QSF 41 — OST gal πE5
HSC 41
QSF 42
→ QSF 44
ASC 41
QSB 41 — West gal πE5
QSB 42
QSB 43
QSK 41
QSK 42
QSK 43 — OST GAL πE3

Oct 22. '04

16:00 Twisted pair cables for TDC start signal in FASTBUS TDC were replaced to new one to overcome the problem described in P191. & Logbook #8

16:37 #8576 (π^0)
- FS41 = 60
- Normal gain
- Narrow gate (400ns)

21:05 End of #8576 ~28K evts

#8577 pedestal
- beam ON (FS41 = 60)
- normal gain
- Narrow gate

21:08 #8578 LED "
21:14 #8579 alpha "

21:20 BB closed
#8580 pedestal beam OFF

21:27 #8581 LED beam OFF
#8582 alpha "

- We realized the LEDs (#2&6) are too bright with the normal setting (~~ch2~~ #2 124 125 126, 127 129 131
~~ch3~~ #6 92 93 94 95 97 99)

qsum = 4.5×10^5 (run # 8578)
1.7×10^5 (run # 8527)

- It seems that LED intensity drastically changed around run #8547.
- We had to change the setting for the CAEN driver

#2	110	111	112	113	115	117
#6	92	93	94	95	97	99

22:44 #8583 pedestal beam off
#8584 LED beam off

DRS preparation

Originally A24 space is used. and.

- SFI use 0xE00000 Base
  0x 1FFFF size
- System ocuppy 0x100000 (I am not sure where is the base address)
- window size of DRS = 0x 800000

So I tried to change Base address of SFI and DRS like

SFI 0x300000
DRS 0x800000

Because Base address of DRS has to be 0x800000 x integer
up to 0x1000000 is available in A24 mode

To realize it I changed

1. Rotary Switch in SIS4100, SW_A24 from E to 3
2. Dip Switch on DRS
   0000 0000 1
   A31 .... A24
3. GEVPC_BASE_ADDR in lpvme_drs2.c from 0x0000000 to 0x0800000
4. SFI_ADDRESS in sis4100lp.c from 0xE00000 to 0x300000

But Situation didnot change. (I can not turn on LED of DRS)

I checked existing DAQ works in this setting.
But if something strange happen.
Please switch back ① and ④ (and make)

Oct 23. '07

2:30 Beam Shutter open

2:45 Run Pedestal # 8586

2:46 Led Run # 8587 The first LED setting is moved from 110 92 ⇒ to 109 91

3:20 α-run # 8588

This time gap is due to the fact that we found the 2nd ADC pad board (ch #48 → #96) unplugged, so we took those runs again.

3:30 π^0-run # 8589 3k events

4:00 Rebooted megonln01 because the TTL enable π^0 run signal was not generated.

~~[struck-out text]~~

The acquisition didn't work until 5:30.

5:30 Run π^0-run # 8590 h.7:30 ~ 10k events
1~2 Hz event rate FS41LR = 60, 400ns gate

13:10 End of #8590 ⇒ 45k evts

	# 8591	pedestal	beam ON
13:41	# 8592	LED	beam ON
13:48	# 8593	alpha	beam ON
13:56	# 8594	pedestal	beam OFF
13:57	# 8595	LED	beam OFF
14:03	# 8596	alpha	beam OFF

14:10 π^0 run # 8597
- normal gain
- FS41LR = 60
- 400ns gate.

⇒ 5.7k

15:20 π^0 run # 8598
- normal gain
- FS41LR = 60
- 400 ns gate
- S1 * LYSO (w/o Xe)

⇒ 200k

16:15 #8599 π^0-run
- S1 * Xe * LTSO
- normal gain
- FS41LR = 60
- 400ns gate

~19:00 Power Cut!! in the area.
- But almost all power for our system is still alive except for the cooling water system.
  - network (DNS, AFS, ..) not working
- Water flow (GW) ~~for~~ to the cooling water system for the LP refrigerater dropped down. (Almost no flow and compression for the target system)
- We had to turned off the refrigerater in the LP and switch to LN_2 operation
- We stopped the circulation pump.
- LH_2 in the target has gone away

~21:00 Water's come back.
- We started the cooling of the target cell
- Switch back to refrigerator operation in the LP
- Circulation pump turned on again

22:40 Still no beam
22:42 #8600 pedestal beam off
22:46 #8601 LED beam off
22:53 #8602 alpha beam off
23:23 #8603 CR beam off

2:25 It is found that Circulation pump was on but no circulation occured (since 23:10)
After several trials, switching the pump on and off repeatedly, it finally works.

4:45 SCFE crashed. Run 8603 interrupted
4:50 checked equipments. Started Run 8604: CR.
#8604, CR, beam off.

Still waiting for the next message on beam status at 8:00 a.m.

7:00 We could not complete the LH_2 filling. Maybe the LH_2 was not evaporated completely? See the LH_2 logbook for details.

8:10 "No beam bevor 4:00pm"
next message 12:00 am (pm?)

~10:00 Ryu working on DRS
11:54 #8605 CR
13:00 Start to emptify Target Cell

15:50 Target Cell Precooling start.
17:45 Target Cell Liquification start.
MSCB connection stucked.
#8605 Pause
MSCB crate restart
Lab view restart
#8605 Resume

23:45 Run #8605 stopped
01:00 SCFE Failure. switched HV on & OFF & ON again. 25/10/04
8606 Pedestal beam off
8607 LED beam off
8608 alpha run beam off.

2:15 LH_2 target full.
Done Rundgang.

After closing the area and opening the shutter it was found that it was impossible to switch on the magnets from Peter's barrak.

MAGNET TROUBLE!

From the Gallery West we found that most magnets tripped for a cooling water failure. We could switch on most of these magnets (by switching to local & to remote again) but we couldn't switch on QSF44.

Here is a list of the magnets that we could not switch on:

QSF41, HSC41, QSF42	OST galerie	they trip as soon as the control is set again to "remote"
QSF44, ASC41, QSB41, QSB42, QSB43, QSK41, QSK42, QSK43	West galerie ⇒ OST galerie πE3	idem

~7:30 very lousy beam [redacted]
(don't care — still beamline magnet problem)

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9:45 Stefan starts working on DRS!

10:15 Peter came & solved all the magnet trouble.

(After checking setups, switch to "remote" at the west platform)

→ If the event rate seems low (or high), then there's some suspect that it is due to the hysteresis of the ASC magnet. Call Peter in this case.

→ may need to check the S1 threshold again?

~10:45 Power Cut Again !!
All electronics off, no cooling water, ...
i.e. everything is off.

~10:45 Electricity came back

11:16 Power failure Again

~11:20 came back on again...

[No sense to continue without solving the cause of the power failure...

The recovery of the cooling water for LP & target is always slow.

22:00 start circulation

DRS implementation to frontend

- src
  - bt617lp.c — general VME functions
  - sis4100lp.c — for sis4100
  - vme_drs21p.c, vme_drs21p.h — for DRS.
- PCI-VME card identifier
  - "VME_DEVICE" in sis4100lp.c (= 1)
  - "VME_DEVICE" in vme_drs21p.c (= 0)
- Base address.
  - SFI 0x E00000
  - DRS 0x 000000 (win size 0x 800000)
- Switches
  - * #define DRS in frontend.h → {increase ODB size, initialize DRS
  - * ODB: /Equipment/Trigger/Settings/DRS in Pi0 run → take DRS in Alpha run → DRS data

In case that there is no trigger for DRS board. frontend will be blocked. If you want to take DRS data without hardware trigger, enable soft_trig() in frontend.c. (Maybe this will be used only for debugging)

- ODB.

  DRS data is stored in .mid file as "DRS0"

- WORD DRS0[0~1023] bin 0~1023 for channel 0
  ⋮
  DRS0[9216~10239] bin 0~1023 for channel 10

~~DRS~~

signal and trigger for DRS * are not connected.

We will continue data take with the same configuration as before.

* 23:17	#8613	pedestal	
23:18	#8614	LED	
23:24	#8615	α	
23:32	#8616	CR	

7:00 End of shift (G&D). The beam is still down

8:18 RUN 8616 ends. 5962 events

Beam is still off.

8:19	RUN 8617	Pedestal	beam off.
8:21	RUN 8619	LED	beam off
8:27	RUN 8619	α	beam off
8:35	RUN 8620	CR	

LP framwork cannot be started ...

Where is the execution table?

10:10 Ramdisking done.

10:25 Accelerator current on the target 1223A.
Somehow stable.

Try to take π° data to check all systems.

All beam line magnets are on.

FS41 = 60

10:34 Beam Blocker opened.

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10:42 RUN 8621 Pedestal beam on FS41 60
Acc current 1168 μA

10:44 RUN 8622 LED
Acc current 1158 μA

10:50 RUN 8623 α
Stop this RUN after 7128 events acquired because beam went off.

11:51 RUN 8624 DRS Test
α trigger
DAQ rate ~9 Hz
42 MByte / 2000 events = 20 kByte / event

12:24 Beam seems to be getting back. 723 μA
25 1016 μA

12:30 RUN 8625 α again beam on FS41 60
Acc current 1013 μA

12:40 RUN 8626 π^0 FS41 60
Acc current 1016 μA

12:46 RUN 8626 ends.
Seems no beam to the target.
(maybe also in RUN 8621 - 8623)

It was found that the beam blocker was opened but a vacuum valve (Gate valve?) on the beam line was not.
The valve is usually opened automatically but failed this time.

14:20 RUN 8627 π^0 RUN FS41 = 60
Acc current 1023 μA

2244 events / 20 min = 1.87 Hz

Reasonable Trigger rate.
There may be no effect of ASC hysteresis

7918 events taken.

15:56 RUN 8628 π^0 RUN FS41 = 70
Acc current 1019 μA

⚠ Due to the power cuts, control modules for FS41 L-R do not respond to remote actions via network.
For changing the Slit setting, please do it manually.

Fixed ~17:30

- 2816 events / 14 min = 3.35 Hz
- Proton current decreased to 848 μA around 16:20, returned to 1021 μA after 5 minutes.

RUN 8629 ~ 8630 DRS TEST No data written on disk

18:50 RUN 8631 ~~[illegible]~~ pedestal
18:59 RUN 8632 LED
19:05 RUN 8633 α

FS41 = 70
beam on
Proton current 1015 μA

Electronics setting changed to the one on P189 of Logbook #8

19:12 RUN 8634 π^0 RUN FS41 = 70

Acc. current 1127 μA

with DRS readout.

DRS channel assignment	ch#	F10
	1	25
	2	28
	3	7
	4	15
	5	20
	6	21
	7	14
	8	

Signals from MACRO Fan-out are put into the DRS board (0-3)

~19:00 Proton current increased up to 1.2mA

20:45 Stop #8634

20:47 load 041017_2.hv (high gain) ⇒ HV setting did NOT change because of lost connection to HV mainframe

#8635 Junk

21:09 #8636 pedestal beam off High gain

21:28 #8637 LED beam off

21:34 #8638 alpha beam off

Intensity setting
#2 108 109 110 111 112 113
#6 96 97 98 99 100 101

21:44 #8639 pedestal beam ON
- FS41 = 70
- Proton 1217 μA

#8640 LED beam ON ⇒ Junk

Probably ~~during these~~ normal gain during these runs.

22:05 High gain setting. (041017_2.hv)

#8641 pedestal beam ON FS41 = 70 Proton = 1230 μA

#8642 LED Beam ON

Very bad LED unstable

Intensity setting
#2 104 105 106 107 108 109
#6 87 88 89 90 91 92

22:50 #8643 alpha beam ON

#8644 π^0 run
- FS41 LR = 70
- proton current = 1218 μA
- high gain

23:16 #8645 LED same as #8642

23:31 #8646 pedestal beam OFF

23:33 #8647 LED "

#8648 pedestal
#8649 LED
#8650 alpha
} beam ON · FS41 LR=70 · proton current = 1230 μA · high gain

0:14 #8651 π^0

trigger rate ~ 3.5 Hz. 72 k events

6:07 #8652 π^0
- FS41 LR=70
- proton current = 1230 μA
- high gain.
- S1 * LYSO ⇒ 120k

6:40 #8653 pedestal
6:43 #8654 LED
6:49 #8655 alpha
6:55 #8656 π^0
} · FS41 LR=70 · proton current = 1230 μA · high gain · S1 * LYSO * Xe.

~10:45 Acc Proton current increased. ~1200 μA → 1300 μA

12:00 It was found that F10 HV had been off. probably from the beginning of RUN 8656 → Switched on

12:01 end of #8656 74 k events

12:03 RUN 8657 pedestal

12:05 RUN 8658 LED

12:11 RUN 8659 α

} Beam ON
FS41 70
Proton current 1300μA

- DRS board is taken away from the VME board for modification.
Hopefully the board will be back this evening

12:24 RUN 8660 take π° data with higher PMT gain for timing resolution analysis.

- π° RUN
- FS41 70
- high gain
- proton current 1360μA.

13 53 events / 5min = 4.54 Hz.

This time FI9 is fine!

27.6 Kevents

14:35 Threshold level for Xenon discriminator is changed

Previous		
LeCroy	0-3	-30mV
	4-7	-10mV
Phillips	all	-12mV

⇨

Now		
LeCroy	0-3	-10mV
	4-7	-10mV
phillips	all	-12mV

14:39 RUN 8661 π° RUN

- FS41 =70
- PMT high Gain, lower threshold
- protom current 1,361μA.

14:55 Stop 8661

Because no TDC data in 16-31 (TDC channel)

It was found that the discriminator out pulse width was narrower, which (was) maybe changed when the threshold level was change by failure.

It returned to normal (30 nsec).

15:10 RUN 8662 π° RUN

- FS41 =70
- PMT high gain, lower threshold
- Proton current 1367μA.

*Since RUN 08637,
Update threshold Current in ODB (/Equipment/HV/Setting)
was changed 2μA ⟶ 0.2μA.

16:29 8662 end due to beam off. 15k events

1/2 STD UNTERRUCH.

17:10 #8663 alpha run without beam (beam off)
lecroy threshold = 10 mV for the front sources. ~6000 events

* The α-peak cannot be seen ← Because we lowered the threshold level.

17:20 Current limit to 12 mA
#8664 Started same as 8662

19:53 Proton current 1.416mA

20:30 Run 8664 stopped 50k events

20:31 # 8665 Pedestal
8666 Led with slightly increased LED intensity
105 ÷ 107 ÷ 109 ÷ 111 ÷ 113 ÷ 115
inst. of
104 ÷ 5 ÷ 6 ÷ 7 ÷ 8 ÷ 9

20:50 # 8667 Run with LXe alone
LXe * PC (i.e ~~not~~ S1 & not LYSO)
linear sum threshold = 320 mV

21:00 # 8668 π^0 run same as 8664
~40 K events.

23:44 # 8669 π^0 run for PMT current test
- FS41LR = 80 ~11Hz
- high gain
- proton current 1400 μA

23:59 # 8670 π^0 run for PMT current ~~test~~
- FS41 LR = 100 3227/183 = 18Hz
- high gain
- proton current ~ 1400 μA

0:25 # 8671. pedestal
- FS4LR = 70
- Normal gain (041017_1.hv)
- proton current ~ 1400 μA
- lower threshold

0:32 # 8672 LED.
setting for normal gain
{ 109 111 112 113 115 117 }
{ 91 93 94 95 97 99 }

0:46 # 8673 π^0
892/314 ≅ 21.8 Hz

→ LP framework of online was not updated.
Stop the run to take pedestal data.

0:55 # 8674 pedestal

0:57 # 8675 π^0 24K
HV01-9-9 (BT24) was off. → enabled.
& Xe sum thresh. was 320mV. → stop the run.
(Because of this, radiative capture events could not be recorded)

3:27 # 8676. pedestal
- FS41 LR = 70
- normal gain
- proton current ~1400μA
- lower threshold
- Xe sum thresh. 160mV

3:29 # 8677 LED.

3:36 # 8678 π^0 45K
1272/336 s ≅ 3.8 Hz

from run # 8671, L1, BT1, L7 pedestals were broad.
S13-52 S13-55 S13-56
(53 , 56)

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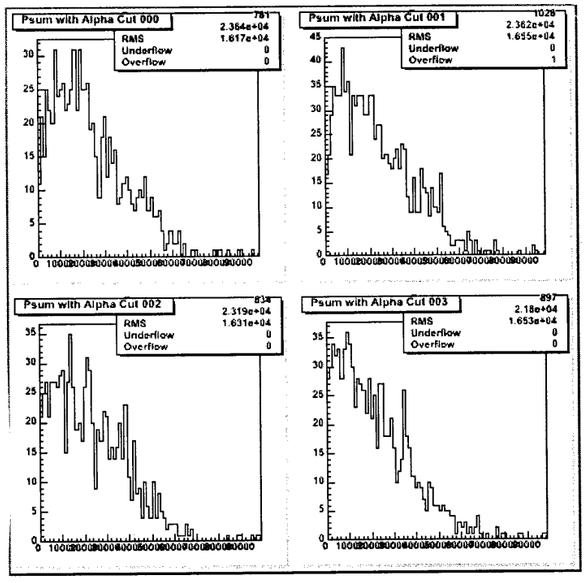
7:36 #8679 pedestal beam on
for test of ADC board (mini card)

7:52 #8680 pedestal beam on

7:56 #8681 LED

8:02 #8682 alpha.

Because of lower threshold level (-10mV instead of -30mV), even with normal gain we cannot see clear α peaks



8:09 #8683 π^0

- FS41LR = 70
- normal gain
- proton current 1403μA
- lower threshold. 28.7k.

Beam Blocker Closed.

10:36 #8684 pedestal beam off

10:37 #8685 LED beam off

10:43 #8686 α with back source trigger

11:19 #8687 removed gamma veto from α trigger to see αs in back side. α with back some trigger without veto.

changed Discriminator 0~7 to 30mV
threshold of

10:28 #8688 α beam off

Beam Blocker Opened

- FS41LR = 70
- PMT normal gain
- proton current 1.428mA
- threshold level. -30 ~ -10mV.

12:17 #8689 Xe alone RUN
no S1 _ no LYSO
threshold level -80mV (Lower than that of RUN 8667)

12:40 #8690 S1 * Xenon Trigger
threshold level of xenon -640mV

#8691 S1 * xenon trigger
-320mV

On-line pedestal was bad.

12:54 #8692 pedestal Beam ON

12:58 #8693 S1 * Xenon Trigger again
threshold level -640mV

13:50 #8694 same as #8693
100k events

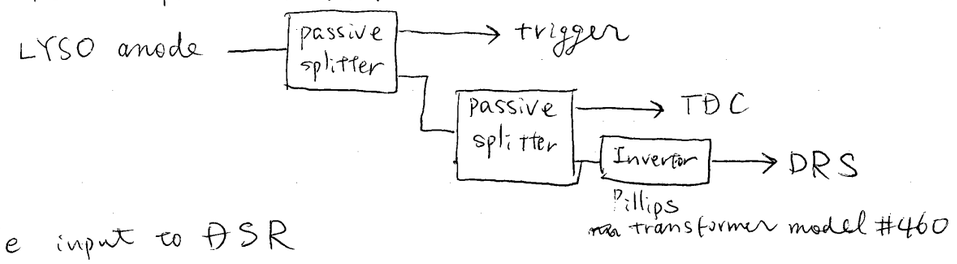
14:15 #8695 same as #8693.

: One more DRS arrived (16 ch in total)

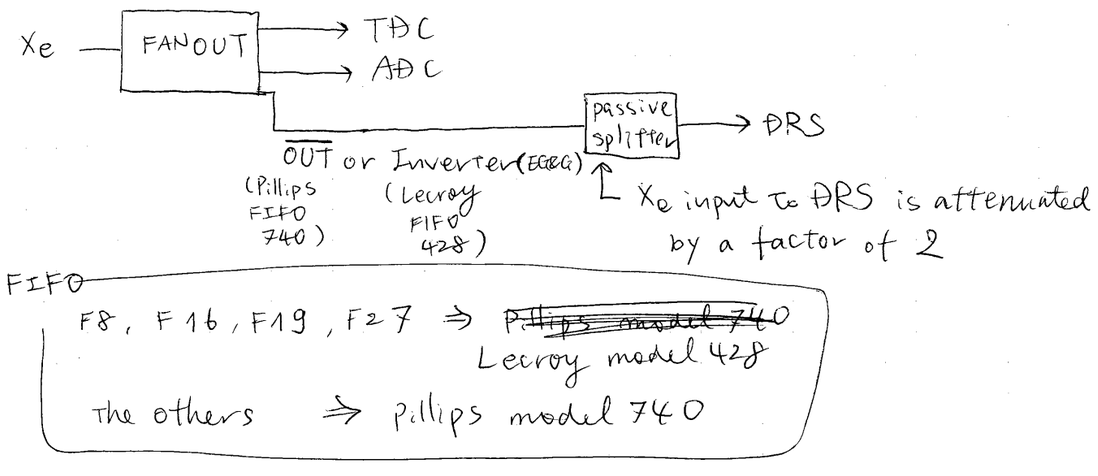
. Channel assignment

ch	DRS 0 (left in the crate)	DRS 1 (right) (new one)
0	~~F8~~ LYSO1 (anode)	LYSO1 (anode)
1	LYSO2 (anode)	LYSO2 (anode)
2	F8	F19
3	F9	F20
4	F13	F21
5	F14	F22
6	F15	F26
7	F16	F27

. LYSO input to DSR



. Xe input to DSR



20:57

#8698 π^0 run with DRS 16ch
- FS41 LR = 70
- proton 1.4mA
- normal gain
- Xe thr = −640mV

23:35 End of #8698 9885 events

23:38 #8699 π^0 run with DRS 16ch
- FS41 LR = 70
- proton 1.4 mA
- normal gain
- Xe scan th. 160mV

~ 2.3 Hz 8.4 k

0:46 #8700 pedestal
0:47 #8701 junk
0:48 #8702 LED
0:56 #8703 π^0 run with DRS 16ch
- FS41 LR = 80
- proton 1.4mA
- normal gain
- Xe thr. − 640mV

21.8 k

4:11 #8704 pedestal
4:13 #8705 LED
4:19 #8706 π^0 run with DRS 16ch
- FS41 LR = 70
- proton current 1.4mA
- normal gain
- Xe thr. − 640mV

8:21 #8707 pedestal
8:22 #8708 LED
8:28 #8709 alpha with γ veto
Almost same condition except proton current 1.5mA
9:13 end 13k 523 MByte !!!

9:13 #8710 alpha same as #8709
9:55 end 13k 508 MByte !!!

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9:56 RUN 8711 alpha same as RUN 8709

10:26 RUN 8711 end 9.5K. 369 MByte.

10:34 Run 8712 pedestal ⇒ maybe Junk (Beam ON and OFF during the run)

10:49 Run 8713 alpha
- without gamma veto
- normal gain
- FS41LR = 60
- DRS

⇒ 2458 evts

11:00 Run 8714 alpha same as #8713 ⇒ 13 K evts

11:52 BB closed
Run 8715 alpha beam off

Hydrogen Target emptied.

BB opened

12:31. RUN 8716. Empty Target RUN
FS41 = 80.

⇨ Found that the threshold level of xenon trigger was −640mV ← should be reduced.
Stop the RUN 7 events.

Threshold level of xenon trigger
−640mV → −160mV

12:41. RUN 8717 Empty Target RUN
FS41 = 80
Xenon threshold −160mV

14:16 #8718 pedestal beam ON · Empty target
· FS41 = 80

14:17 #8719 LED "

14:27 #8720 pedestal beam OFF

15:30 Start heating bottom heater 30 V ~~[illegible]~~ 7Ω
16:00 ⓐ fill outer vessel with N_2 gas (1/4 atm)
17:22 HV off.

1:40 100ℓ LN_2 tank empty → fill.
4:10 "
7:30 "
10:15 "
10:29 HV on (1e6 setting)
CAMAC Discri for first 4 patches 30 → 10 mV

#8728 Alpha with DRS gas
NIM Discri 270 → 180 mV
(4 PMTs in 1 patch)

#8729 Alpha with DRS gas 0.185 MPa

#8730 "

Modified electronics from DRS setting to normal

#8731 pedestal

#8732 LED

#8733 alpha with normal electronics (w/o DRS)
0.183 MPa
SM top −74°C
SM bot −81°C

12:26 #8734 pedestal
#8735 LED

12:35 #8736 NIM Discri −180mV ⇒ −80mV (multiplicity ≥ 2)
IV 0.183 MPa (SM top (~~−80~~ 39°C
SM bot ~~−83.40~~ °C)

12:38 #8737 alpha in gas same condition as in ~~#8736~~

⇒ 200k events

13:23 #8738 alpha in gas

- Normal gain
- Trigger: Top back wire only (Discri 8 & 9)
- Trigger rate ~7Hz

0.184 MPa
SM top -72.6°C
SM bott -79.4°C

⇒ 3.8k

#8739 same as in ~~#8738~~

0.185 MPa
SM Top -72.7°C
SM bot -72.2°C

⇒ 10k

14:14 #8740 pedestal high gain

#8741 LED

LED	#2	104	105	106	107	108	109
	#6	87	88	89	90	91	92

#8742 alpha in gas

- high gain
- Trigger Discri 0-3, 8&9 (without 10 & 11)

#8743 alpha in gas

- high gain
- Trigger Discri 10&11

⇒ 46k

Still many triggers by front side wires

#8744 alpha in gas

- high gain
- Trigger Discri 10&11
- multiplicity ≥ 3 (NIM thr −130mV)

IV 0.189 MPa
SM top -70.84°C
SM bot -77.8°C

14:30 Peter started APD study with beam.

#8745 Pedestal

- beam ON
- high gain

FS41R=80

#8746 LED

- beam ON
- high gain

#8747 alpha

- beam ON
- high gain
- DRS waveform

⇒ Junk test

#8748 alpha

- beam ON
- high gain
- DRS
- Multiplicity NIM thr −130mV

⇒ 3303 events

IV 0.185 MPa
SM top −70.24°C
SM bott. −77.1°C

18:36 #8749 alpha

- same as #8748
- removed splitter right before DRS input ⇒ no attenuation for the input to DRS

⇒ 8192 events

19:05 End of DAQ HV OFF

19:10 Recovery started again