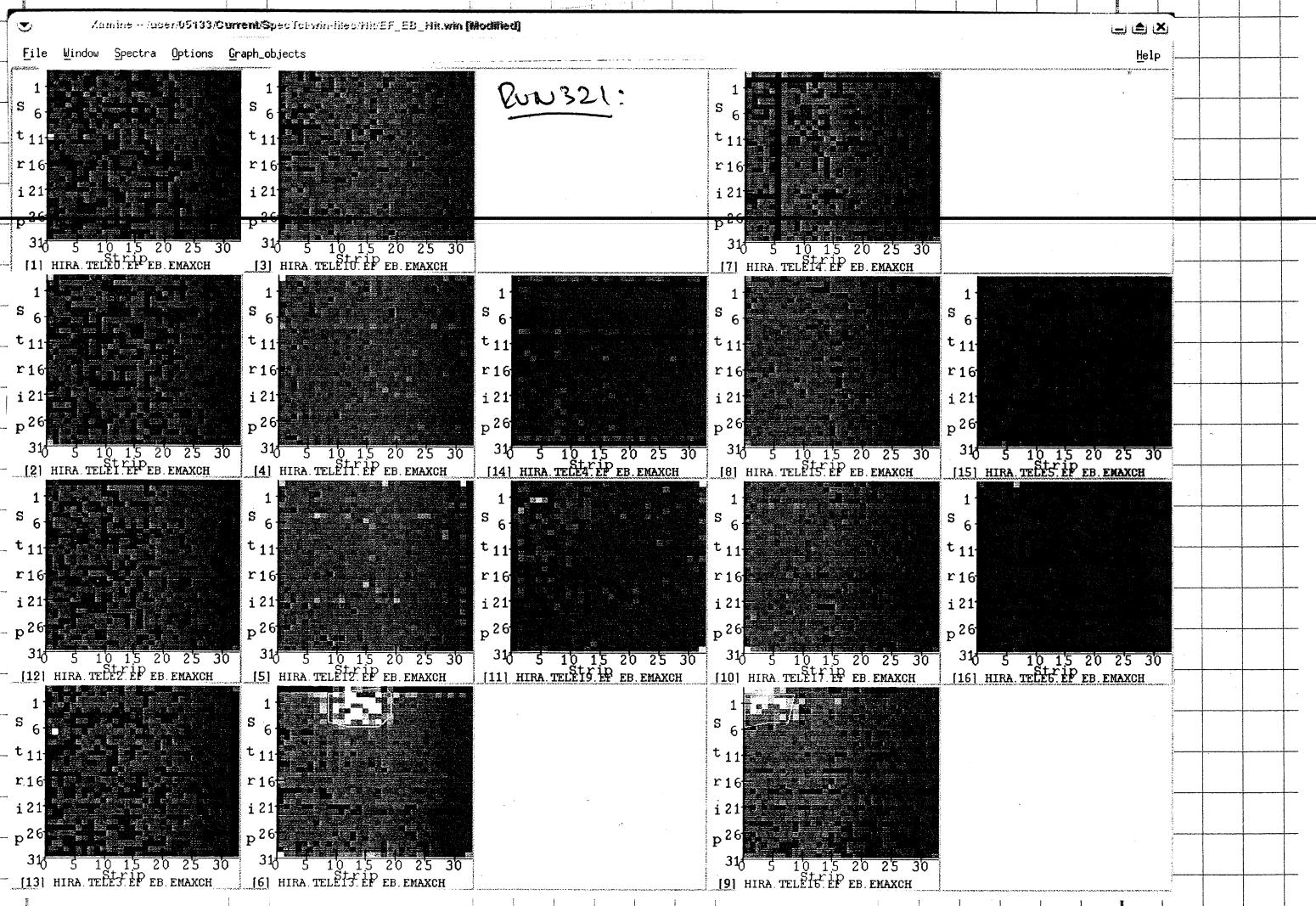
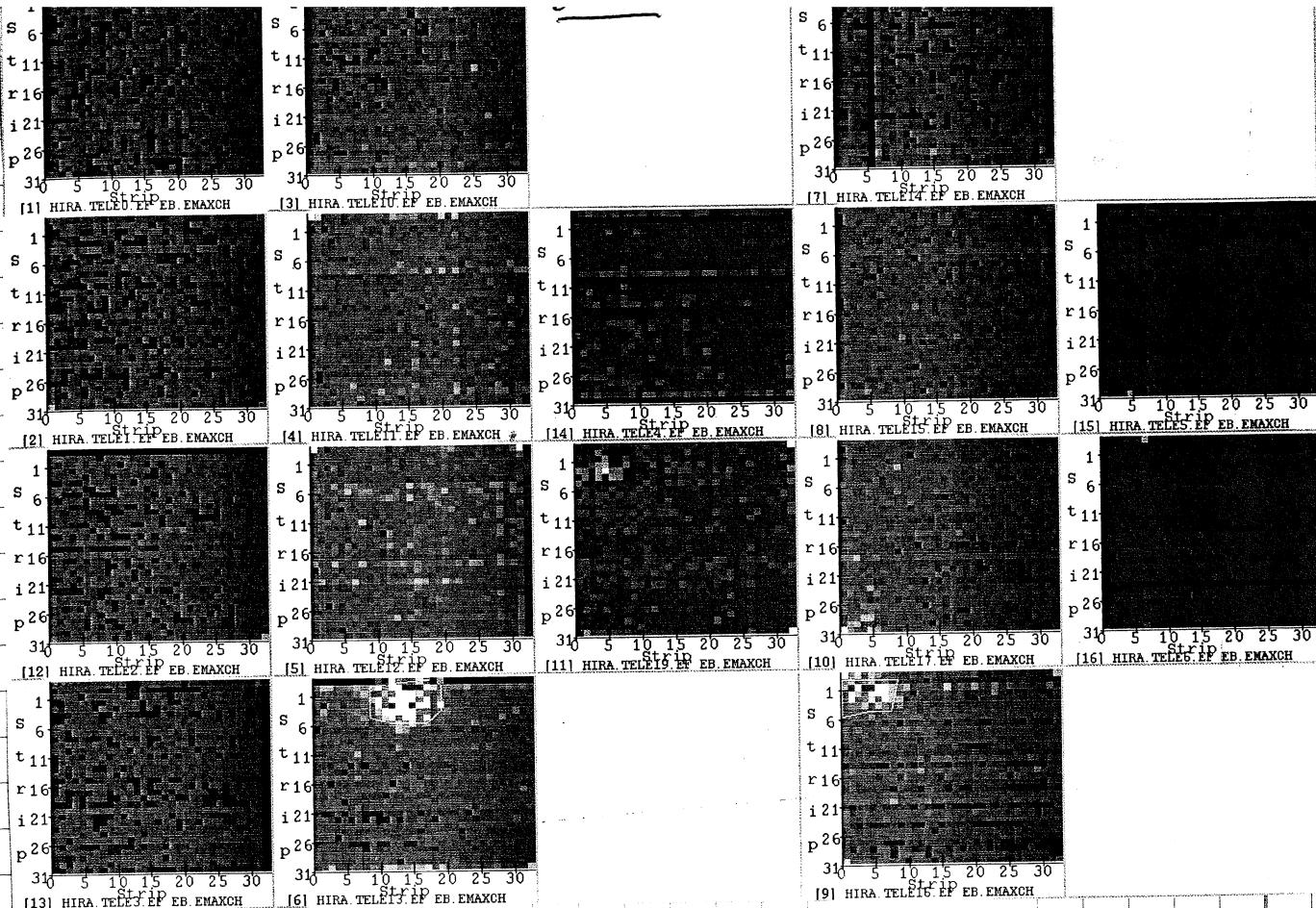
channel	signal
16	S800
17	H1PA
18	S800 + H1PA coincidence - counts too high, seems like to be the right thing plugged in
19	External 2
20	MCP Gate

Run# 341	Trigger					Date: 10/27/07					
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	<input type="checkbox"/> Coin <input type="checkbox"/> Secondary <input type="checkbox"/> Ext 2 <input type="checkbox"/> Ext 1 <input type="checkbox"/> S800					On shift: $V+D$					
Target = $(\text{CH}_2)_n$ : 25um; 75um; 100um, carbon, viewer, mask, blank											
<b>MCP 1:</b> _____ ; <b>XFP:</b> _____ ; <b>Live trigger:</b> _____ <b>Bp:</b> _____ (segment 8); <b>Attenuation:</b> _____ <b>Comments:</b> continuation of data; 5 TTL signals added											
					I250X-R Target 157.449	I251Y-R MCP 0 123.837					
					I250Y-R MCP 1 152.172	Position (mm)					

Reset Sparky to see if it helps to improve hit pattern in file 0 and 10

Run# 342	Trigger					Date: 10/27/07					
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	<input type="checkbox"/> Coin <input type="checkbox"/> Secondary <input type="checkbox"/> Ext 2 <input type="checkbox"/> Ext 1 <input type="checkbox"/> S800					On shift: $V+D$					
Target = $(\text{CH}_2)_n$ : 25um; 75um; 100um, carbon, viewer, mask, blank											
<b>MCP 1:</b> _____ ; <b>XFP:</b> _____ ; <b>Live trigger:</b> _____ <b>Bp:</b> _____ (segment 8); <b>Attenuation:</b> _____ <b>Comments:</b> continuation of data after Sparky reset											
					I250X-R Target	I251Y-R MCP 0					
					I250Y-R MCP 1	Position (mm)					





s 6  
 t 11  
 r 16  
 i 21  
 p 26  
 310 5 10 15 20 25 30  
 [1] HIRA TELE1 EP EB EMAXCH

s 6  
 t 11  
 r 16  
 i 21  
 p 26  
 310 5 10 15 20 25 30  
 [3] HIRA TELE10 EP EB EMAXCH

KUN SC+

s 6  
 t 11  
 r 16  
 i 21  
 p 26  
 310 5 10 15 20 25 30  
 [7] HIRA TELE14 EP EB EMAXCH

s 6  
 t 11  
 r 16  
 i 21  
 p 26  
 310 5 10 15 20 25 30  
 [15] HIRA TELE15 EP EB EMAXCH

1  
 s 6  
 t 11  
 r 16  
 i 21  
 p 26  
 310 5 10 15 20 25 30  
 [2] HIRA TELE1 EP EB EMAXCH

1  
 s 6  
 t 11  
 r 16  
 i 21  
 p 26  
 310 5 10 15 20 25 30  
 [4] HIRA TELE11 EP EB EMAXCH

1  
 s 6  
 t 11  
 r 16  
 i 21  
 p 26  
 310 5 10 15 20 25 30  
 [14] HIRA TELE14 EP EB EMAXCH

1  
 s 6  
 t 11  
 r 16  
 i 21  
 p 26  
 310 5 10 15 20 25 30  
 [8] HIRA TELE15 EP EB EMAXCH

1  
 s 6  
 t 11  
 r 16  
 i 21  
 p 26  
 310 5 10 15 20 25 30  
 [15] HIRA TELE15 EP EB EMAXCH

1  
 s 6  
 t 11  
 r 16  
 i 21  
 p 26  
 310 5 10 15 20 25 30  
 [12] HIRA TELE12 EP EB EMAXCH

1  
 s 6  
 t 11  
 r 16  
 i 21  
 p 26  
 310 5 10 15 20 25 30  
 [5] HIRA TELE12 EP EB EMAXCH

1  
 s 6  
 t 11  
 r 16  
 i 21  
 p 26  
 310 5 10 15 20 25 30  
 [11] HIRA TELE13 EP EB EMAXCH

1  
 s 6  
 t 11  
 r 16  
 i 21  
 p 26  
 310 5 10 15 20 25 30  
 [10] HIRA TELE14 EP EB EMAXCH

1  
 s 6  
 t 11  
 r 16  
 i 21  
 p 26  
 310 5 10 15 20 25 30  
 [16] HIRA TELE16 EP EB EMAXCH

[13] HIRA TELE13 EP EB EMAXCH

[16] HIRA TELE16 EP EB EMAXCH

[9] HIRA TELE16 EP EB EMAXCH

File Window Spectra Options Graph\_objects Help

1  
 s 6  
 t 11  
 r 16  
 i 21  
 p 26  
 310 5 10 15 20 25 30  
 [1] HIRA TELE1 EP EB EMAXCH

1  
 s 6  
 t 11  
 r 16  
 i 21  
 p 26  
 310 5 10 15 20 25 30  
 [3] HIRA TELE10 EP EB EMAXCH

RUN 328

1  
 s 6  
 t 11  
 r 16  
 i 21  
 p 26  
 310 5 10 15 20 25 30  
 [7] HIRA TELE14 EP EB EMAXCH

1  
 s 6  
 t 11  
 r 16  
 i 21  
 p 26  
 310 5 10 15 20 25 30  
 [15] HIRA TELE15 EP EB EMAXCH

1  
 s 6  
 t 11  
 r 16  
 i 21  
 p 26  
 310 5 10 15 20 25 30  
 [2] HIRA TELE1 EP EB EMAXCH

1  
 s 6  
 t 11  
 r 16  
 i 21  
 p 26  
 310 5 10 15 20 25 30  
 [4] HIRA TELE11 EP EB EMAXCH

1  
 s 6  
 t 11  
 r 16  
 i 21  
 p 26  
 310 5 10 15 20 25 30  
 [14] HIRA TELE14 EP EB EMAXCH

1  
 s 6  
 t 11  
 r 16  
 i 21  
 p 26  
 310 5 10 15 20 25 30  
 [8] HIRA TELE15 EP EB EMAXCH

1  
 s 6  
 t 11  
 r 16  
 i 21  
 p 26  
 310 5 10 15 20 25 30  
 [16] HIRA TELE16 EP EB EMAXCH

1  
 s 6  
 t 11  
 r 16  
 i 21  
 p 26  
 310 5 10 15 20 25 30  
 [12] HIRA TELE12 EP EB EMAXCH

1  
 s 6  
 t 11  
 r 16  
 i 21  
 p 26  
 310 5 10 15 20 25 30  
 [5] HIRA TELE12 EP EB EMAXCH

1  
 s 6  
 t 11  
 r 16  
 i 21  
 p 26  
 310 5 10 15 20 25 30  
 [11] HIRA TELE13 EP EB EMAXCH

1  
 s 6  
 t 11  
 r 16  
 i 21  
 p 26  
 310 5 10 15 20 25 30  
 [10] HIRA TELE14 EP EB EMAXCH

1  
 s 6  
 t 11  
 r 16  
 i 21  
 p 26  
 310 5 10 15 20 25 30  
 [16] HIRA TELE16 EP EB EMAXCH

1  
 s 6  
 t 11  
 r 16  
 i 21  
 p 26  
 310 5 10 15 20 25 30  
 [13] HIRA TELE13 EP EB EMAXCH

1  
 s 6  
 t 11  
 r 16  
 i 21  
 p 26  
 310 5 10 15 20 25 30  
 [16] HIRA TELE16 EP EB EMAXCH

Run# 343, 344	Trigger					Date: 10/27/07
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1	S800	On shift: V+D Jeng, Bill, Betty
	Target = (CH <sub>2</sub> )n: 25um; 75um; 100um, carbon, viewer, mask, blank					

MCP 1: \_\_\_\_\_ ; XFP: \_\_\_\_\_ ; Live trigger: \_\_\_\_\_

I250X-R Target	I251Y-R MCP 0
----------------	---------------

Bp: \_\_\_\_\_ (segment 8); Attenuation: \_\_\_\_\_

I250Y-R MCP 1	Position (mm)
---------------	---------------

Comments: 343: More data

344: No pulser or beam. Background & Blob investigations

Run# 345, 346	Trigger					Date: 10/27/07
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1	S800	On shift: V+D Jeng, Bill, Betty
	Target = (CH <sub>2</sub> )n: 25um; 75um; 100um, carbon, viewer, mask, blank					

MCP 1: \_\_\_\_\_ ; XFP: \_\_\_\_\_ ; Live trigger: \_\_\_\_\_

I250X-R Target	I251Y-R MCP 0
----------------	---------------

Bp: \_\_\_\_\_ (segment 8); Attenuation: \_\_\_\_\_

I250Y-R MCP 1	Position (mm)
---------------	---------------

Comments: 345: More data

346: Acquisition Checks (Back to original before Run)

Run# 348, 349	350	Trigger					Date: 10/27/07	
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1	S800	On shift: V+D, Betty, Jeng, Mike		
	Target = (CH <sub>2</sub> )n: 25um; 75um; 100um, carbon, viewer, mask, blank							

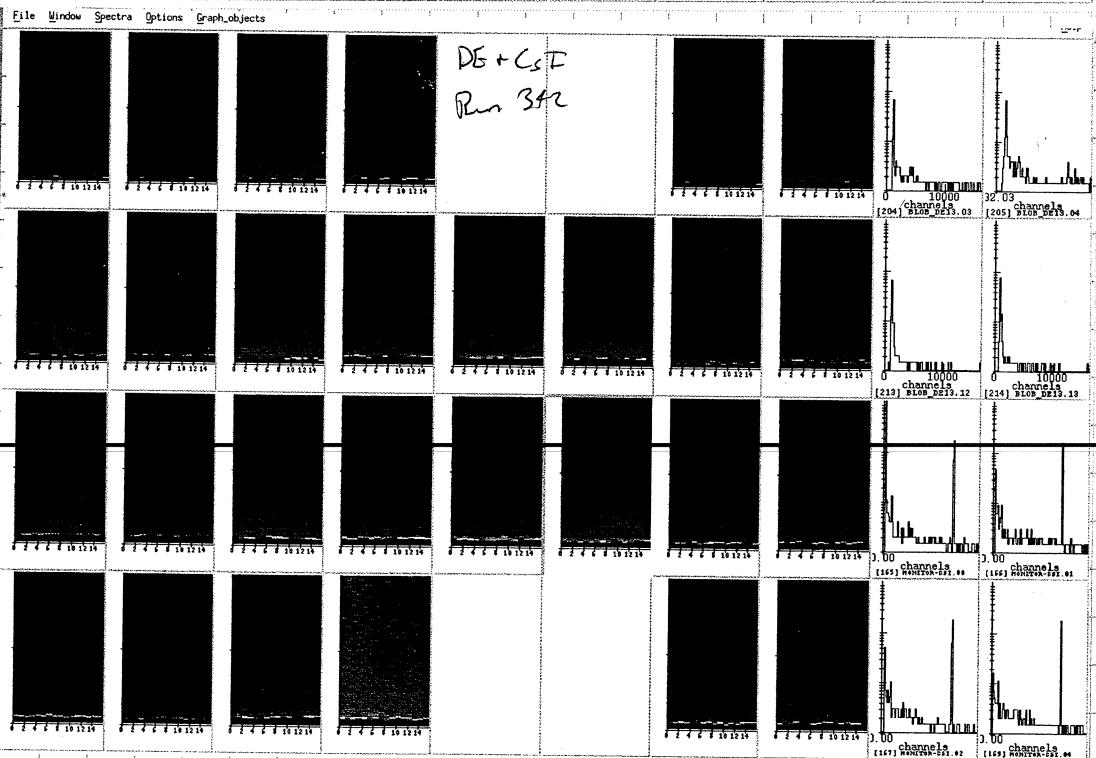
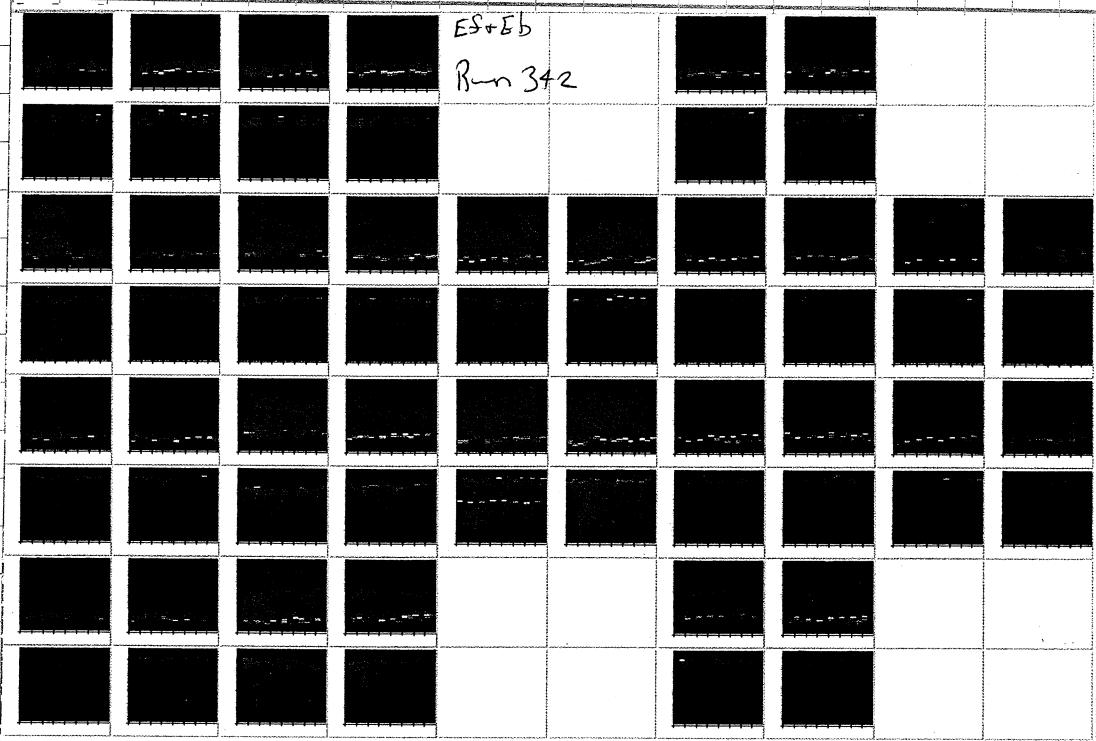
MCP 1: \_\_\_\_\_ ; XFP: \_\_\_\_\_ ; Live trigger: \_\_\_\_\_

I250X-R Target	I251Y-R MCP 0
----------------	---------------

Bp: \_\_\_\_\_ (segment 8); Attenuation: \_\_\_\_\_

I250Y-R MCP 1	Position (mm)
---------------	---------------

Comments: Back to Run's acquisition + more data



~ 8:30 AM 10/27/07

gave beam to operator for tuning  
cyclotron source, Need to replace RF tube.

Run# 351	Trigger					Date: 10/ / 07
Beam: $^{46}\text{Ar}$ E/A=33 MeV	Coin	Secondary	Ext 2	Ext 1	S800	On shift: <i>Betty, Dan, Mike, Jim.</i>
Alpha source						
Target = $(\text{CH}_2)_n$ : 25um; 75um; 100um, carbon, viewer, mask, blank						
MCP 1: _____ ; XFP: _____ ; Live trigger: _____ Bp: 2.069 (segment 8); Attenuation: _____ Comments: _____						
			I250X-R Target 267	I251Y-R MCP 0 123.85		
			I250Y-R MCP 1 153.2	Position (mm)		

At 3pm, change Segment 8 magnet to thin target  
x Bp 2.069 by Micha per instruction over  
phone with Daniel Bayin

Estimate ~6pm for to fix cyclotron

Run# 352	353, 354, 355	Trigger	356, 357	Date: 10/ / 07		
Beam: $^{46}\text{Ar}$ E/A=33 MeV	Coin	Secondary	Ext 2	Ext 1		
Alpha source						
Target = $(\text{CH}_2)_n$ : 25um; 75um; 100um, carbon, viewer, mask, blank						
MCP 1: _____ ; XFP: _____ ; Live trigger: _____ Bp: 2.069 (segment 8); Attenuation: _____ Comments: Continue of RUN 351.						
			I250X-R Target 267	I251Y-R MCP 0 123.85		
			I250Y-R MCP 1 153.2	Position (mm)		

10/28/07 12:20 AM

	Vbias(V)	I( $\mu\text{A}$ )
Back 0		4.06
Back 1		6.34
Back 2		5.31
Back 3		6.86
MCP 0	2280	0.70
MCP 1	2280	85

E/A=33 MeV  
Alpha source

Coin Secondary Ext Ext 1 S800

Target = (CH<sub>2</sub>)n: 25um; 75um; 100um, carbon, viewer, mask, blank

MCP 1: 113,000; XFP: 37000 → <sup>190K</sup>  
Bp: 2.069 (segment 8); Attenuation: 1  
Comments: Cyclotron fixed, Beam tuned!  
Data Run: Threshold for tele 15 dE adjusted!

I250X-R Target 49.6	I251Y-R MCP 0 123.85
I250Y-R MCP 1 153.2	Position (mm)

During RUN 358 the intensity of beam on XFP gradually decreases from 350K to ~190K (within hour)  
→ operator claims beam from 11200 is OK  
→ Thomas Bannerman called to check secondary tuning

Run# 359	Trigger	Date: 10/26/01
Beam: <sup>46</sup> Ar E/A=33 MeV Alpha source	Coin Secondary Ext Ext 1 S800	On shift: U+D + Beth + Bill
Target = (CH <sub>2</sub> )n: 25um; 75um; 100um, carbon, viewer, mask, blank		

MCP 1: ~70K ; XFP: ~180K ; Live trigger: 50-60  
Bp: \_\_\_\_\_ (segment 8); Attenuation: 1  
Comments: weak beam still getting weaker

I250X-R Target 49.599	I251Y-R MCP 0 123.837
I250Y-R MCP 1 153.173	Position (mm)

↳ very short run 359 → Tom Bannerman takes the key (at ~ 1:45 AM)

Beam back from operators at ~ 2:25 AM (beam finally satisfactory)  
→ ~600K at XFP

Run# 360	Trigger	Date: 10/26/01
Beam: <sup>46</sup> Ar E/A=33 MeV Alpha source	Coin Secondary Ext 2 Ext 1 S800	On shift: U+D + B+B
Target = (CH <sub>2</sub> )n: 25um; 75um; 100um, carbon, viewer, mask, blank		

MCP 1: 250K ; XFP: 675K ; Live trigger: ~80.  
Bp: \_\_\_\_\_ (segment 8); Attenuation: 1  
Comments: beam newly tuned

I250X-R Target 49.599	I251Y-R MCP 0 123.837
I250Y-R MCP 1 153.173	Position (mm)

↳ run stopped after ~18 minutes at Bill's request  
new run started immediately

Run# 361	Trigger					Date: 10/28/07
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1	S800	On shift: $V \leftarrow B + \bar{B}$
Target = (CH <sub>2</sub> )n: 25um, 75um; 100um, carbon, viewer, mask, blank						

MCP 1: 220K; XFP: ~620K; Live trigger: ~80  
 Bp: \_\_\_\_\_ (segment 8); Attenuation: 1

Comments: more data. waiting

I250X-R Target 49.199	I251Y-R MCP 0 123.837
I250Y-R MCP 1 153.173	Position (mm)

Run# 362	Trigger					Date: 10/28/07
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1	S800	On shift: $V + D + B_{(all)}$
Target = (CH <sub>2</sub> )n: 25um, 75um; 100um, carbon, viewer, mask, blank						<u>5 min</u> <u>run</u>

MCP 1: ~215K; XFP: ~600K; Live trigger: ~80

Bp: \_\_\_\_\_ (segment 8); Attenuation: 1

Comments: 0% of de Tel 18 turned off to see effect on Tel/B blob => no effect

↳ otherwise data OK

I250X-R Target 49.599	I251Y-R MCP 0 123.837
I250Y-R MCP 1 153.173	Position (mm)

Run# 363	Trigger					Date: 10/28/07
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1	S800	On shift: $V + D \leftarrow B$
Target = (CH <sub>2</sub> )n: 25um, 75um; 100um, carbon, viewer, mask, blank						<u>5 min</u> <u>run</u>

MCP 1: \_\_\_\_\_; XFP: ~610K; Live trigger: ~80

Bp: \_\_\_\_\_ (segment 8); Attenuation: 1

Comments: 0% of de of Tel 13, 19, 16 turned off to look for blob => no effect observed

↳ otherwise data OK

I250X-R Target 49.599	I251Y-R MCP 0 123.837
I250Y-R MCP 1 153.173	Position (mm)

Run# 364	Trigger					Date: 10/28/07
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1	S800	On shift: $V + D + B$
Target = (CH <sub>2</sub> )n: 25um, 75um; 100um, carbon, viewer, mask, blank						

MCP 1: \_\_\_\_\_; XFP: \_\_\_\_\_; Live trigger: \_\_\_\_\_

I250X-R Target	I251Y-R MCP 0

Run# 365	Trigger					Date: 10/28/07
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1	S800	On shift: $\text{U} + \text{D} \rightarrow \text{Belle}$
Target = (CH <sub>2</sub> )n: 25um; 75um; 100um, carbon, viewer, mask, blank						

MCP 1: ~200K ; XFP: 620K ; Live trigger: ~80  
 Bp: \_\_\_\_\_ (segment 8); Attenuation: 1  
 Comments: all OR's and DISCs of TOT 5 back ON  
 running like normal

I250X-R Target	I251Y-R MCP 0
I250Y-R MCP 1	Position (mm)



Things to do. (when beam being returned)

1. Check scaler wiring for MCP1 and MCP0 ✓
2. Put MCP1/DSC into true ADC as a bit #8  
     use the splitter plus 50Ω termination. ← doesn't work
3. check the QDC gate for DSC vs MCP gate for MCP don't work  
     is it patched in? ✓
4. Do a ramp of Xfp, MCP0, MCP1 vs Insertion  
     Should add a drawing of the signal shape for each discriminator
5. Check MCP stop ~~vs.~~ gated on Focal plane. see that it equal Focal plane
6. put the beam on the focal plane and compare Ext vs MCP0, MCP1  
     Xfp delay is wrong into the TDC. It should be fixed ← doesn't work
7. ...

Run# 366	Trigger					Date: 10/28/07
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1	S800	On shift: $\text{U} + \text{D} \rightarrow \text{Belle}$
Target = (CH <sub>2</sub> )n: 25um; 75um; 100um, carbon, viewer, mask, blank						

MCP 1: ~200K ; XFP: 585K ; Live trigger: ~75  
 Bp: \_\_\_\_\_ (segment 8); Attenuation: 1  
 Comments: None more data with reasonable beam

I250X-R Target 49.599	I251Y-R MCP 0 123.837
I250Y-R MCP 1 153.173	Position (mm)

Run# 367	Trigger					Date: 10/28/07
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1	S800	On shift: Bill Dan Michal
Target = (CH <sub>2</sub> )n: 25um; 75um; 100um, carbon, viewer, mask, blank						

MCP 1: 2.3E5; XFP: 7.1E5; Live trigger: \_\_\_\_\_  
 Bp: 2.064 (segment 8); Attenuation: 1  
 Comments: More data. After beam tuning,  
Bill patched up cables, and put MCP into ADL6#8

I250X-R Target 49.549	I251Y-R MCP 0 123.837
I250Y-R MCP 1 153.173	Position (mm)

Run# 368	Trigger					Date: 10/28/07
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1	S800	On shift: Michal Dan
Target = (CH <sub>2</sub> )n: 25um; 75um; 100um, carbon, viewer, mask, blank						

MCP 1: 2.2E5; XFP: 6.9E5; Live trigger: 80  
 Bp: 2.064 (segment 8); Attenuation: 1  
 Comments: More data

I250X-R Target 49.549	I251Y-R MCP 0 123.837
I250Y-R MCP 1 153.173	Position (mm)

Run# 369	Trigger					Date: 10/28/07
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1	S800	On shift: Michal Dan
Target = (CH <sub>2</sub> )n: 25um; 75um; 100um, carbon, viewer, mask, blank						

MCP 1: 2.2E5; XFP: 6.7E5; Live trigger: \_\_\_\_\_  
 Bp: 2.064 (segment 8); Attenuation: 1  
 Comments: Continue

I250X-R Target 49.549	I251Y-R MCP 0 123.837
I250Y-R MCP 1 153.173	Position (mm)

Run# 370	Trigger					Date: 10/28/07
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1	S800	On shift: Michal Dan
Target = (CH <sub>2</sub> )n: 25um; 75um; 100um, carbon, viewer, mask, blank						

MCP 1: 1.7E5; XFP: 6.3E5; Live trigger: 80  
 Bp: 2.064 (segment 8); Attenuation: 1  
 Comments: Continue data taking

I250X-R Target 49.549	I251Y-R MCP 0 123.837
I250Y-R MCP 1 153.173	Position (mm)

Run# 371	Trigger					Date: 10/28/07
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1	S800	On shift: Michal Dan
Target = (CH <sub>2</sub> )n: 25um; 75um; 100um, carbon, viewer, mask, blank						

MCP 1: 1.8E5; XFP: 6.2E5; Live trigger: 80  
 Bp: 2.064 (segment 8); Attenuation: 1

I250X-R Target	I251Y-R MCP 0

Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1	S800	On shift: Mich Dan, Sun
Target =( $\text{CH}_2\text{n}$ ): 25um; 75um; 100um, carbon, viewer, mask, blank						

MCP 1: 1.6ES; XFP: 5.6E5; Live trigger: 80  
Bp: 2.069 (segment 8); Attenuation: 1  
Comments: Data

I250X-R Target 49.594	I251Y-R MCP 0 123.837
I250Y-R MCP 1 153.173	Position (mm)

Run# 373	Trigger					Date: 10/28/07
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1	S800	On shift: Mich Dan, Beth, Sun
Target =( $\text{CH}_2\text{n}$ ): 25um; 75um; 100um, carbon, viewer, mask, blank						

MCP 1: 1.7E5; XFP: 6.3E5; Live trigger: 80  
Bp: 2.069 (segment 8); Attenuation: 1  
Comments: Data. After beam tune.

I250X-R Target 49.594	I251Y-R MCP 0 123.837
I250Y-R MCP 1 153.173	Position (mm)

Run# 374	Trigger					Date: 10/28/07
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1	S800	On shift: Mich Dan, Beth, Sun
Target =( $\text{CH}_2\text{n}$ ): 25um; 75um; 100um, carbon, viewer, mask, blank						

MCP 1: 1.8E5; XFP: 6.7E5; Live trigger: 85  
Bp: \_\_\_\_\_ (segment 8); Attenuation: \_\_\_\_\_  
Comments: Continue same.

I250X-R Target	I251Y-R MCP 0
I250Y-R MCP 1	Position (mm)

Run# 375	Trigger					Date: 10/28/07
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1	S800	On shift:
Target =( $\text{CH}_2\text{n}$ ): 25um; 75um; 100um, carbon, viewer, mask, blank						

MCP 1: 1.6ES; XFP: 6.3E5; Live trigger: 80  
Bp: \_\_\_\_\_ (segment 8); Attenuation: \_\_\_\_\_  
Comments: \_\_\_\_\_

I250X-R Target	I251Y-R MCP 0
I250Y-R MCP 1	Position (mm)

Run# 376	Trigger					Date: 10/28/07
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1	S800	On shift:
Target =( $\text{CH}_2\text{n}$ ): 25um; 75um; 100um, carbon, viewer, mask, blank						

MCP 1: 2.0E5; XFP: 7.4E5; Live trigger: 85  
Bp: \_\_\_\_\_ (segment 8); Attenuation: \_\_\_\_\_  
Comments: Beam boosted. Rest same.

I250X-R Target	I251Y-R MCP 0
I250Y-R MCP 1	Position (mm)

Run# 377

## Trigger

Beam:  $^{46}\text{Ar}$   
 E/A=33 MeV  
 Alpha source

Coin

Secondary

Ext 2

Ext 1

S800

On shift:

Target =  $(\text{CH}_2)_n$ : 25um; 75um; 100um, carbon, viewer, mask, blank

MCP 1: 1.4E5 ; XFP: 7.7E5 ; Live trigger: 90

Bp: \_\_\_\_\_ (segment 8); Attenuation: \_\_\_\_\_

Comments: Same as previous

I250X-R Target	I251Y-R MCP 0
I250Y-R MCP 1	Position (mm)

Run# 378

## Trigger

Date: 10/ / 07

Beam:  $^{46}\text{Ar}$   
 E/A=33 MeV  
 Alpha source

Coin

Secondary

Ext 2

Ext 1

S800

On shift:

Target =  $(\text{CH}_2)_n$ : 25um; 75um; 100um, carbon, viewer, mask, blank

MCP 1: 1.9E5 ; XFP: 7.7E5 ; Live trigger: 90

Bp: Some (segment 8); Attenuation: \_\_\_\_\_

Comments: Some Previous Run

I250X-R Target	I251Y-R MCP 0
I250Y-R MCP 1	Position (mm)

We see that the dead time numbers disagree

	before calibration	AST room	A later
CST OR	.625	.898	
" 1OR	.834	.908	
" 2OR	.305	.285	
3OR	.899	.906	
CST IN	.811	.893 <del>.892</del>	
MCP 0	.816	.896 <del>.892</del>	
MCP 1	.899	.903	
MCD ONSC	.849		

Question? Does the pulse mess up these numbers?

So the MCP deadtimes are right all along

Things to do

1. turn off CST power EF-EG pulse activated deadtimes - Blob
2. Check ratio of MCP1 / Secondary MCP1 / coincidence MCP1 / Ext 2 to run #
3. Fix got on MCP timescale

Found that the coincidence C + O were set on as requirement from producing an output from the MCP timescale gate

Run# 380	Trigger					Date: 10/27/07
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1	S800	On shift: Everyone
Target = (CH <sub>2</sub> )n; 25um; 75um; 100um, carbon, viewer, mask, blank → position: (shown in program)						
MCP 1: $200\text{k}$ XFP: $760\text{k}$ Live trigger: $82$ Bp: $2.069$ (segment 8) Attenuation: $1$ Comments: Data Run m cl down scale working	I250X-R Reaction	I251Y-R MCP0				
I250Y-R MCP1						

Down scaled factor =  $500 \times 500$ .

Run# 381	Trigger					Date: 10/28/07
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1	S800	On shift: Everyone
Target = (CH <sub>2</sub> )n; 25um; 75um; 100um, carbon, viewer, mask, blank → position: (shown in program)						
MCP 1: $600\text{k}$ XFP: $200\text{k}$ Live trigger: $60$ Bp: $2.069$ (segment 8) Attenuation: $3$ Comments: after reduced to 3 to do MCP 1 research	I250X-R Reaction	I251Y-R MCP0				
I250Y-R MCP1 $153.2$						

Run# 382	Trigger					Date: 10/28/07
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1	S800	On shift: Everyone
Target = (CH <sub>2</sub> )n; 25um; 75um; 100um, carbon, viewer, mask, blank						
MCP 1: $196\text{k}$ ; XFP: $760\text{k}$ ; Live trigger: $90$ Bp: _____ (segment 8); Attenuation: $1$ Comments: _____	I250X-R Target $49.6\text{ mm}$	I251Y-R MCP 0 $129.8$				
I250Y-R MCP 1 $153.2$						Position (mm)

coincidence with MCP

1. There are many more randoms with ~~the~~ higher beam intensity.

2. Random rate is rather not too small. The signal is 150 ns wide

The random rate is 250 ns  $\Rightarrow$  dead time  $\approx 3.7\%$

3. However the efficiency could be as low as  $20\%$ . This was examined by capturing ~~on~~ <sup>large</sup> E-OR = 5800 all at the MCP-E-OR. There ~~were~~ were about 40 good events and about 7 <sup>looking</sup> events with MCP + Noisy

4. The background rate of the MCP is about 20/s — negligible

5. The gate for the MCP is aligned with the MCP OR beam with a rather large time jitter of  $240 \text{ ns}$   $\text{MCP} - t_{\text{EOR}} \leq 340 \text{ ns}$ . I.e. the MCP can be 340 ns from the true coincidence and be OK and it can be up to 240 ns off.

6. While downstairs, I turned off the CS1 pulse — fixed the deadtime problem

7. I pushed the gate of the MCP into the bin better  
set DNSC factor to  $7.5 \times 10^5$

8. Found C and D well set to coincidence A was 1 h and B was and  
(B was the busy)

9. MCP downscale bit comes in

check MCP DNSC.live = 2690      DNSC.Raw = 2967

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Some thoughts about the efficiency:

1. we lose  $\sim 3\%$  in electronics deadtime. We need to test this by running with a reduced rate

2. we have a loss in efficiency. 1 loss in triggers  $\leftarrow$   
2 loss in corners

~~→~~ the loss in corner can be assessed by binned analysis  
— loss of triggers — effects data and normalization the same way  
— random rate should not be included in the correction, but this is tricky  
~~under~~ RANDOMS = Gates - self times stops? no.  
- rates — HIRA-MCP peak count  $\rightarrow$

1. check whether MCP and HVA and go into the TDC for S800.

2. Check whether Counts  $\rightarrow$  Count\_stop.

a.

~~Salient rule~~

$$R_{\text{MCP, live}} = R_{\text{Input}} \cdot E_{\text{MCP}} \cdot (1 - \Delta t R_{\text{MCP, raw}})$$

is the raw rate

~~Impulse~~

$$R_{\text{FF}}(R_{\text{raw}}) = E_{\text{FF}} \cdot (1 - \Delta t R_{\text{MCP, raw}})$$

~~electron rate~~

$$R_{\text{MCP, raw}} = R_{\text{Input}} \cdot E_{\text{FF}} \cdot (1 - \Delta t R_{\text{MCP, raw}})$$

~~beam FF~~

~~discrimination~~

$$R_{\text{FF}}(R_{\text{raw}}) = E_{\text{FF}} \cdot (1 - \Delta t R_{\text{MCP, raw}})$$

~~discrimination resolving time~~

$$R_{\text{MCP, raw}} = R_{\text{Input}} \cdot E_{\text{FF}} \cdot (1 - \Delta t R_{\text{MCP, raw}})$$

$$R_{\text{Input}} = R_{\text{beam}} + R_{\text{back}} \quad \text{if } R_{\text{beam}} \ll R_{\text{back}}, \text{ we are ok}$$

$$\text{Then } R_{\text{MCP, raw}} = R_{\text{beam}} \cdot E_{\text{FF}}(R=0) \cdot (1 - \Delta t R_{\text{MCP, raw}}) \Rightarrow R_{\text{beam}} = \frac{1}{E_{\text{FF}}}.$$

$$\text{DATA RATE} = \frac{R_{\text{beam}}}{R_{\text{MCP, raw}}} = \frac{dQ}{dR} \cdot \frac{dR}{dt} \cdot t_{\text{tgt}} \cdot v_{\text{L.b.}}$$

! lot has several factors 1 - computer 2 - electronics

Check this by changing the beam rule

$$\Rightarrow \frac{\text{DATA RATE}}{R_{\text{MCP, raw}}} = \frac{dQ}{dR} \cdot N_L \cdot \frac{t_{\text{tgt}}}{m_p} \cdot v_{\text{L.b.}} \quad \text{this is beamlets dependent as we can per collision with beam rep.}$$

~~1. R off  
2. R off  
3. R off~~

	Vbias(V)	I(μA)
10:04pm		
Back 0	100	4.08
Back 1	100	6.47
Back 2	100	5.84
Back 3	100	6.97
MCP 0	2280	71
MCP 1	2290	86

Run# 385	Trigger					Date: 10/ / 07				
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1	S800	On shift:				
Target = (CH <sub>2</sub> )n: 25um; 75um; 100um, carbon, viewer, mask, blank										
MCP 1: 175k; XFP: 7521; Live trigger: 90 Bp: 2.069 (segment 8); Attenuation: 1 Comments: Continue of previous run						<table border="1"> <tr> <td>I250X-R Target</td> <td>I251Y-R MCP 0</td> </tr> <tr> <td>I250Y-R MCP 1</td> <td>Position (mm)</td> </tr> </table>	I250X-R Target	I251Y-R MCP 0	I250Y-R MCP 1	Position (mm)
I250X-R Target	I251Y-R MCP 0									
I250Y-R MCP 1	Position (mm)									

11:35 beam to operator -- water leak @ ARTES, Dallas (leaking)  
 Vlad and Pavel checking Table 19 CSA noise  
 01:45 am beam back

Run# 386	Trigger					Date: 10/ 29/ 07				
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1	S800	On shift: VTD				
Target = (CH <sub>2</sub> )n: 25um; 75um; 100um, carbon, viewer, mask, blank										
MCP 1: 200k ; XFP: 730-690k; Live trigger: 95 Bp: 2.069 (segment 8); Attenuation: 1 Comments: Continue on after leak repair						<table border="1"> <tr> <td>I250X-R Target</td> <td>I251Y-R MCP 0</td> </tr> <tr> <td>I250Y-R MCP 1</td> <td>Position (mm)</td> </tr> </table>	I250X-R Target	I251Y-R MCP 0	I250Y-R MCP 1	Position (mm)
I250X-R Target	I251Y-R MCP 0									
I250Y-R MCP 1	Position (mm)									

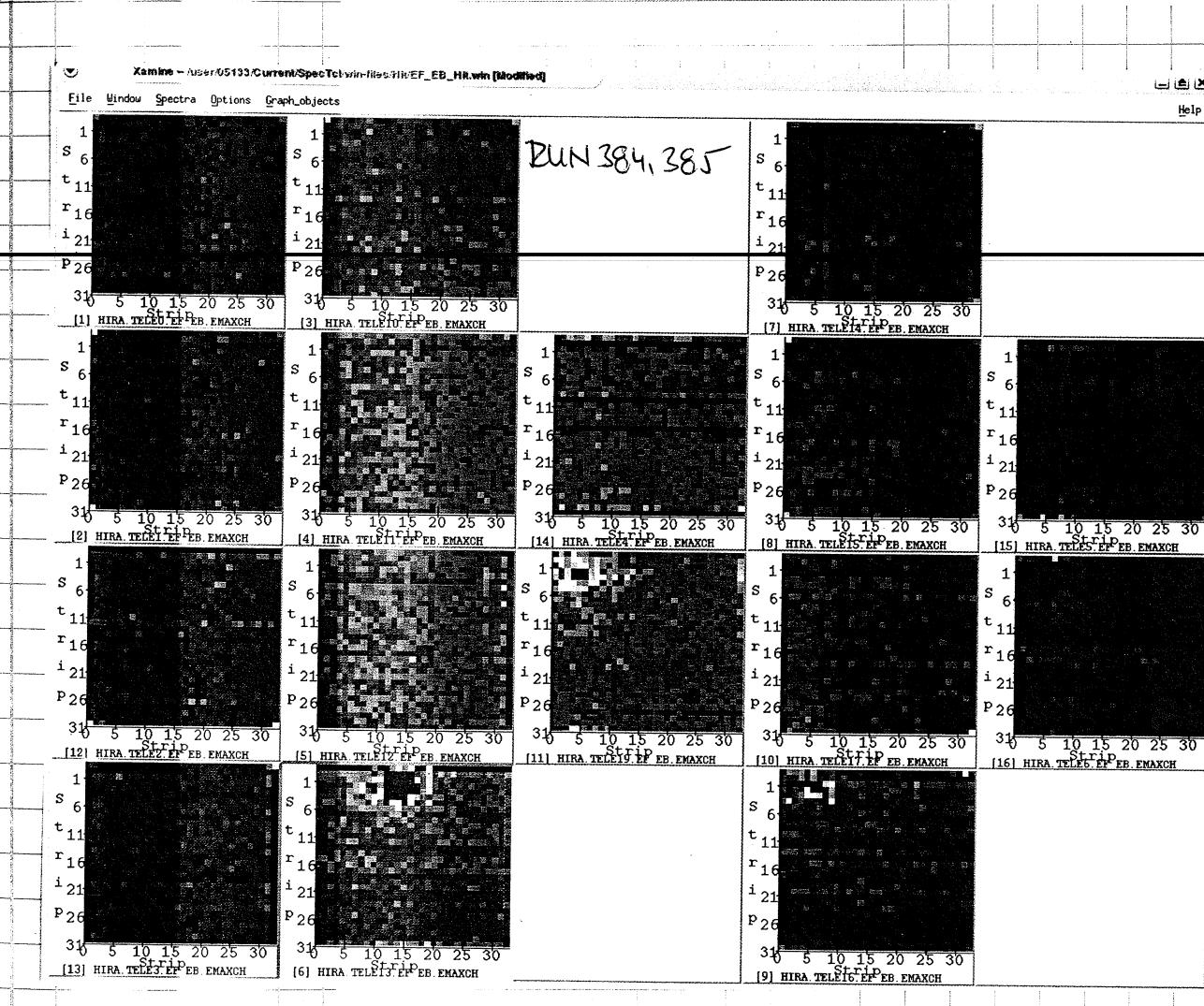
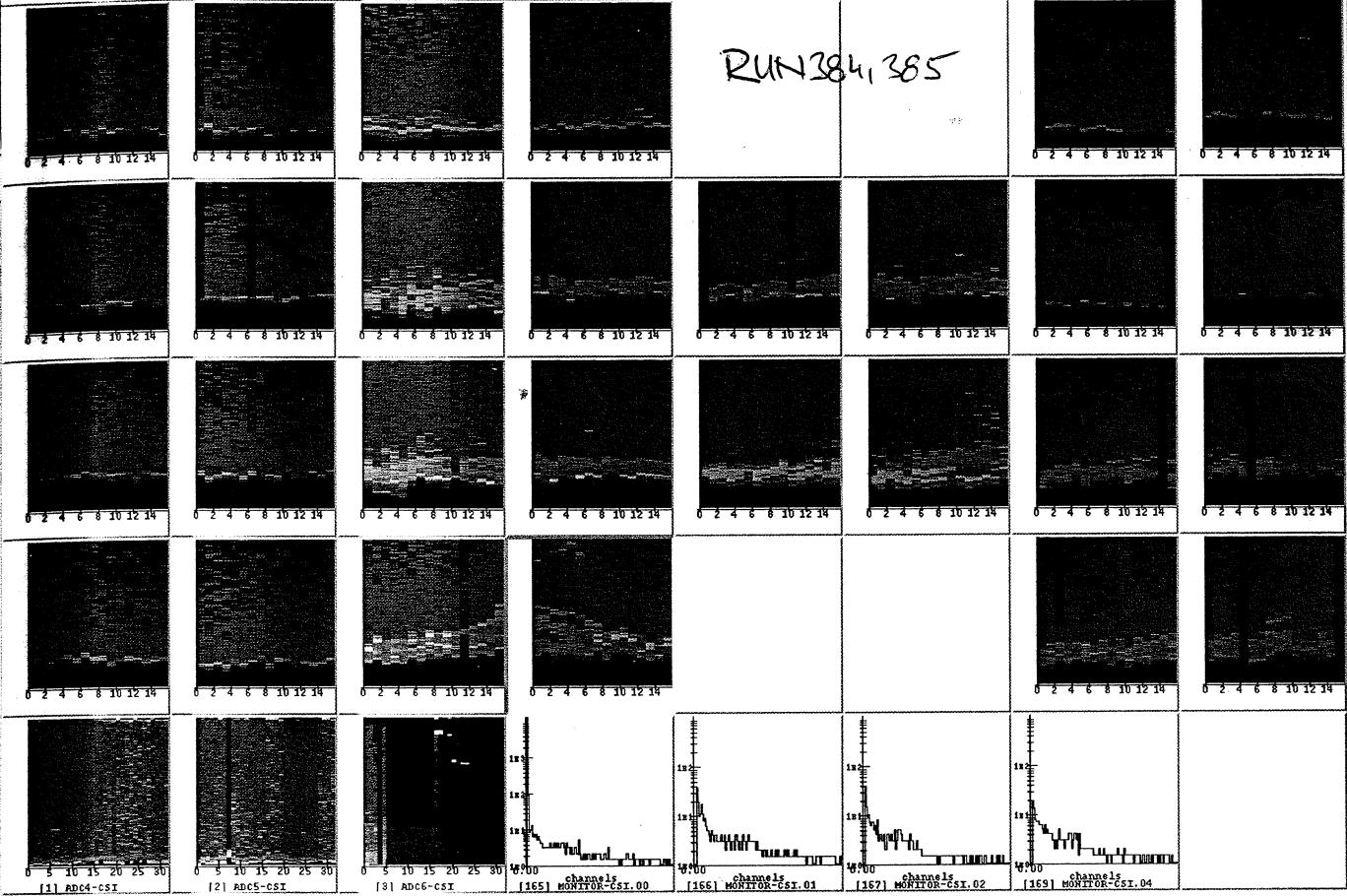
beam intensity dropped down to ~ 5% during this run  
 giving key to operators for return  
 beam returned - quick ion source adjustment - see whether  
 the beam is stable now

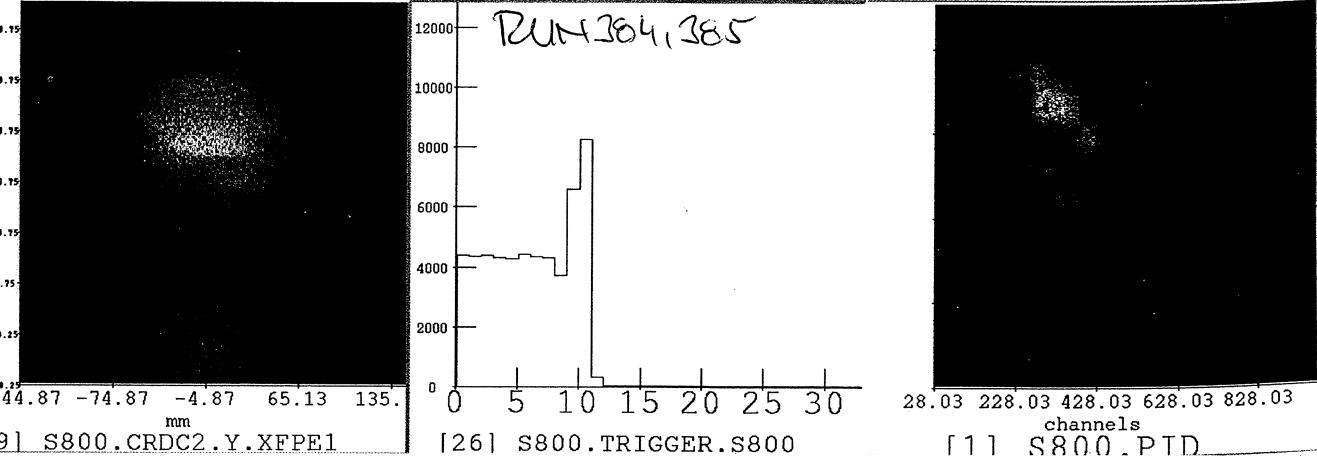
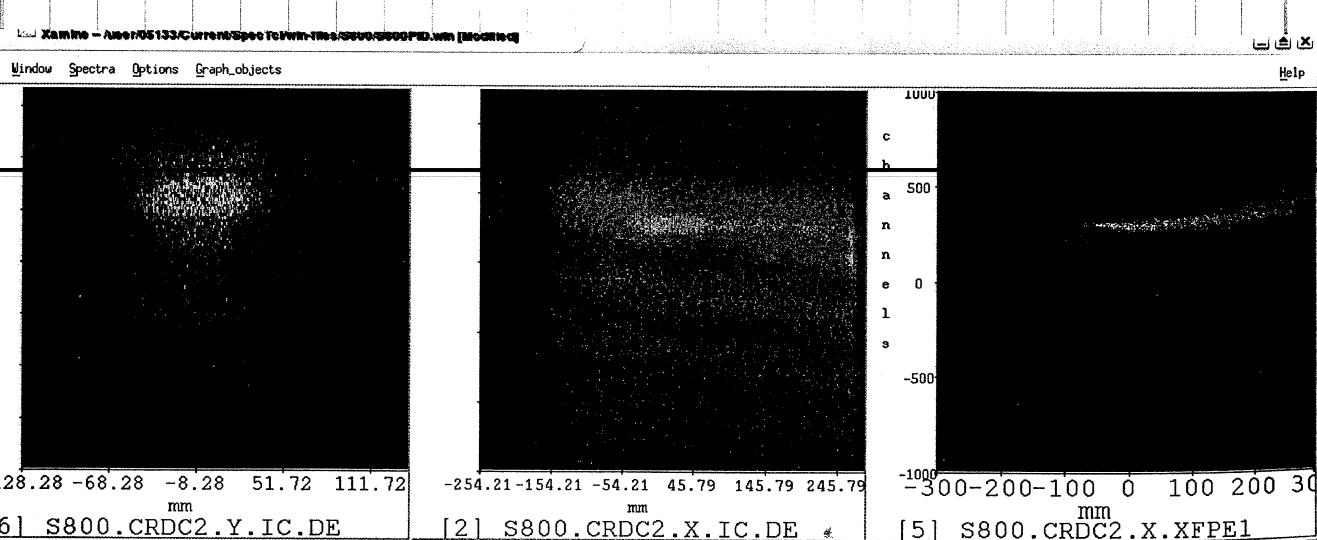
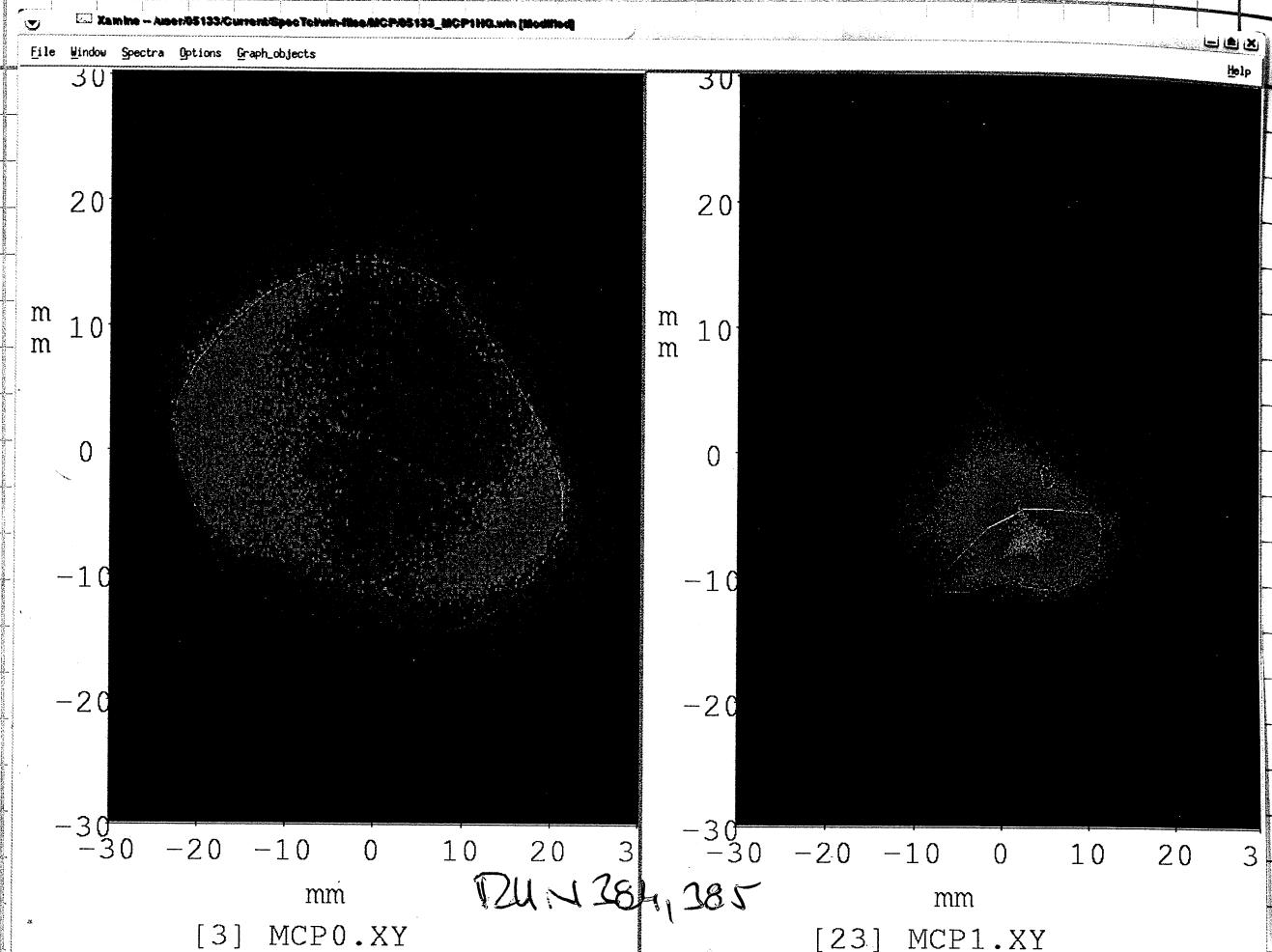
User	Group	Name	VSet	ISet	VMax	IMax	Pw	Status	On#
		PS10	100,00 V	4,00 mA	100,75 V	0,64 mA On			0,00,00
		PS11	200,00 V	4,00 mA	200,75 V	1,28 mA On			0,00,00
		PS12	210,00 V	4,00 mA	209,50 V	0,70 mA On			0,00,00
		PS13	220,00 V	4,00 mA	210,50 V	1,36 mA On			0,00,00
		PS14	110,00 V	4,00 mA	110,00 V	1,40 mA On			0,00,00
		PS15	150,00 V	4,00 mA	250,50 V	1,30 mA On			0,00,00
		PS16	250,00 V	4,00 mA	250,50 V	1,30 mA On			0,00,00
		PS17	300,00 V	4,00 mA	310,75 V	2,02 mA On			0,00,00
		PS18	310,00 V	4,00 mA	310,25 V	1,98 mA On			0,00,00
		PS19	310,00 V	4,00 mA	299,50 V	0,70 mA On			0,00,00
		PS20	100,00 V	4,00 mA	100,50 V	1,67 mA On			0,00,01
		PS21	200,00 V	4,00 mA	190,75 V	1,68 mA On			0,00,01
		PS22	150,00 V	4,00 mA	120,50 V	1,22 mA On			0,00,01
		PS23	200,00 V	4,00 mA	200,50 V	1,56 mA On			0,00,01
		PS24	240,00 V	4,00 mA	240,00 V	2,40 mA On			0,00,01
		PS25	340,00 V	4,00 mA	340,50 V	1,32 mA On			0,00,01
		PS26	200,00 V	4,00 mA	200,50 V	1,46 mA On			0,00,01

User	Group	Name	VSet	ISet	VMax	IMax	Pw	Status	On#
		PH1	5,00 V	2,0 mA	7,10 V	0,0 mA On			0,03,000
		PH11	5,00 V	2,0 mA	6,90 V	0,1 mA On			0,03,001
		PH12	5,00 V	2,0 mA	7,00 V	0,0 mA On			0,03,002
		PH13	6,00 V	2,0 mA	7,70 V	0,0 mA On			0,03,004
		PH14	6,00 V	2,0 mA	5,45 V	0,0 mA On			0,03,006
		PH15	0,00 V	2,0 mA	0,10 V	0,0 mA Off			0,03,007
		PH16	0,00 V	2,0 mA	0,25 V	0,0 mA Off			0,03,008
		PH17	5,00 V	2,0 mA	8,85 V	0,2 mA On			0,03,010
		PH18	7,00 V	2,0 mA	6,90 V	0,0 mA On			0,05,000
		PH19	9,00 V	2,0 mA	8,90 V	0,1 mA On			0,05,001
		PH20	6,00 V	2,0 mA	6,05 V	0,2 mA On			0,05,002
		PH21	7,00 V	2,0 mA	7,10 V	0,5 mA On			0,05,003
		PH22	7,00 V	2,0 mA	6,90 V	0,0 mA On			0,05,007
		PH23	8,00 V	2,0 mA	7,95 V	0,4 mA On			0,05,008
		PH24	8,00 V	2,0 mA	7,75 V	0,0 mA On			0,05,009
		PH25	7,00 V	2,0 mA	6,75 V	0,0 mA On			0,05,010

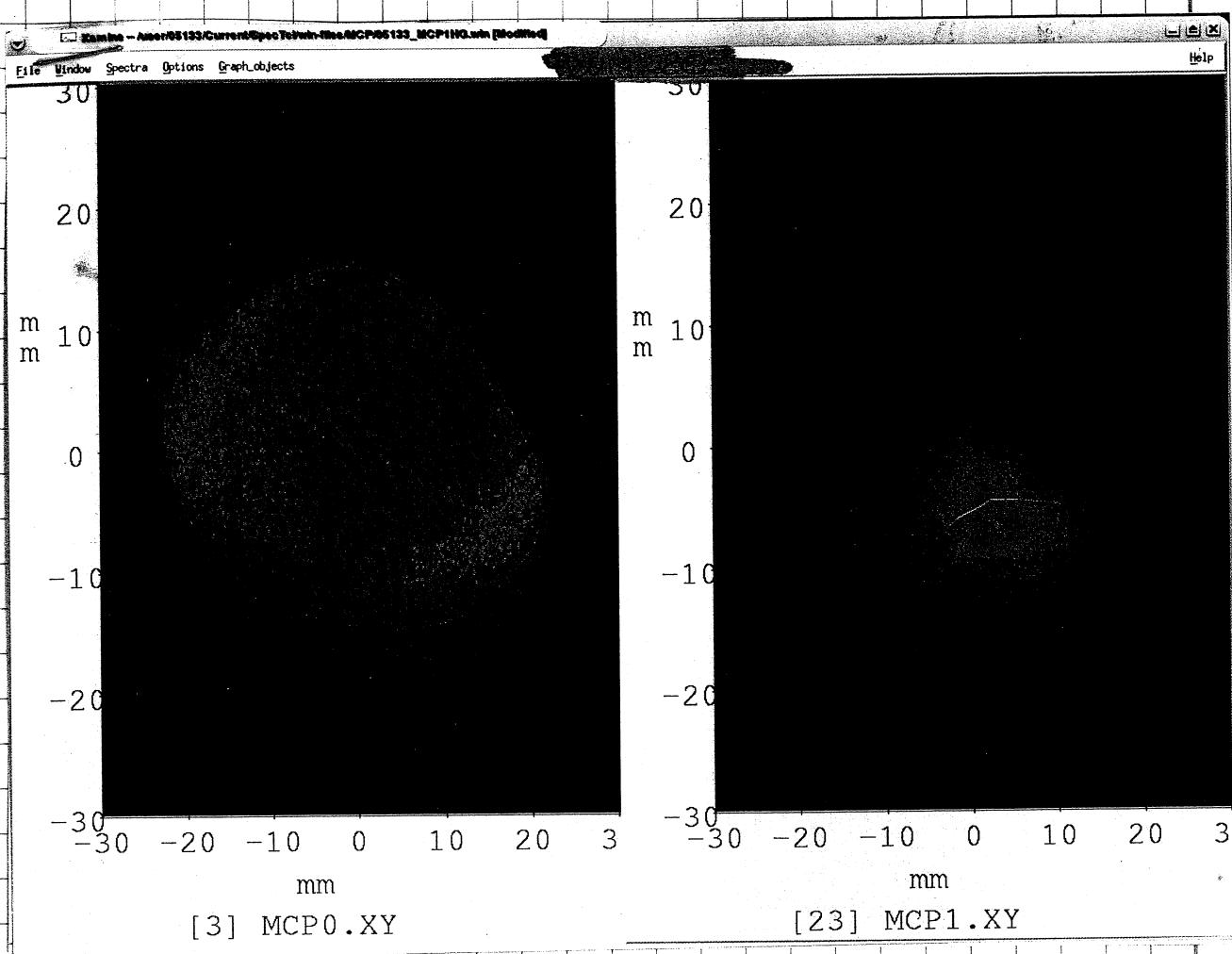
BlankEdit Group 02 LocEn V0 10 N + CAEN SY2527

User	Group	Name	VSet	ISet	VMax	IMax	Pw	Status	On#
		PS11	80,00 V	3,0 mA	80,05 V	0,0 mA On			0,03,005
		PS12	80,00 V	3,0 mA	79,90 V	1,2 mA On			0,03,011
		PS13	80,00 V	3,0 mA	79,85 V	0,0 mA On			0,05,005
		PS14	80,00 V	3,0 mA	80,05 V	0,1 mA On			0,05,011





# BETAM SPOT CHANGE track down:



beam spot changed between Run 378 and 379,  
no record of tuning in Logbook, no changes in Barney  
between those two runs -.

→ Since the main spot still within the gate and MCP0 is  
the same width we can keep on running

Run# 387	Trigger					Date: 10/29/07
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1	S800	On shift: $V + D$
Target = $(\text{CH}_2)_n$ : 25um; 75um; 100um, carbon, viewer, mask, blank						

MCP 1: 210%; XFP: 770%; Live trigger: 90

Bp: 7.069 (segment 8); Attenuation:

Comments: continuation of date taking  
after beam retune (source adj)

I250X-R Target	I251Y-R MCP 0
I250Y-R MCP 1	Position (mm)

Run# 388	Trigger					Date: 10/29/07
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1	S800	On shift: V+D
Target = (CH <sub>2</sub> )n: 25um; 75um; 100um, carbon, viewer, mask, blank						

MCP 1: 1918 ; XFP: 730k ; Live trigger: 92

Bp: 2.069 (segment 8); Attenuation: 1

Comments: continuation of data taking

I250X-R Target 49.199	I251Y-R MCP 0 123.837
I250Y-R MCP 1 153.173	Position (mm)

	Vbias(V)	I(μA)
Back 0	100	4.08
Back 1	100	6.49
Back 2	100	5.35-5
Back 3	100	6.99-7.02
MCP 0	2280	71
MCP 1	2290	86

Run# 389	Trigger					Date: 10/29/07
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1	S800	On shift: V+D+Mc(Mike)
Target = (CH <sub>2</sub> )n: 25um; 75um; 100um, carbon, viewer, mask, blank						

MCP 1: 1908 ; XFP: 730k ; Live trigger: 89

Bp: 2.069 (segment 8); Attenuation: 1

Comments: continuation of data taking

I250X-R Target 49.199	I251Y-R MCP 0 123.837
I250Y-R MCP 1 153.173	Position (mm)

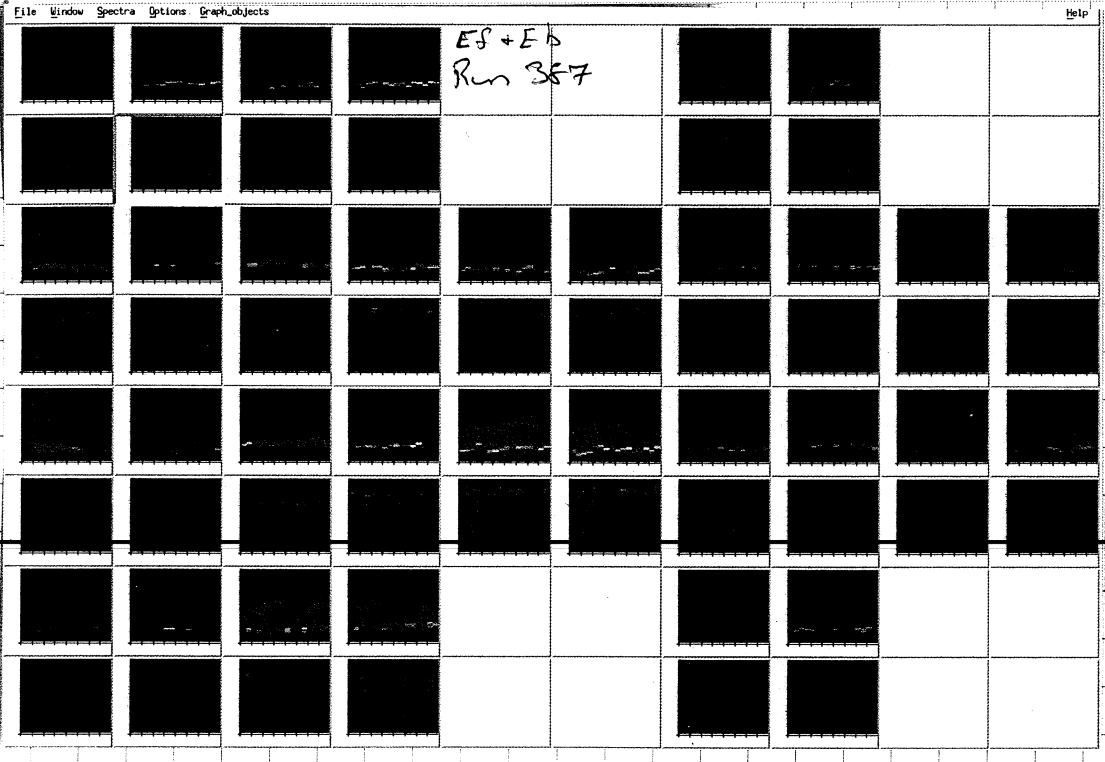
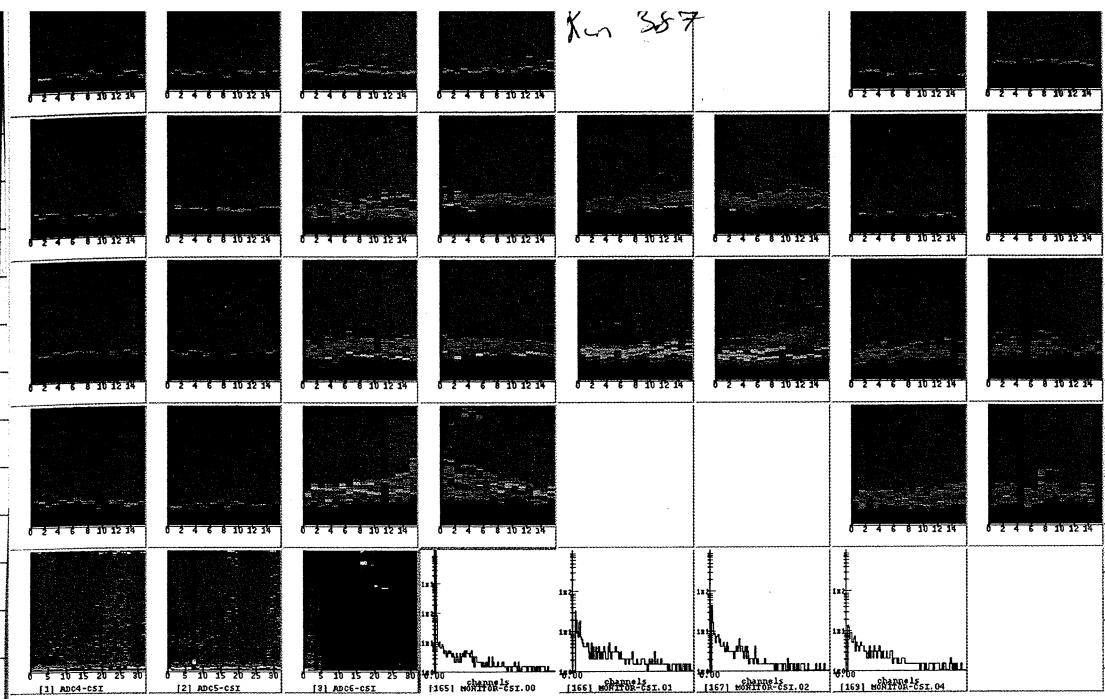
Run# 390	Trigger					Date: 10/29/07
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1	S800	On shift: V+D+Mc(Mike)
Target = (CH <sub>2</sub> )n: 25um; 75um; 100um, carbon, viewer, mask, blank						

MCP 1: 190,000 ; XFP: 730,000 ; Live trigger: 89

Bp: (segment 8); Attenuation: 1

Comments: continuing to take data

I250X-R Target 49.599	I251Y-R MCP 0 123.837
I250Y-R MCP 1 153.173	Position (mm)



Run# 371	Trigger					Date: 10/29/07
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	<input checked="" type="radio"/> Coin	<input checked="" type="radio"/> Secondary	<input checked="" type="radio"/> Ext 2	Ext 1	S800	On shift: $V+D+M+\mu$
Target = (CH <sub>2</sub> ) <sub>n</sub> : <u>25um</u> ; 75um; 100um, carbon, viewer, mask, blank						

MCP 1: 190K; XFP: 730K; Live trigger: 90

B $\rho$ : \_\_\_\_\_ (segment 8); Attenuation: 1

Comments: More data, More data, More data.

I250X-R Target 49.599	I251Y-R MCP 0 173.837
I250Y-R MCP 1 153.173	Position (mm)

- operator takes the key to fix problem with ion source

Run# 392	Trigger					Date: 10/29/07
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1	S800	On shift: V+D et al
Target = $(\text{CH}_2)_n$ : 25um, 75um; 100um, carbon, viewer, mask, blank						

MCP 1: \_\_\_\_\_ ; XFP: \_\_\_\_\_ ; Live trigger: \_\_\_\_\_

Bp: \_\_\_\_\_ (segment 8); Attenuation: \_\_\_\_\_

Comments: continuation of data taking  
after ion source fix

I250X-R Target 49.599	I251Y-R MCP 0 123.837
I250Y-R MCP 1 153.173	Position (mm)

8:38am - beam gone, ion source problem - Larry Tobey called

9:06am - key back from operators

Run# 393	Trigger					Date: 10/29/07
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1	S800	On shift: V+D et al
Target = $(\text{CH}_2)_n$ : 25um, 75um; 100um, carbon, viewer, mask, blank						

MCP 1: \_\_\_\_\_ ; XFP: \_\_\_\_\_ ; Live trigger: \_\_\_\_\_

Bp: \_\_\_\_\_ (segment 8); Attenuation: \_\_\_\_\_

Comments: continuation of data taking  
after ion source fix

I250X-R Target 49.599	I251Y-R MCP 0 123.837
I250Y-R MCP 1 153.173	Position (mm)

Run# 394	Trigger					Date: 10/01/07
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1	S800	On shift: Dan Michel Sun
Target = $(\text{CH}_2)_n$ : 25um, 75um; 100um, carbon, viewer, mask, blank						

MCP 1: 1.6E5 ; XFP: 7.2E5 ; Live trigger: 90

Bp: 2.0E1 (segment 8); Attenuation: 1

Comments: Data

I250X-R Target 49.599	I251Y-R MCP 0 123.837
I250Y-R MCP 1 153.173	Position (mm)

Run# 395	Trigger					Date: 10/04/07
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1	S800	On shift: Dan Michel Sun
Target = $(\text{CH}_2)_n$ : 25um, 75um; 100um, carbon, viewer, mask, blank						

MCP 1: 1.6E5 ; XFP: 6.8E5 ; Live trigger: 85

Bp: \_\_\_\_\_ (segment 8); Attenuation: \_\_\_\_\_

Comments: continue previous

I250X-R Target	I251Y-R MCP 0
I250Y-R MCP 1	Position (mm)

Talk to Dan Marpa, decide to raise MCP1 voltage by 50V.

Run# 396	Trigger					Date: 10/29/07
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1	S800	On shift: Betty Dan Micha Sun
Target = (CH <sub>2</sub> )n: 25um; 75um; 100um, carbon, viewer, mask, blank						

MCP 1: 1.8 ES ; XFP: 6.5 ES ; Live trigger: 85  
 B $\rho$ : 2.069 (segment 8); Attenuation: 1  
 Comments: increased MCP1 voltage. Data.  
 MCP1/MCP0 ratio improves

I250X-R Target 49.594	I251Y-R MCP 0 123.837
I250Y-R MCP 1 153.173	Position (mm)

Run# 397	Trigger					Date: 10/29/07
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1	S800	On shift:
Target = (CH <sub>2</sub> )n: 25um; 75um; 100um, carbon, viewer, mask, blank						

MCP 1: 2.0 ES ; XFP: 6.5 ES ; Live trigger: 40  
 B $\rho$ : \_\_\_\_\_ (segment 8); Attenuation: \_\_\_\_\_  
 Comments: Raised MCP1 voltage to 2400 V.  
 Rest same. MCP0/MCP1 ~ 1.1

I250X-R Target	I251Y-R MCP 0
I250Y-R MCP 1	Position (mm)

Run# 398	Trigger					Date: 10/29/07
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1	S800	On shift:
Target = (CH <sub>2</sub> )n: 25um; 75um; 100um, carbon, viewer, mask, blank						

MCP 1: 2.0 ES ; XFP: 6.2 ES ; Live trigger: 80  
 B $\rho$ : \_\_\_\_\_ (segment 8); Attenuation: \_\_\_\_\_  
 Comments: Raised MCP1 voltage to 2450 V.  
 Rest is same

I250X-R Target	I251Y-R MCP 0
I250Y-R MCP 1	Position (mm)

When you raise voltage, MCP0/MCP1 ratio  
 and efficiency both immediately increase

Run# 400	Trigger					Date: 10/29/07
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1	S800	On shift: Micha Dan Sun
Target = (CH <sub>2</sub> )n: 25um; 75um; 100um, carbon, viewer, mask, blank						

MCP 1: 1.5 ES ; XFP: 7.8 ES ; Live trigger: 100  
 B $\rho$ : 2.069 (segment 8); Attenuation: 1  
 Comments: Continue.

77.25

I250X-R Target 49.594	I251Y-R MCP 0 123.837
I250Y-R MCP 1 153.173	Position (mm)

In Run 400, I noticed that towards the end of the run, the MCP and live trigger drop in efficiency but the XFP beam intensities remain the same.

Change back to long C foil

Run# 401	402	Trigger	Date: 10/ / 07
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin Secondary Ext 2 Ext 1 S800		On shift:
Target = $(\text{CH}_2)_n$ : 25um; 75um; 100um, carbon, viewer, mask, blank			

MCP 1: 155K ; XFP: 7.5x10<sup>5</sup>; Live trigger: 75  
 Bp: 2.069 (segment 8); Attenuation: x1  
 Comments: see note above

I250X-R Target	I251Y-R MCP 0
I250Y-R MCP 1	Position (mm)

## Background Measurements

Run# 403	Trigger	Date: 10/ / 07
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin Secondary Ext 2 Ext 1 S800	On shift: Betty Micha.
Target = $(\text{CH}_2)_n$ : 25um; 75um; 100um, carbon, viewer, mask, blank		

MCP 1: ; XFP: 1200 ; Live trigger: 236  
 Bp: 2.069 (segment 8); Attenuation: 1K  
 Comments: Transmission is only ~20%  
 (Bogin)

I250X-R Target	I251Y-R MCP 0
243.88	123.85
I250Y-R MCP 1	Position (mm)
153.2	

Daniel Bogin & Tom Ginter are investigating what happens to the time.

Run# 406	Trigger	Date: 10/ / 07
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin Secondary Ext 2 Ext 1 S800	On shift: Betty Micha.
Target = $(\text{CH}_2)_n$ : 25um; 75um; 100um, carbon, viewer, mask, blank		

blank target  
 MCP 1: ; XFP: ; Live trigger: 1K  
 Bp: (segment 8); Attenuation:  
 Comments: S800 trigger

I250X-R Target	I251Y-R MCP 0
202.15	123.85
I250Y-R MCP 1	Position (mm)
153.2	

Run# 406

Trigger(changed to MCP trigger) Date: 10/ / 07

Beam:  $^{46}\text{Ar}$   
E/A=33 MeV  
Alpha source

Coin	Secondary	Ext 2	Ext 1	S800
------	-----------	-------	-------	------

Target = (CH<sub>2</sub>)n: 25um; 75um; 100um, carbon, viewer, mask, blank

On shift:

MCP 1: 300 ; XFP: 1100 ; Live trigger: 252

I250X-R Target	I251Y-R MCP 0
----------------	---------------

Bp: \_\_\_\_\_ (segment 8); Attenuation: \_\_\_\_\_

I250Y-R MCP 1	Position (mm)
---------------	---------------

Comments: dipole set to 65% S800 transmission  
beam spot on MCP0 changedto be higher. ( $^{36}\text{Ar}$  settings)

Run# 407

Trigger MCP trigger

Date: 10/ / 07

Beam:  $^{46}\text{Ar}$   
E/A=33 MeV  
Alpha source

Coin	Secondary	Ext 2	Ext 1	S800
------	-----------	-------	-------	------

Target = (CH<sub>2</sub>)n: 25um; 75um; 100um, carbon, viewer, mask, blank

On shift:

MCP 1: 2140 ; XFP: 110 ; Live trigger: 235

I250X-R Target	I251Y-R MCP 0
----------------	---------------

Bp: 2.1308 (segment 8); Attenuation: 1k.

I250Y-R MCP 1	Position (mm)
---------------	---------------

Comments: \_\_\_\_\_

Run# 408

Trigger MCP trigger

Date: 10/ / 07

Beam:  $^{46}\text{Ar}$   
E/A=33 MeV  
Alpha source

Coin	Secondary	Ext 2	Ext 1	S800
------	-----------	-------	-------	------

Target = (CH<sub>2</sub>)n: 25um; 75um; 100um, carbon, viewer, mask, blank

On shift:

beam bgo

MCP 1: 234 ; XFP: 110 ; Live trigger: \_\_\_\_\_

I250X-R Target	I251Y-R MCP 0
----------------	---------------

Bp: 2.0708 (segment 8); Attenuation: \_\_\_\_\_

243.88	123.85
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Comments: \_\_\_\_\_

I250Y-R MCP 1	Position (mm)
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153.2

Bf = reaction Bp = 2.08

Carbon target

Run 407 AT No beam

Live trigger XFP MCP 0

409

Sov

0

MCP 1

410 1k

No beam

Sov

0

0

411

 $^{46}\text{Ar}$ 

Sov

0

0

326

300

Cannot do rate ramp due to a service being the detectors

6:15 pm

Run# 411, 412	Trigger					Date: 10/29/07
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1	S800	On shift: Everyone
						Target = (CH <sub>2</sub> )n: 25um; 75um; 100um, carbon, viewer, mask, blank

MCP 1: 120k; XFP: 630k; Live trigger: 580Bp: 2.0/100 (segment 8); Attenuation:Comments: Carbon background  
trigger mostly on alphas, see d's in CsI  
monitors

I250X-R Target 243.8	I251Y-R MCP 0 23.8
I250Y-R MCP 1 229.45	Position (mm)

Run# 413	Trigger					Date: 10/ / 07
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1	S800	On shift:
						Target = (CH <sub>2</sub> )n: 25um; 75um; 100um, carbon, viewer, mask, blank

MCP 1: \_\_\_\_\_; XFP: \_\_\_\_\_; Live trigger: \_\_\_\_\_

Bp: \_\_\_\_\_ (segment 8); Attenuation: \_\_\_\_\_

Comments: Carbon Target, CRDC 1  
mask

I250X-R Target	I251Y-R MCP 0
I250Y-R MCP 1	Position (mm)

Run# 414	Trigger					Date: 10/ / 07
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1	S800	On shift:
						Target = (CH <sub>2</sub> )n: 25um; 75um; 100um, carbon, viewer, mask, blank

MCP 1: 3611; XFP: 742k; Live trigger: 55

Bp: \_\_\_\_\_ (segment 8); Attenuation: \_\_\_\_\_

Comments: Carbon Target  
CRDC 2 Mask

I250X-R Target	I251Y-R MCP 0
I250Y-R MCP 1	Position (mm)

Run# 415	Trigger					Date: 10/ / 07
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1	S800	On shift:
						Target = (CH <sub>2</sub> )n: 25um; 75um; 100um, carbon, viewer, mask, blank

MCP 1: 13k; XFP: 28k; Live trigger: 113Bp: \_\_\_\_\_ (segment 8); Attenuation: 5Comments: MCP phi mask calibration

I250X-R Target 243.9	I251Y-R MCP 0 200.6
I250Y-R MCP 1 153.2	Position (mm)

Run# 416

## Trigger

Date: 10/ / 07

Beam:  $^{46}\text{Ar}$   
E/A=33 MeV  
Alpha source

Coin

Secondary

Ext 2

Ext 1

S800

Target = (CH<sub>2</sub>)n: 25um; 75um; 100um, carbon, viewer, mask, blank

On shift:

MCP 1: \_\_\_\_\_ ; XFP: \_\_\_\_\_ ; Live trigger: \_\_\_\_\_

Bp: 20709 (segment 8); Attenuation: \_\_\_\_\_

Comments: MCP1 mask calibration

I250X-R Target 243.9	I251Y-R MCP 0 123.85
I250Y-R MCP 1 229.45	Position (mm)

Run# 417

## Trigger

Date: 10/ / 07

Beam:  $^{46}\text{Ar}$   
E/A=33 MeV  
Alpha source

Coin

Secondary

Ext 2

Ext 1

S800

Target = (CH<sub>2</sub>)n: 25um; 75um; 100um, carbon, viewer, mask, blank

I250X-R Target 243.9	I251Y-R MCP 0 123.85
I250Y-R MCP 1 229.45	Position (mm)

MCP 1: 720; XFP: 700; Live trigger: 103

Bp: 20709 (segment 8); Attenuation: \_\_\_\_\_

Comments: MCP1 mask calibration  
selected beam in progress

Run# 418

## Trigger

Date: 10/ / 07

Beam:  $^{46}\text{Ar}$   
E/A=33 MeV  
Alpha source

Coin

Secondary

Ext 2

Ext 1

S800

Target = (CH<sub>2</sub>)n: 25um; 75um; 100um, carbon, viewer, mask, blank

I250X-R Target	I251Y-R MCP 0
I250Y-R MCP 1	Position (mm)

MCP 1: \_\_\_\_\_ ; XFP: \_\_\_\_\_ ; Live trigger: \_\_\_\_\_

Bp: 20709 (segment 8); Attenuation: 10

Comments: HIRA trigger terminated  
by 0.1's (MCP1 mask in my middle)

Run# 419

## Trigger

Date: 10/ / 07

Beam:  $^{46}\text{Ar}$   
E/A=33 MeV  
Alpha source

Coin

Secondary

Ext 2

Ext 1

S800

Target = (CH<sub>2</sub>)n: 25um; 75um; 100um, carbon, viewer, mask, blank

I250X-R Target	I251Y-R MCP 0
I250Y-R MCP 1	Position (mm)

MCP 1: \_\_\_\_\_ ; XFP: \_\_\_\_\_ ; Live trigger: \_\_\_\_\_

Bp: 20709 (segment 8); Attenuation: \_\_\_\_\_

Comments: MCP1 trigger HIRA  
MCP0 mask in my middle

Run# 421	Trigger					Date: 10/ / 07
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1	S800	On shift:
				*		
Target = $(\text{CH}_2)_n$ : 25um; 75um; 100um, carbon, viewer, mask, blank						

Run# 422	Trigger					Date: 10/ / 07
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1	S800	On shift:
						Target = $(\text{CH}_2)_n$ : 25um; 75um; 100um, carbon, viewer, mask, blank
MCP 1: 700 ; XFP: 2500 ; Live trigger: 131 B $\beta$ : 2.079 (segment 8); Attenuation: 100 Comments: target mask calib. slits 0.65, some beam in CR06	I250X-R Target 262.15	I251Y-R MCP 0 123.85	I250Y-R MCP 1 153.2	Position (mm)		

$(\text{Ct}_2)_n$  target; two trigger; second

Run# 423	Trigger					Date: 10/ 07
Beam: $^{46}\text{Ar}$						On shift: P; 11, Beta Andy, Jenny, Al
E/A = 33 MeV	Coin	Secondary	Ext 2	Ext 1	S800	
Alpha source	Target = $(\text{CH}_2)_n$ ; 25um; 75um; 100um, carbon, viewer, mask, blank					
MCP 1: Book ; XFP: $\frac{1}{16} \times 10^3$ ; Live trigger: 94	I250X-R Target 49.6	I251Y-R MCP 0 123.85				
Bp: 2.0709 (segment 8); Attenuation:	I250Y-R MCP 1 153.2	Position (mm)				
Comments: 51.7 (4.6) beam in CRDC in the begin of the run. Date						

Ran H Ramp.  
11-215

425 110 beam

426 June 10  
" -

427 547 135

428      10  
51-9      30

429 30  
430 30

Run# 431  
Beam:  $^{46}\text{Ar}$   
E/A=33 MeV  
Alpha source

### Trigger

Coin

Secondary

Ext 2

Ext 1

S800

Date: 10/30/07

On shift: B, H, Betty,  
Vlad, Daniela, Andy,  
Jenny, Alisse

Target =  $(\text{CH}_2)\text{n}$ : 25um; 75um; 100um, carbon, viewer, mask, blank

MCP 1: ~~270k~~; XFP: ~~650k~~; Live trigger: 80

Bp: \_\_\_\_\_ (segment 8); Attenuation: 1

Comments: Pat a run

I250X-R Target <u>49.6</u>	I251Y-R MCP 0 <u>123.84</u>
I250Y-R MCP 1 <u>153.2</u>	Position (mm)

Run# 432

### Trigger

Date: 10/30/07

Beam:  $^{46}\text{Ar}$   
E/A=33 MeV  
Alpha source

Coin

Secondary

Ext 2

Ext 1

S800

On shift:

V+D

Target =  $(\text{CH}_2)\text{n}$ : 25um; 75um; 100um, carbon, viewer, mask, blank

MCP 1:  $\sim 300k$ ; XFP:  $\sim 700k$ ; Live trigger:  $\sim 85$

Bp: \_\_\_\_\_ (segment 8); Attenuation: 1

Comments: more data taking

I250X-R Target <u>49.6</u>	I251Y-R MCP 0 <u>123.84</u>
I250Y-R MCP 1 <u>153.17</u>	Position (mm)

Run# 433

### Trigger

Date: 10/30/07

Beam:  $^{46}\text{Ar}$   
E/A=33 MeV  
Alpha source

Coin

Secondary

Ext 2

Ext 1

S800

On shift:

V+D

Target =  $(\text{CH}_2)\text{n}$ : 25um; 75um; 100um, carbon, viewer, mask, blank

MCP 1:  $\sim 300k$ ; XFP:  $\sim 700k$ ; Live trigger:  $\sim 85$

Bp: \_\_\_\_\_ (segment 8); Attenuation: 1

Comments: more data taking

I250X-R Target <u>49.6</u>	I251Y-R MCP 0 <u>123.84</u>
I250Y-R MCP 1 <u>153.17</u>	Position (mm)

Run# 434

### Trigger

Date: 10/30/07

Beam:  $^{46}\text{Ar}$   
E/A=33 MeV  
Alpha source

Coin

Secondary

Ext 2

Ext 1

S800

On shift:

V+D

Target =  $(\text{CH}_2)\text{n}$ : 25um; 75um; 100um, carbon, viewer, mask, blank

MCP 1:  $\sim 300k$ ; XFP:  $\sim 700k$ ; Live trigger:  $\sim 85$

Bp: \_\_\_\_\_ (segment 8); Attenuation: 1

Comments: more data taking

I250X-R Target <u>49.6</u>	I251Y-R MCP 0 <u>123.84</u>
I250Y-R MCP 1 <u>153.17</u>	Position (mm)

Run# 435	Trigger					Date: 10/30/07
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1	S800	On shift: V+D
Target = (CH <sub>2</sub> )n: 25um; 75um; 100um, carbon, viewer, mask, blank						
MCP 1: ~45k ; XFP: ~95k ; Live trigger: ~50 Bp: _____ (segment 8); Attenuation: 10 (?) Comments: data taking with increased att. factor ( $\equiv 10$ )	I250X-R Target 49.6	I251Y-R MCP 0 123.84	I250Y-R MCP 1 153.17	Position (mm)		

Run# 436	Trigger					Date: 10/30/07
Beam: $^{46}\text{Ar}$ E/A=33 MeV Alpha source	Coin	Secondary	Ext 2	Ext 1	S800	On shift: V+D
Target = (CH <sub>2</sub> )n: 25um; 75um; 100um, carbon, viewer, mask, blank						
MCP 1: ~90k ; XFP: ~125k ; Live trigger: ~65 Bp: _____ (segment 8); Attenuation: 3 Comments: data taking with increased att. factor ( $\equiv 3$ )	I250X-R Target 49.6	I251Y-R MCP 0 123.84	I250Y-R MCP 1 153.17	Position (mm)		

Thanks Arif!

5:00 AM End of beam time  $\rightarrow$  key returned to operator

RUN 437 - 448 : background measurements (each ~ 5min)  
trigger Coin + Secondary + Ext 2  
target still at 49.6 (i.e. no alpha)

RUN 449 - T0 }  
450 - T1 } pulser ramp (0-5V in 51 steps, 5sec) } trigger on  
451 - T2 }  
452 - T3 }  
453 - T4-5 - pulser ramp (0-1.2V in 61 steps) } VTA  
} single

RUN 454 - pulse

RUN 455 - CsI pulser ramp 0-0.54V with 0.01 steps (1st part)  
RUN 456 - \_\_\_\_\_ (2nd part)  
 $\rightarrow$  double peak at 0.25 Volts

$\text{N}^{45}\beta \rightarrow$  alpha spectra  $\rightarrow$  trigger  $E_f + dE$  (4-RA singles)  
 $\hookrightarrow$  target at 267.65 mm

$\text{N}^{45}\beta - \alpha$ -calibration continuation