5/Mar/2004

14 Xe bottles arrived to PSI. from russia

- { stand
  + 1 Japan bottles (empty)
  + 3 Russian bottles (empty) } w/o bottle caps → 294.3 kg
- nothing → 0.16 kg
- { stand
  + 3 Russian bottles (empty) } w/o bottle caps → 248.2 kg
- stand → 67 ~~8~~.3 kg

- { stand
  + 4 bottles (full) with caps
    - ~~#1~~ ~~#7~~
    - #12
    - #11
    - #07
    - ~~unknown~~ #14 } 551.62 kg

Japan bottle	46.1 kg
Russian bottle	~~59.4~~ 60.3 kg
stand	57.1
a bottle cap	0.62 kg

☆ value written on invoice

⇒ ~~240.6~~ ~~238.4~~ kg Xe (☆ expected 234.7)
(~~60.1~~ ~~60.8~~ kg Xe per bottle)
60.2

- { stand
  4 bottles (full) with caps
  - #1
  - #8
  - #9
  - #13 } 544.4 kg
  2 33.0 kg Xe (58.4 kg/bottle) (☆ ~~expected~~ 227.3 kg)

10/3/2004

- { stand
  4 bottles (full) with caps
  - #2
  - #3
  - #5
  - #10 } 555.90 kg (☆ 239.5 kg)
  ~~245.0~~ 245.0 kg Xe
  (61.2 kg/bottle)

{ Stand
2 bottles (full) with caps
- #4
- #15 } 312.02 kg
122.92 (kg Xe) (☆ 122.343)
(61.46 kg Xe/bottle)

(Stand
1 bottle (full) with a cap
- #4) 191.96 kg
63.58 kg Xe (☆ 64.59)

(stand
1 bottle (Full) with a cap
- #15) 186.8
58.62 kg Xe (☆ 57.75 kg)

10/Mar/2004
14:40 stand 2 bottles (#4, #15) ~~☆~~ 311.58

SUMMARY

Xe weight

measured
842.3 kg (824.8 kg)

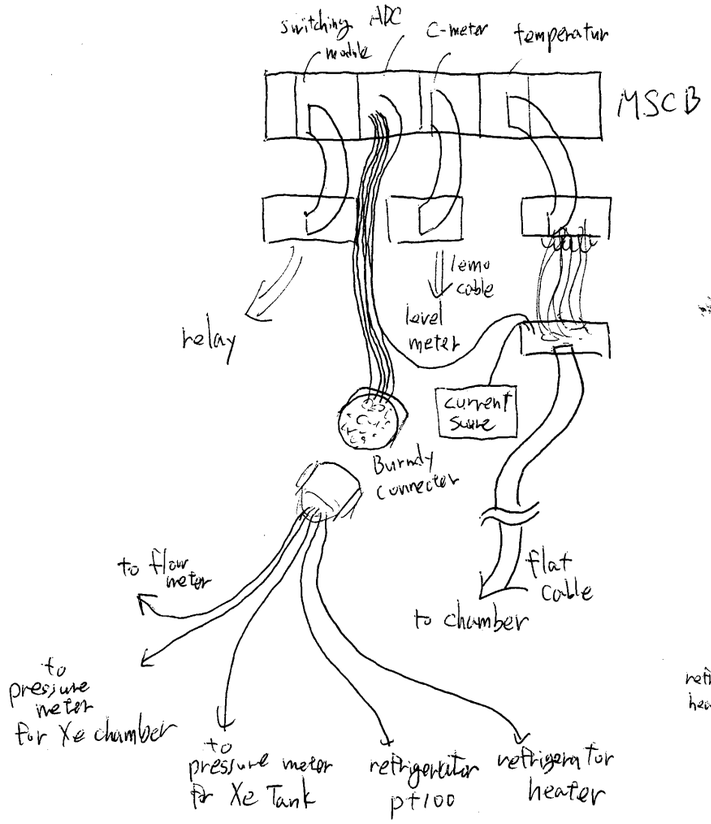
Supposing 5kg offset

☆ Data's declaration
823.8 kg ~ 278.3 ~~4~~

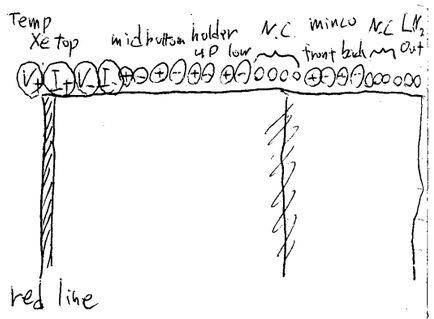
ρ = 2.96 kg/l → 824.8 kg ≈ 278.6 l

20/Apr/2004

18:30 cabling for slow control

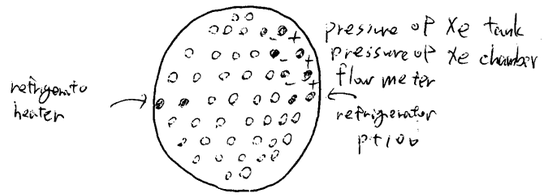


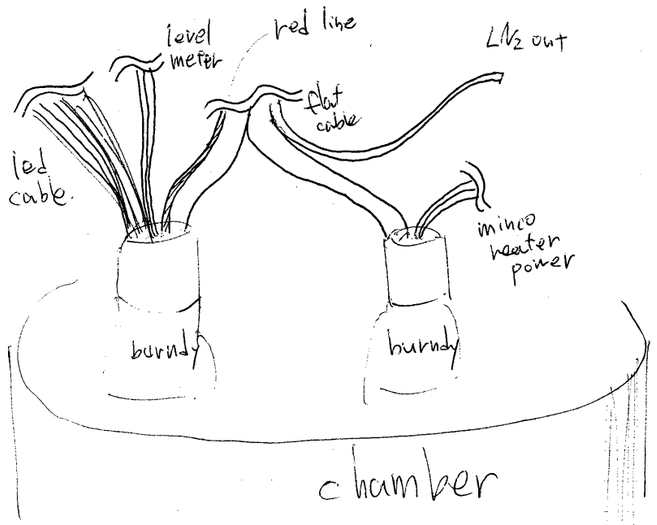
flat cable assignment



burndy assignment

seeing from front of panel

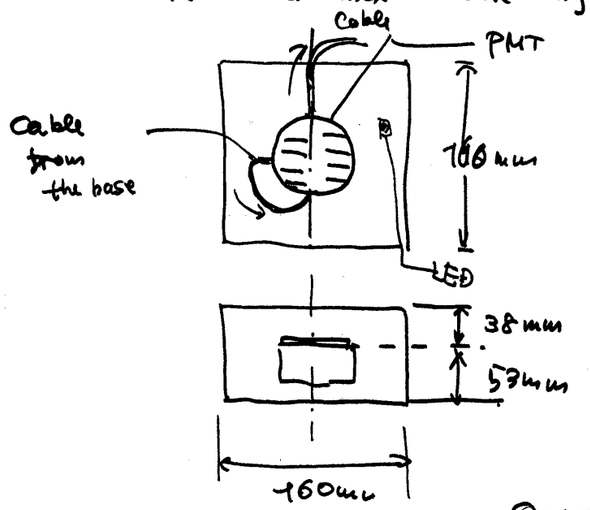




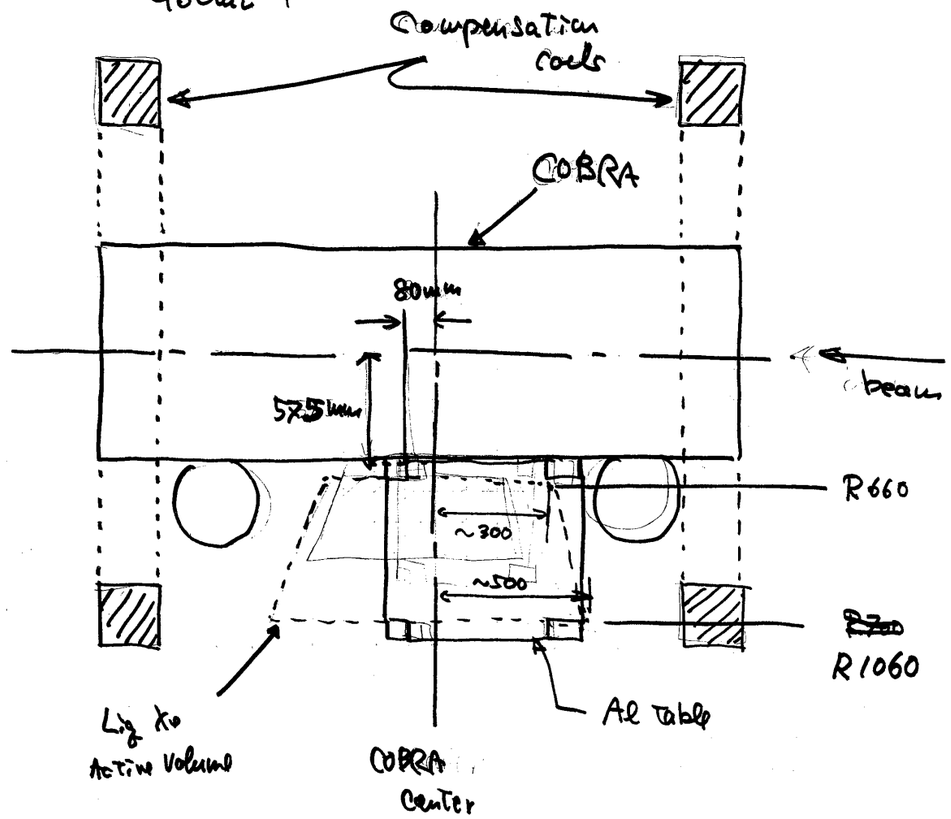
23/April/2004

- PMT test under the magnetic field.

PMT test box made by TI

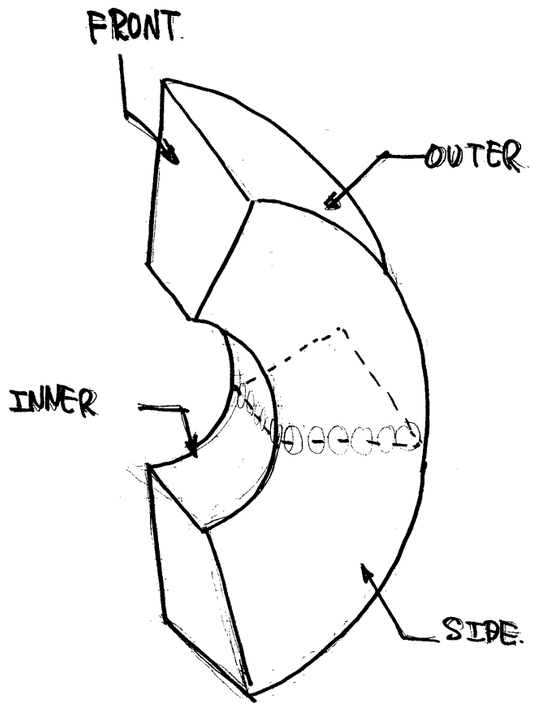


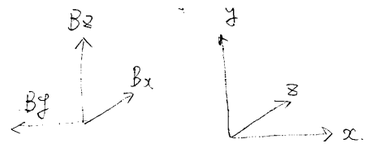
LED (blue) is equipped in the box.



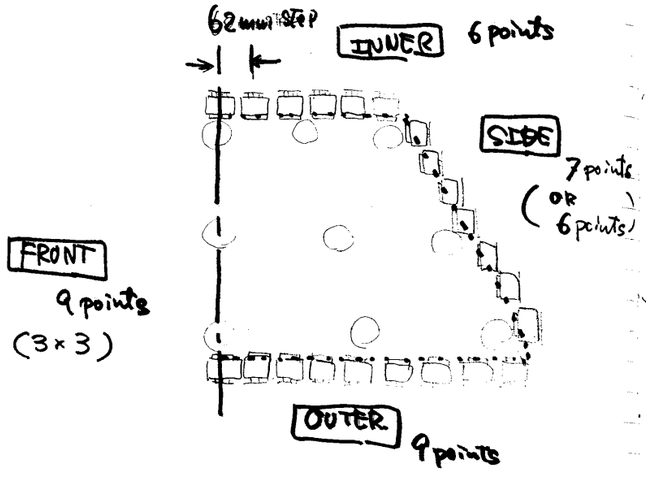
PMT S/N : TB0585

29/April/04

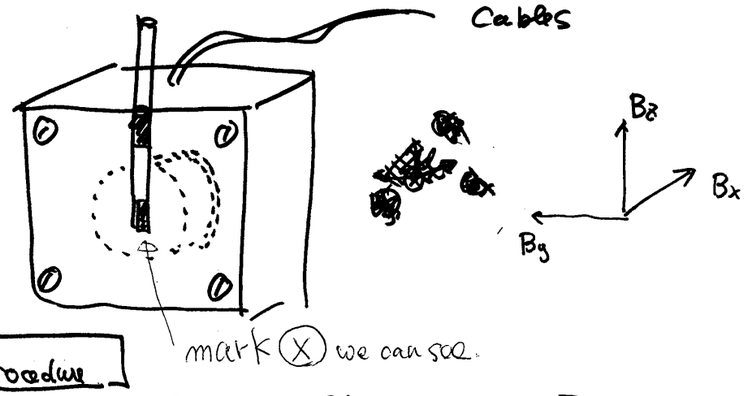


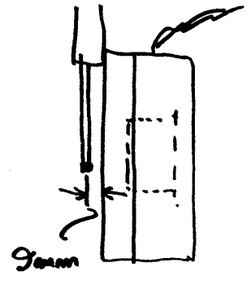


Bx ⇔ z
Bz ⇔ y
By ⇔ −x



Hole Probes are put on the box! Record the field strength when the gain is measured.





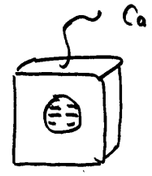
Procedure

- HV for the PMT +750V
- Gain w/o magnetic field (Bx, By, Bz) = (0, 0, 4,2 3,5) |B| = 5.5
- Measure the gain & field strength at

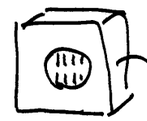
Inner	① ~ ⑥
Outer	① ~ ⑨
SIDE	① ~ ⑥
FRONT	(9 points)

with two setting angle 0° & 90°

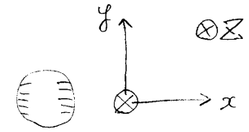
25/April/04



setting angle 0°



setting angle 90°



へんこう

- RUN 1 ~ 42 DAQ setup test runs
- RUN 43 ~ 47 Gain Measurement Reproducibility Test RUNs

RUN 43	1.27588	×10^6
44	1.26968	
45	1.26867	
46	1.25415	
47	1.31878	
48		
49		

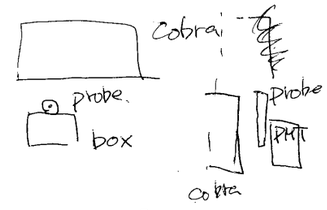
} 5% error

waveform LED
TEK00000 ~ 00003 (step 1~4)
TEK00004 ~ 00005 (step 5~6)

18
1,32-1,254
1,32.

magnet field

X	+0.1023	G
Y	+4.0550	G
Z	+3.7030	G
↕	+5.4821	G



real position of magnet PMT center

X −(+) 4.35
Y −(+) 26.49
Z +0.63
T 26.85

Because this was measured by rotating the probe 180° around z-axis of the probe

Isc : 360 A , Inc : 320 A

· position inner ① setting angle 0°

PMT +x direction

X : −2.77 G
Y : −19.60 G
z : −0.13 G

tot. 19.798 G

14:27 Run#50

Gain = 1.34935 ×10^6.

14:30 Run#51 Gain = 1.41899×10^6

~~TEK0000b (step 6)~~

strong!! position ① , setting angle 90°

PMT −y direction

X: −0.2 G, Y: +0.33, Z: −20.8, T: +20.8

Run #52 for waveform. TEK00006.CSV (Step 6)

position ② 0°
Inner.

X: −1.14
Y: −18.22
Z: +0.44
T: 18.26 G

PMT center position
X' +(−)8.93
Y' −(+)3.28
Z' +0.89
T' 23.63

Run #53. 1.31517 ×10⁶ gain.

position ② 90°.

X: +2.54
Y: −0.57
Z: −19.4
T: 19.57

Run #54. 1.39468 ×10⁶ gain

position ③ 0°.

X: +0.26
Y: −14.89
Z: + 1.06
T: +14.929 G

PMT center position
X' +(−)6.69
Y' −(+)6.87
Z' +1.32
T' +18.20

Run #55 1.23513 ×10⁶ gain

position ③ 90°

X: +3.08
Y: − 1.30
Z: − 15.93
T: +16.28 G
1.31809 ×10⁶ gain

Run #56

position ④ 0°

X: ÷ 0.06
Y: − 10.13
Z: + 1.66
T: +10.10
1.34627 ×10⁶ gain

PMT center position
X' +(−)7.95
Y' −(+)11.40
Z' +1.85
T' 14.02

Run #57

position ④ 90°

X: +2.18
Y: − 1.75
Z: −11.14
T: 11.49
1.31 × 10⁶

Run #58

position ⑤ 0°

X: − 1.86
Y: − 4.20
Z: +2.37
T: +5.17
1.34 ×10⁶ gain

PMT center position
X' +(−)8.78
Y' −(+)10.99
Z' +2.38
T' +9.14

Run #59.

position ⑤ 90°

X: −1.59
Y: −2.49
Z: −5.19
T: 5.97
1.34 ×10⁶ gain

Run #60.

position ⑥ 0°

X: − 11.46
Y: + 0.63
Z: + 2.96
T: 11.85
1.45 × 10⁶ gain.

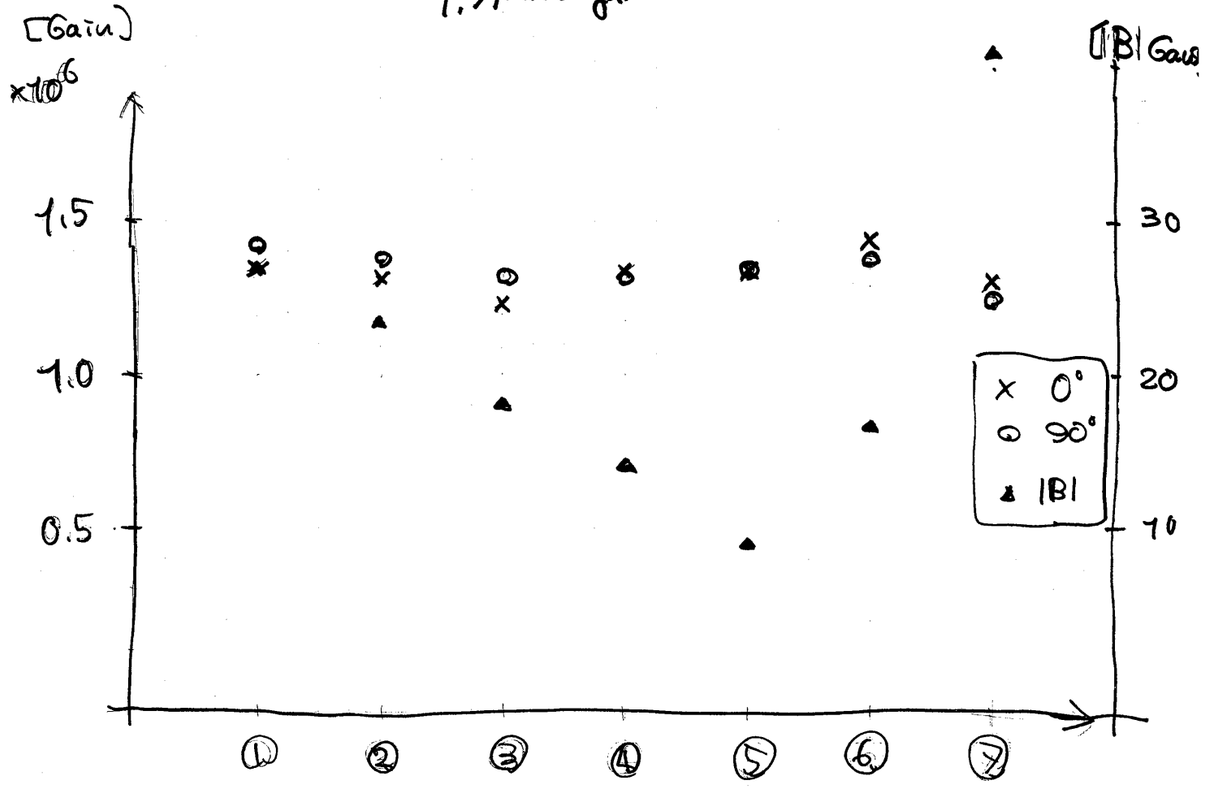
PMT center position
X' −(+)1.62
Y' +(+)6.31
Z' +7.11
T' +16.68

Run #61

position ⑥ 90°

X: −10.8
Y: − 3.4
Z: − 0.26
T: 11.32.
1.37 ×10⁶ gain

Run #62



positron ⑦ 0°

Run # 63.

X: −26.15
Y: − 0.79
Z: + 3.45
T: 26.39.

1.30×10^6 gain

x′ −30.57
Y′ +(−27.24
Z′ 4.57
T′ 41.16

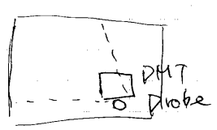
PMT center position

position ⑦ 90°

Run # 64.

X: −26.39
Y: − 4.05
Z: − 1.27
T: 26.73

1.25×10^6 gain



sign of both X and Y are reversed.
~~for OUTER~~

OUTER ⑨ 0°

RUN #65

X +32.21
Y +5.53
Z +4.26
T 32.96

1.13×10^6 gain

x′ +(−43.11
Y′ +(−)3.80
Z′ +2.91
T′ +43.37

OUTER ⑨ 90°

RUN #66

X: +34.0
Y: −4.40
Z: +1.88
T: +34.4

1.17×10^6 gain

OUTER ⑧ 0°

RUN #67

X: +29.3
Y: +10.9
Z: +3.83
T: +31.5

1.19×10^6 gain

X′ +(−)36.18
Y′ +(−)11.59
Z′ 2.44
T′ 38.06

OUTER ⑧ 90°

RUN #68

X: +29.3
Y: −4.13
Z: +9.23
T: +31.0

1.14×10^6 gain

OUTER ⑦ 0°

RUN#69

X +25.4
Y +15.6
Z +3.31
T +30.0

1.20×10^6 gain

X′ +(−)30.09
Y′ +(−)17.52
Z′ 1.99
T′ 34.88

OUTER ⑦ 90°

RUN #70

X +24.7
Y −4.03
Z +14.8
T +29.1

1.06×10^6 gain

OUTER ⑥ 0°

RUN #71

X +21.7
Y +18.9
Z +2.92
T +28.9

1.25×10^6 gain

X′ +(−)25.12
Y′ +(−)21.47
Z′ +1.62
T′ 33.09

OUTER ⑥ 90°

RUN #72

X +20.3
Y −9.13
Z +18.6
T +27.8

1.15×10^6 gain

OUTER ⑤ 0°

RUN #73

X +18.0
Y +21.4
Z +2.37
T +28.0

1.26×10^6 gain

X′ +(−)9.85
Y′ +(−)24.72
Z′ 1.22
T′ 31.73

OUTER ⑤ 90°

Run # 74

X +16.2
Y −3.58
Z +21.2
T +26.9

1.12×10^6 gain

OUTER ④ 0°

RUN#75

X +14.0
Y +23.5
Z +1.96
T +27.4
1.27×10^6 gain

X' +(-)15.68
Y' +(-)26.48
Z' 0.86
T' 30.78

OUTER ⑧ 90°

RUN#76

X +11.4
Y -2.96
Z +23.4
T +26.1
1.14×10^6 gain

OUTER ③ 0°

RUN#77

X +10.5
Y +25.0
Z +1.57
T +27.1
1.24×10^6 gain

X' +(-)10.91
Y' +(-)28.01
Z' 0.53
T' 30.06

OUTER ③ 90°

RUN#78

X +7.65
Y -2.29
Z +29.6
T +25.9
1.20×10^6 gain

OUTER ② 0°

RUN#79

X +6.29
Y +26.0
Z +1.00
T +26.8
1.35×10^6 gain

X' +(-)6.91
Y' +(-)28.81
Z' 0.12
T' 29.63

OUTER ② 90°

RUN#80

X +4.02
Y -1.57
Z +25.4
T +25.8
1.35×10^6 gain

OUTER ① 0°

RUN#81

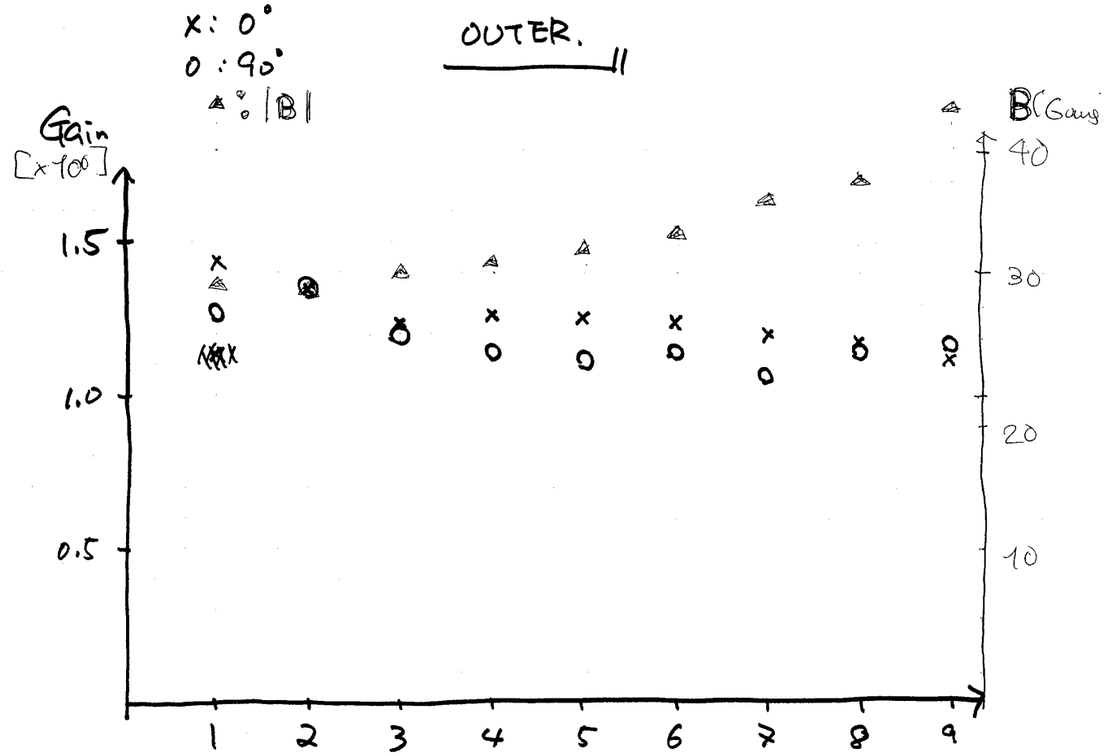
X +3.24
Y +26.3
Z +0.431
T +26.5
1.43×10^6 gain

X' +(-)8.34
Y' +(-)29.26
Z' -0.27
T' +29.45

OUTER ① 90°

RUN#82

X +0.326
~~Y +0.18~~ Y -0.816
Z +25.6
T +25.6
1.27×10^6 gain



SIDE ① 0°

RUN #83

X +0.339
Y +1.06
Z +2.53
T +2.76
1.36 ×10⁶ gain

X' +(−)8.24
Y' +(−)6.92
Z' +2.97
T' 11.16

SIDE ② 0°

RUN #84

X +4.75
Y −7.99
Z +2.65
T 9.66
1.31 ×10⁶ gain

X' −(+)8.15
Y' +(−)14.53
Z' +3.18
T' 15.20

SIDE ② 90° → 1cm 外側である.

RUN #85

X +7.33
Y −3.12
Z −9.33
T +12.27
1.37 ×10⁶ gain

SIDE ③ 0°

RUN #86

X +9.70
Y −12.25
Z +2.87
T 15.89
1.30 ×10⁶ gain

X' −(+)9.37
Y' +(−)15.46
Z' 3.32
T' 18.38

SIDE ③ 90°

RUN #87

X +10.88
Y −3.44
Z −12.54
T 16.96
1.32 ×10⁶ gain.

SIDE ④ 0°

RUN #88

X +12.47
Y −14.49
Z +2.97
T 19.35
1.22 ×10⁶ gain.

X' −(+)0.53
Y' +(−)15.73
Z' +3.38
T' 19.23

SIDE ④ 90°

RUN #89

X +13.88
Y −3.72
Z −14.55
T 20.45
1.32 ×10⁶ gain

SIDE ⑤ 0°

RUN #90

X +13.10
Y −17.24
Z +3.05
T. 21.86
1.20 ×10⁶ gain.

X' −(+)8.79
Y' +(−)18.29
Z' +3.38
T' +20.56

SIDE ⑤ 90°

RUN #91

X +14.72
Y −3.77
Z −17.28
T 23.01
1.41 ×10⁶ gain

SIDE ⑥ 0°

RUN #92

X +13.13
Y −21.30
Z +3.09
T 25.20
1.26 ×10⁶ gain

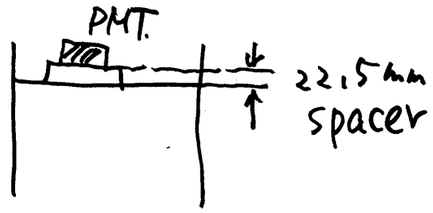
X' −6.92
Y' +(+)23.48
Z' +3.39
T' +24.20

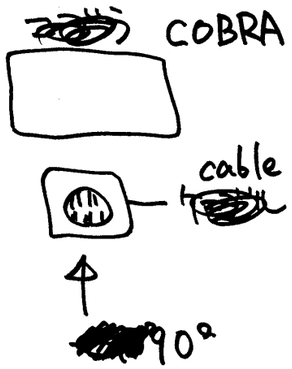
SIDE ⑥ 90°

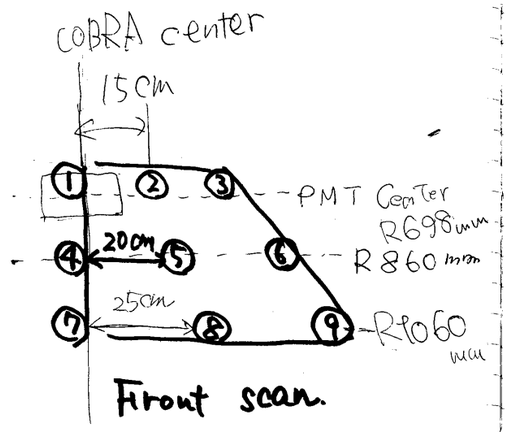
RUN #93.

X +15.37
Y −3.83
Z −21.09
T 26.38
1.36 ×10⁶ gain.

Front side scan.







Front ① 90°

Run #94

X −1.36
Y −1.22
Z +20.55
T 20.63

1.35×10^6 gain

Front ① 0°

Run #95

X +1.34
Y +21.51
Z +1.59
T 21.61

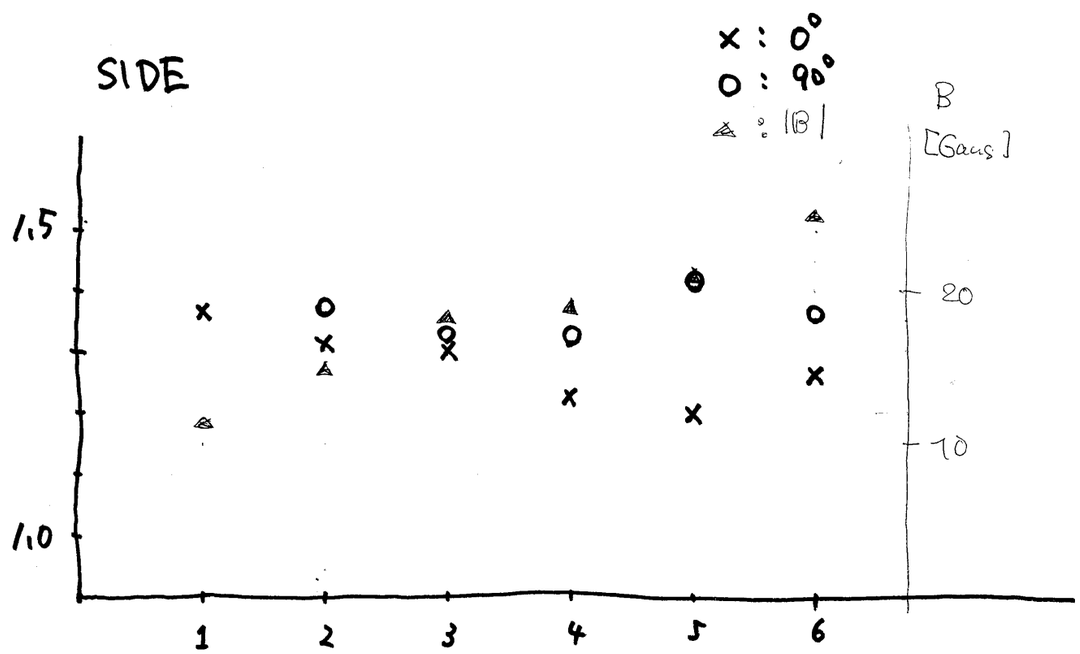
1.37×10^6 gain

Front ② 90°

Run #96

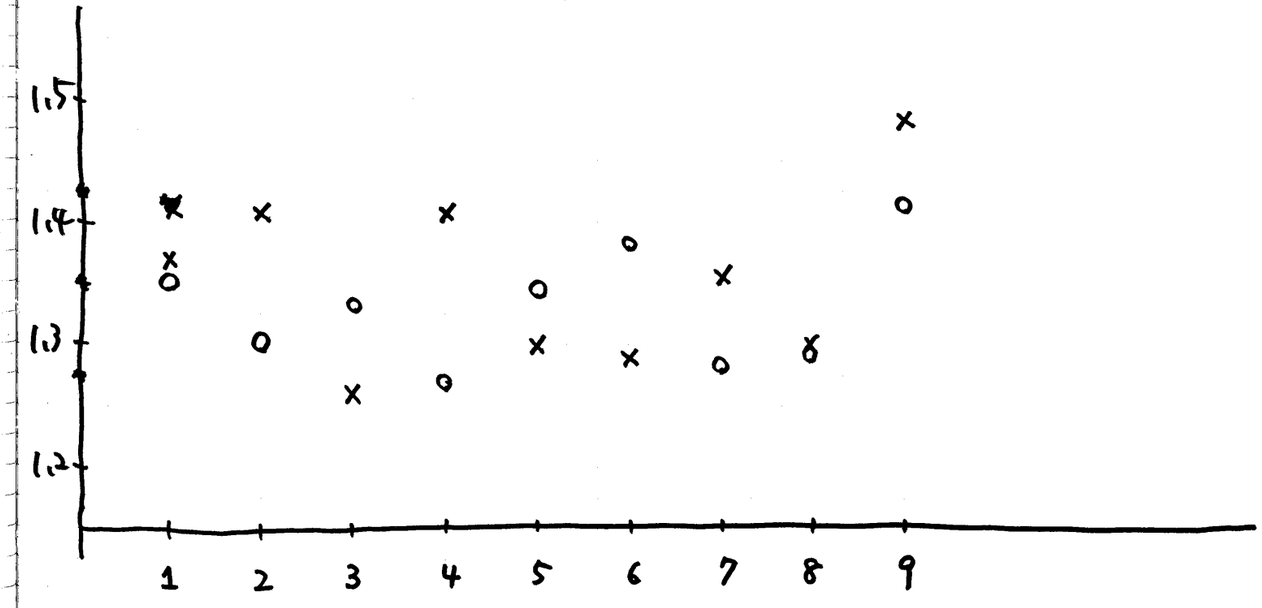
X −1.87
Y +2.10
Z +13.40
T 13.

1.30×10^6 gain



Front

× : 0°
○ : 90°



Front ② 0°

Run #97

X −0.17
Y +19.57
Z −2.23
T 14.74

1.41×10^6 gain.

Front ③ 90°

Run #98

X −4.69
Y −7.56
Z −1.63
T 9.05

1.33×10^6 gain

Front ③ 0°

Run #99

X −4.35
Y −0.30
Z +7.53
T 8.71

1.26×10^6 gain.

Front ④ 90°

Run #100

X −1.14
Y −1.13
Z +20.12
T 20.18

1.27×10^6 gain.

Front ④ 0°

Run #101

X +2.41
Y +20.87
Z +0.99
T 21.03

1.41×10^6 gain

Front ⑤ 90°

Run #102

X −3.99
Y −7.25
Z +15.87
T 17.89

1.35×10^6 gain

Front ⑤ 0°

Run #103

X −0.51
Y +17.04
Z +7.47
T 18.62

1.30×10^6 gain

Front ⑥ 90°

Run #104

X −6.89
Y −14.33
Z +9.29
T 18.42

1.38×10^6 gain

Front ⑥ 0°

Run #105

X −3.57
Y +11.14
Z +14.69
T 18.78

1.29×10^6 gain

Front ⑦ 90°

Run #106

X −1.69
Y −1.34
Z +26.69
T 26.78

1.28×10^6 gain

Front ⑦ 0°

Run # 107

X +3.76
Y +27.41
Z +0.83
T 27.68

1.36×10^6 gain

Front ⑧ 90°

Run # 108

X -5.91
Y -14.17
Z +22.03
T 26.86

1.30×10^6 gain

Front ⑧ 0°

Run # 109

X -0.13
Y +23.08
Z +14.55
T 27.28

1.30×10^6 gain

Front ⑨ 90°

Run # 110

X -9.98
Y -29.27
Z +1.41
T 30.95

1.42×10^6 gain

Front ⑨ 180°

Run # 111

X -5.02
Y +0.44
Z -30.93
T 31.33

1.48×10^6 gain

SIDE ① 0° + 5cm ~~outside~~ upstream

Run # 112

X -8.09
Y -6.25
Z +2.96
T 10.65

1.41×10^6

SIDE ① 90° + 5cm upstream

Run # 113

X -8.33
Y +4.40
Z +6.11
T 11.23

1.23×10^6

SIDE ③ 0° + 5cm upstream

Run # 114

X +9.48
Y -15.20
Z +3.25
T 18.21

1.35×10^6

SIDE ⑤ 90° + 5cm upstream

Run # 115

X +9.22
Y -18.17
Z +3.35
T 20.65

1.32×10^6

SIDE ⑥ 0° + 5cm upstream

Run # 116

X + 7.90
Y - 23.22
Z + 3.37
T 24.75

1.42×10^6 gain

OUTER ① 0° +5cm in R

Run #117

X +3.59
Y +28.95
Z + 0.54
T 29.18

1.36×10^6 gain

OUTER ④ 0° + 5cm in R

Run #118

X +15.30
Y +26.11
Z +1.97
T 30.33

1.23×10^6 gain

OUTER ⑦ 0° +5cm in R

Run #119

X +29.60
Y +17.29
Z + 3.46
T 34.46

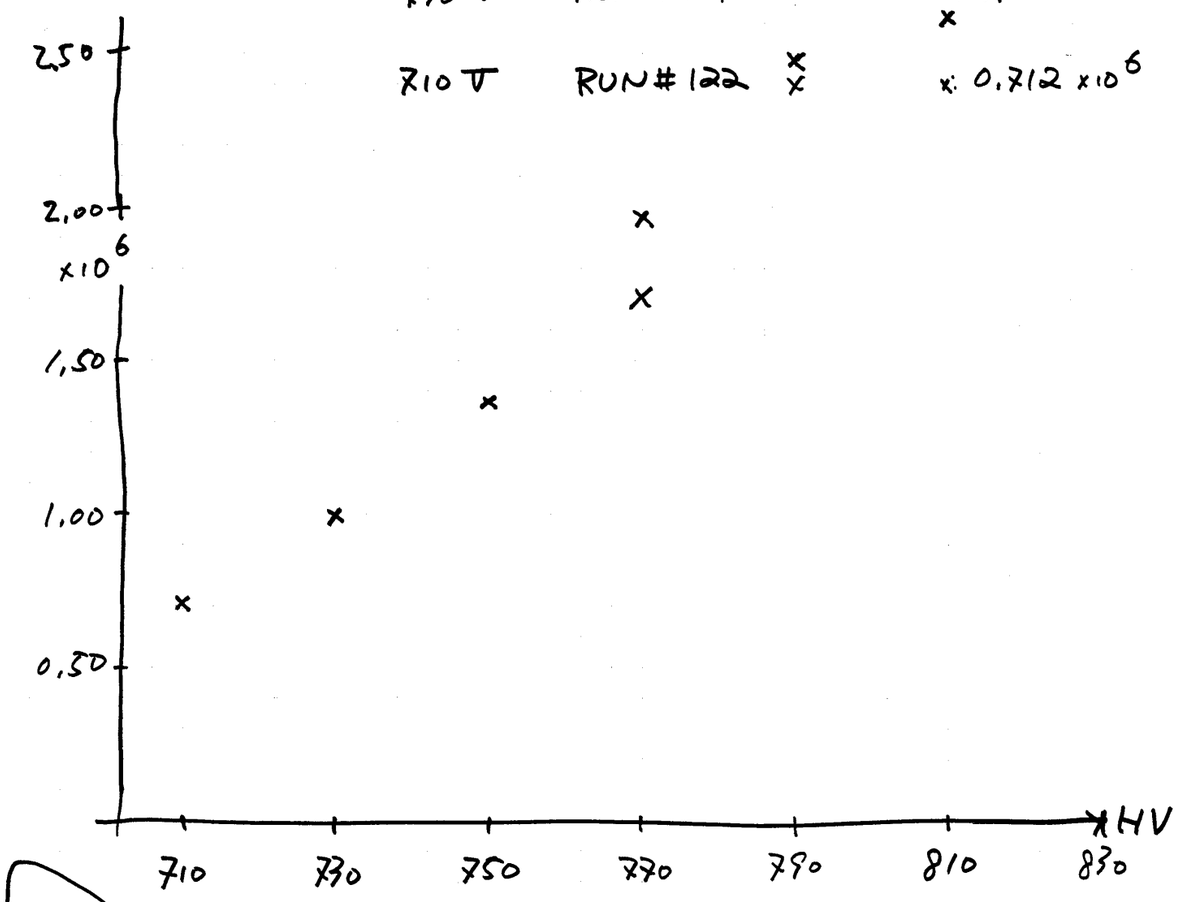
1.17×10^6 gain.

HV-scan

INNER ① 0°. , 750 V. RUN #120. Gain : 1.37×10^6.

730 V RUN #121 : 1.00×10^6

710 V RUN #122 : 0.712×10^6



770 V
Run #133
1.71×10^6

770 V RUN #123 Gain : 1.96×10^6

790 V RUN #124 Gain : 2.48×10^6

810 V RUN #125 Gain : ~~2.63×10^6~~ 2.63×10^6

830 V RUN #126 Gain : 2.76×10^6.

↓ increased LED intensity.

RUN # 127 Gain : 3.48×10^6

↓ increased # of events/step from 1000 to 2000

128 Gain. 3.60×10^6

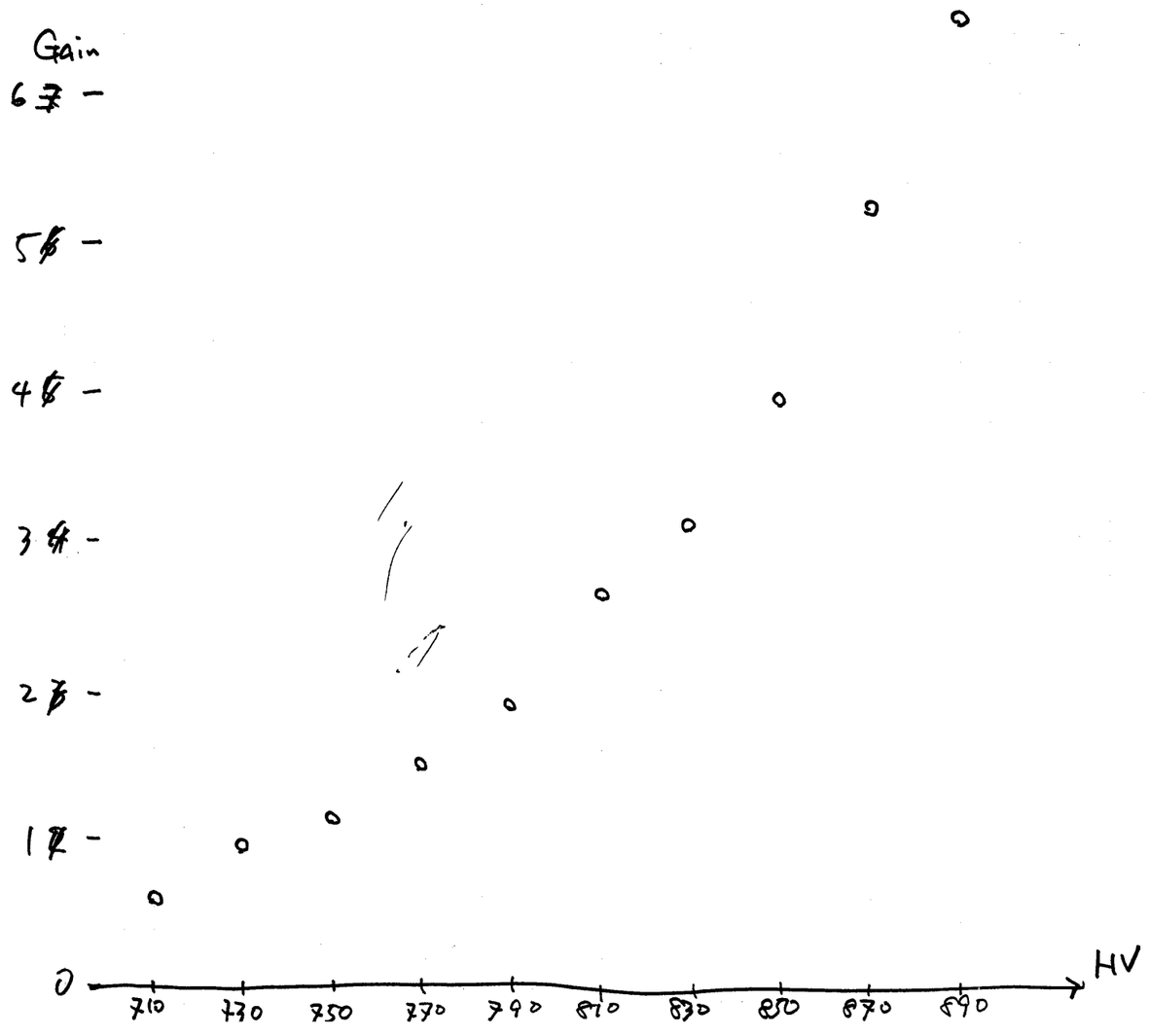
810 V Run # ~~129~~ 131 Gain. 2.89×10^6

790 V Run # 1362 Gain : 2.40×10^6

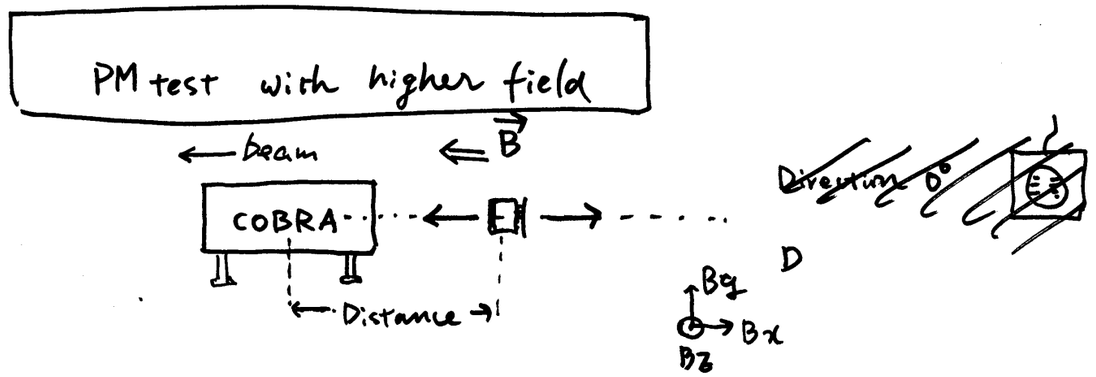
2004-Apr-26 HV Scan @ OUTER (8) +90°

X +24.20
Y − 8.27
Z +14.39
T +29.07

HV: 750 V ·	RUN: #134.	gain : 1.14×10^6
730 V	#135	0.91×10^6
710 V	#136	0.63×10^6
770 V	#137	1.48×10^6
790 V	#138	1.90×10^6
810 V	#139	2.65×10^6
830 V	#140	3.14×10^6
850 V	#141	3.95×10^6
870 V	#142	5.28×10^6
890 V	#143	6.53×10^6



PM test with higher field



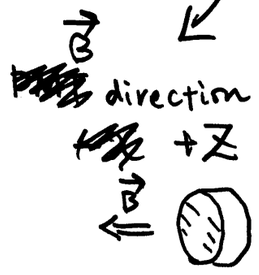
position (1) Distance = 4.23 m

Bx −61.0
By +8.3
Bz +4.4
B 61.7

Run #144 B = 62 Gauss HV 750 V
1.11×10^6 gain

Run # 145 same as before but with more intense LED flashing
1.12×10^6 gain

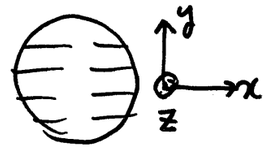
Run # 146 1.17×10^6



$\vec{B}$ direction −x $|\vec{B}|$ = 62 Gauss

147 1.14×10^6 gain

PMT local c.s.



$\vec{B}$ direction is defined as relative direction with respect to # PMT local c.s

position ② Distance: 4.05m $|\vec{B}|$ = 81 Gauss

B_x = 80.21
B_y + 10.3
B_z + 5.1
$|\vec{B}|$ 81.0

$\vec{B}$: $-\hat{z}$

#148 0.87×10^6 gain

#149 ~ #151 } test run.

position ①. to take gain & QE & collection efficiency dependence on High Voltage.

HV + ~~800~~ 750 V Run # ~~148~~ 152

Attenuator 0. 1.08×10^6 gain

From now on. LED setting (6 step.) width: 30, 31, 32, 33, 34, 35 height

Gain ratio. 0.81
PE ratio 0.70
⇓
total 0.57

HV +730 V Run # 153

0.79×10^6 gain

Gain ratio 0.60
PE ratio 0.70
⇓
0.42

HV +710 V Run # 154

0.61×10^6 gain.
0.46 gain ratio
0.66 PE ratio.

HV 770 V Run # 155

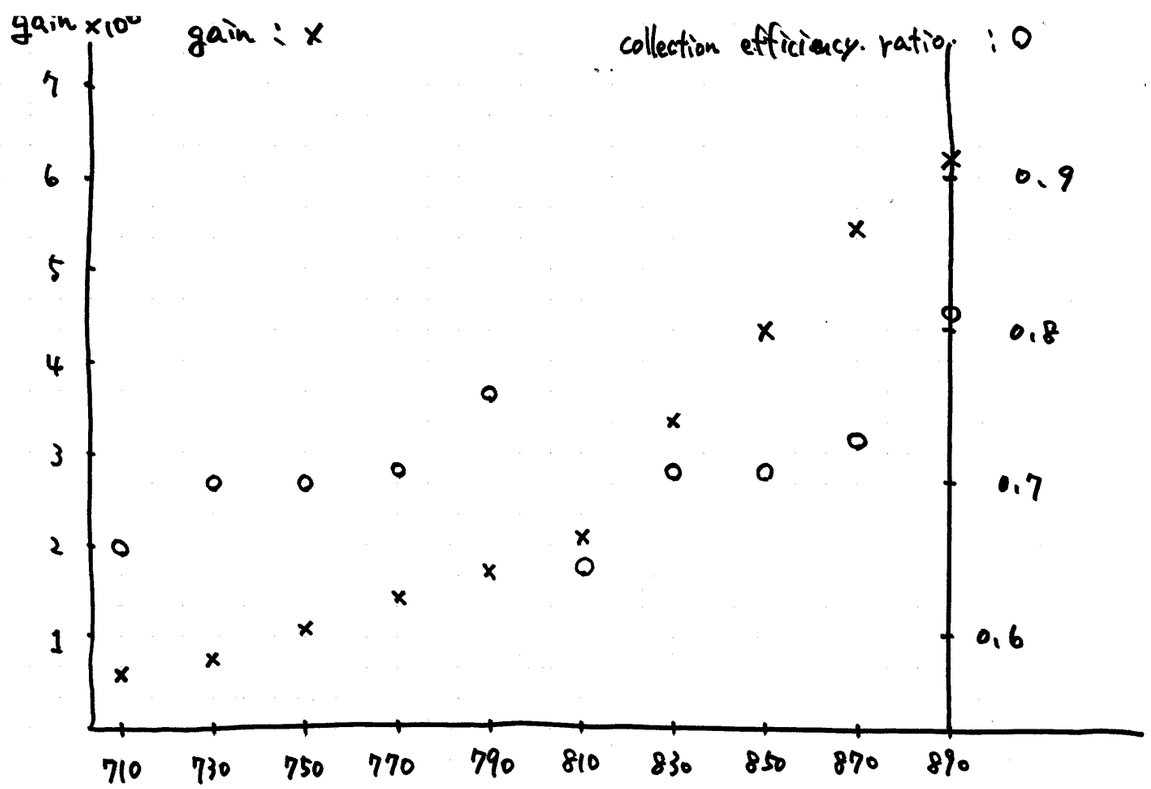
1.43×10^6
1.08
0.71

HV 790 V #156

1.79×10^6
1.35
0.76

HV 810 V #157

2.50
1.89
0.72



HV 810 V #158. 10 dB Attenuator

0.86×10^6 → 2.72×10^6
0.65 gain ratio → 2.06
0.65 → ~~2.00~~

HV 830 V #159. 10 dB

1.05×10^6 → 3.30×10^6
0.99 2.50
0.71

HV 850 V #160 10 dB

1.37×10^6 → 4.33×10^6
1.03 3.26
0.71

HV 870 V #161 10 dB

1.69 5.36×10^6
1.28 4.05
0.73

HV 890 V #162 10 dB

1.94 6.15×10^6
1.47 4.65
0.81

LED long stability test

2Hz LED flashing.

(100 events pedestal + 900 events LED.) × 1 might.

Run # 163 ~ Run # 168 } test run

1:00. Run # 169 LED stability check run
(width. height) = (50, 30)
magnet condition SC : 0
NC : 0

7/5/2004.

No magnet field measurement

Run #210. · no excitation of COBRA.
· PMT HV 750V
· Attenuator 10dB
· LED { width, height × 6 }
= { 50, { 30, 31, 32, 33, 34, 35 } }.
1.25 × 10^6 gain.

X −0.26
Y −0.12
Z −1.15
T 1.17 G//

Run #211 · same as Run #210 +750V
1.21 × 10^6 gain

Run #212 · PMT HV +730V, no (0dB) attenuator
→ overflow.

Run #213 · HV +730V, 10dB Att.
0.94 × 10^6 gain.

Run #214 HV +710V, 0 dB Att.
0.73 × 10^6 gain

Run #215 HV +770V, 10dB Att.
1.69 × 10^6 gain.

Run #216 HV +790V, 10dB Att.

Run #217 HV +790V, 10dB Att. 2.1 × 10^6 gain

Run #218 HV +810V, 20dB Att

Run #219 ~~HV~~ test

Run #220 HV +810V, 20 dB Att. 2.4 × 10^6 gain

Run #221 HV +830V, 20 dB. 3.1 × 10^6 gain

Run # 222	HV 850V,	20 dB.	4.2×10^6 gain
Run # 223	HV 870 V,	20 dB.	5.1×10^6 gain
Run # 224	HV 890V,	20 dB.	6.2×10^6 gain

11/5/2004 Tue.

12/5/2004 wednesday is no beam day.
We'll test another PMT dependence on magnetic field.

Next PMT S/N : TB 0473

23:00 setup for black box finished.
(this box modified. to be able to change a PMT inside smoothly.)

Run # 250 HV 750V, 10dB 1.7×10^6 gain.
No magnet field near DAQ machine.

X : +0.328
Y : +2.032
Z : +0.139
T : 2.064 G.

LED {width 50, height 30, 31, 32, 33, 34, 35}

23:30 Run # 251 HV 750V, 10 dB same as #250 1.6×10^6 gain

Run #252	HV 730V,	10 dB.	1.23×10^6 gain
Run #253	HV 710V,	0 dB	0.91×10^6 gain.
Run #254	HV 690V,	0 dB.	0.69×10^6 gain.
Run #255	HV 770V,	10 dB.	2.20×10^6 gain.
Run # 256	HV 790V,	10 dB.	2.78×10^6 gain.
Run # 257	HV 810V,	20dB.	3.64×10^6 gain.
Run # 258	HV 830V,	20dB.	4.81×10^6 gain.
Run # 259	HV 850V,	20dB.	5.89×10^6 gain.
Run # 260	HV 870V,	20dB.	7.53×10^6 gain.

↓ HV 730V (~ 1.23×10^6 gain) setting.

12/5/2004 Wed.

No beam today.
Before COBRA excitation, some no magnet data will be taken.

Run #261	HV 750V,	10dB	1.84×10^6 gain
Run # 262	〃		1.68×10^6 〃
Run # 263	〃		1.72×10^6 〃
Run # 264	〃		1.66×10^6 〃
Run # 265	〃		1.73×10^6 〃
Run # 266	〃		1.62×10^6 〃
Run # 267	〃		1.68×10^6 〃

position scan start.

w/ 10dB attn.

Magnet condition SC: 360A NC: 320A

Bc = 1.2471 T

Inner ① 0°

run #268

X −0.80
Y −19.2
Z +0.0
T 19.2

1.67 × 10^6 gain

Inner ① 90°

run #269

X −0.34
Y +0.05
Z −20.05
T 20.06

1.66 × 10^6 gain

Inner ② 0°

run #270

X +1.30
Y −17.8
Z +0.63
T 17.89

1.63 × 10^6 gain

Inner ② 90°

run #271

X +1.75
Y −0.36
Z −18.76
T 18.84

1.69 × 10^6 gain

Inner ③ 0°

run #272

X +1.34
Y −14.54
Z +1.237
T +14.66

1.68 × 10^6 gain

Inner ③ 90°

run #273

X: +1.91
Y: −0.91
Z: −15.5
T: 15.67

1.68 × 10^6 gain

Inner ④ 0°

run #274

X: +0.154
Y: −10.31
Z: +1.84
T: +10.47

1.66 × 10^6 gain

Inner ④ 90°

run #275

X: +0.64
Y: −1.54
Z: −11.35
T: +11.47

1.64 × 10^6 gain

Inner ⑤ 0°

run #276

X: −3.99
Y: −5.21
Z: +2.45
T: 7.00

1.71 × 10^6 gain

11:34

Inner ⑤ 90°

run #277

X: −3.36
Y: −2.28
Z: −6.53
T: +7.69

1.73 × 10^6 gain

Inner ⑥ 0°

run #278

X: −12.43
Y: −1.83
Z: +3.00
T: +12.92

1.77 × 10^6 gain

Inner ⑥ 90°

run #279

X: −11.89
Y: −3.28
Z: −2.79
T: +12.65

1.73 × 10^6 gain

Inner ⑦ 0° run # 280

X: −24.31
Y: −4.50
Z: +3.45
T: +24.96

1.52 × 10⁶ gain

Inner ⑦ 90° run # 281

X: −23.16
Y: −4.28
Z: −4.17
T: +23.91

1.54 × 10⁶ gain

Outer ⑨ 0° run # 282

X: +25.55
Y: +1.87
Z: +4.15
T: +25.95

1.40 × 10⁶ gain

Outer ⑨ 90° run # 283

X: +25.79
Y: −3.797
Z: −0.004
T: +26.07

1.41 × 10⁶ gain

Outer ⑧ 0° run # 284

X: +24.2
Y: +9.10
Z: +3.60
T: +26.12

1.47 × 10⁶ gain

Outer ⑧ 90° run # 285

X: +24.5
Y: −3.46
Z: +7.26
T: 25.77

1.45 × 10⁶ gain

Outer ⑦ 0° run # 286

X: +21.88
Y: +13.82
Z: +3.10
T: +26.06

1.46 × 10⁶ gain

Outer ⑦ 90° run # 287

X: +21.94
Y: −3.08
Z: +12.2
T: +25.3

1.44 × 10⁶ gain

Outer ⑥ 0° run # 288

X: +18.41
Y: +17.31
Z: +2.62
T: 25.4

1.51 × 10⁶ gain

Outer ⑥ 90° run # 289

X: +18.51
Y: −2.73
Z: +15.73
T: +24.4

1.39 × 10⁶ gain

Outer ⑤ 0° run # 290

X: +14.61
Y: +19.8
Z: +2.13
T: +24.68

1.53 × 10⁶ gain

Outer ⑤ 90° run # 291

X: +14.81
Y: −2.34
Z: +18.33
T: +23.68

1.41 × 10⁶ gain

Outer ④ 0° run # 292

X: +11.07
Y: +21.6
Z: +1.65
T: +24.32

1.53 × 10⁶ gain

Outer ④ 90° run # 293

X +11.02
Y −1.97
Z +20.34
T +23.22

1.40 × 10⁶ gain

Outer ③ 0° run #294 — 1.58×10^6 gain

X: +7.55
Y: +22.95
Z: +1.14
T: +24.18

Outer ③ 90° run #295 — 1.44×10^6 gain

X: +7.59
Y: −1.58
Z: +21.8
T: +23.1

Outer ② 0° run #296 — 1.62×10^6 gain

X: +3.93
Y: +23.74
Z: +0.64
T: +24.08

Outer ② 90° run #297 — 1.59×10^6 gain

X: +4.15
Y: −1.20
Z: +22.68
T: +23.09

Outer ① 0° run #298 — 1.67×10^6 gain

X: +0.659
Y: +23.88
Z: +0.146
T: 23.88

Outer ① 90° run #299 — 1.51×10^6 gain

X: +0.705
Y: −0.78
Z: +22.93
T: +22.95

Side ① 0° run #300 — 1.69×10^6 gain

X: +0.741
Y: +0.147
Z: +2.33
T: +2.45

~~**side ① 90°**~~ → skip

X:

side ② 0° run #301 — 1.58×10^6 gain

X: +6.15
Y: −7.83
Z: +2.61
T: +10.29

side ② 90° run #302 — 1.66×10^6 gain

X: +6.68
Y: −2.54
Z: −8.62
T: +11.20

side ③ 0° run #303 — 1.62×10^6 gain

X: +11.62
Y: −11.04
Z: +2.83
T: 16.28

side ③ 90° run #304 — 1.62×10^6 gain

X: +12.11
Y: −2.45
Z: −12.23
T: +17.40

side ④ 0° run #305 — 1.46×10^6 gain

X: +14.36
Y: −13.28
Z: +2.95
T: +19.78

side ④ 90° run#306 1.57 × 10⁶ gain

X: +14.28
Y: -2.46
Z: -14.73
T: +20.66

side ⑤ 0° run#307 1.47 × 10⁶ gain

X: +15.24
Y: -15.99
Z: +3.03
T: +22.3

side ⑤ 90° run#308 1.67 × 10⁶ gain

X: +15.05
Y: -2.52
Z: -17.25
T: +23.03

side ⑥ 0° run#309 1.60 × 10⁶ gain

X: +15.6
Y: -20.3
Z: +3.11
T: +25.80

side ⑥ 90° run#310 1.66 × 10⁶ gain

X: +15.88
Y: -2.53
Z: -21.32
T: +26.71

12:50 Bc = 1.467 T

Inner ① 0° NO compensation coil. & SC on

X -0.33 G
Y -280 G
Z -1.5 G
T 280 G

compensation 360A on, SC off.

X -0.19
Y +298
Z +0.69
T. 298 G

For the test @ ECRIT.

Inner ① 0° ~~Compen~~ NC: 360A, SC: 360A.
Bc = 1.2507 T

Run#311 1.65 × 10⁶

X: -1.73
Y: +10.83
Z: +0.12
T: +10.97

Inner ④ 90° Run# 312

X: -1.63
Y: -0.69
Z: +10.38
T: +10.52

1.59 × 10⁶

Inner ⑦ 0° Run#313

X: -36.01
Y: +30.8
Z: +3.67
T: 47.53

1.45 × 10⁶
QE 0.64
gain 0.87

Inner ⑦ 90° Run#314

X: -35.14
Y: -5.49
Z: +31.1
T: +47.27

1.41 × 10⁶
QE 0.65
gain 0.84

Outer ⑨ 0° Run#315 1.36 × 10⁶

X: +44.65
Y: -25.59
Z: +4.08
T: +51.62

Outer ⑨ 90° Run # 316

X: +45.66
Y: -2.62
Z: -28.4
T: +53.83

1.38×10^6

Outer ① 0° Run # 317

X: +1.45
Y: -0.54
Z: -0.12
T: 1.52

1.72×10^6

side ① 0° Run # 318

X: -38.37
Y: -7.27
Z: +2.05
T: +39.11

1.41×10^6

side ⑥ 0° Run # 319

X: -15.64
Y: -34.79
Z: +2.78
T: +38.25

1.54×10^6

QE 0.86
gain 0.92

side ⑥ 90° Run # 320

X: -15.05
Y: -3.41
Z: -34.8
T: +38.02

1.43×10^6

QE 0.50
gain 0.85

~17:00 Power cut due to lightning
21:04

SC: 360A NC: 320A Bc = 1.2461 T

Front ① 0° Run # 321

X: -1.17
Y: +21.35
Z: +1.55
T: +21:43

1.60×10^6 gain
r.QE 1.01
r.gain 0.96

Front ① 90° Run # 322

X: -1.03
Y: -0.72
Z: +20.51
T: +20.55

gain 1.55×10^6
r-QE 0.97
r.gain 0.92

Front ② 0° Run # 323

X: -1.94
Y: +14.55
Z: -2.71
T: +14.93

gain 1.62×10^6
r-QE 1.01
r.gain 0.97

Front ② 90° Run # 324

X: -2.08
Y: +1.63
Z: +13.69
T: +13.94

gain 1.51×10^6
r-QE 1.04
r-gain 0.90

Front ③ 0° Run # 325

X: -3.72
Y: -0.25
Z: +6.65
T: +7.62

gain 1.58×10^6
r-QE 1.02
r-gain 0.94

Front ③ 90° Run # 326

X: -3.52
Y: -7.46
Z: -0.19
T: +8.25

gain 1.67×10^6
r-QE 0.99
r-gain 0.99

Front ④ 0° Run # 327

X: -0.93
Y: +20.6
Z: +0.84
T: +20.7

gain 1.65×10^6
r-QE 0.98
r-gain 0.98

Front ④ 90° Run # 328

X: -0.96
Y: -1.21
Z: +19.9
T: +20.0

gain 1.53×10^6
r-QE 0.99
r-gain 0.91

Front ⑤ 0° — Run # 329

x: -3.06
Y: +16.2
z: +7.63
T: +18.2

gain 1.61 × 10^6
r-QE 0.99
r-gain 0.96

Front ⑤ 90° — Run # 330

x: -2.78
Y: -8.40
z: +15.58
T: +17.92

gain 1.52 × 10^6
r-QE 1.03
r-gain 0.90

Front ⑥ 0° — Run # 331

x: -5.58
Y: +9.45
z: +14.77
T: +18.40

gain 1.52 × 10^6
r-QE 1.00
r-gain 0.91

Front ⑥ 90° — Run # 332

x: -4.59
Y: -15.49
z: +8.89
T: +18.44

gain 1.62 × 10^6
r-QE 0.98
r-gain 0.97

Front ⑦ 0° — Run # 333

x: -1.41
Y: +29.4
z: +0.93
T: +29.4

gain 1.59 × 10^6
r-QE 0.99
r-gain 0.95

Front ⑦ 90° — Run # 334

x: -1.06
Y: -1.41
z: +28.35
T: +28.41

gain 1.49 × 10^6
r-QE 0.94
r-gain 0.89

Front ⑧ 0° — Run # 335

x: -3.60
Y: +25.43
z: +14.38
T: +29.44

gain 1.58 × 10^6
r-QE 0.96
r-gain 0.94

Front ⑧ 90° — Run # 336

x: -2.65
Y: -14.92
z: +24.9
T: +29.1

gain 1.50 × 10^6
r-QE 0.96
r-gain 0.89

Front ⑨ 90° — Run # 337

x: -5.08
Y: -32.20
z: +5.42
T: +33.1

gain 1.58 × 10^6
r-QE 1.01
r-gain 0.94

Front ⑨ 180° — Run # 338

x: -4.39
Y: -3.39
z: -33.48
T: +33.94

gain 1.65 × 10^6
r-QE 0.76
r-gain 0.98

---

side ① 0° +5 cm upstream — Run # 339

x: -7.38
Y: -8.02
z: 3.16
T: 11.35

gain 1.60 × 10^6
r-QE 0.96
r-gain 0.95

side ① 90° +5 cm upstream ⇒ not possible to place?

side ③ 0° +5 cm upstream — Run # 340

x: +10.6
Y: -14.5
z: +3.5
T: +18.36

gain 1.46 × 10^6
r-QE 1.03
r-gain 0.87

side ③ 90° +5cm upstream — Run#341

X: +11.07
Y: -3.01
Z: -15.48
T: +19.27

gain 1.55 × 10⁶
r-QE 0.95
r-gain 0.92

side ⑤ 0° +5cm upstream — Run#342

X: +11.6
Y: -16.91
Z: +3.69
T: +20.83

gain 1.54×10⁶
r-QE 1.01
r-gain 0.92

side ⑤ 90° +5cm upstream — Run#343

X: +11.5
Y: -3.15
Z: -17.94
T: +21.54

gain 1.56 × 10⁶
r-QE 0.97
r-gain 0.93

side ⑥ 0° +5cm upstream — Run#344

X: ~~+10~~ +9.79
Y: -22.70
Z: +3.68
T: +24.99

gain 1.53 × 10⁶
r-QE 1.05
r-gain 0.91

Outer ① 0° +5cm inR — Run#345

X: +1.37
Y: +28.9
Z: +0.49
T: +29.0

gain 1.59 × 10⁶
r-QE 0.99
r-gain 0.95

Outer ④ 0° +5cm inR — Run#346

X: +13.2
Y: +27.05
Z: +2.06
T: +30.2

gain 1.53 × 10⁶
r-QE 0.94
r-gain 0.91

Outer ⑦ 0° +5cm inR — Run#347

X: +27.9
Y: +19.9
Z: +3.3
T: +34.42

gain 1.32×10⁶
r-QE 0.89
r-gain 0.79

HV-scan

Outer ⑥ 90°

X: +20.85
Y: -2.65
Z: +18.35
T: +27.9

Attenuation already taken into account

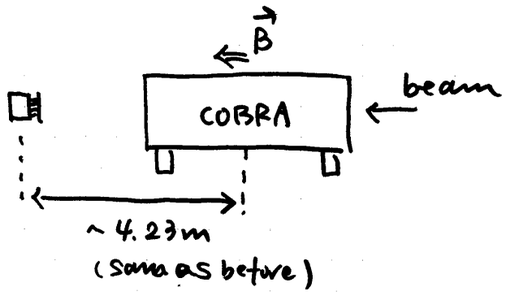
			attn
HV +750V	Run#348	1.34 × 10⁶ r-QE 0.90 r-gain 0.80	10 dB
HV +730V	Run#349	1.03 × 10⁶ r-QE 0.89 r-gain 0.61	10 dB
HV +710V	Run#350	0.71 × 10⁶ r-QE 0.94 r-gain 0.42	10 dB
~~HV +770V~~	~~Run#351~~		
HV +690V	Run#351	0.525×10⁶ r-QE 0.96 r-gain 0.31	0 dB
HV +770V	Run#352	1.77 × 10⁶ r-QE 0.91 r-gain 1.06	10 dB
HV +790V	Run#353	2.35 × 10⁶ r-QE 0.91 r-gain 1.40	10 dB
HV +810V	Run#354	2.90 × 10⁶ r-QE 0.96 r-gain 1.73	10 dB
HV +830V	Run#355	3.82 × 10⁶ r-Q 0.94 2.27	10 dB
HV ~~+870~~ 850 V	Run#356	4.71 × 10⁶ r-QE 0.98 r-gain 2.81	20 dB

HV +870V Run # 357 6.05×10^6 20dB
r-QE 0.96
r-gain 3.61

On beam axis

X −60.89
Y −5.19
Z −8.68
T +61.73

→ measured@PMT center
(15mm from photocathode)



HV +750 V Run # 358 1.25×10^6 attn 10dB
r-QE 0.57
r-gain 0.74

HV +730 V Run # 359 ~~1.25×10^6~~ 0.93×10^6 10dB
r-QE 0.56
r-gain 0.55

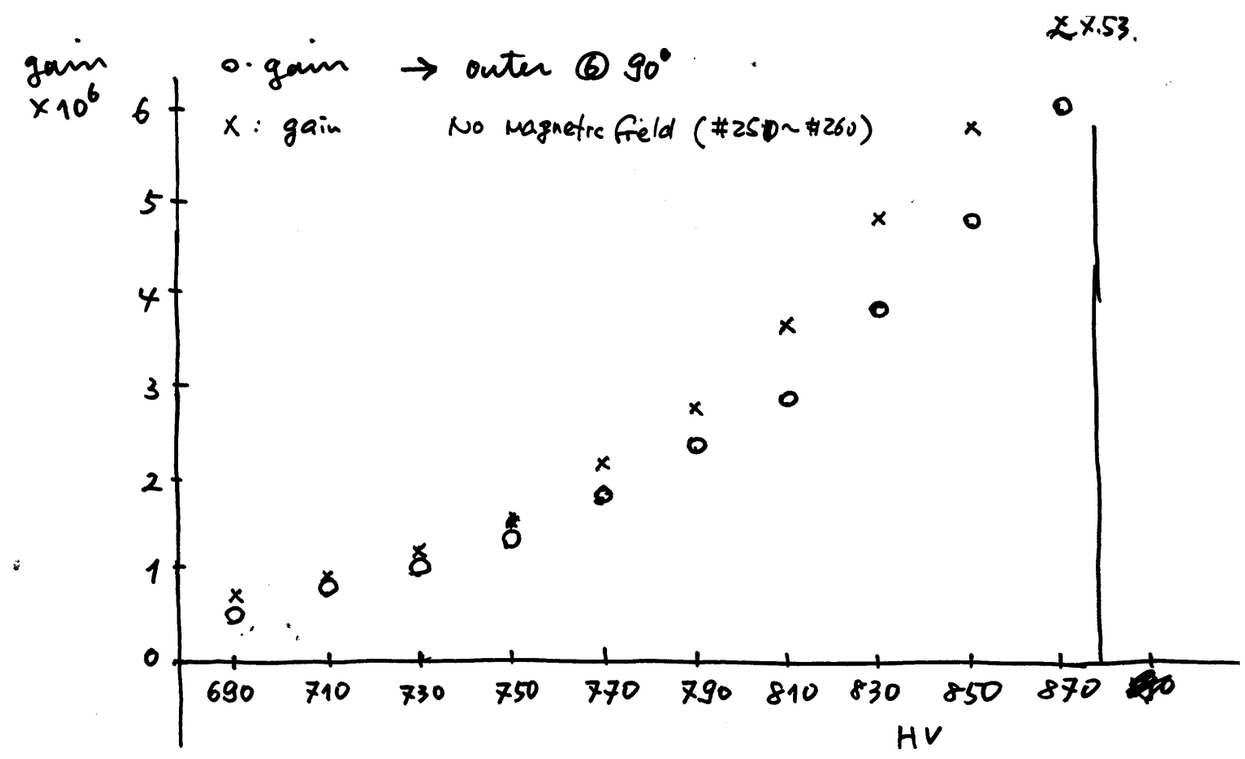
HV +710 V Run # 360 0.73×10^6 0dB
r-QE 0.52
r-gain 0.43

HV +690V Run # 361 0.53×10^6 0dB
r-QE 0.53
r-gain 0.31

HV +770V Run # 362 1.72×10^6 10dB
r-QE 0.55
r-gain 1.03

HV +790 V Run # 363 2.23×10^6 10dB
r-QE 0.57
r-gain 1.33

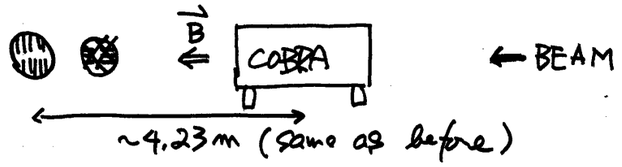
HV +810 V Run # 364 2.99×10^6 10dB
r-QE 0.56
r-gain 1.78



HV +830V run # 365 3.69×10^6 10dB
r-QE 0.59
r-gain 2.20

HV +850V run # 366 4.79×10^6 10dB
r-QE 0.59
r-gain 2.85

HV +870 V run # 367 6.01×10^6 20dB
r-QE 0.60
r-gain 3.58 1.24



			attn
HV +750 V	Run #368	1.39×10^6 r-QE 0.46 r-gain 0.83	10 dB
HV +730 V	Run #369	7.03×10^6 r-QE 0.46 r-gain 0.62	10 dB
HV +710 V	Run #370	0.79×10^6 r-QE 0.45 r-gain 0.47	0 dB
HV +690 V	Run #371	0.58×10^6 r-QE 0.44 r-gain 0.35	0 dB
HV +770 V	Run #372	7.82×10^6 r-QE 0.47 r-gain 1.08	10 dB
HV +790 V	Run #373	2.45×10^6 r-QE 0.46 r-gain 1.46	10 dB
HV +810 V	Run #374	3.77×10^6 r-QE 0.48 r-gain 1.85	10 dB
HV +830 V	Run #375	4.01×10^6 r-QE 0.48 r-gain 2.39	10 dB
HV +850 V	Run #376	4.90×10^6 r-QE 0.51 r-gain 2.92	10 dB

			attn
HV +870 V	Run # 377	6.38×10^6 r-QE 0.50 r-gain 3.80.	20 dB

1.2460 T @ COBRA center. 13-May-2004, 0:48 AM.

22 May, 2004

20:40. Neutron flux measurement @ A3 area.
22:27. stop. ~0cm height.

7276 events / 107 min.

≈ 1.13 Hz // by larger ^{3}He detector.

Discri. threshold +300 mV (default setting of PSI user)

A3NOSHIELD.bmp beam was almost on!

- B4C neutron absorber ~ minimum 30mm.
- ^{3}He counter covered by upper B4C. "
  to take B.G. measurement

22:35 Neutron flux measurement. @ A3 area
with B4C. thermal neutron absorber. 30mm.
22:46

633 evts / 11 min

A3B4C 30mm.bmp

22:53 Neutron flux @ A3 area
with B4C. minimum 60mm.
23/May/2004
9.
18:57

35880 events / 19.1 hours
= 0.52 Hz. //

23 May 2004

Sensitivity of ^{3}He neutron counter

small size. : 0.5 NH 1 / 1kF
large size : 8 NH 4F.

0.5 ⇒ 0.5 cps / (neutron/cm²/s)
8 ⇒ 8 cps / (neutron/cm²/s)

So, A3 area neutron flux.

1.13 Hz ⇒ 0.14 neutrons/cm²/s

(normal environmental neutrons ~ 0.001 n/cm²/s) 100 times!!

B4C neutron absorber effect.

no shield for ^{3}He counter @ A3 area -- 1.13 Hz

[redacted]
30mm B4C ... 0.96 Hz
60 mm " ... 0.52 Hz.

if. 100% B4C, σ = 600 b
ρ = 2.5 g/cm³ $\Sigma = N\sigma$ = 17 cm⁻¹ (0.6mm)
mean free path

→ this absorber contains B4C less than 1% ? //

This might not be B4C.
Just polyethlene?

23 May 2007

19:48 Neutron flux measurement @ B3 area. 70cm height on the table.

22:48. Stopped.

19,560 events/10800 s ≈ 1.81 Hz

22:51 Neutron Measurement @ C3 area. 70cm H

12:30 stopped 90.34 kwfm

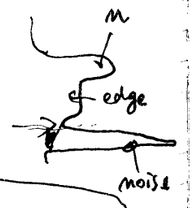
90.340 events / 49140 s ≃ **1,84 Hz**

14:52 Neutron Measurement flux @ D3 area 70cmH.

18:00. 21,670 events / 11280 s = 1.92 Hz //

18:08 Neutron measurement @ D3 area.
Am/Be source moved to outside the area.

[redacted] woops! mistake!!



To do List.

- to remove Am/Be sources from that position.
- Background measurement. by no thermal neutron condition.
  (outside is best?).
- Beam off timing measurement in the area. (on Wednesday)
- ...

20:16 same as @ D3 area without Am/Be.

21:28 8873 events / 4320 sec. = 2.05 [redacted] Hz

No difference between AmBe source existence or not.
Am/Be source was recovered to original position.

21:53. Neutron Measurement @ C3, 146cm Height.

22:33. 5103 events / 2400 sec. = 2.12 Hz
(~ 0.27 n/cm²/s)

LabVIEW installed by Watane. Otani.
Office2000 " by Ryu Sawada. into megoscillo

25/May/2007.

0:46

2:01. Neutron Measurement @ C3, 146cm Height.
±12V power line for preamp was connected to ±6V // → fixed.

9:29 25358 / 26520 sec = 0.96 Hz (LabVIEW)

{ 9:29 start 1.8Hz (~100s). ↕ (TekScope) ↑ More Dead time?

9:41 Small size detector 0.5NH1 @ C3, 146cm Height.
{sensitivity ~ 1/16}
34 events / 200 sec = 0.17.

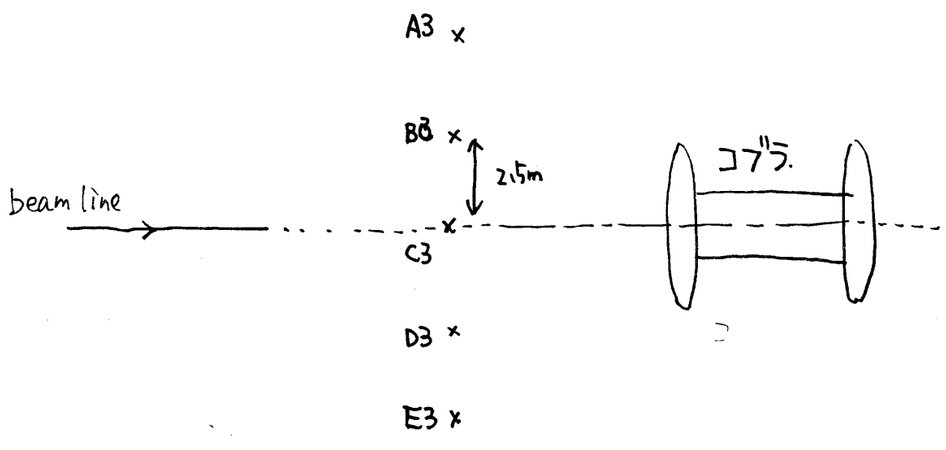
9:59 151 events / 1080 s = 0.14 Hz (~ 0.28 n/cm²/s)

12:00. Am/Be neutron source near the ^{3}He detector.
to check if ^{3}He detector & TekScope can get data taking larger than 2Hz.

⇓

15 Hz detected //. O.K.

Am/Be source. ··· 370 MBq (21000 n/s)



	(n/cm²/s) Neutron flux	cps
A3:	0.14	1.13
B3:	0.23	1.81
C3:	0.23	1.84
D3:	0.24	1.92
E3:	0.23	1.82

26 May, 2004. Wed.

10:44 Neutron Measurement @ A3 area.
No beam from proton machine. (15 evts/17 min. ≈ 0.019 Hz ≈ 0.002 n/cm²/s)

17:13. 1150 events/ 269 min. 0.071 Hz 0.009 n/cm²/s
but today, beam development was done several times.
not perfectly shut down. ∴ ≪ 0.009 n/cm²/s

17:28 Same condition. (start). → beam was on and off.
difficult to detect real rate.

27 May, 2004

11:45 Neutron Measurement @ A3 area.
proton beam current : 1680 μA

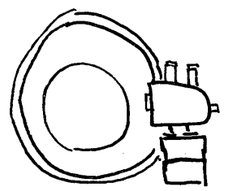
15:51 17010 evts/ 14760 s. = 1.15 Hz //

17:31 Neutron Measurement @ E3 area

18:24 5795 events/ 3180 sec. = 1.82 Hz //

5/June/2004

Moved LP ~~to~~ beside the Cobra



0:10 Outer vessel start evacuation

He leak test O.K. → 9.2×10^{-2} Pa

0:10 Inner vessel start evacuation → 3.2×10^{-1} Pa

13:00 Inner vessel He leak test O.K.

16:00 Inner vessel 5.8×10^{-2} Pa

Outer vessel 6.1×10^{-3} Pa

18:00 Purification System He leak test O.K.

(Piping work between Tank P.S. chamber finished)

start evacuation all

9/June/2004

10:00 stop baking of flexible tubes

11:00 IV 1.3×10^{-2} Pa

OV 9.3×10^{-4} Pa

PS 4.6×10^{-4} Pa

fill chamber with 2.0 atm Xe

19:00 start cooling with refrigerator

10/June

15:00 start ~~cool~~ LN_2 flow for cooling

11/June

getter was broken (May be, around electric circuite)

↓

removed getter and investigate

↓

Maybe, it is ~~hard~~ necessary to replace some parts on board.

12/June

- When we came to the area we realized strange things.
  - refrigerator ~~is~~ did not work
  - Pressur of Xe chamber was 2.6 atm (more than we filled)
  - Compresser for refrigerator ~~was~~ had stopped due to "pressur error"

  The pressur of He was around 2~3 atm.
- We ~~sam~~ took some Xe from ~~the~~ Inner Vessel and compared the response of He leak detector against samle Xe and Air.

  Obviously, Xe contained more He than that Air contains
- We resulted that He in refrigerator went into Xe chamber
- We decided to evacuate Inner Vessel.

16:00 Inner Vessel ~~the~~ evacuation start.

W.O
R.S

According to LabVIEW log

		IV pressure	PMT Holder (low)	Cold head
12/Jun	1:22	1.53 atm	-39°C	-107°C
	1:30	1.54	-39	-107
	2:30	1.92	-39	-105
	3:30	2.38	-39	-54
	4:30	2.55	-39	-26
	5:30	2.60	-38	-13
	6:30	2.62	-37	-6
	7:30	2.63	-37	-4
	8:30	2.63	-36	-3

Normal Values

↓ stable

13. Jun. '04

11:30 IV 4.0×10^{-1} Pa

14/Jun/2004

10:00 IV 3.3×10^{-1} Pa

TMP stop

IV closed

10:20 IV 3.2×10^{0} Pa

10:26 fill ~~[illegible]~~ refrigerator with N_2 gas

⇓

IV pressure goes up quickly.

⇓

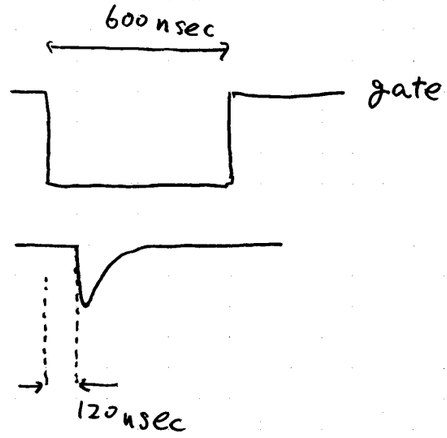
Obviously, there is a leak between refrigerator and LP

• Fill IV with N_2 gas of ~1 atm

• start to investigate PMT behavior

BK31	700V	I can see dark current.	
	900V	12μA	
L39	500V	37μA	
	900V	68μA	I can see dark current
T39	500V	37μA	
	900V	66μA	D.C. ok
R39	500V	37μA	
	900V	65μA	D.C. ok
BT39	500V	37μA	
	900V	66μA	D.C. ok
F0	500V	35μA	
	900V	64μA	D.C. ok

• checking PMT with LED run



20:45 # 7167 pedestal run

20:47 # 7169 LED 185 (92.93.94.95.96.98) with 10dB att

⋮ LED height adjustment

21:05 # 7170 LED 185 (85 87 90 93 96 98) with 10dB att

21:30 # 7172 pedestal ◎

21:40 # 7173 LED (ADC data is not booked)

21:42 # 7174 LED ◎

LED 387

22:40 # 7175 pedestal

22:41 # 7176 LED fail

22:51 # 7177 LED

7178 LED (85. 86. 87. 88. 89. 90)

15/June/2004

PMT check using LED Calibration

#7185, pedestal run, #7184 LED run

No ADC count

#	2		HV off	
	11		〃	
	17		〃	
	61		〃	
	64	G3-1 ADC 13-65		Divider input signal O.K.
	102	G4-7		No divider input signal
	105			Divider input sigal O.K.
	119		HV off	
	127		〃	
	131			Divider input signal O.K.
	134			Divider input signal O.K.
	172			No divider input signal
	178			No divide input signal

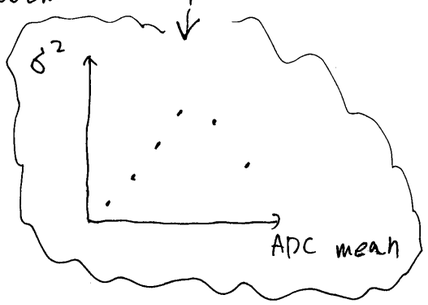
output impedance measured before divider = 0.5MΩ

---------> = 100 kΩ

---------> = 100 kΩ

Strange shape of σ^2 vs ADC mean

10	g1-11	13-11	pedestal σ = 18ch
68	g3-5	13-69	not reproducable problem
80	g3-17	13-81	?
126	g4-31	11-21	pedestal σ = 12ch
193	g7-30	9-40	pedestal σ = 21ch
218	g8-23	9-71	pedestal σ = 18ch
222			known problem



	problem
HV	
HV	
HV	
HV	
ADC ~ divider	→ No signal at feedthrough
PMT ~ divider	
ADC ~ divider	
HV	
HV	
ADC ~ divider	
ADC ~ divider	→ No signal at feedthrough → HV was off
PMT ~ divider	→ output impedance measured at feedthrough is also 0.5MΩ
PMT ~ divider	
pedestal	→ clean signal at feedthrough spike 9μsec at out of divider → divider problem (upper output)
	〃
	〃
pedestal	〃
pedestal	〃
pedestal	〃
known problem	〃

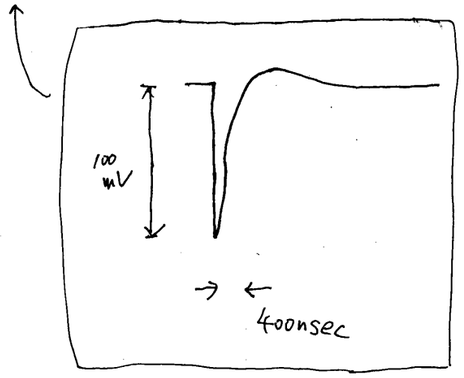
divider output O.K → ~~short in delay cable~~ → Fixed

It was moved to ADC 11-48 on 10/10/2005

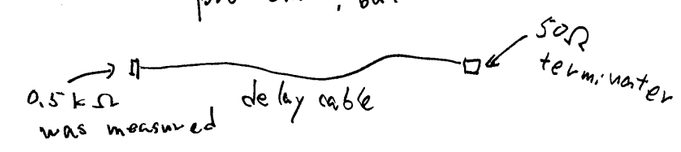
signal at ADC input looks normal

〃

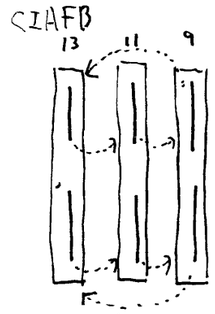
overshoot



Delay cable for ADC 120 may have a problem, but



check ADC with charge input card and take pedestal



(11, 70, 106, 136) — broad pedestal channels

⇓

ADC has no problem.

17/June/2004

12:00
- remove refrigerator from LP
  put stop flange there.
- ~~Check~~ A leak was found → here

- (start evacuation LP
  start evacuation 1/2 gal bottle.

22/June/2004

15:00

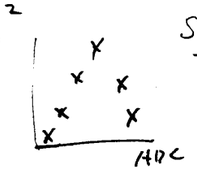
±V	9.5×10^{-2} Pa
0V	3.4×10^{-4} Pa
1/2 gal bottle	4.3×10^{-3} Pa

5:35 #7189 pedestal

5:37 #7190 LED

23/June/2004

No ADC Input
#2, 11, 17, 61, 63, 94, 102, 119
127, 131, 134, 172, 178

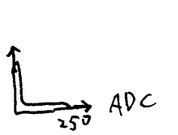
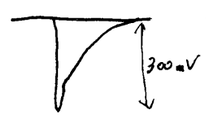


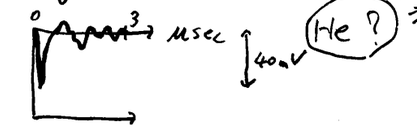
strange
10, 67, 80, 129, 193, 218, 222

No ADC Input

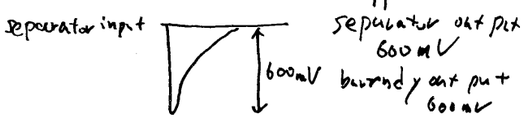
2			HV off
11			HV off
17			HV off
61			HV off
63	2-32	13-64	~~no ADC input signal, burndy out put o.k. ⇒ delay cable problem~~ miss asignment at Burndy ⇒ fixed
94	3-31	13-95	ADC input signal o.k. ⇒ ADC problem
102			no signal at feedthrough
119			HV off
127			HV off
131	5-16	11-64	ADC input signal o.k. ⇒ ADC problem
134	5-19	11-67	burndy pin problem ⇒ replaced (fixed)
172			HV off
176			output impedance measured at feedthrough = 0.5 MΩ

Strange

10		pedestal problem	
67		〃	〃 ADC input signal looks "not so bad."
80	93-17	13-81 L14	ADC input 
129		pedestal	σ = 10.6
193		pedestal	σ = 17.5
218		pedestal	σ = 12.8
222		known problem (overshoot)	



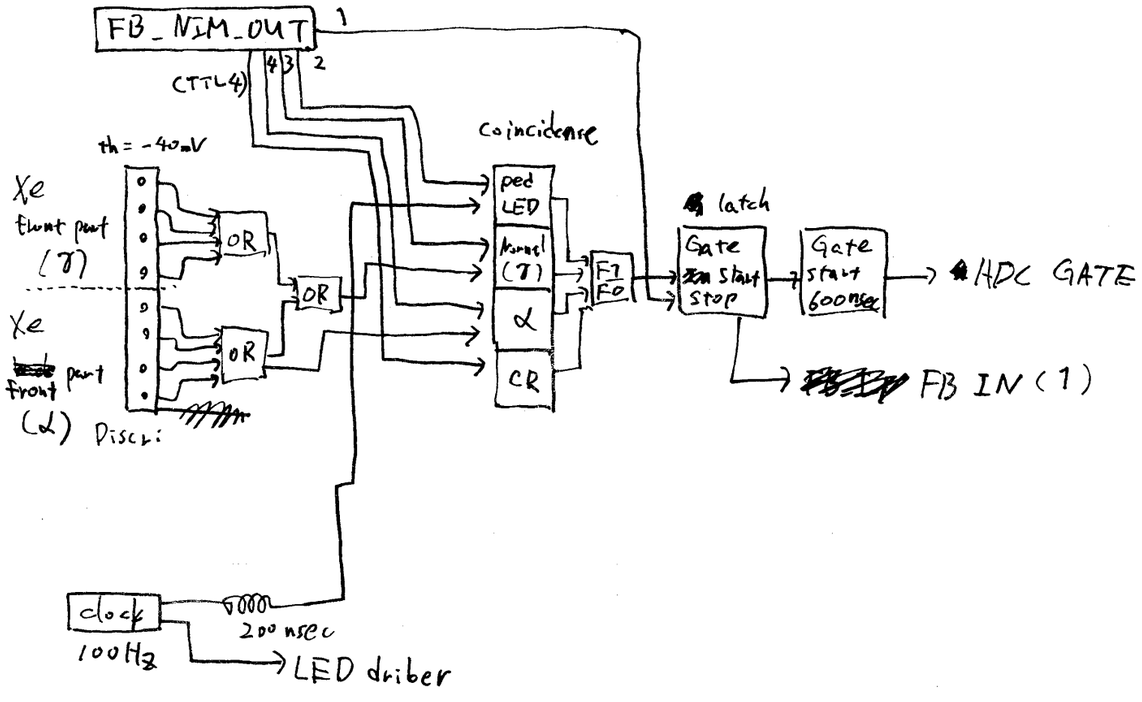
delay cable problem



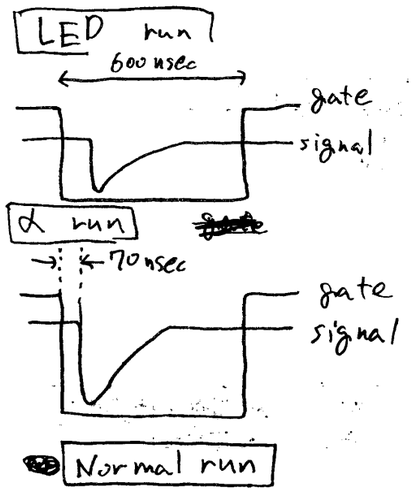
#7191 pedestal (ADC input cards were disconnected)
at δ of pedestal of all channel < 1.0ch

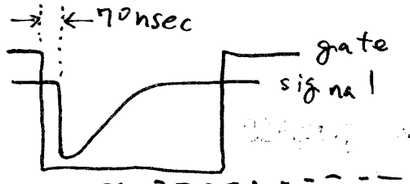
12:15 #7192 pedestal
12:15 #7193 LED δ7ch ch ... #10, 17.9
120 23.4
193 17.6
218 13.0

26 / June / 2004
OV 3.6×10^{-4} Pa
½ gal Bottle 1.2×10^{-3} Pa



I adjusted timing for LED and α run and normal





replacement of refrigerator
KEK → Iwatani

14 / July / 2004
IV 2.0×10^{-2} Pa
leak test → leakage was found at signal feedthrough
↓
put Araldite
P.S. + ½ gal bottle $\sim\times10^{-4}$ Pa
18:30 fill IV with Xe of 1.96 atm without getter
start cooling with refrigerator

15/July/2004

16:00 start pre cooling with LN_2
1 LN_2 330 l, 2 bar (gauge)

20:00 Install getter → He leak test O.K.
P.S. line 8.5×10^{-4} Pa

start evacuate getter

16/July/2004
LN_2 Tank ~~[illegible]~~ charge

11:00 liquefaction start (w/ refrigerator)
(w/ getter)

19/July/2004

9:30 Liquefaction is in progress

Current Status.

Control Mode
- Refrigirator only
- Pressure Control at 0.110 ~ 0.120 with COMPRESSOR ON/OFF

Surface level up ~ 0.0
low ~ 0.92.

Flow rate 7.90 l/min (gas) (~ 0.96 l/h (liquid)

Pressure Reducer setting
TANK OUT 1st ~6MPa
2nd ~0.6 MPa
Getter out (1st ~0.6 MPa)
2nd ~ 0.18 MPa

⚠ Bundy Connector for Temperature Control is rather unstable. When HN installed the COSMIC-RAY counter. temperature readout jumped!! But this is not a serious problem.

9:40 TRY to test Temperature control.
Set Point 162K. (cold head temperature)

9:48 Heating Power 29.03%
Measured temperature 161.98 K
Flow rate 8.21 l/min (gas)
Vessel Inner Pressure 0.116 MPa

9:55 **Labview was stopped and restarted for refreshing the time scale.**

11:30 Temperature Control seems to work stably.
Continue liquefaction in this mode
Temperature Set Point 161.4 K
Heating Power 70 ~ 75%
Measured Temp 161.4 ± 0.3 K
Flow rate 9.17 l/min (gas)
Vessel Inner Pressure 0.114 MPa