

2005 / Jan / 11

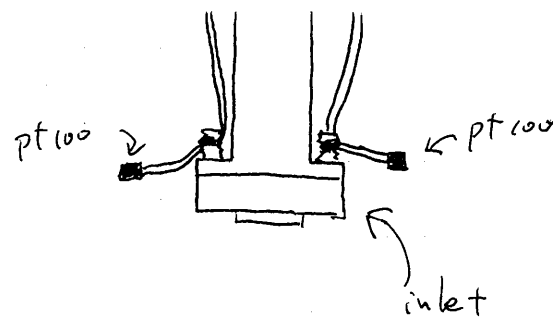
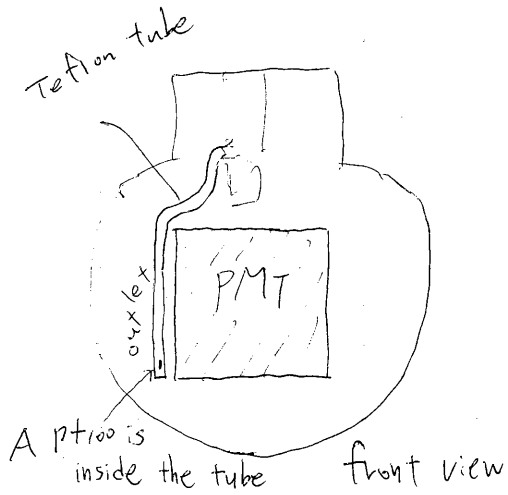
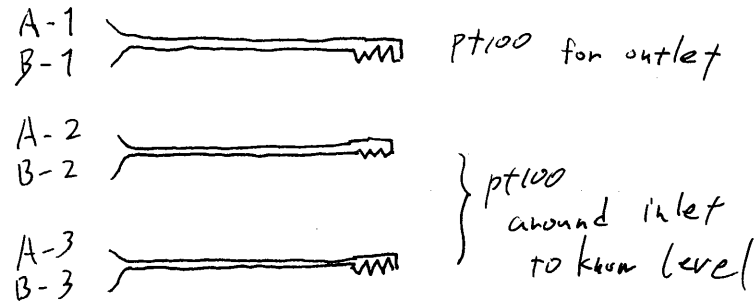
transport LP to the east area labo.

replace back chimney to one with liquid phase pump

put 2 pt100s ^{around} inlet of the liquid pump.

1 pt100 will be placed at the outlet of the pump.

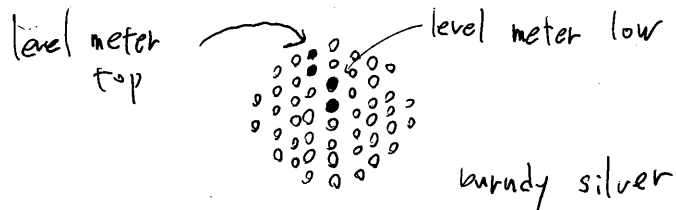
ZIF PT
see Note #3
Page 189



13 / Jan / 2003

o repair of level meter

a latch of bundy socket has gone bad. So I changed balls for level meter. (low).



see Note #3
Page 189

o LED 7 ~~was~~ connected wrong way to bundy socket has been \Rightarrow corrected.

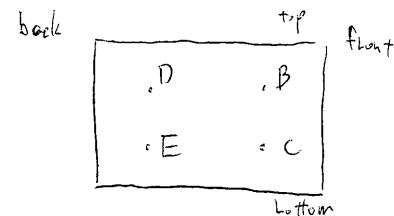
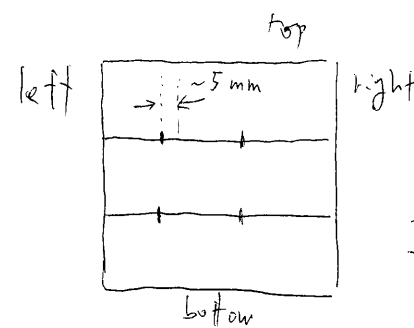
14 / Jan / 2004

Dark current test

L7
BK3
BK27

\Rightarrow Dark current was seen with applying 900V.

\Downarrow
PMT itself contact up to inner G10 card contact up to ZIF } are O.K.



	left	right
B	300 Bq	310
C	210	500
D	360	170
E	660	480

I could see black spots on wire about 5mm left from correct points. (Are they sources or markers?)

29 / Jan / 2004

4 wires replaced for alpha source.

Installation of PMT holder into chamber

Signal cable resistance check \rightarrow O.K.

HV

change HV cable of T22 from 80 μ m to 44 μ m

2 / Feb / 2004

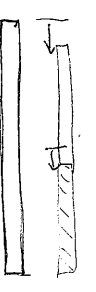
transport LP to Counts hall

start evacuation of LP

3 / Feb / 2004

He leak test of top ~~flange~~ flange of LP \Rightarrow O.K.
 around
 IV -1.2×10^{-1} Pa

バネの 箱にバネを300g かけると 2mm 縮む。バネの通常長は2cm

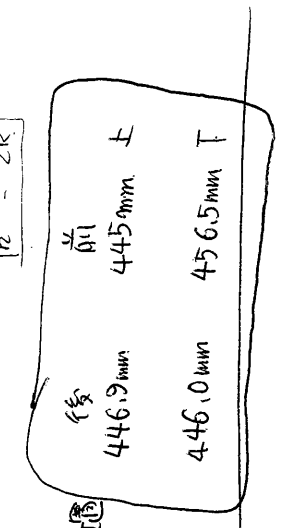
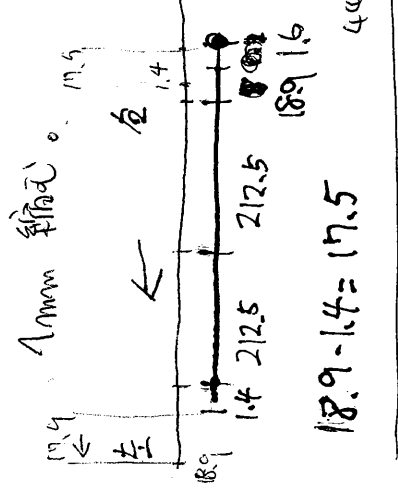


$$\frac{1}{2} k x^2 = \frac{1}{2} k' x'^2$$

$$x' = \frac{1}{2} x$$

$$= \frac{1}{2} k x (\frac{1}{2} x)^2 = \frac{1}{8} k' x^2$$

長さが 半分になると、バネ定数は、2倍になる。
 100g 300g かけると、α 2cm (縮む) は、半分になる。
 長さが 半分になると、バネの 300g の 縮みは 2cm

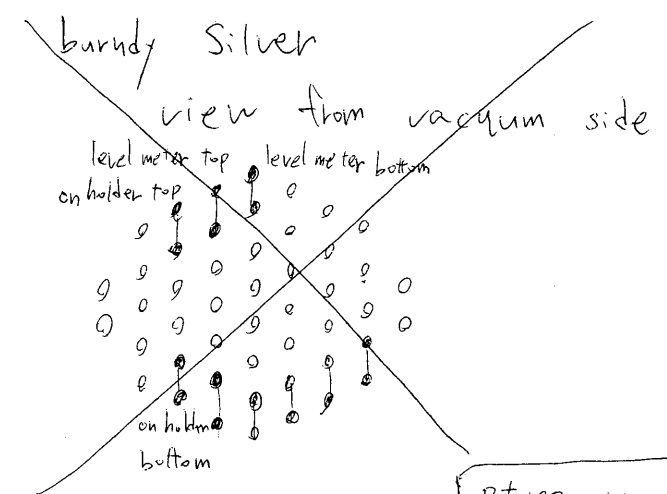


The sources cover from 0.5mm to 1mm of wire
 The reference mark is at 180+/- 0.5mm from the first source (S#1) and 304+/- 0.5 mm from the second source (S#2).

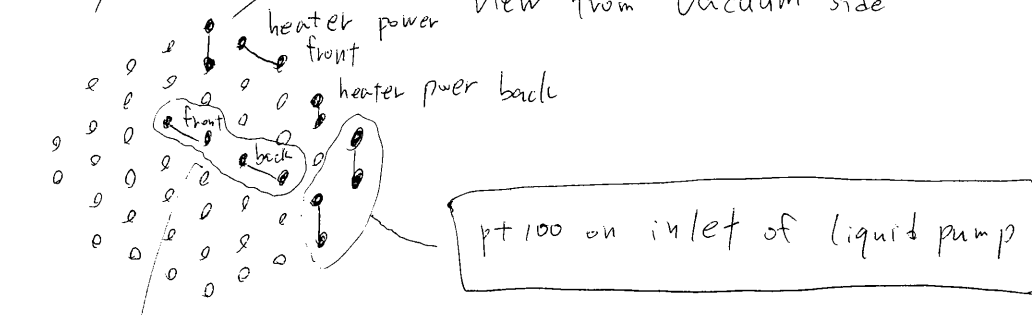
Using as reference the cross-calibration between the activity measured with a PIN diode in Genoa and the corresponding activity measured in the Large Prototype, I estimate the following activities for the 5 wires.

- Wire-A: S#1 = 1.3 KBq, S#2= 1.2 KBq
- Wire-B: S#1 = 300 Bq, S#2= 310 Bq
- Wire-C: S#1 = 500 Bq, S#2= 210 Bq
- Wire-D: S#1 = 170 Bq, S#2= 360 Bq
- Wire-E: S#1 = 480 Bq, S#2= 660 Bq

newly installed PT 100



pt100 in outlet of liquid pump



See Page 24

Feb 08 23:00 Purification line 1.2×10^{-2} Pa (too bad)
 OV 1.2×10^{-3} Pa
 IV 3.5×10^{-2} Pa

re-tighten VCRs around Tank

{ Tank line open
 { air valves of tank open
 start evacuation of { purification line
 { Tank line

still there is another leak

Feb. 09 2:00 re-tighten ICF above getter

start evacuation of { purification line
 { Tank line

11:45 Purification line } 3.2×10^{-3} Pa
 Tank line }

there is another leak around top of getter

IV 3.3×10^{-2} Pa
 OV 1.1×10^{-3} Pa

15:00 A leak was found at the out of regulator
 ↓
 fixed

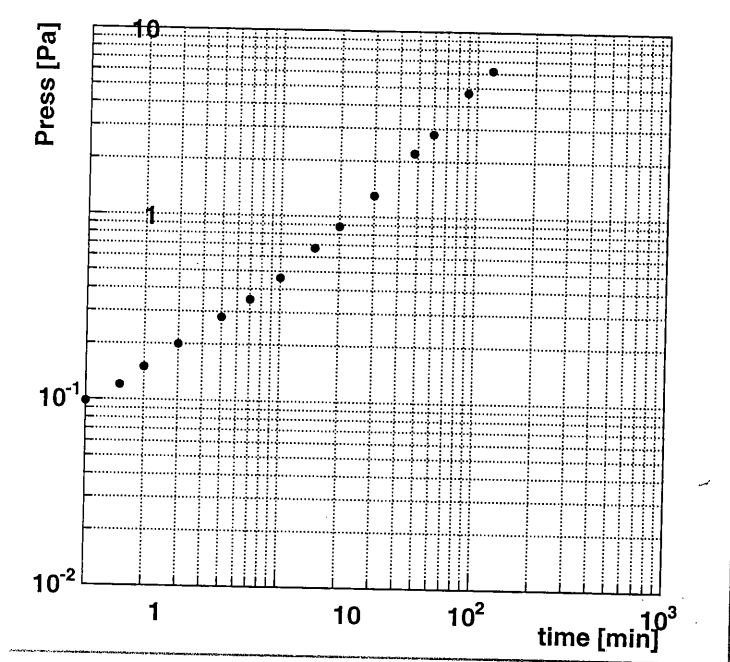
He leak test of purification line and Tank line
 → o.k.

10 Feb 16:00 Purification line + Tank line 4.0×10^{-4} Pa

IV 2.9×10^{-2} Pa
 OV 9.5×10^{-4} Pa

11 Feb 15:00 I V build up test

min	Press
0	2.7×10^{-2}
1	9.8×10^{-2}
1.5	1.2×10^{-1}
2	2.5
3	2.8
5	3.5
7	4.6
10	6.7
15	8.8
20	1.3×10^0
30	2.2
40	2.8
60	4.7
90	6.2
120	



supply of contribution is from water
 10 Pa water
 1000 Pa $22.4 \times 10^{-3} = 78 \text{ g}$
 $78 \times \frac{200}{22.4} \times \frac{70}{70000} = 0.78 \text{ g}$
 $\frac{0.18}{70 \times 10^3} = 0.06 \times 10^{-5}$
 $= 0.6 \text{ ppm}$
 we need 40 times

13 Feb Purification line
 Tank line
 IV
 OV

changed output of HV HV cable for T22 cable # 44 ... HV ch 0-6-7 modified also database.

NFTDC in { frontend.h } ⇒ 0 } ⇒ # of TDC is 16
 NCTDC " " ⇒ 16 }

~~ADC channels~~
 CR Counters

	ADC	TDC
CR1 Up	9-80	(CAMAC) 22-0
CR1 Low	9-81	22-1
CR2 Up	9-82	22-2
CR2 Low	9-83	22-3
CR3 Up	9-84	22-4
CR3 Low	9-85	22-5

Fast Bus

LP monitor

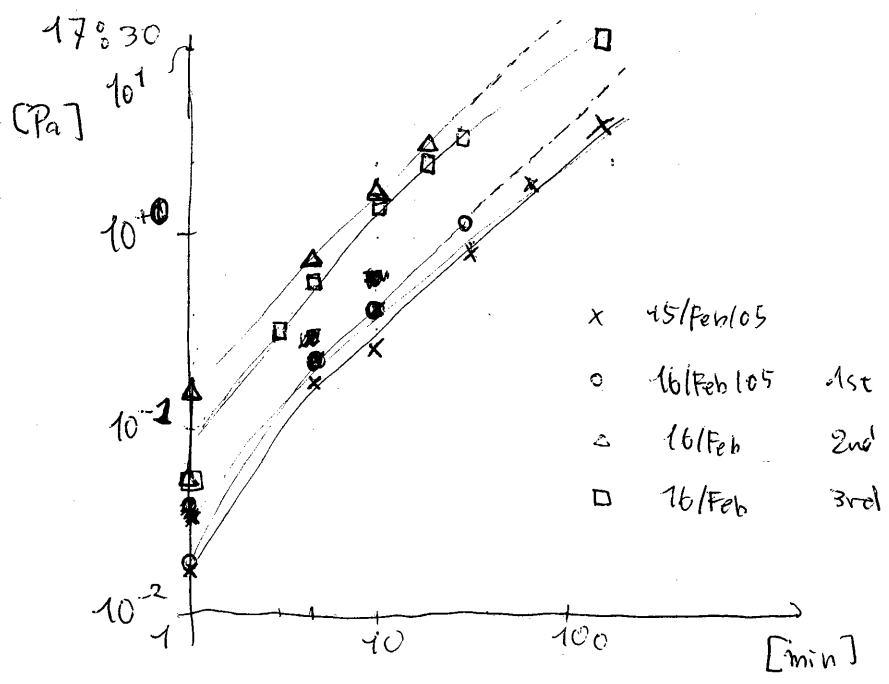
I couldn't compile lpmonitor on PC4884.
 Because I can't install libxml2.
 Instead of PC4884, I installed it on meganln02.
 executable is ~megannn2/lpmonitor/lpmonitor

↳ I couldn't install libxml also on meganln02.
 Scientific Linux does not provide xmlwriter

↳ I installed lpmonitor on PC4466.
 at the same place with offline
 (2005-1)

15/Feb/05

15:30	Stop the turbo pump (Inner Vessel)	2.2×10^{-2} Pa
15:35		4.5×10^{-1} Pa
15:40		2.5×10^{-1} Pa
16:00		7.6×10^{-1} Pa
16:45		2.2 Pa
17:30		3.8 Pa



17:05	Stop the turbo pump (purification line)	4.2×10^{-2} Pa
17:20		2.7×10^{-1} Pa
17:30		4.8×10^{-1} Pa
18:05		6.2×10^{-1} Pa

17:43 All valves are closed.
 Put Air in to the inner vessel to increase water concentration after degasification.

17:45 Air in the inner vessel. @ 1atm

18:30 Flow Cold gas Nitrogen (taken from 400L dewar) in the cooling pipe of the LP.

18:40 Start evacuation again.
 Keep flowing cold gas nitrogen.

21:05 Inner Vessel Vacuum level 1.4×10^{-1} Pa

Start Pre-cooling tomorrow morning after build-up test!

16/Feb/05

8:23 Close the gate valve and stop the pump for the build-up test of the inner vessel

1st build-up test Today		
Time	0 (min)	2.3×10^{-2} Pa
8:28	5	2.3×10^{-1} Pa
8:33	10	3.9×10^{-1} Pa
8:53	30	1.1 Pa

mmmm worse than yesterday's test, but better than the test of 5 days ago...

16/Feb/05

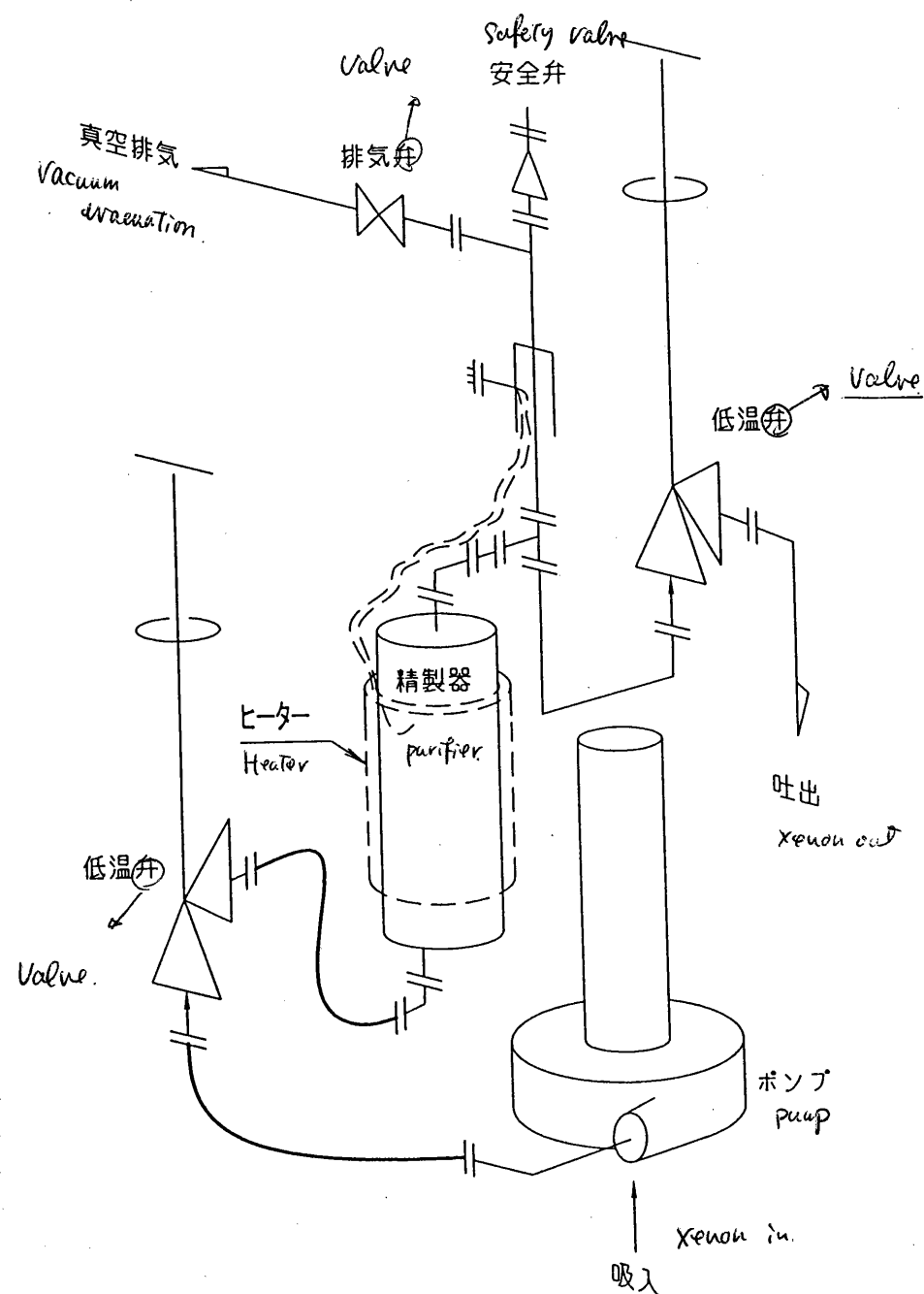
Stop the build-up test
and get Air again!

9:00 Before doing this, liquid-phase purifier cartridge valves
are opened.

9:02 Vacuum level 2.8×10^0 Pa

9:10 8.4×10^0 Pa

The valves are closed again



16/Feb/05

If "10 Pa" water remains in the cryostat, that corresponds
to

$$18 \frac{g}{l} \times \frac{200 l}{22.4 l} \times \frac{10}{100000} \sim 0.02 \frac{g}{kg}$$

Total weight of xenon 1500 ~ 450 kg

$$\Rightarrow \frac{0.02}{450 kg} = \underline{\underline{0.04 ppm}}$$

We need 10 times more contamination
to see the absorption effect clearly.

The purifier cartridge can absorb water up to $\sim 20 \frac{g}{kg}$.

9:30 Air in the inner vessel again with cold-N₂ gas
cooling. Start pumping after that.

⚠ keep the pressure-increase valve of the 400.l down.
Otherwise the cold-gas nitrogen flow will stop.

10:25 Inner vessel vacuum level 2.0×10^{-1} Pa
(with cold gas nitrogen flow / turbo pump evacuation)

10:55 1.1×10^{-1} Pa

11:05 9.4×10^{-2} Pa

11:30 6.3×10^{-2} Pa

(min)	2nd Build-up Test with cold gas N ₂ flow
0	6.2×10^{-2} Pa
1	2.2×10^{-1} Pa
5	8.8×10^{-1} Pa
10	4.8×10^0 Pa
20	3.6×10^2 Pa

Evacuate again to perform another build-up test

16/Feb/05

12:00

Inner Vessel Vacuum level 6.1×10^{-2} Pa
(with cold gas nitrogen flow / turbo pump evacuation)

3rd Build-up Test again W/O Cold gas N ₂ flow	
0 min	5.8×10^{-2} Pa
(cold N ₂ flow stopped)	
3 min	3.6×10^{-1} Pa
5 min	6.6×10^{-1} Pa
10 min	1.3×10^0 Pa
20 min	2.5×10^0 Pa
30 min	3.6×10^0 Pa
115 min	4.1×10^0 Pa

14:05 Low Temp valve opened

Vacuum level 11 → 14 Pa → 16 Pa
(immediately after) (5 min later)

closed again

14:30

Start to fill the chamber with 2 Bar xenon

- better OK
- Pressure Reducer Set Point 2.30V

15:30

End of xenon filling 0.2 MPa

close the tank valves

Start pre-cooling 0.18 MPa - 0.19 MPa

LN₂ control valve ON/OFF
pressure range.

18:45

Pressure Range changed

0.18 MPa → 0.17 MPa

↓

0.17 MPa - 0.18 MPa

20:12

Pressure Range 0.16 MPa - 0.17 MPa

17/Feb/05

1:00

Pressure Range 0.14 - 0.15 MPa (Uchigawa)

7:55

OK cooled well start liquefaction

8:25

Pressure Range 0.15 - 0.16 MPa

flow rate ~ 8-9 l/min

Pressure Reducer SP 3V 0.26 MPa

9:30

Pressure Reducer SP 4.33V

flow rate ~ 15 l/min

11:15

Pressure Reducer SP 4.93V

flow rate ~ 77 l/min

" 3.4 cc/min (l.g.)

" 2 l/hour (l.g.)

Pressure Control Range 0.14 MPa ~ 0.145 MPa

7:55

All stable

Regulator SP 5.44V

Pressure 0.51 MPa

flow rate 18.3 l/min

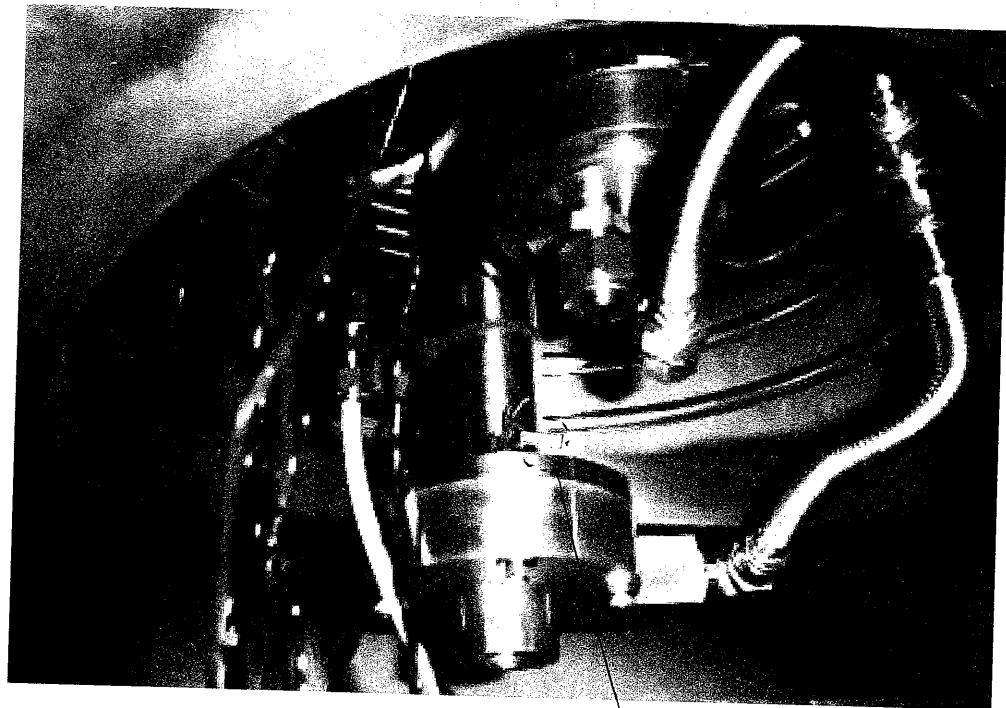
Inner Vessel Pressure 0.14 ~ 0.145 MPa

N₂ Valve ON/OFF 20 times/hour ~ once in 3 min

11:00

FN prepared COSMIC RAY TRIGGER

Counters . Thanks



PT100 Temp sensor

18 / Feb / 2005

22:00

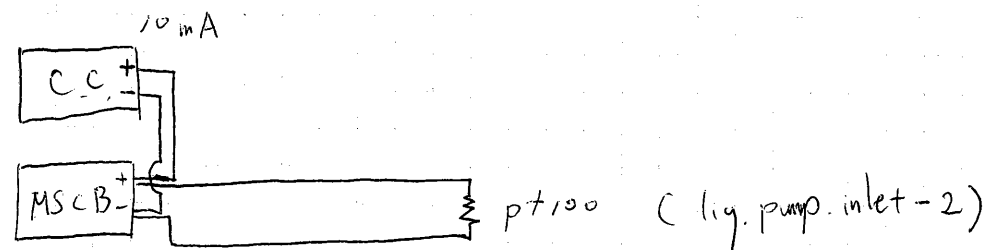
Applied HV to CR counters

1 top	2500 V
1 bottom	1600 V
2 top	1800 V
2 bottom	1800 V
3 top	2070 V
3 bottom	1850 V

19 / Feb / 2005

1:00 Repaired Lake shore current source (replaced fuse)

changed excitation voltage of Liq. pump inlet pt100 - #2



19 / Feb / 2005

10:00

When the ~~heater~~ temperature sensor (inlet 2), measured temperature goes up to around -40°C and then ~~decrease~~, slowly increase when the sensor is in gas. It is expected that temperature stays stable when the sensor is in liquid.

inlet 1 temperature is now ~~at~~ around -80°C

11:00

It seems that level meter output has saturated at around 0.94.

11:10

Labview hung up.

MSCB crate rebooted now OK.

11:12

Flow rate changed

18 l/min \rightarrow 6.5 l/min

Regulator SP 2.41V

Pressure 0.218 MPa

for avoiding too much fill of Xenon.

11:56

Temperature "inlet 1" started to decrease

now at -82°C

14:50

inlet 1 temperature is now around -85°C

Not only this - But also reducing rapid increase of pressure needs slowing down the flow rate because gas phase volume in the cryostat is getting smaller and smaller. So keep this rate.

16:10 Pt100 Inlet 2 -46°C @ 10mA still in gas

17:10 Pt100 Inlet 1 -85.3°C @ 1mA
Inlet 2 -46.2°C @ 10mA

18:30 Pt100 Inlet 1 -85.7°C @ 1mA
-49.1°C @ 10mA

20:22 Pt100 Inlet 1 -85.9°C @ 1mA
Inlet 2 -45.2°C @ 10mA

20:59 HV on (load 041017, 2. hv)
L7 900V high gain
⇒ save as 050219-1. hv

21:40 Pt100 Inlet 1 -86.3°C @ 1mA
Inlet 2 -48.2°C @ 10mA

22:45 Pt100 Inlet 1 -86.5°C @ 1mA
Inlet 2 -48.3°C @ 10mA

HV error BK11

24:04 Pt100 Inlet 1 -87.4°C @ 1mA
Inlet 2 -50.8°C @ 10mA

20/ Feb / 2005

0:48 Pt100 Inlet 1 -88.26 @ 1mA
Inlet 2 -51.59 @ 10mA

HV error R6

HV error T9

HV error F2

20 / Feb / 2005

η: 29 load 041017-1. hv (normal gain)

L7 900V ⇒ save as 050220-1. hv

η: 35 Inlet 1 -87°C
Inlet 2 -48°C

#8812 pedestal
8813, 8814 Junk
#88145 LED 3x7
w/ 10dB att and Inverter

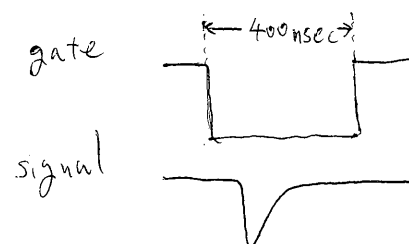
Step	height				
1	0	0	124	137	0
2	0	0	125	138	0
3	0	0	126	139	0
4	0	0	127	140	0
5	0	0	129	142	0
6	0	0	131	144	0

L7 5.2 x 10⁶ gain
BT39 2.9 x 10⁶ gain
⇒ 500 V
⇒ 1045 V
save as 050220-2. hv

Trigger logic was prepared for

- pedestal
- LED
- α
- CR

Timing of ADC gate and signal was adjusted so that (LED and α trigger)



To be done

- Timing of CR trigger (including TDC timing)
- ~~to~~ pedestal channels L0, L20, L14, R10, F30, BT35, R34, T34, T40, L36, T37, R37, T39, BT38, BK31, BK8
- No signal PMT (ADC) F2, R35, BT32, BK3, BK27

8: ¹⁶

temperature @ inlet.

Inlet 1 : -88.84.
Inlet 2 :
 -52.9.

■ Fine investigation for "NO SIGNAL" PMTs. (See above page).

▲ F2 : This PMT was reported as "HV error" again and again.

And then, this PMT has NOT been applied HV.

⇒ F2 is inactive.

▲ R35 : F/O output signal ... OK.
F/I input signal ... OK.
Burndy pin ... OK.
CIA input signal ... OK. } All of checks are passed.

⇒ CIA minicard should be replaced.

▲ BT32 : F/O output signal ... OK.
F/I input signal ... OK.
Burndy pin ... OK.
CIA input signal ... OK. } OK.

⇒ CIA minicard should be replaced.

▲ BK3 : F/O output signal ... NG. } (∴) Active splitter is NG.
F/I input signal ... OK.

- The current buffer amplifier corresponds to BK3 is broken.

- I installed another active F/O module in same crate and replaced this channel. → OK

⇒ FIXED.

▲ BK27 : F/O output signal ... NG. (oscillation). } → PMT's problem.
F/I output signal ... NG. (oscillation).

- Impedance of this PMT's signal line is ∞!

- This PMT is applied 94V, but measured current is 0.6μA.

⇒ Probably, PMT is broken.

13:00.

■ CIAFB minicard replaced.

▲ for "NO SIGNAL" PMT. (R35./BT32) see above page.

▲ for "Broad Pedestal channels".

- L0 (43-36) ⇒ OK fixed.	- T40 (9-26) ⇒ OK fixed.
- L20 (41-52) X	- L36 (9-302) ⇒ OK fixed.
- L14 (41-53) X	- T37 (9-307) ⇒ OK fixed.
- R40 (41-54) X	- R37 (9-338) ⇒ OK fixed.
- F30 (41-52) X	- T39 (9-40) ⇒ OK fixed.
- BT35 (41-94) ⇒ OK fixed.	- BT38 (9-96) ⇒ OK fixed.
- R34 (9-3) ⇒ OK fixed.	- BK31 (9-56) ⇒ OK fixed.
- T34 (9-16) ⇒ OK fixed.	- BK8. (9-64) ⇒ OK fixed.

and 3 more channels become worse. { 9-30. → all entries underflow
9-39 → broad
9-48 → pedestal; double peak

→ These 4 channels connected to "Not original" delay cable. Not used. OK.

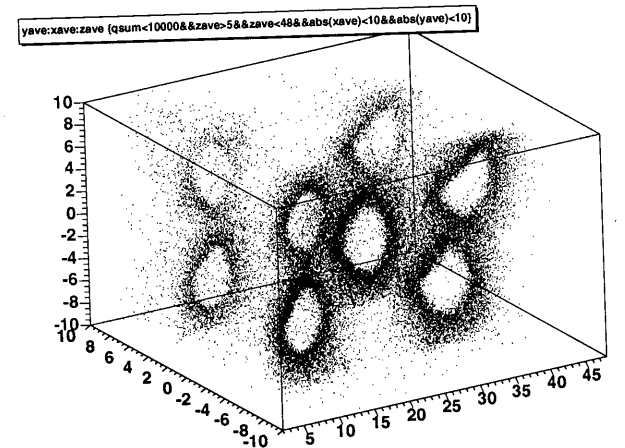
Actually, these 4 channels original delay cables were broken before CEX 2003, so we arranged these channels towards 41-52, 41-53, 41-54 and 41-57.

- I guessed, these burndy Lemo cables are unstable, so I re-made 4 cables. but pedestal distribution doesn't change... (XX)

⇒ Concerning, these 4 PMTs, the origin of broad pedestal is delay cable. If we can arrange these channels to another delay cables. We should perform this one.

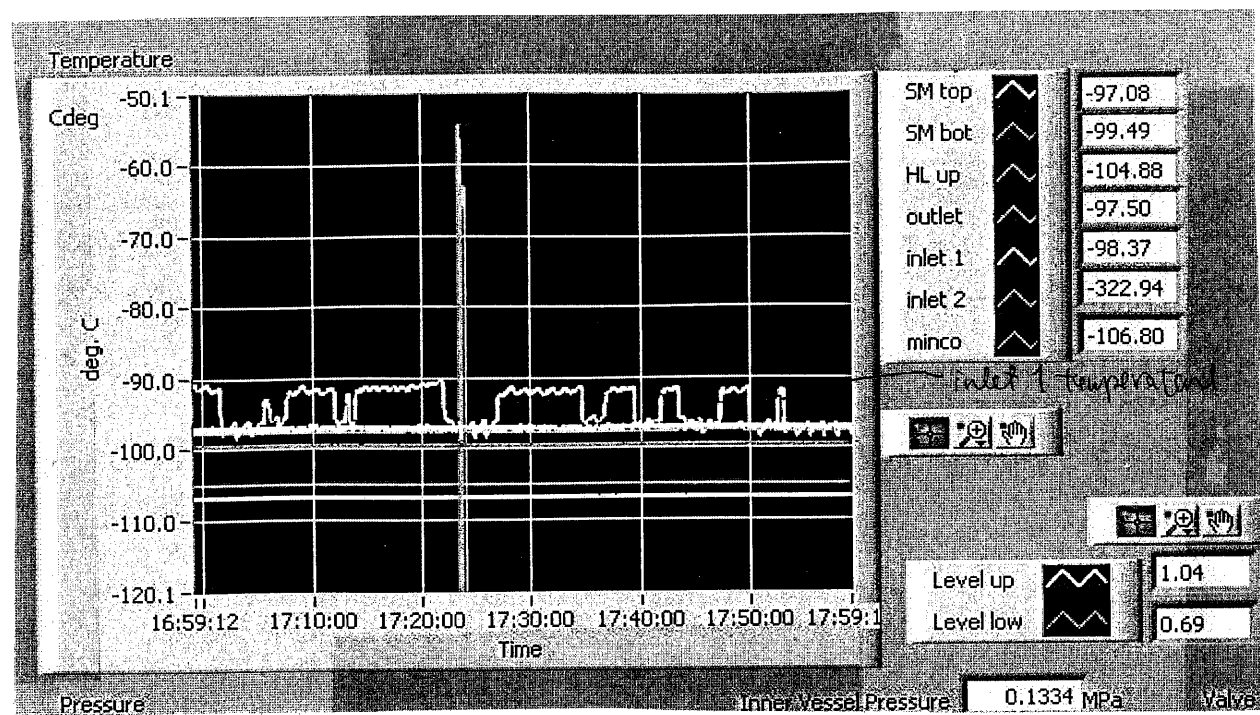
21 / Feb / 2005

1:25 #8818 pedestal
1:27 = 8819 LED
1:40 #8820 α



All alphas are alive!

20/Feb/05



18:26. It seems that the pump head is now in the liquid!

19:00 Xenon flow is stopped

Pressure Range 0.140 - 0.145
 ↓
~~0.130 - 0.125~~
 0.125 - 0.130



Added new ROME Task into LPframework

◦ LPTXEAlphaFit does following s

◦ Fit n_{phe} with Poisson function convoluted with gaussian whose sigma is taken from pedestal, after α run -

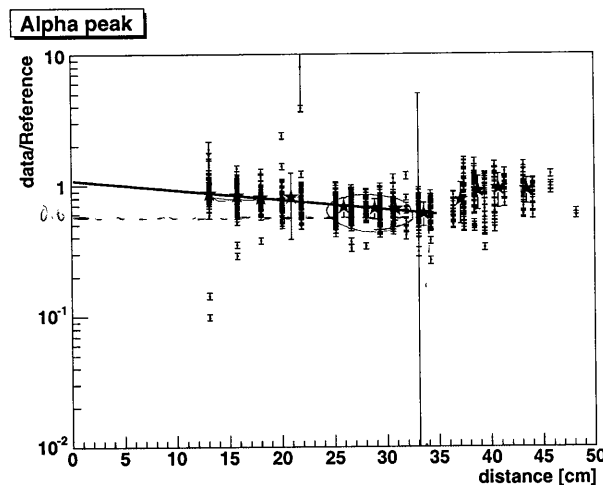
◦ Make (data/Reference): (distance from source) plot. Currently reference is data of run 08528.

~~Swit~~ This task is very time consuming.

There is a switch of activation in some Config.xml

- In addition, there is a switch for liquid/gas.
- If liquid, this task perform α emission angle cut.
- Figures will be saved in alphafit0XXXX.ps

run 08820



Fit range slope
 0 ~ 35 cm 58 cm
 0 ~ 50 cm 6.9 m

How to fit sub range
 after finishing analysis in
 LPframework

gAveraged → Fit("exp.", "R", 0, 35)

8:52 #8821 CR

10:00

Labview history has a problem.
 in neg-lpt.vi.

The history shows data only for 5 minutes

Switched back to the previous version
 to monitor tentatively.

lneg-lpt-feb05-Temp. Refresh fit!

21 Feb 05

Pump Study started around 11:00

Stop Cosmic-RUN RUN.

Pressure Range changed to 0.130 - 0.735

11:52

8822 α RUN

PUMP SPEED 12 Hz

STOPPED IMMEDIATELY ... Strange data

11:54

8823

Pedestal

Pedestal run with PUMP operation.
12 Hz

11:57

8824

α RUN

with pump operation
12 Hz

Total 26000 ~~1000~~ events

need careful analysis

α -Rings could not be seen on-line.

12:47

8825

α Run

pump speed 53 Hz

12:57 End of PUMP STUDY. Pressure Range changed back to 0.125 - 0.130 after 40 min.

13:58

8826

α RUN

(pump stop.)

In this period, the pump speed was changed from 12 Hz to 53 Hz step by step

RUN 8824

Result

24/Feb/05

Fitting Range: 0-35 cm.

Slope:

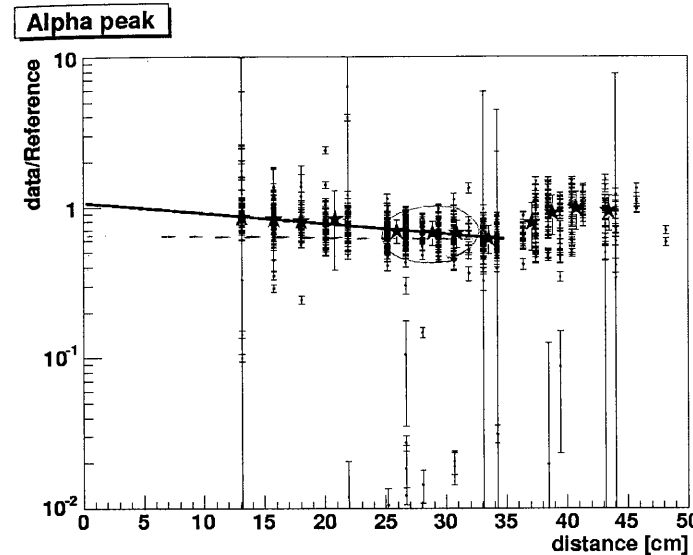
$$-1.58134 \times 10^{-2} \pm 1.12498 \times 10^{-2}$$

Const:

$$6.42810 \times 10^{-2} \pm 2.87710 \times 10^{-1}$$

↓

63.2 cm



JUST AFTER STARTING PUMP OPERATION

RUN 8825 similar result.

64.8 cm (0-35 cm)

RUN 8826 similar result

66.5 cm (")

16:01

8827

Pedestal

16:02

8828

alpha ... w/ pump ON.

* DAD prescale = 200

Pump Speed was changed step by step

0 Hz → 20 Hz → 40 Hz

16:33

Pump Speed at maximum, 53 Hz (53.20 Hz)

17:22

8829

alpha same as #8828

↑ stopped #8828 because of SCFE error.

17:36

8829

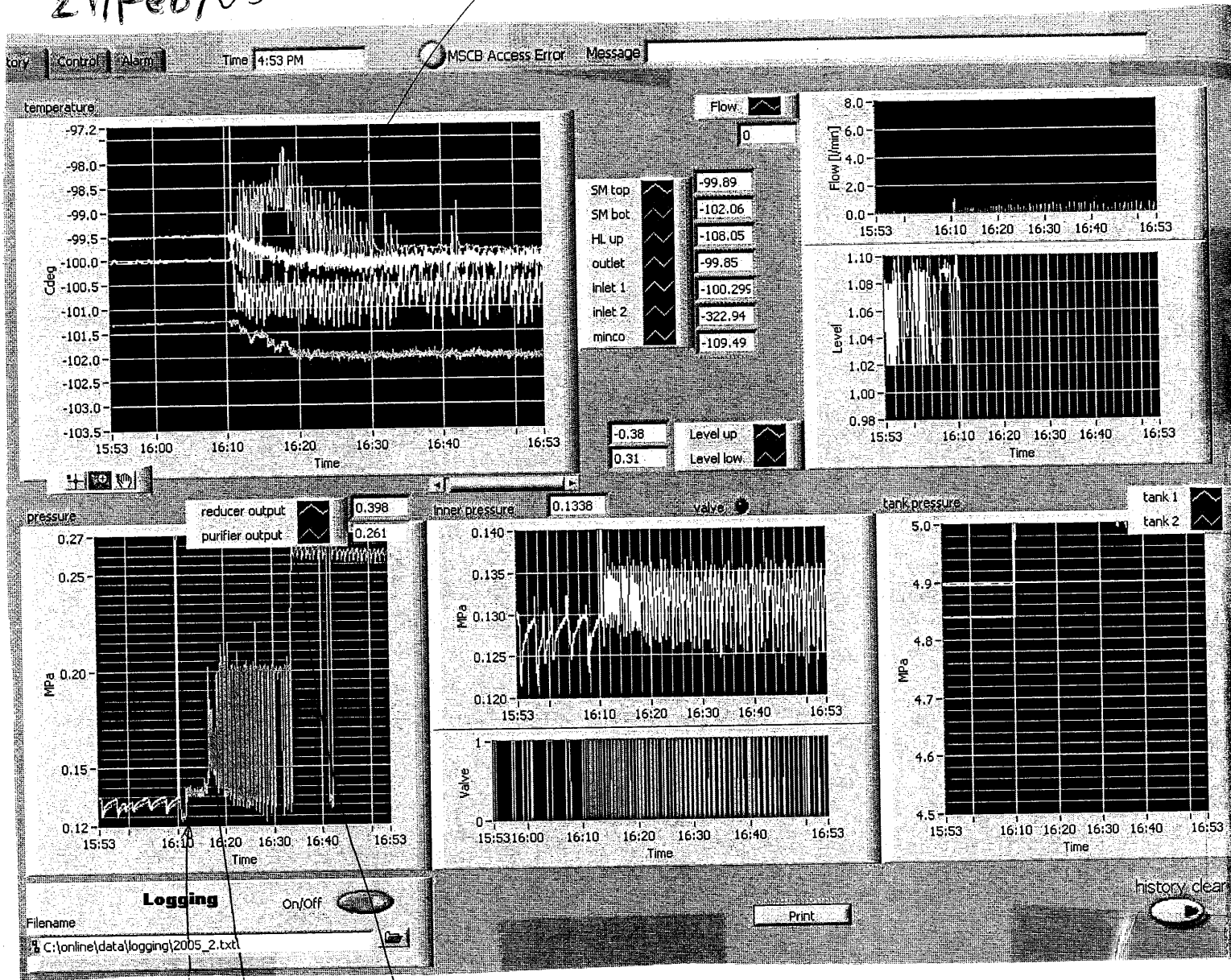
end.

4989 events

Prescale 200 → 0

21/Feb/05

liquid outlet temperature



20Hz 40Hz 53Hz

17:40 #8830 pedestal RUN

17:43 #8831 LED RUN

17:48 #8832 α RUN

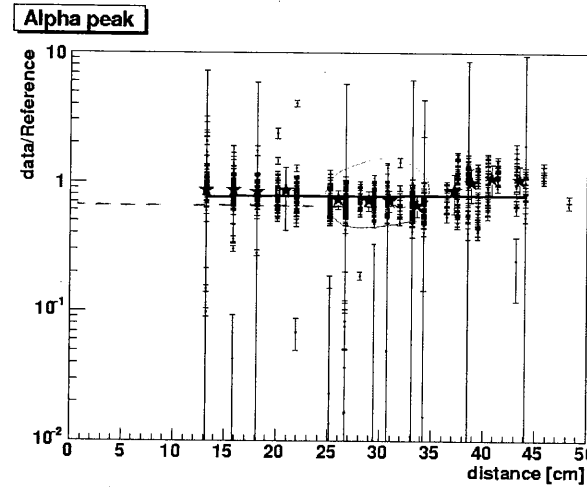
after 1 hour operation of liquid pump at 53Hz.

17:55 #8833 α RUN

again Pre scale = 200!

Be careful! This data may be bad

RUN 8828 Result.



Fitting Range 0-35cm

→ 76.5cm.

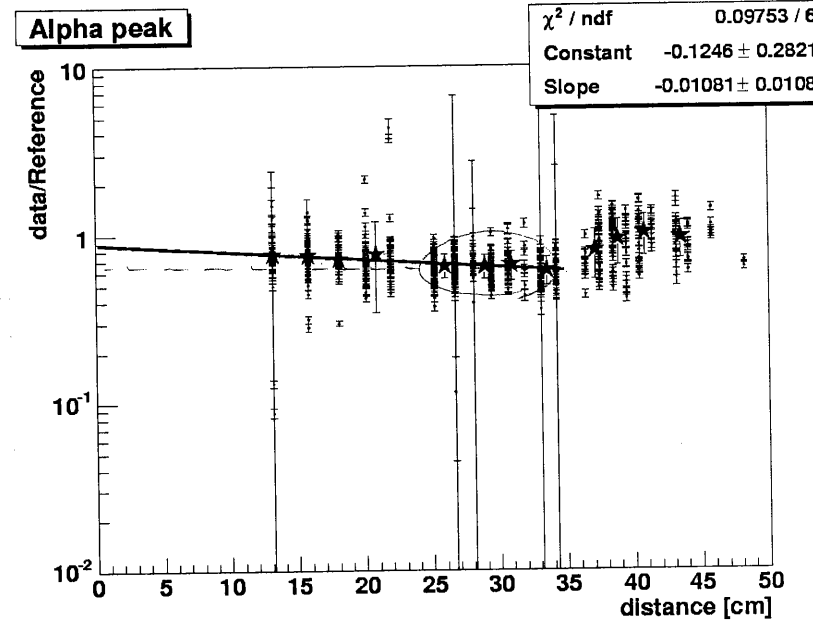
19:00 PUMP stopped.

We performed liquid-phase purification for 2.5 hours

19:05 #8834 α RUN w/o pump operation

⇒ 100.2cm (0-35cm).

19:12 #8835 COSMIC RAY.



← RUN 8832 Result.

92.5cm (0-35cm)

22/Feb/2005

1:47 stop #8835
 1:48 #8836 pedestal
 1:49 #8837 LED \Rightarrow bad run
 1:58 #8838 LED again \Rightarrow Junk.

change LED setting (w/ 10dB att)

126	127	128	129	131	133
144	145	146	147	149	151

#8839) Junk (LEDs are unstable)
#8840

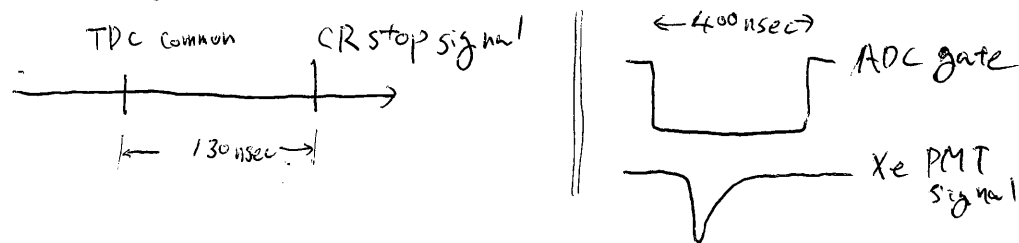
changed LED from 387 \Rightarrow 286

LED setting

119	120	121	122	124	126
119	120	121	122	124	126

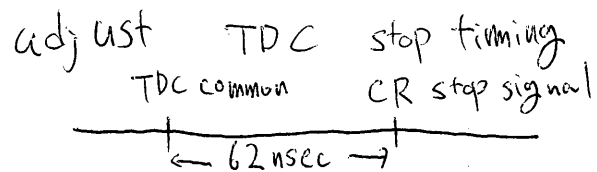
3:59 #8842 LED very good run
 3:59 #8843 α
 4:17 #8844 CR \Rightarrow Junk

adjust timing of CR trigger



5:17 #8845 CR

5:32 stop 8845



22/Feb/2005

5:42 #8846 CR

CR counter's timing O.K.
TDC

10:04 Stop CR run #8846, (512 events triggered).

#8847 pedestal run

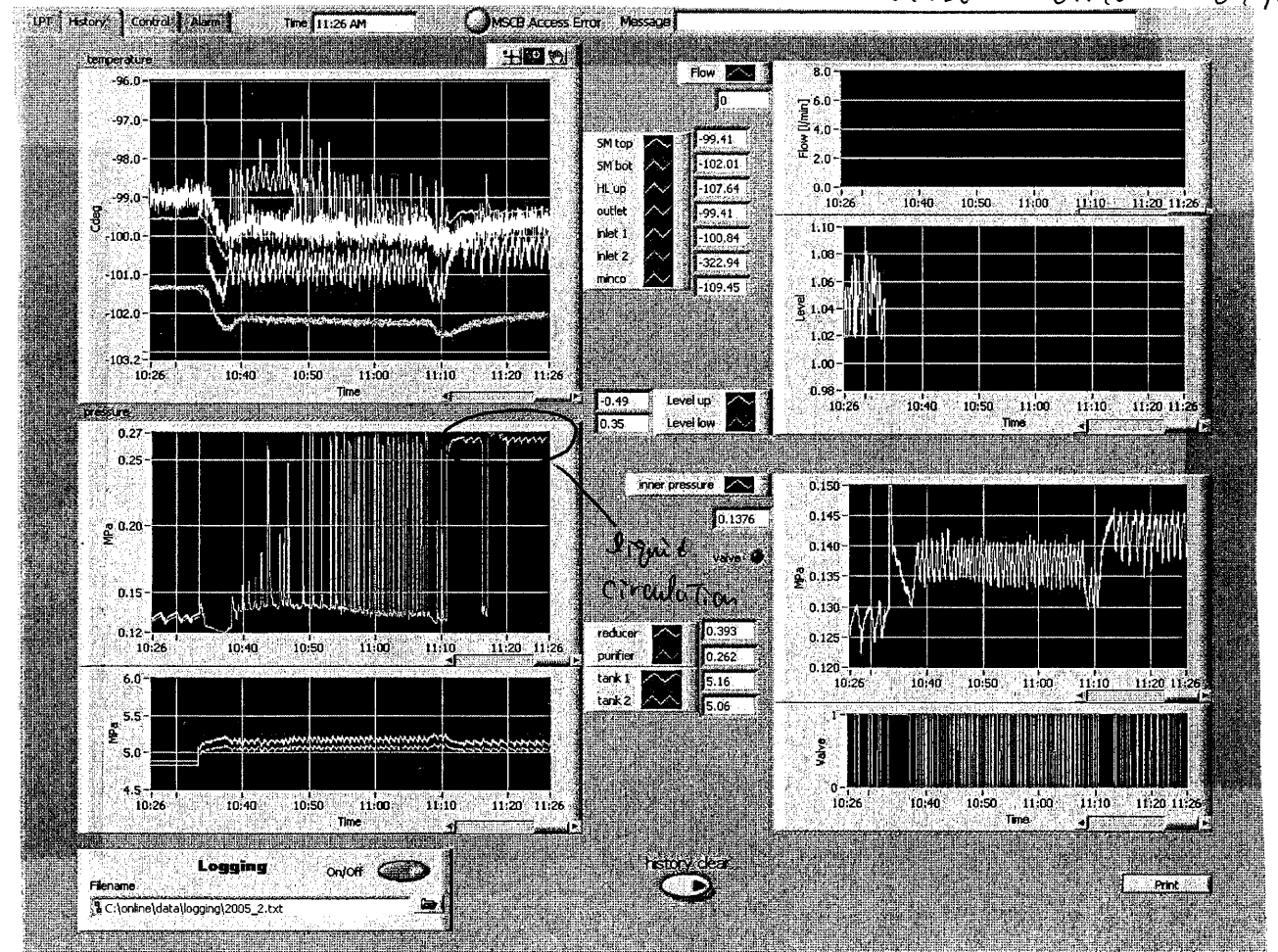
10:06 #8848 α run, w/o liquid circulation pump.

Before circulation, pump stopped ~15 hours.

fitting range: 0~35. $A = 23.26$ cm

10:30 Lig.-phase purification study restarted

- 0Hz \rightarrow 20Hz \rightarrow 40Hz \rightarrow 53Hz
- Pressure Setting also varied 0.125 \rightarrow 0.135 \rightarrow 0.145
0.130 \rightarrow 0.140 \rightarrow 0.140



22 Feb 05

In this study (today), we decided to use nitrogen from the 400L dewar to measure nitrogen consumption rate during purification.

log N₂ consumption.
340 → 308L for 4 hours
32L/4 hours = 8L/hour

- We tried to increase pump speed above 53Hz, but could not due to pressure limit above 58Hz...
- end of purification. We performed purification for 4 hours
 - low temp. valves are closed
 - pump stopped

14:40

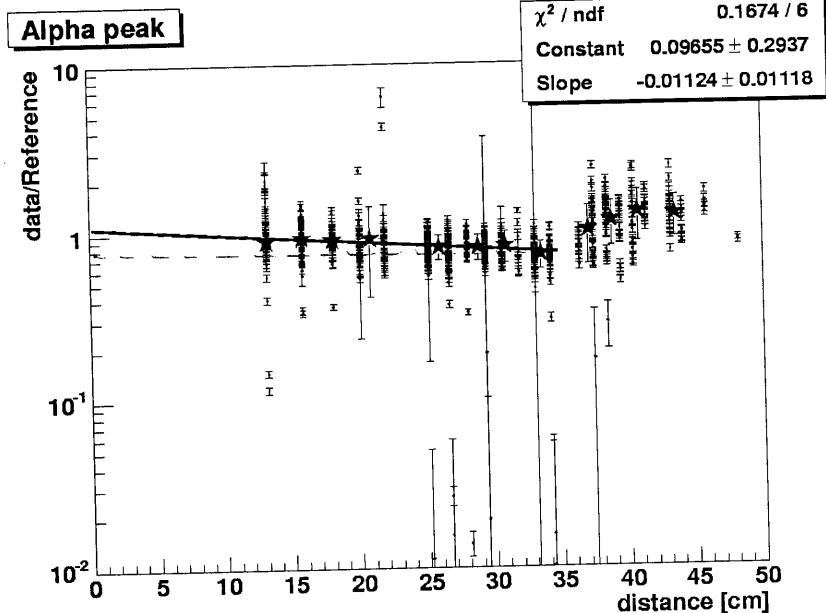
end of purification. We performed purification for 4 hours

14:44

α RUN #8849

15:00

Log-N₂ 400 dewar level at 300.



α RUN #8849

89.0 cm

15:20 Pedestal RUN #8850
15:25 LED #8851
15:31 d #8852
15:37 CR #8853
17:40 Stop #8853

→ 84.7 cm
(0-35 cm)
Similar to #8849

Cosmic Ray self-trigger

Run number: 8854 Variable: Address

202	221	220	219	218	217
203	222	233	232	231	216
204	223	234	237	230	215
205	224	235	236	229	214
206	225	226	227	228	213
207	208	209	210	211	212

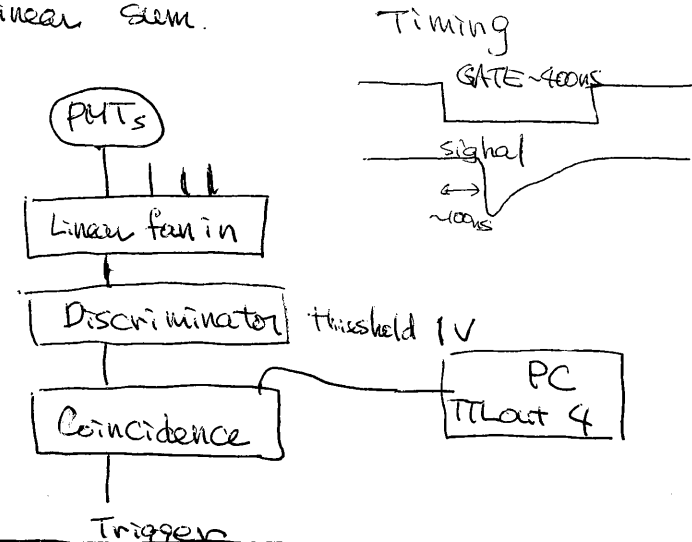
198	199	200	201	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197		
174	175	176	177	178	179	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173
150	151	152	153	154	155	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149
126	127	128	129	130	131	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125
102	103	104	105	106	107	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101
78	79	80	81	82	83	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77
54	55	56	57	58	59	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53

20 21 22 23 24 25
19 6 7 8 9 26
18 5 0 1 10 27
17 4 3 2 11 28
16 15 14 13 12 29
35 34 33 32 31 30

Back
Bottom Left Top Right Front

16 PMTs
(T2, T9, T14, T21, T26, T33, T37, BK10)
(BT2, BT9, BT14, BT21, BT26, BT33, BT37, BK21)

Linear sum.



RUN Mode '5' is now set to CR self trigger

18:10 CR self trigger #8854
19:18 Pedestal #8855
19:21 LED #8856
19:37 CR self trigger #8857

0% 15 N₂ line switched from dewar to CE tank,
N₂ level 269 L

31 L / 9h 15 min = 3.4 L/hour
w/o pump operation

23/Feb/05

0:43 End of RUN 8857

0:45 #8858 Pedestal

0:48 #8859 LED

0:56 #8860 α

1:07 #8861 CR self trigger

5:38 #8861 end 264686 events

80.6 cm
(0-35 cm)

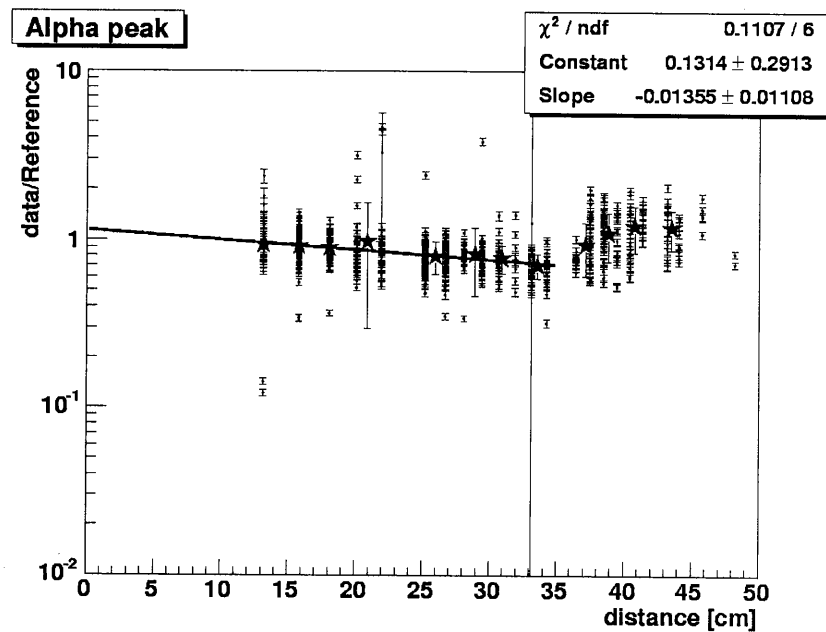
Take α data again together with calibration data

5:39 #8862 Pedestal

#8862

5:41 #8863 LED

5:46 #8864 α



8864 Result

73.8 cm
(0-35 cm)

15 hours later after the pump was stopped

7:00 liquid Pump start

20 Hz

Pressure Range setting

7:02

30 Hz

0.142 - 0.747 MPa

7:04

40 Hz

cartridge temperature -89°C

7:06 pump speed 53 Hz

Pressure Range

0.145 - 0.750 MPa

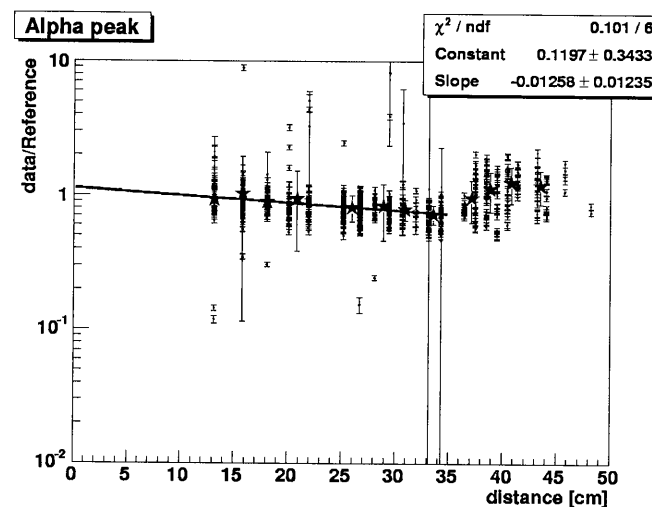
7:25 53 Hz

0.747 - 0.750 MPa

7:36 Take α data during purification

#8865 α (no prescale)

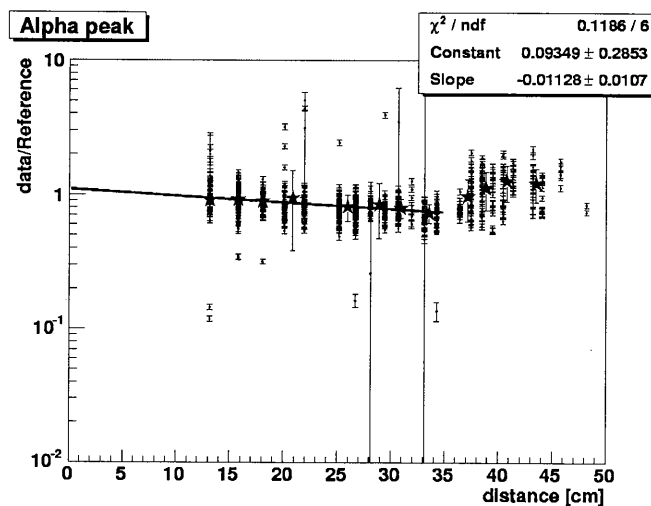
30 minutes later after purification was restarted



79.5 cm
(0-35 cm)

8:10 #8866 α (no prescale)

60 minutes later after purification was started



88.7 cm
(0-35 cm)

23 Feb 05

9:10 #8867 α (no prescale) \rightarrow 89.1 cm (0-35 cm)
120 minutes after purification was started.

\uparrow
Seems to be bad data. Take α data again
OK!

#8868 Junk data

9:38 #8869 α (no prescale)
150 minutes after purification was started

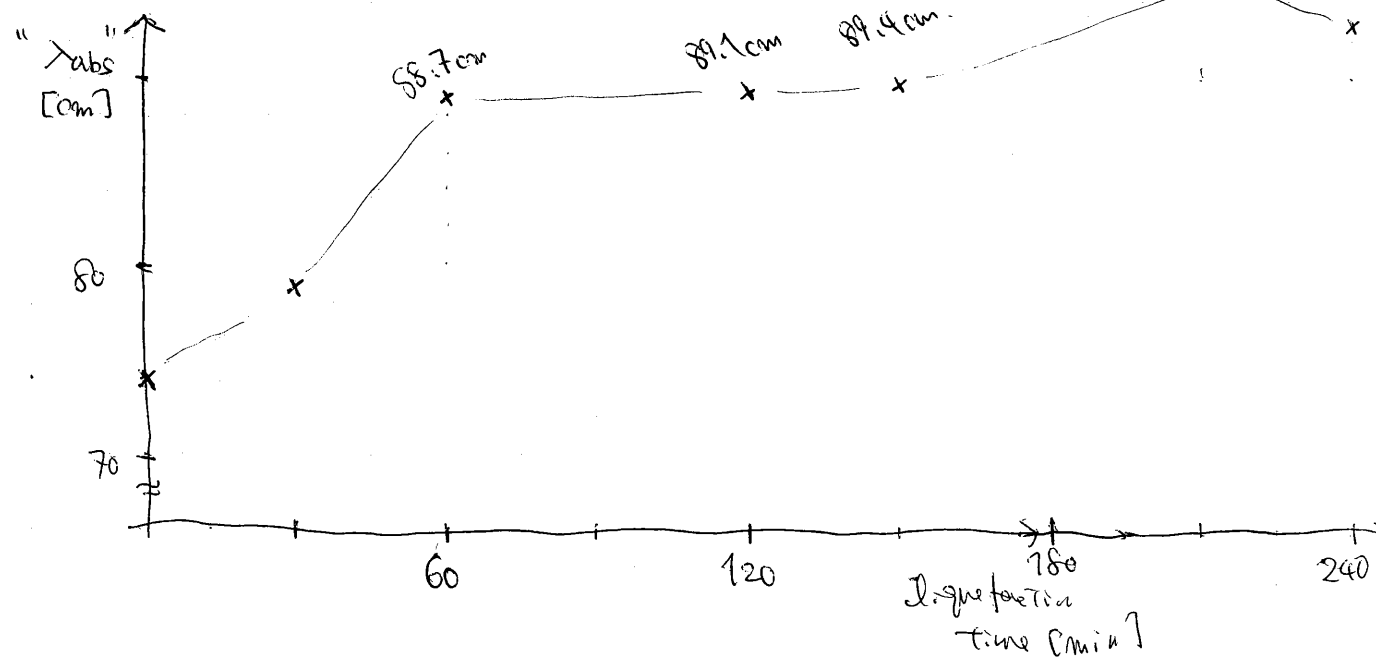
89.4 cm (0-35 cm)

10:46 #8870 α
216 minutes after purification was started

94.8 cm (0-35 cm)

11:10 #8871 α
240 minutes

92.8 cm (0-35 cm)



12:05 purification stopped. valves for cartridge close

12:08 #8872 α right after stopping pump Junk

12:19 #8873 α right after stopping pump (107.9 cm (0-35 cm))

13:23 #8874 α pump off (96.4 cm (0-35 cm))

14:33 #8875 α " (90.54 cm)

12:30 evacuation of line between liquid pump and getter

15:20 stop evacuation 3.5×10^{-2} Pa Good!

15:20 #8876 pedestal

15:21 #8877 LED

15:36 #8878 α (78.4 cm (0-35 cm))

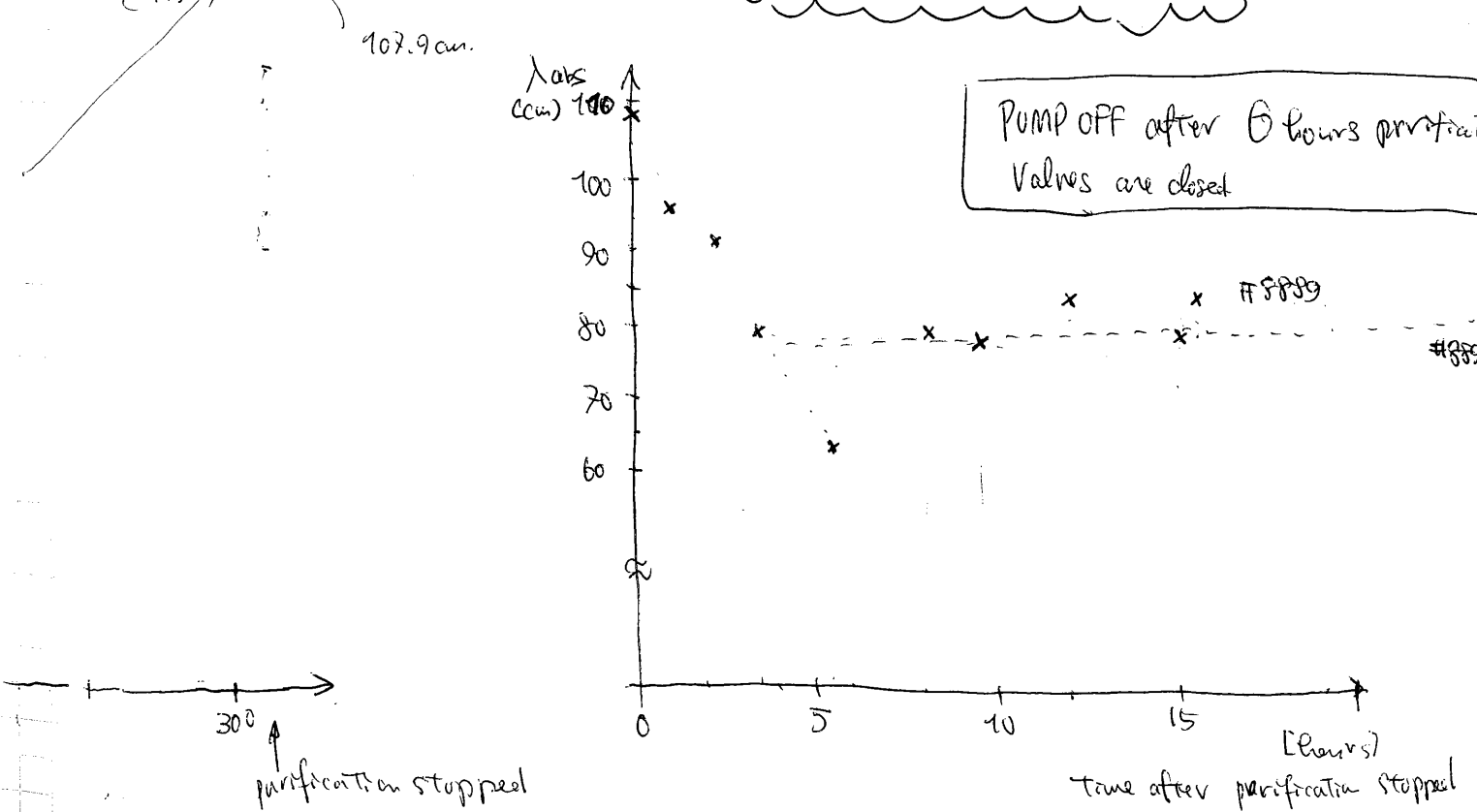
17:27 #8879 pedestal
#8880 LED

17:39 #8881 α (63.6 cm (0-35 cm))

18:18 #8882 CR

20:20 #8883 α (77.63 cm (0-35 cm))

21:45 #8884 α (77.0 cm (0-35 cm))



Feb 05

24

0:06 #8885 α
(12 hours later)

83.5 cm
(0-35 cm)

2:30 #8886 pedestal

2:32 #8887 LED

3:13 #8888 !!!!! α

3:43 #8889 α

Maybe these calibrations
are not good

78.4 cm (0-35 cm)

83.2 cm (0-35 cm)

#8888, 8889 are analyzed
by using #8876, 8877

4:41 COSMIC RAY trigger switched back
to the previous one which uses trigger counters.

4:42 #8890 pedestal

4:44 #8891 LED

4:54 #8892 COSMIC-RAY TRIGGER by using trigger counters

9:10 #8893 pedestal pump off

9:15 #8894 LED "

9:23 #8895 CR with trigger counters

12:38 #8896 α pump off

12:45 #8897 CR with TC

$\lambda_{abs} = 82.6$ cm
(0-35 cm)

Installed lpmonitor on pc4884. (home / 1-mu gamma / lpmonitor / lpmonitor)

To run it, just type "lpmonitor" in shell

14:20 #8898 pedestal pump off

#8899 LED "

#8900 alpha "

$\lambda_{abs} = 84.5$ cm (0-35 cm)

14:55 Circulation pump (gas phase purification) started

flow 7.8 lpm

16:00 #8901 alpha gas pump ON

$\lambda_{abs} = 76.5$ cm
(0-35 cm)

16:12 #8902 alpha gas pump ON w/ prescale = 200

17:01 #8903 alpha gas pump ON
~20k events

$\lambda_{abs} = 74.2$ cm
(0-35 cm)

18:31 #8904 pedestal

18:32 #8905 LED

18:37 #8906 α gas pump on

Calibration file updated

$\lambda_{abs} = 78.0$
(0-35)

20:04 #8907 α

$\lambda_{abs} = 78.6$ cm
(0-35 cm)

21:18 Gas-phase circulation stopped

21:58 #8908 α gas pump off

22:26 #8909 pedestal liquid pump on

22:28 #8910 LED "

22:33 #8911 α $\lambda_{abs} = 90.0$ cm

29:17 #8912 α $\lambda_{abs} = 117.4$ cm

0:14 #8913 α $\lambda_{abs} = 102.1$ cm

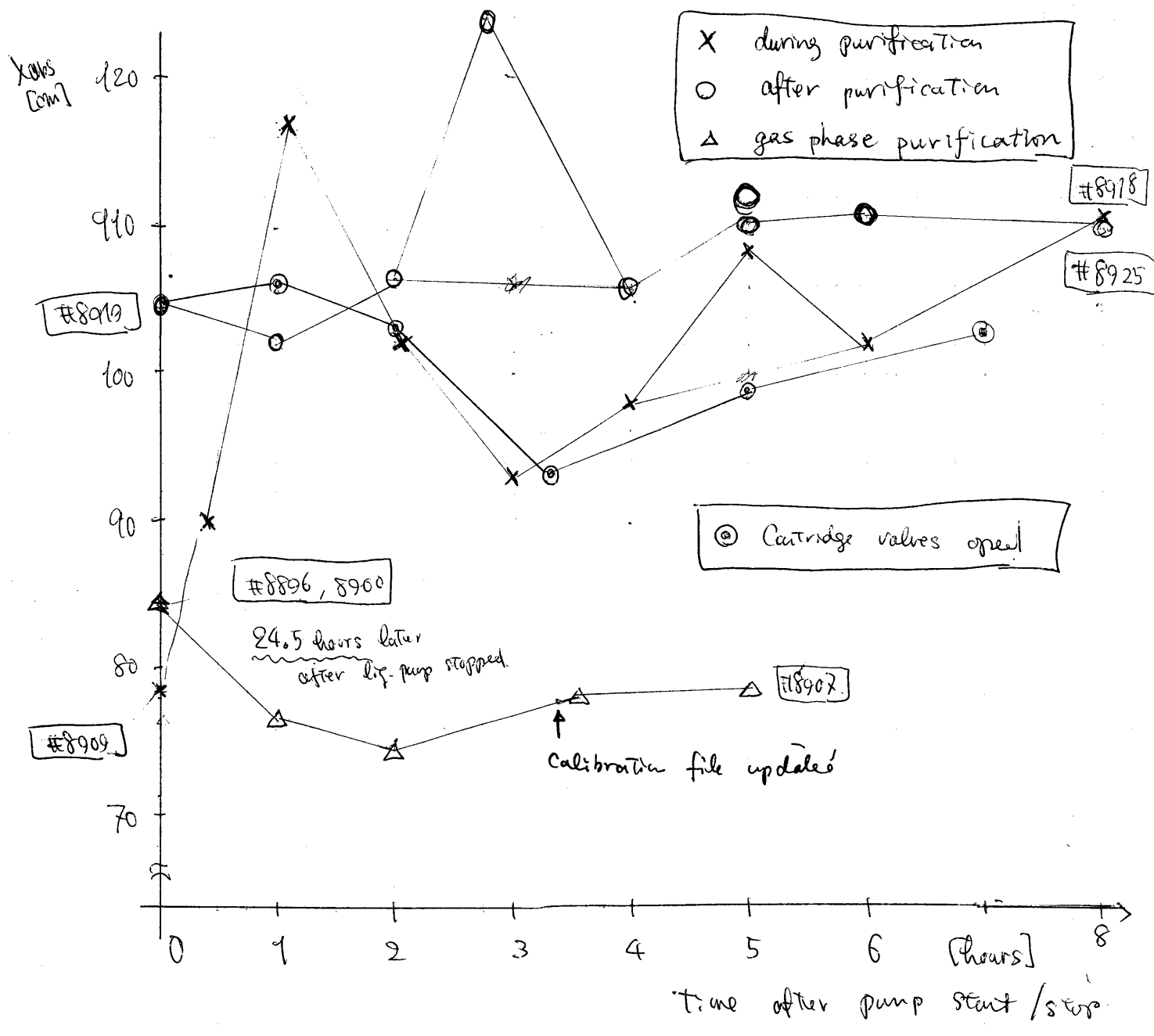
4:12 #8914 α $\lambda_{abs} = 93.2$ cm

Pressure Range Settings
0.142 - 0.145
Circulation started
at 22:10
mm

changed to
0.145 - 0.147
at 4:00
mm

25 Feb 05

2:13	#8915	α	$\lambda_{abs} = 98.1 \text{ cm}$
3:13	#8916	α	$\lambda_{abs} = 108.7 \text{ cm}$
4:11	#8917	α	$\lambda_{abs} = 101.8 \text{ cm}$
5:00	#8918	α	$\lambda_{abs} = 110.8 \text{ cm}$ low temp. valves are closed.
6:10	Liquid Pump stopped. (Pressure Range Setting 0.125~0.130) in total, purification continued for 8 hours		
6:11	#8919	α	$\lambda_{abs} = 104.7 \text{ cm}$
7:15	#8920	α	$\lambda_{abs} = 102.3 \text{ cm}$



8:09	#8921	α	$\lambda_{abs} = 106.4 \text{ cm}$
8:57	#8922	α	$\lambda_{abs} = 124.0 \text{ cm}$
10:09	#8923	α	$\lambda_{abs} = 106.2 \text{ cm}$
11:08	#8924	α	$\lambda_{abs} = 112.3 \text{ cm}$
12:08	#8925	α	$\lambda_{abs} = 110.8 \text{ cm}$
12:14	#8926	pedestal pump off	
12:16	#8927	LED	"
14:16	#8928	α	" $\lambda_{abs} = 108.1 \text{ cm}$
14:25	Valves to cartridge opened		Calibration file updated!
14:27	#8929	α	pump off, valve open $\lambda_{abs} = 105.0 \text{ cm}$
15:25	#8930	α	" $\lambda_{abs} = 106.8 \text{ cm}$
16:30	#8931	=	$\lambda_{abs} = 103.7 \text{ cm}$
17:47	#8932	"	$\lambda_{abs} = 92.9 \text{ cm}$
19:22	#8933	α	" " $\lambda_{abs} = 98.5 \text{ cm}$
21:24	#8934	α	" " ? $\lambda_{abs} = 105.1 \text{ cm}$
21:40	liquid pump start @ 53.2 Hz		
21:44	#8935	pedestal	
21:45	#8936	LED	Calibration file updated
21:51	#8937	α	right after starting circulation 117.7 cm 11 min
23:17	#8938	"	" 128.6 cm 97 min
23:57	increased pressure control range from 1.45-1.50 to 1.50-1.55		
26 Feb/ 2005			
1:05	#8940	α	121.2 cm 3 h 25 m = 205 min

26/Feb./05.

02:00 RUN # 8941 pedestal run. Calibration file (pedestal only) updated
 03:00 RUN # 8942 α run (~5 hours). $\lambda = 129.9$ cm. 5h 20m = 320
 04:00 RUN # 8943 α run (~6 hours). $\lambda = 130.5$ cm. 6h 20m = 350
 05:00 RUN # 8944 α run (~7 hours). $\lambda = 118.1$ cm. 7h 20m = 440
 06:00 RUN # 8945 α run (~8 hours). $\lambda = 152.8$ cm. 8h 20 = 500
 07:00 RUN # 8946 α run (~9 hours). $\lambda =$
 Junk!!

During RUN # 8946, megonln01 froze, suddenly.
 I tried to connect via ssh, but I couldn't connect.
 PING doesn't turn back, so, I reboot by power button.

07:33 Rebooted.

ODD said, "invalid database handle".

Probably, database was crashed.

In ODBedit, reloaded "RUN08945.odb".

But, I cannot start "frontend".

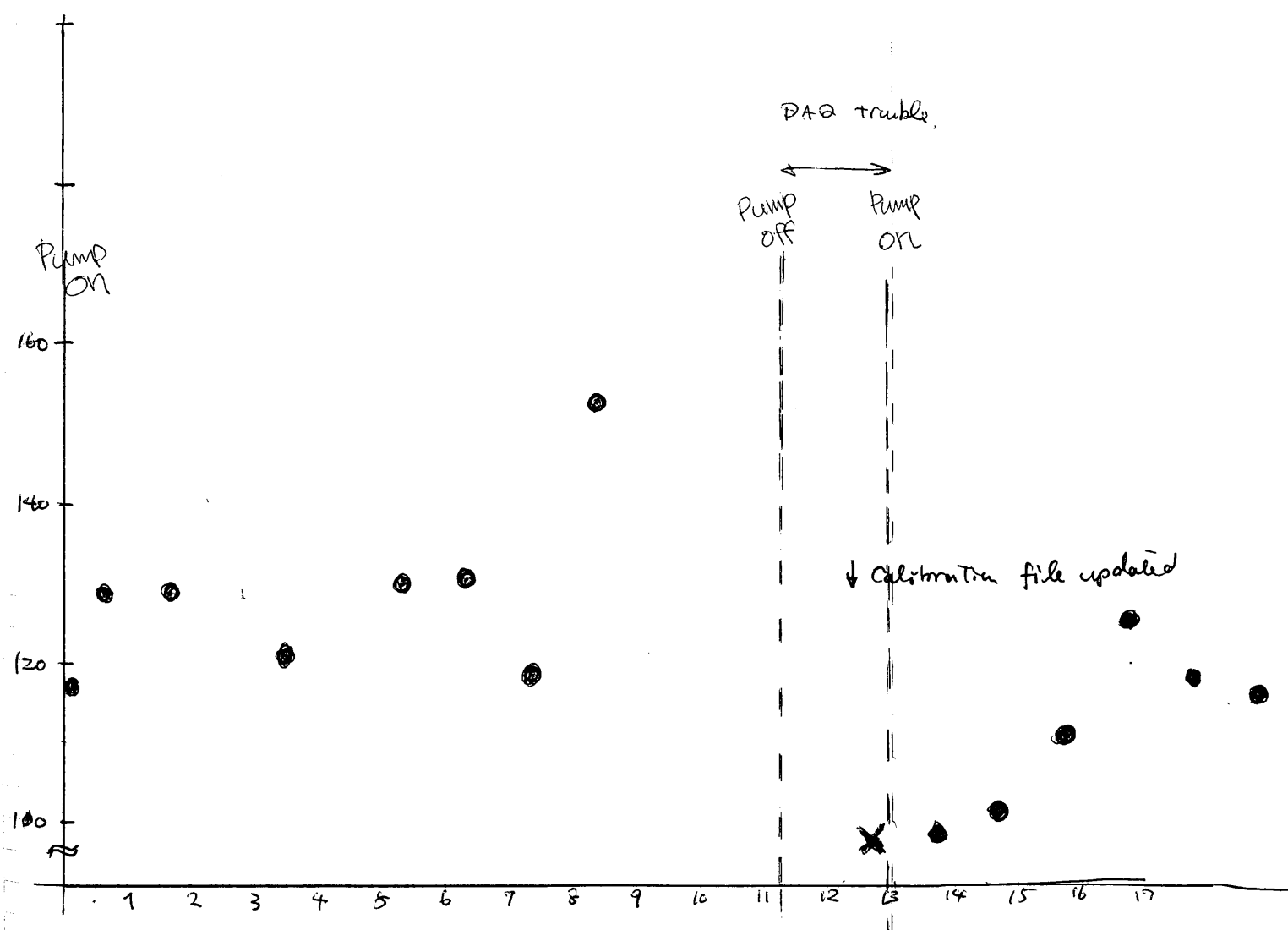
Frontend started, and stopped immediately.

8:55 Liquid Pump stopped due to DAG trouble 11h 15 min

Fixed

I modified /etc/grub.conf
 due to load the correct kernel.

10:18 RUN # 8947 pedestal run. / pump off.
 10:20 RUN # 8948 LED calibration run. / pump off.
 10:27 RUN # 8949 α run. Calibration file updated
 $\lambda_{abs} = 97.3$ cm
 12 is 47m after start
 1h 32m after stop
 10:36 Liquid circulation pump, start.
 Calibration file updated 8952, 8953
 11:21 Run # 8950 α , Pump on $\lambda_{abs} = 93.9$ cm
 12 hours
 13h + 1
 12:21 Run # 8951 α , Pump on $\lambda_{abs} = 97.3$
 103.6
 14h 41m
 100.2 cm



26/ Feb / 05

13:19	Run 8952	Pedestal	circulation pump on	
13:21	Run 8953	LED	circulation pump on	
13:27	Run 8954	α	circulation pump on	(ish 27m) $\lambda_{abs} = 110.8 \text{ cm}$
14:21	Run 8955	α	"	(ish 41m) $\lambda_{abs} = 125.5 \text{ cm}$
15:26	Run 8956	α	"	$\lambda_{abs} = 118.1 \text{ cm}$
16:21	Run 8957	α	"	$\lambda_{abs} = 119.9 \text{ cm}$
17:26	Run 8958	α	"	$\lambda_{abs} = 120.5$

Increased threshold of discriminating α
 from ~~0.75~~ to ~~1.25~~
 0.75 ml 1.25 ml

18:17	#8959	α	106.8 cm
19:33	#8960	α	111 cm
20:53	#8961	α	107.1 cm
21:12	#8962	pedestal	
21:14	#8963	LED	(Junk)

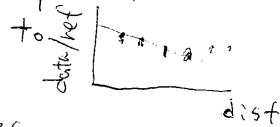
New steering parameters of ROME Task XeAlphaFis was introduced.

These parameters can be changed with editing "rome Config.xml"

In Liquid : switch Liquid/Gas

CircleFit : switch whether circle fit ~~will~~ be done.

AbsorptionLengthFit / Min, Max : range of expo fit



Y, Z : center of α rings. these values will be used if CircleFit is false

P.S. there is a switch to enable/disable Canvas drawing.

Calibration file updated

22:13	#8964	α	96.9 cm
23:26	#8965	LED	
23:40			

Stop liquid phase circulation

- ° close valves between chamber and purification line, (getter)
- ° keep opening valves between chamber and liquid pump cartridge

Calibration file updated (only side)

23:44	#8966	α	98.44 cm
	#8967	pedestal	

27/Feb/2005
 1:05 #8968 α (after ~1 hour from pump stopped).
 $\lambda_{abs} = 92.06 \text{ cm}$

3:00 #8969 α run, after 3 hours from pump stopped.
 $\lambda_{abs} = 95.3 \text{ cm}$

4:00 #8970 α run after 4 hours from pump stopped.
 $\lambda_{abs} = 99.16 \text{ cm}$

5:00 #8971 α run, after 5 hours from pump stopped.
 $\lambda_{abs} = 99.12 \text{ cm}$

6:00 #8972 α run = after 6 hours from pump stopped,
 $\lambda_{abs} = 95.21 \text{ cm}$