CSC 2004
Test beam
<table>
<thead>
<tr>
<th>Test</th>
<th>CFE shortcomings</th>
<th>CFEB test</th>
<th>CFEB run</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Test 9</td>
<td>7.5V - Error message</td>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Test 9</td>
<td>CFEB control</td>
<td>OK</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CFEB ID</td>
<td>1240</td>
<td>1246</td>
<td>1241</td>
</tr>
<tr>
<td>3.</td>
<td>Test 15</td>
<td>CFEB Pedestals</td>
<td>OK</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Test 16</td>
<td>CFEB connectivity</td>
<td>Run 1834</td>
<td>OK</td>
</tr>
<tr>
<td>5.</td>
<td>Test 12</td>
<td>AFEB connectivity</td>
<td>Run 1836</td>
<td>OK</td>
</tr>
<tr>
<td>6.</td>
<td>Test 13</td>
<td>AFEB threshold</td>
<td>Run 1837</td>
<td>OK</td>
</tr>
<tr>
<td>7.</td>
<td>Test 11</td>
<td>No HV</td>
<td>120V/15 min</td>
<td>Run 1818</td>
</tr>
<tr>
<td>8.</td>
<td>Test 28</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CFE7</th>
<th>CFE7</th>
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<tbody>
<tr>
<td>3100V</td>
<td>31.0</td>
<td>4.3</td>
<td></td>
</tr>
<tr>
<td>3150V</td>
<td>36.7</td>
<td>3.8</td>
<td></td>
</tr>
<tr>
<td>3200V</td>
<td>34.8</td>
<td>4.7</td>
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<tr>
<td>3250V</td>
<td>213.1</td>
<td>27.7</td>
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<td>298.3</td>
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<td>3350V</td>
<td>743.7</td>
<td>163.3</td>
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<td>3400V</td>
<td>743.7</td>
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<td>3450V</td>
<td>743.7</td>
<td>104.6</td>
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<tr>
<td>3500V</td>
<td>592.6</td>
<td>57.1</td>
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<tr>
<td>3550V</td>
<td>788.1</td>
<td>931.7</td>
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<td>3600V</td>
<td>283.3</td>
<td>104.3</td>
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<td>3650V</td>
<td>279.2</td>
<td>190.0</td>
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<tr>
<td>3750V</td>
<td>279.2</td>
<td>792.6</td>
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<tr>
<td>3770V</td>
<td>279.2</td>
<td>792.6</td>
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Run 1839
Run 1840
Run 1852
Run 1841
<table>
<thead>
<tr>
<th>Test</th>
<th>Description</th>
<th>Status</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Test 9</td>
<td>OK</td>
</tr>
<tr>
<td>2</td>
<td>Test 9</td>
<td>OK</td>
</tr>
<tr>
<td>3</td>
<td>Test 15</td>
<td>OK</td>
</tr>
<tr>
<td>4</td>
<td>Test 16</td>
<td>OK</td>
</tr>
<tr>
<td>5</td>
<td>Test 12</td>
<td>OK</td>
</tr>
<tr>
<td>6</td>
<td>Test 13</td>
<td>OK</td>
</tr>
<tr>
<td>7</td>
<td>Test 11</td>
<td>OK</td>
</tr>
<tr>
<td>8</td>
<td>Test 28</td>
<td>OK</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Test 28</th>
<th>AICT</th>
<th>CLCT</th>
</tr>
</thead>
<tbody>
<tr>
<td>3100</td>
<td>132.7</td>
<td>5.05</td>
</tr>
<tr>
<td>3150</td>
<td>217.6</td>
<td>15.5</td>
</tr>
<tr>
<td>3200</td>
<td>4659</td>
<td>39.4</td>
</tr>
<tr>
<td>3250</td>
<td>1828</td>
<td>22.5</td>
</tr>
<tr>
<td>3300</td>
<td>3775</td>
<td>57.5</td>
</tr>
<tr>
<td>3350</td>
<td>7946</td>
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<td>45.7</td>
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<td>1070</td>
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<td>9274</td>
<td>19.7</td>
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<td>9874</td>
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<td>3600</td>
<td>9383</td>
<td>27.9</td>
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<td>3650</td>
<td>7998</td>
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<td>3700</td>
<td>7769</td>
<td>9.77</td>
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<tr>
<td>3750</td>
<td>9833</td>
<td>8.92</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Test 18</th>
<th>Run 1842</th>
<th>OK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test 19</td>
<td>Run 1948</td>
<td>OK</td>
</tr>
<tr>
<td>Test 25</td>
<td>1949</td>
<td>OK</td>
</tr>
<tr>
<td>Test 26</td>
<td>1950</td>
<td>OK</td>
</tr>
</tbody>
</table>
12:00 call long delay 17

Edit dqmb config 0023

ALCTx = 21
ALCTx = 6
CFEBRx = 18

Test 15 Run 1865
Test 13 Run 1866 N = 14000 OK
Test 19 Run 1867 N = 42000 OK
Test 16 Run 1868 N = 5000 OK
Test 20 Run 1865 N = 9600 OK
Test 21 OK
Test 27 Run 1876 N = 10000 OK
Test 15 Run 1876 N = 5000 OK

63.50% 2.3 ABE
1. CBE 0.4 B - "Backward" for ending -

2. CBE is grounded

3. LV:

<table>
<thead>
<tr>
<th>Analog</th>
<th>Digital</th>
</tr>
</thead>
<tbody>
<tr>
<td>LVDB</td>
<td>+6.6V</td>
</tr>
<tr>
<td>LV 3.5V</td>
<td>-3.8V</td>
</tr>
</tbody>
</table>

   LVDB is cooling by an air ventilator

   LV 3.5V - damper mode

4. CO₂, CO, CF₃, H₂O, SO₂, NO, NO₂, NOₓ, O₂, CO

5. HV:
   
   \[ H V _{\text{max}} = 3.4 \text{ kV} \]

6. Show case - no cables:
   
   \[ L_1 = 2 \text{ m}, \quad L_2 = 10 \text{ meters}, \quad \text{revision D} \]
   
   \[ L_{\text{total}} = 12 \text{ meters} \quad (\text{from CBE to VAE}) \]

7. LVBE: manual mode
Switched from Boston HV supplies to
PSS controller CEN supply.

Mapping:

CH00 - ME1/1 3.0 kV
CH01 - ME1/2 3.5 kV
CH02 - ME2/2 3.5 kV
CH03 - ME3/2 3.5 kV

Use the PSS computer to control/set voltage
and current limits.

See Xiaoping/Zhuang or Ben for questions.

Status of AEC3 firmware:

Hedge downloaded

{ ME2/2, ME3/2 } > non-ghost testers (i.e. not development)

ME1/2

ME1/1 > with ghost testing (development) firmware

AEC 384

AEC 288

For fast sites have checked all columns
we are now connected via skew clear focus on
microscopy.
3:01pm ME3/2 HV trips
- getting about 16.5k L14/8 spill

5/18-04 9am Safety inspection:

Needs:
- Armando’s name on gas drum
- MEV/1 22GeV single off ground tank
- HV labels for PMT’s
- PMT stand strengthened

Beamline: We are configured for "electrons" before lead target, equal mixture of electrons & muons.

160 ± 20 GeV ≤ 160 ± 20 GeV after the electron filter

Nominally the beam has p₀ ~ 120 GeV
He has DCS software updated to G7 with Frank’s help. Currently, it can’t simultaneously run DCS & run control. Agree that we’ll spend some time to add automated feature to send DCS data to PCC app when run # occurs.

10:00pm: Lindsey & Andre set program to add short / long/trigger / stop freeze sequence!
CSR 2: Functions

Hy-byte [E..0] controls B-60 cfo(s)
read pointer reset
0 = active.
[7..4] controls B-60 cfo(s)
clear function (resets
1 = active,
0 = inactive,
(completely)
(clears the data)

B-60 - MODE
only 8-bit & 16-bit are useful.
[6,7] - controls source of B-60 cfo7 pulse
0 = no input
1 = B-60 7 x TEST register (write 8 pulse)
[1] = Toggle Synch/Asynch mode
0 = Synch mode, generates B-60 cycle at
end of an inhibit pulse
1 = Asynch, generates B-60 cycle when B-60 cfo is sent.

0 = Single mode - CFO is sent once
1 = Repetitive (synch only), CFO is sent at the
end of each inhibit signal.

0 = waits till B-60 cfo is not empty
1 = start cycle,
0 = Donor, sends CFO when 8 is goal received.

To setup for operation (no inhibit signals)

1. Set each B-60 channel you want to use to 000b.
   This sets the channel to listen to one-byte pulses for testing.
2. Load command into CFO, most significant byte looks like:
   0000 0000 0000 0000, and set (SR2 = 0x0)
   8-bit command as in (8 words) your board.
3. Send command by writing to CFO, pulsegenerates in command order.
4. Set main use), B-60 channel to 0xa, so it starts to listen to 8m signals.
Proposal of ME1 CSC parameters measurements during beam test.

Spatial and timing resolution study:

1. Scan along strip: 15 points of measurement.
2. HV scan (Radius = 2500mm): 2.7kV – 3.1kV, step 50V.

Geometry:

![Diagram of beam and chambers](image)

Requirements for measurements:

ME1/2, ME2/2, ME3/2 chambers - track monitor. Alignment can be done with muons using offline monitoring (P. Molisens).

Statistics: 16000 events per point. Total 1 000 000 events.

Estimated time:
Alignment: ~ 1 day?
Measurements: 3-5 hours.

Study of track reconstruction efficiency and spatial resolution in the presence of electromagnetic secondaries:

![Diagram of beam through iron and chambers](image)
* Installed Full BBU (base bigger GBE Fire) #4/4
  - Input Channels (fibers) #0-14, but DO NOT use #4, 9, 12
  - Use Fiber ch #11 for MEY1
    ch #12 for MEY2
    ch #13 for MEY 3/2
    ch #14 for MEY 3/2

* Discussed ORACLE - interface w/ Igor Vorobtov
  He provided two perl scripts + rpm for phenix + new webpage
  (see genesis - cecontrol/oracle)

  Regular Update password:          west-hall - run
  Selective Update password:         west-hall - selective
  Express password:                  exprt-run.e6

  Darin will put the new webpage on the TB04 webpage.

  * Took 7 data sets w/ MB/1/2, 2/2, and 3/2 in 3 beam
  * SR data in A101/1/2/oracle/tech1996 - run#57
    all 8 minutes... dow data 7... there must be the first value under more runs
    * found log mode... SR does not... these files could have been in log last two

  * Changed dependencies (don't change signal) according to new people's code
    configuration (add the 3/2/1996 (Ws) RW at per 2/96)
    Took a new data file

  * Using GECG (G685) in test
    * Using NN 11A > 5P
JHG suggested checking timing of LCT with LVI on CFEBS. Chambers 2, 3, 4 have a delay of 2.90 ±0.01 ms, Ch 5 (Dobin) has
a delay of 2.89 ms. JHG said to delay the LCT by 3 bunch-crossings (0.075 μs) to Ch 5 and all other delays at LVI were checked and
adjusted.

Data taken this way ad saved.
JHG, Jamie, and Darin A.

29 May 04

- Data with SP
  - Tile Chambers (HEV2, HEV3)
  - Iron block in beam
  - Download new LCT firmware (ghost bunching)

0.25, 127, 128: Same with no CFEBS 4 chambers
107, 108: only two chambers HEV2 + HEV3/3
108: only 1 chamber HEV2
110-112: only two - different contributions
113: all 4 chambers - good run
Redesign Ch 2/2 - 3/2 normal to beam.

31 May 2004 1300 hrs

Redesign Ch 2/2 - 3/2 to 4/40 wot normal to beam

[Diagram of a structural design with annotations and measurements]
May 31, 2005

Today, ME1 only due to

-6/30/2005, data bin → 1 chamber (ME1) configured but
- 4 chambers output to DBU
- Peter saw no CCE counts

DBU

<table>
<thead>
<tr>
<th>ME7</th>
<th>ME11</th>
</tr>
</thead>
<tbody>
<tr>
<td>ME11</td>
<td></td>
</tr>
<tr>
<td>ME11</td>
<td></td>
</tr>
<tr>
<td>ME1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Noted, data bin |

- changed beam line from 5 to 3
- run BP
- changed for decay beam from 24 to 17
- run BP
- charged the 26 decay beam to 23
- run BP

- changed DBM and TIM cables order from 1, 3, 4, 5
- to 4, 5, 2, 1, 3
- plugged back in the ME7, ME11

- data in 22 bin (stopped after May 21)
- through the triggering counter reported a 15/65,000 efficiency

well, 22ch

Shifted to key osc

Today again only chamber #141 - 144
June 2, 2004

Machine Development...

15:18 We finally have the GEM machine clock...

17:03 are connected to the machine clock.

20:40. Take run 148. 8 M data (two spills)

Run 149

Run 150 1.6 GB M data.

June 3, 2004

Mike: 752 Machine = old ME11/ ACT firmware (day 0: nov 15 '94)

ME11 data sent.

15:41 (1 spill)

ME11 has been moved in the beam.

16:45: Data Run 155. ~2 GB. File size limit reached, core dump.

In this file, DPM wrote data to computer, and we delay the memory read. So there is no "fighting" that is reading memory while no package in memory.

This seems to explain why the "real" stuck at times.

ME11 backup -- up to run 159

ME11 backup -- up to run 150

June 4, 2004

Removal ME11 from the PC config until the ACT firmware gets updated.

Trigger rate = 8k/spill

Run 159 5 channels.

Run 160

161

162 1.09 Gb

Single PC setup. [just Stopped & Stopped.

Stop.]

[Note: Handwritten notes and diagrams]
So I'm like: I'm not sure how to proceed here. I've been looking at the F114 engine, but I'm not sure if it's the right choice. I've heard some people say it's not reliable, and others say it's perfect. What do you think? Have you had any experience with it?

If you're thinking about buying a new car, but you're not sure what to get, I'd be happy to help you decide. Just let me know what kind of car you're looking for, and I can give you some advice. Whether you want a luxury car, a sports car, or something more practical, I can help you find the perfect vehicle for your needs.
0. On 167 - tried new ALC  patterns

- have collars

- not accepted

- sometimes does TP's

- try 2 mode = 2

- still problems with

- 17,700 cuts

- run 168 back to default patterns (no holes)

Q: 3:40pm

Run 169: Mixed SP & LIA delay forward to 18X

- still had AC  patterns

- try 2 mode = 2

- still having SP + LIA

170: Give me "miss it" ALC patterns
drops? still same?

171: Now have new patterns

- 8th run

- CSC id 1 moved 2/8X in SP, why?

172: Same thing, let's try for CSC id 1

173: Same thing, the EF again (related to new pattern)?

- because 6/12 + 10/12?
Based on test conducted efficiency 1 seems that the 2 large chambers are tilted opposite the ABC pattern.

Kryten confirms that based on fast setup pattern, we are tilted wrong way.

18.5 - Any ADUT firmware in ME 2/1, 1 fiber, not
Default setting for all chambers
Trigger 3.5
 Ampl. 0.15
 TDC threshold 2

18.6 - Same as 18.5 but with DDC data and fiber, blends

10:43 ME 2/2 and ME 3/2 were tilted rotated on -30°. Distance between ME 2/2 and ME 3/2 is 93 cm.

4:57 on 194 kaon -/ this geometry + nominal settings
4 chambers
Unknown ±700 g/l11
HV: 2950  file: ddu195.dat bin
ddu196.dat bin
ddu197.dat bin

3000  ddu198.dat bin
      ddu199.dat bin
      ddu200.dat bin

3050  ddu201.dat bin
      ddu202.dat bin

20:30  DAG hangs

New scan: delay 7.25 (25min)

22:25  3050
23:00

 filed 205
delay

new plot产生了new_T.txt for: c3 3 x 4
This time, efficiency of 0.3, 511, 1 = filled
 chambers, the correction
 r = 1, m = 2, np = 4

23:43  change mode = 0, c3 x 3 x 8

run 260

new run 2950 - 3160 step 50

HV 2750  file: ddu207.dat bin (174 wed)
      ddu208.dat bin

run 280

2800  file: ddu209.dat bin
      ddu210.dat bin

run 291

1100 wed 174

2300
3142
3142
2300
3150
3350
back

3000V run
225
220
225
225
230

Question: Why is the right LV supply switched off?
Answer: Because it is not used.

7-6-04 ~ 5:40am Fixed data readout part of Emu/FeB (LP/FB)
We rotated ME2/1 & ME3/1 block 1°.

\[ \tan \theta = \frac{88}{132} \Rightarrow \theta = 33.7^\circ \]

162 cm separation between chambers.

Moved CSCs again.

New position ->

<table>
<thead>
<tr>
<th>ME1/1</th>
<th>Surface Scan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Run #</td>
<td>Pos #</td>
</tr>
<tr>
<td>235</td>
<td>2</td>
</tr>
<tr>
<td>256</td>
<td></td>
</tr>
</tbody>
</table>

End of underwater beam.

HV & LV switched off.
Structured beam now started!
checked on scope that L1A + clock are synchronous with each other

6:15pm ~ 6:30pm 6000M /sec

Peripheral crate configuration:

PC#1
ME1/1 TMB slot 14  =>  csc id = 12  12
ME1/2 TMB slot 16  =>  csc id = 13  13

PC#2
ME2/1 TMB slot 6  =>  csc id = 3  14
ME3/1 TMB slot 18  =>  csc id = 9  15

SP configuration

SP in slot 10:  PC#1  Min 1  =>  F1/M1
                2  F1/M2
                3  F1/M3
PC#2
                1  F3/M1
                2  F3/M2
                3  F3/M3
3:45pm demo ended new set to TF
Global: Melin - 3-2375 mom.

global: melin - 3

gustin: melin - 14/04/1935

melin - 7 

local

- local: melin-032474-14

4pm - 6:30pm/lap

9:30pm - released SP late again
Also fed 24n/1oz 10:20 (4oz)

10:30pm left TF due for new TF

- by 210h 1oz (meline = 28.45ss)

efficiency 1oz?

Also tonight, ceb 2oz placed into TF crate (see removed 210h 2oz)

This is the special one with 114 opt from 50
26pm: Mentor moves back from RAT
down to front of TM3 for MELA
Efficiency goes back up. RAT noted.

SF calculation:
- 1 period 1 end, 2 MELA's
- 16 cev = Cx A
- Loaded beam + phi, len T (correct + on)
- G1 = H1 (H1, H2)
- G1 = H1 (H1, H2)

Set: y = 5x + offset
f = 3 + load + offset
offset depends on exact to make all chambers line up with 2 pixels in 2 values.

10 pm:
SP with y = 35, 36 -> grid = 2.3 and 3.0
SP hit 2 = 1.8, 9.1
3 x 5 = 2 x 5 = 10

10.35 pm turned off BXA

Leo has LLA output through 09B, 20A
It sees signals in code.

Synchronize with BXA on
normal 2 hits w/o BXA
been plotting with the system

Switched filters from spill start to end:
F1, F2, F3

New F1: MCS, $\text{Me}^2/2 + \text{Me}^2/4$

F3: $\text{Me}^1/1 + \text{Me}^1/2$
Run Control Instructions

To start TF GUI on dag@acosta1 (pass: sector-p)

cd Toy DAE/TrackFinder src

c /TFGUI

To start XDAE:

XDAE Menu -> Start (may have to stop then start)

To start Run Control:

Click on upper left <RUN> on TF GUI

To start Run:

Click on <Set-up> on TF GUI

Watch log files on geurt4 @ acosta1 until ready

Start on d06 @ geurt4 /d06/DDU/ (pass: fedub)

Hardware Dumper -r 241 -m 100000

Issue L1 Reset on TF GUI panel & TF GUI

Start on dag @ acosta1:

Toy DAE/TrackFinder/ crate/ test

.../bin/Linux._.2.2/SB_DDU DCD -m1 -s10 -2480 -a -w

Click <Start>

Hit Ctrl + SB_DDU DCD

Hardware Dumper when done

Then click <Stop> on TF GUI

Write:

my SP DDU DAE -crabfile.dat ~/testbeamdata/SP_DDU_DAE_r109??.dat

Nom = J. Nunn 1/17/2013 Li
291: Start up current release TF + PC logging

293: New implant LIA from TF

CBB: HA delay > 3.7 in PC #2 → 3.1
CBB: 9.7 in PC #1 → 3.1

TF delay changed:
Pipeline FIFO Delay CSN: 510: $8 \rightarrow 74$ milli-sec

Because TF LIA is GCBX later than scintillator,
\[ \text{LIA} = \text{TF} \]
run 297 when weighting.

298: LIA delay → 30 in PC.

June 15, 2009

Download new SP firmware that handles Moon Satur, timing procedure.

Check for CC & input data from EIS.

Output of Jason Mumford's program:

<table>
<thead>
<tr>
<th>Data</th>
<th>CSC #2</th>
<th>8</th>
<th>3</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>AF</td>
<td>94.8</td>
<td>98.6</td>
<td>94.4</td>
<td>95.2</td>
</tr>
<tr>
<td>CLCT</td>
<td>94.9</td>
<td>94.5</td>
<td>94.5</td>
<td>94.5</td>
</tr>
</tbody>
</table>

Data: CLCT

99.9 88.4 95.2 94.3 63.74 48.3
PM switched to discrete log2 on the CCB's in the perceived code. Tried to time:

SP: 11A = 1650ms later than expected log2

ct: 461ms?

15GB / 10 spills = 1.5GB/s

SI: 5 spill rate = 17,300/spill / sec/sec

Bandwidth est. = 60 MB/s

20 Ship PNNs

Channel up

2/1 3.5\mu A

1/2 3.5\mu A

2/1 5.5\mu A

8/1 8\mu A

Frye 2 10\mu A

CPU front: solved BSC software issue (BCS)

can take data.

TF LIA rate = 240,000/spill!

With pen beam
Retire until prius until 10pm then
switch lanes

track runs 296, 293, 298 using TF only (no DDU)

2:50: 51: +480K
53  +200K
513  +240K
TF 614  +152K
-194.8 kg dead time

run 799 DDU + TF 109.15

230,000/1.67

17:00
17:24
AC delay = 48K
AC delay = 47K

18:01
18:05
18:10
18:13
delay = 20
delay = 25
delay = 10

301
302
303
304
305
306
307
308
309

Hangs
Hangs
450,000; 2,045,000; 2,208,000; 2,390,000
459,000; 339,000; 1,598,000; 2,126,000
458,000; 2,035,000; 2,311,000
413,000; 3,649,000; 1,000,000
6:15 PM

Load "617" version of SP LUTs:

- LocalPhi
- GlobalH ME1a
- GlobalH ME2
- GlobalE ME1a
- GlobalE ME2

Load y = stroboid

some, but put in stroboid

2 = wC + offsets

7:20 PM

173,000 LUTs vs. 240,000 p15s

St10 = run 3, 11, 3.2, etc.

10:40 PM

finally loaded LUTs into ME3 and ME2

of SP in st14

Also loaded SP in st14, 21
PC#2 only  
MAC2/M1 = F1/M1  
M1 = F2/M1  
M2 = F3/M1  
M3 = F4/M1

Not sure on 310.  
- Check 310
- Check 311
- Check 312
- Check 313
- Check 314
- Check 315
- Check 316
- Check 317
- Check 318
- Check 319
- Check 320
- Check 321
- Check 322
- Check 323
- Check 324

21,000 LIA/spill vs. 4300 suspect?

20,000/spill 10,000

20,000 / 10,000

12,000 / 10,000

M2 (not M1)

ME2/1  ME3/2

4.5 pm  

7:00pm/10,000

22,000 / 10,000

22,000 / 10,000

22,000 / 10,000
PC 1  MPC1/M1  FI/M1  EM/M1  MF/M1

Try to send set of 2 sp’s

Look in 325 both sp’s + DVI

Try sending each sp separately

- read set sp #10 only
- sp #21 only
- sp #10 + sp #21
- sp #11 only

Sum 332 LIA 144K

PC Seeker vs Temporiser Mode

- #1 (15005) 7TH P 217
- #2 (2003) 7TH P 348

MPC cur1 = 00000 01111 20011 20010
= 0x0347 (099)

MPC cur2 = 00000 01111 20011 20010
= 0x03CB (771)
16:50: Pm 2:05: The "tunnel" of KBG.
I don't have to go to floor 100.

17:05: I went down to 100.
Aunt Agnes, I'm there.

7:55 a.m. LI delay.

1:00 a.m. New SP firmware installed with BX centered changed.

23:35: Tired telling one chamber M03/2 in feed.

\[ \text{Survey} \]

22.5°

\[ \text{Frontier} \]

22.5°

\[ \text{Frontier} \]

\[ \text{M02/2} \]

\[ \text{M02/2} \]

\[ \text{M03/1} \]

\[ \text{M03/1} \]

Seems that we killed TF rate!

Found out disp. patterns were not enabled.
(Since last night when Martin changed things?)

Martin fixed it. Now TF rate up.

11:00 a.m. Found that SP pipeline F1 = 0 at T.
01:45 Run 348 started (μ) combined

Mixed SP links again in SP10

1. MPC 1/1
   M2  $\rightarrow$ F1/1
   M3  $\rightarrow$ F1/3
   ME5/1
   ME6/1
2. MPC M1
   M2  $\rightarrow$ F3/1
   M3  $\rightarrow$ F3/3
   ME7/1
   ME8/1

Torek runs 340 + 341

Returned links

PC 2

PC 2

Me 3

F4/1

Me 3

F4/1

Cain says first link, F1/1, is contrast to timing.

Changing that changes timing! (Must have something)

Run 347 - 349 fail [something] and RPC
12:45 PM: Brought up THU on chamber

20mA trim pt. of PM beams

7mA during setup for ME3/2

4:35 PM: Notice ME1/1 tripped

ME3/2 drawing >10mA during setup

5:10 PM: Switched back to mains for 6 hours

6:45 PM: Len has been spending lots of time tuning the RF signals to match specs in the TIC manual.

We now also no longer use an external gate delay generator for the LIA signal. Instead, we use the CS8201 in the TF crate to program a delay on the LIA request from the SP.

This clears up some problems with triggers occurring before gate time.

5:15 PM: Noticed the PM SP21 & SP710 sending LIA stuff.
9:46am  Started on 357  DDU+TF

* Delayed spill start signal 0.5-1 sec  
  ⇒ Try to see if this helps

10:00am  Frank during Event builder run 1

DDU Likelihood rate > 8-9k / m² / Front of spill cut off

Task run 355 combined, DDU+TF

Jay R. increased rate during spill  
from 15k / spill

5:30pm  Actual 2nd spill run (accidentally confused with 356)

356? correlated runs RPC + CSC + TF  
triggered by TF

1st spill DDU
2nd spill CSC

357  5 spills

1st spill 358 = and 2nd DDU+TF run, no RPC

10:30pm  Tracker group switched us to pins

Jay R. reduces HV on chambers by 100V
on all chambers
1:20 am: Seems to be losing TMB match with ATOMEC.
First CEC 9, then CEC 3, on next run, again... (Rate is still stuck/spill ~/ TP ~/ no TMB!)
every few minutes (stick/spill) with both

12:00 am: Lev & Mike swapped to another CEC 2001 with a TCE R which (the last was TCR 2) to see if we solve the fluctuating issues.
No improvement. Lev added a sp + FIFO in the firmware to catch changes in the BX counter maximum (see 974 E) some spots.
Interestingly, the MP-35P link synchronization was 0.3B for first CEC
6µt 0.39 for one ~ 1.5 TCE R 2 (306x increase)
Why?

First CEC = CEC 2001 # 22
2nd CEC = CEC 2001 # 17 ~/ TCE R

12:00 am: Set HV about 50 kHz lower than standard to reduce trips during beam run. Raise it up tomorrow
9:20am  Case HV in chambers back to nominal, although still C Pm-5
  2952, 3100x3
  5, 6, 8, 10 µA during 5M

9:30am tried playing in PC #1 M1, M2, M3 links into F5/M1-M3 on SP
  Link 2 from PC1 seems dead 600V VDC today
  Falling fibers, so either M1C/M2 transmission or fiber F5 SP reciever is ok
  Should try MIke's M2 firmware
  Note that TM#3 + TM#9 in PC #7
  Stop repeating LET#s after ten minutes

10:05 Switch to murons!

10:24 run 359 started, 8cm DMTTF

10:31 raise EMU HV for M6/2, M7/7, M6/2
  50 V to 355V
  current ~0.1 MA
Adjust 188 sec delay in 053201 in code

OS1A \rightarrow OS1B 1 more BX delay

OS1C

\[ \text{DDU has 20\% increase in \# pie 0.36} \]

\[ \text{5.15 cm} \]

\[ \text{92.5 cm between} \]

N0 concurrent with PIC

\[ \text{run 361 - 21 sp.1s} \]

\[ \text{50 cm long} \]

\[ \text{20 cm wide} \]

\[ \text{30 cm high} \]

\[ \text{9.25 cm between} \]

17:26 New moved ME1/2 + ME2/2 toward counting room

Also look at 22.5° $\Phi_6 + 1\Phi$

Installed run stack between ME1/2 and ME2/2

\[ \text{17.50 cm long} \]
noticed that only F1/F3 were active on SPDS readout

lower apparent efficiency!

non-active OD links: DD CSE DPC S1PF

Found bad fiber for PC#1/M2
replaced it, now all links fine in 1365.

2:10pm Found FE3/2 tripped. Tripped again to raise HV

2:20 TF only ran 366.

Decided to try to move MOV1 away from XSA control room to 347 away from gratings + hopefully improve efficiency. Not improved though.

2:30 Start TF-only ran 367. 91 sp/s.

MOS 3. He doesn’t seem to be finding tracks.

12:48 ran 368 (hit LT reset) 36 sp/s.

Start DDU dome + TF 10 g.
RPC + CSC (TP+DDU) 369

CSC only, TP+DDU 8.5m$^3$

370 Chase ACD delay from 6ns to 0ns
for CSC id 3, 9 (RPC#2)

They are now nearly centered in SPx HS!

Non leading le in SP#21 because may have adversely affected Muon sector

Non Muon sector has 1 muon in "Muon1" slot (rather than "Muon 3" as before)

Beam lost a spill 6

372 Same conditions

Seem to have lost Muon 1...

Few double muons (1-2 spill?)

373 Go back to 6ns ACD delay again
Few more "Muon2" on MS

both ~3000 L1A/spill (lower because of?)
1:45 [Handwritten note]

M375 still ~3k LTA/spot why? (based on
in M1455, loaded all SQ LUTs, still just 2 spots)
12 spots for 30-rate

Just reduced CSC to 1.8k, 3400x3

to prepare for pages

Also reduced RFC to 40x4u

If noticed the LTA rate was 10k/spot for pages
Reduced rate why?

Tried setup again, new rate 10k/spot!

In 1 page, the text seems to lack a, no date format
(no "Mar")

Task run M377 with p3s? (but V failed)

5:00pm run M378 new firmware in SP to 6200p
New SP firmware now does a simple read of RX count based on BED, rather than checking if BED arrives at correct time:

BED arrives at correct time

Particles are now always same RX spill to spill:

So, particles are locked to BED orbit speed, but or bit period varies from time to time.

See plot next page.
Stuio - an inspec to spilly
9:00PM  pulled RAT board out of R#1 for TMB csc id = 8  

Retuned config settings to default RAT change (i.e. similar to TF + 50V 
rate back up to 15k/spill  

20 spills

→ Returned iron between ME1/2 + ME2/2
→ Moved ME1/2 back to original place
→ Added 16-20 cm in front of ME1/1

Chamber HV's @ 3x 3.55 kV + 1x 285 kV
9.40p.m. Took run 381, 23 spills

Non-change all trig. modes for AEC to & all chambers

(took run 382)

33 spills

L1A rate ~ 15-16 k/sec

Run 383, 18 spills

~ 15 k/sec

Now change trig. mode for AEC to 3, all chambers

Run 384, trig. mode = 1, all chambers

27 spills

(ate µ)

returned trig. mode = 2

Run 385, 1,000,000 events, ran out for DDM, 23 spills

kept TF going... ~ 60 spills

Try tmb, dev, delay = "2.6" for ME 1/1

no help.

Run 386: increase L1A latency by 18x

CBB 2001, 0x24 => 0x81c (4x => 816)

TF only ran