52

Mon. 27 Sep

Physics run: 2 GeV particles @ $\eta = 0.45$

Signal in LAr Calo visible on scope

max amplitude ~ 300-400 mV.

But no associated trigger (e.g. scint. signals?)

12:30 Since this morning lots of problems with the combined run. → is being debugged.

13:00 The 2nd tower builder was taken down to be installed next access!
Tile calibration signals still there.

LAr will generated calibration signals corresponding to 100 GeV energy deposit in Trigger Towers.

Mechanism: 16 middle layer cells get calibration signals & summed up into TT's.

each cell gets a calibration pulse corresponding to ~6.25 GeV energy deposit.

6.25 GeV corresponds to LAr. ADC counts of ~350

for the DAC setting (16-bits) this is 100$

$DAC_{max} \sim 5V \sim 65535 \Rightarrow 76.3 \, \mu V/DAC\text{-count}$

$\left(\frac{ADC}{DAC} \text{ is } 0.35 \text{ of } \frac{DAC}{ADC} \text{ setting}\right)$

1.22 V/TT   100 GeV/TT ?

15:15

No test beam meeting today : probably Beniamino busy debugging or.......

Because of magnet switching $\Rightarrow$ $\emptyset$ positioning of beam not good for L1Calo

Although we see LAr signals on the scope $\rightarrow$ but we don't see a corresponding scint trigger.

16:00   Weiming will investigate this He has just arrived.

LAr calibration pulses will only be generated during special calibration runs. We will be informed, when they are going to start these runs.

The corresponding trigger is now upstairs in the counting room. It's supposed to be synchronized to the TTC clock, which is what we want.

Timing with respect to the signal to be seen when calib pulses are being sent.

27 Sep. 16:00 M. Try to set trigger thresholds on CFM higher
to see only Tile calibration pulses & no noise

Problem : setting off thresholds in Cp chip
is unreliable

This is apparently a known problem
which Gilles is investigating

19:00. Check LAr signals again. Beam is now 1 GeV.

See signals ~ 600 mV on scope.
Really correlated with beam. No beam, no signal.
So definitely not a calibration artefact gated by spill.
(frequently)
Also, see lots of noise ~ 200-300 mV for first ~ 3µs of the spill.
                                                        just after

Checked timing of trigger signals

One of the LAr channels with signal does have correlation
with the SCINT trigger.

Delay from peak of LAr pulse to trigger output from 3rd coincidence
is 970 ns.

Compare with delay from Tile calib pulse to trigger output is 1200 ns.

Compare ATLD LIA (output of 2nd coincidence) with SCINT trigger
(output of 3rd coincidence).
     → SCINT is 225 ns earlier than ATLD LIA.

TUESDAY 28 SEP

M. overnight standalone running took ~ 300k events
DAC still going, but Cprod3ₖ is permanently busy.
Run 1095 (past UCensin).

11:00 finally calibration signal from LAr.

some confusion concerning the calibration pulse amplitude
on the LAr side. I have corrected now the numbers
on page 52. summary:

DAC [0..5] Volts. ; 16 bits.

$\Rightarrow$ 76.3 μV/DAC-count

A setting of 250 on the DAC gives us
1 Volts on the scope. (Reminder: Cable attenuation)

I have asked Enric to check their calibration factors
(i.e. conversion from DAC to GeV). Probably this afternoon
he will do that.

* Not all the frontend boards are in the crate, so $\eta \in [0.8-1.2]$
has no signals in. We actually only use $\eta \in [00-0.8]$
region.

* Not all the channels on the cable have signal in, or more correctly
the ordering is not correct $\rightarrow$ is being investigated

11.30 (mL) With Jim Schiesh? & Ian Werner tried integration
with RoIB again.

Small integrated partition, just RoIB, Level2, LiCalo, MuCTPI
(and CTPD)
Lvl2/partitionpart_RoIBTest.

Added some LiCalo configuration setup in the Lvl2 account
(~lvl2usr/online and ~lvl2usr/setup-10.csh)

Use Run type TestBeam - CompPlaySetup
generator CompLevlsKit, mode 1

Enable both RoIInterface & RoIBInterface   (note lvl2L?)

Shunt mask 3 for CpmsL4

First tried combined ATLAS L1A
=> problem is triggers NOT event but calibration
(no beam because of access to cav)

So tried local LiCalo triggers and expect that
MuCTPI will give triggers in RoIB

Got some events, but problem in level2 network.
Also access finished, so started getting beam
triggers again in MuCTPI.
After a few events RoIB gave xoff to us → busy → stop

Result: inconclusive

Level 2 should check network problem
prepare for running RoIB with only LiCalo?

Also need to understand why no Tile triggers
when there is a beam.

15:30 (KM): _ run today has been _ energys e & π for
calo material studies.

Bad beam quality

No LAr calibration runs at the moment.

17:00 (KM) severe problems with our standalone data taking
is being investigated — No data from PPM ?!

19:00 (KM) some s/w fixes done, apparently the new method
of configuring the PPM has not been working
properly ! ⟶ using now the old version

But still problems

22:00 (KM): After (dinner) & several tests "suddenly" PPM
configuration works. I have no idea why?

* Stefan has gone & he is still doing some measurements
on the old & the new fem, without interfering with
the running system.

4 GeV π run until stop now, & 4 GeV μ will start

As of Bill tomorrow morning, till at least 16:00 afternoon there
_ _ beam. MD & Toym data installation

Stefan:

22:30   investigate the voltage measurement problem on the JEM. We find out, that the voltage on the

Input Modules are 3V3. So that seem to be ok. But we see also that on the voltage sensor Max 6685 we measured only 3.09V. →
→ ask Bruno whats happen and why.

The only thing that we need now is another TTCrx Module for the JEM.

1:50   Juergen & Murrough are working on the online s/w for the last ~2 hours.

(KM.) LAr Calibration pulse measured at the input of PPM signal height corresponds to a DAC$_{LAr}$ settings of ~250.

Δ: 1.61µT   Δ: 930mV
@: -24.0ns   @: 10.0mV

Ch1 500mV Ω   M 400ns A Ch4 ∫ -290mV
Ch4 500mV Ω
T 70.60 %
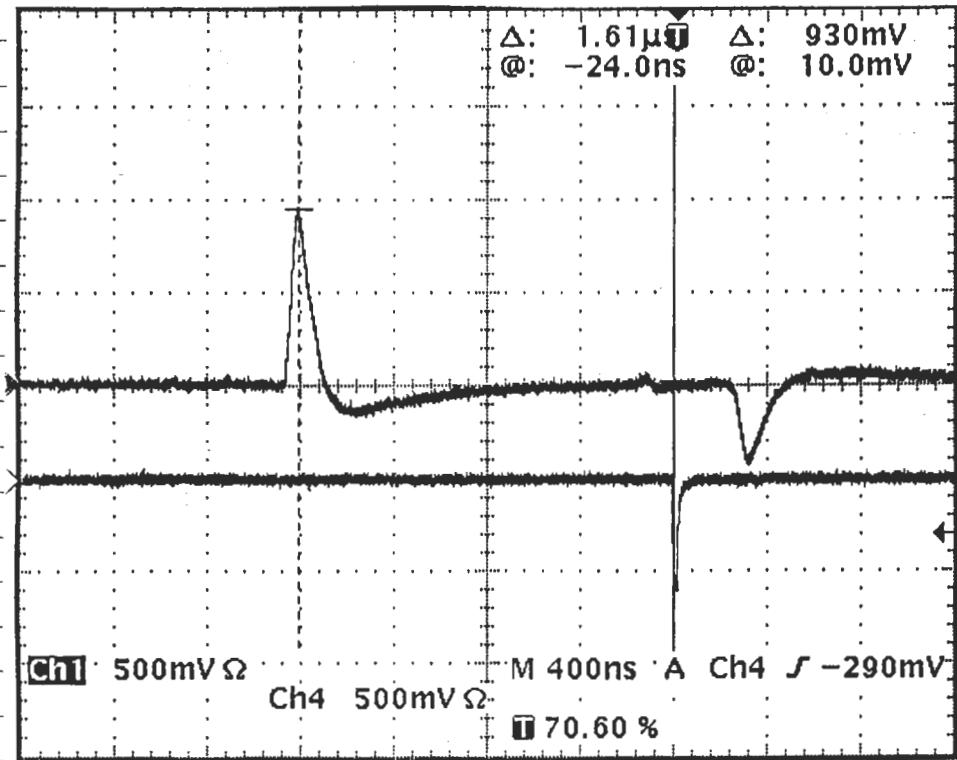
→ L1A delivered by LAr

timed with clock

L1A depth: 1.61 µs

WED 29 SEP

Me + Per Werner: Try RoD categorisation again

Again no trigger from combined L1A.

Try with just L1Calo L1A
wites - clearly errors from MuCTPI ROS.

Write down. part - RoDBTest , run number 1031

Run type
TestBeam - Cpu Playback   File in pctb - run - s/0 1
dag - sfi - 10 - - 000, 031_folo41 writing
                                         (not closed properly

Generator

Cpds Cpu Hlt
Mode 1   Next try without MuCTPI segment
                          Run 1032: dag-sfi-10 - RoDBTest -L1Calo-MuCTPI ......
Chw pers 4

                          (NB using L1Calo calos as trigger)

Johannes shows us how to get global triggers
just with scintillators, etc

→ Run with L1Calo only, global triggers
       Run 1033

Put MuCTPI back in   Run 1034

    →? many errors MuCTPI ROS missing wds?
       will Pu missing fragments

    Perhaps because MuROS makes errors in BilD

    Data files copied to ~lvl2usr/tdaq-logs/dag-8

    list of data + logs

    ~lvl2usr/tdaq-logs. RoDBTest -L1Calo-MuCTPI. tgz

- Wenning Stefan and Thomas investigated the voltage drop of 3.3V for JEM LVDS input daughter card.
It turned out that the power distribution for this 3.3V supply is not very good on JEM mother board. ~~crosses~~ Currently there are only one daughter card is active, this power supply means on the daughter card is 3.09V, which is at the lower limit of requirement. After soldering a thick wire directly from 3.3V high power pin of backplane connector to the LVDS input daughter card, this power supply voltage rise to 3.186V.

- I (Stefan) ~~set~~ put ~~set~~ the following setups to ~~the DB:~~ for JEM to the DB:

    roi Offset: 0x28

    bc Offset jet: 0xdeb

    bc Offset Sum: 0x19

    dog Offset: 0x23

~22.40 Take standalone data to disk

~23.10 Put 4Calo in combined run.
     (disabled simulation → too slow → timeouts)

     Run 210242   e

     η ~ 0.45.   250 GeV e

     Expect both e & τ during the night, also eh scan

(KM) Program at the moment LAr HV Scan (down to 0V!)
(23:10)   with e/π⁻ 250 GeV beam

Program for overnight: η (0.3 - 0.5) + E (250 ↘ 20 GeV) scan
         probably 50k events per point/energy   (Φ ~ 0 ?)

KM: today we did a thorough JEM parity error issue problematic channels are fixed & does not follow MCM's. (2 ch's)

The two channels are: (JEM nomenclature)

$$c-e\emptyset \ \& \ B-h\emptyset$$

$\Rightarrow$ at least problem localized & to some extent understood.

In the process we found out that the second PPM has power problems when inserted in the VME crate The board powers off ~~whrn~~ (probably) due ~~by~~ to spikes on voltage(s) which are sensed by the hot swap controller

THUR 30 SEP

ML. LiCalo segment was removed from combined partition about 10 minutes after we left last night!

Probably not due to us, they saw some trigger & TileCal signal related problems.

We should try again. Ideally with segment that does not contain simulation to avoid having to disable it in our standalone partition too.

Advantage of using different (simulation-less) segment in combined partition is that if they disable it (instead of removing it) we can still run our standalone segment which includes simulation.

STILL Need to get Beniamino to use sim-less segment file LiCalo/segments/RosendHill_LiCalo segment_data.xml instead of . . . RosendHuSimIII . . .

NB in the sim-less segment, I have renamed the our "root" segment and associated controller to LiCalo Combined (instead of RosendHuSimIII_LiCalo) Sorry Bruce!

14:00
ML (Beniamino.   Combined partition now changed to use
                  RosendHuSimIII_LiCalo Segment.

                  Tested. Works OK — except our Ros gives errors on stop, start
                  (Must other detectors Ros don't do this).

                  Wrote ~ 100 events .   Run # 2101293

file Explosion lender/week public/work (handwritten, left margin)

Sep 30, 04 11:09 **combl1in.txt**

```
Adding L1Calo segment in combined partition
-------------------------------------------

You need to do either (a) or (b) and then always (c)


(a) if L1CaloCombinedSegment is not included in the partition

- NB database changes can be made while previous run is still going

- in IGUI, click OKS button to open oks_data_editor
- in main window scroll to Segment class, double click to get list,
  find segment called L1CaloCombinedSegment, left click to select,
  right click for menu, choose "Select L1CaloCombinedSegment"
- in main window, scroll to Partition class, double click to get list
  (just one item), double click to open it, scroll to "Segments" box,
  right click for menu, choose "Add Object [L1CaloCombinedSegment]"
- exit oks_data_editor and save files
- stop run and shutdown
- you will probably need to quit and restart play_daq in order to
  start PMG agents on L1Calo CPUs


(b) if L1CaloCombinedSegment is included but not enabled

- if the L1CaloCombinedSegment is already in the Partition, then
  you just need to enable the segment which can be done in the IGUI
- in the IGUI, choose "Segment & Resource" tab, find L1CaloCombinedSegment
  right click for menu, choose choose "Enable segment"


(c) enable BUSY and check settings
- you need also to enable L1Calo in the global BUSY module
- run RODbusy.csh (on cttb-ctpd01 as daquser)
- option 3 to check status, option 2 to enable (1), L1Calo is input 10

- after restarting the IGUI, check L1Calo panel settings
- with L1CaloCombinedSegment there is only one runtype, one trigger
  menu and one calibration file and no simulation so generator type
  is irrelevant
- but DO check settings in ModPars tab
- lv1c02-rosinterface0: enabled
- lv1c02-RoIBinterface0: disabled (unless RoIB is in)
- lv1c03-cprod*: all enabled
- lv1c03-busy: enabled
- lv1c03-*: all enabled
- lv1c04-*: all enabled, number of DAQ slices = 5
- lv1c06-ttcvi: L1A source = 3 (combined L1A)
- lv1c06-dss*: can both be disabled (no sim)

- start run and hope for the best!
```

(handwritten annotation pointing to enable line) rod-busy.csh

(handwritten table, right margin)

cPROD ϕ:	Clink	Slink
0	8	1
1	8	1
2	8	1
3	10	1

cMM ϕ: o/p Input Mask ff00
         Cable Mask ϕ

cMM 1: o/p fff

[Anded with database value]

Sep 30, 04 11:09 **combl1out.txt**

```
Removing L1Calo segment from combined partition
-----------------------------------------------

You need to do either (a) or (b) and then always (c)


(a) really remove it from the partition

- NB database changes can be made while previous run is still going

- in IGUI, click OKS button to open oks_data_editor
- in main window scroll to Partition class, double click to get list
  (just one item), double click to open it, scroll to "Segments" box,
  select L1CaloCombinedSegment, right click for menu,
  choose "Remove Object [L1CaloCombinedSegment]"
- exit oks_data_editor and save files
- stop run and shutdown no need to quit IGUI


(b) just disable our top level segment

- you just need to disable the segment which can be done in the IGUI
- in the IGUI, choose "Segment & Resource" tab, find L1CaloCombinedSegment
  right click for menu, choose "Disable segment" (not disable subtree!)


(c) disable BUSY

- you need also to disable L1Calo in the global BUSY module
- run RODbusy.csh (on cttb-ctpd01 as daquser)
- option 3 to check status, option 2 to disable (0), L1Calo is input 10
```

(handwritten) rod-busy.csh

CTP Integration. Test with CTP_In (Ralf Spiwoks)

30/9/ CMM ~~test~~ playback pattern Mode 10

17:00 ① CP flavour   (Input ch. 5 repeating every 8 events,
     (most hand CMM)   counting up each multiplicity 0-7)
                             all pins toggled!

  → automated check of pattern

  → No errors for >10 mio events checked ✓

  → input phase check performed:
        Latched o.K.

② Energysum flavour
    → CMM playback pattern mode 9 → x20
  Sum-Energy thresholds: (as in "physics" Trigger menu
                          Module #4
                            steps of 20
       1)   2)   3)   4   0-320 GeV
   E_T-Miss thresholds: ⌐ 0x·14   ?
        ⌐ 0x f orzce   ⌐ 0x 32
         0x 14 sek. 0x 64   Output bit
         1e   0x c8   definition:
         28   map of thresholds
         3c   format ?
         78

```
Sep 30, 04 17:28            cmm0_ctp.dat              Page 1/1

0x010000b6
0x01000080
0x01000092            CTP_In
0x01000094
0x01000025
0x01000025
0x010000b6
0x010000b6
0x010000b6
0x01000080
0x01000092
0x01000094
0x01000025
0x01000025
0x010000b6
0x010000b6
```

```
Sep 30, 04 17:28    /home/l1calo_daq/vectors/part_L1CaloSim/    Page 1/4

#
# Filename:   /home/l1calo_daq/vectors/part_L1CaloSim/lv1c04-cmm0.sim
# Generated:  17:11:34 Thu 30 Sep 2004
# By Class:   CmmOutputWriter
#
# Main Output from CMM Simulation
# CrateMergers:            SystemMerger:
# Local:       Remote:     Final Sums:       CTP bits:
    0    1    2    0  0  0     0    0    2    0 0
   20   21   22    0  0  0    20   20   22    1 2
   40   41   42    0  0  0    40   40   42    1 4
   60   61   62    0  0  0    60   60   62    2 5
   80   84   88    0  0  0    80   84   88    2 5
  100  104  108    0  0  0   100  104  108    3 6
  120  124  128    0  0  0   120  124  128    3 6
  140  144  148    0  0  0   140  144  148    3 6
    0    1    2    0  0  0     0    0    2    0 0
   20   21   22    0  0  0    20   20   22    1 2
   40   41   42    0  0  0    40   40   42    1 4
   60   61   62    0  0  0    60   60   62    2 5
   80   84   88    0  0  0    80   84   88    2 5
  100  104  108    0  0  0   100  104  108    3 6
  120  124  128    0  0  0   120  124  128    3 6
  140  144  148    0  0  0   140  144  148    3 6
```

No of thresholds passed!

CMMout CTP_In
       → parity?
80
92
94
25
25
b6
b6
b6

1/10/2001

NOT A VERY PRODUCTIVE DAY SO FAR (18 30!)

SPENT MOST OF THE DAY CHASE CHASING A DAQ
PROBLEM WHICH MAY HAVE TURNED OUT TO BE DUE TO
A DIRTY INPUT 40 MHz CLOCK, OR BAD CONNECTION OF
SAID CLOCK.

HOWEVER, CONCLUSIONS ARE NOT ENTIRELY CLEAR.
BY 4-5 WE FINALLY HAD ALL 4 RODS RUNNING
AGAIN AT HIGH L1A RATES, AND SEEMINGLY STABLE.

ALSO BEAM FINALLY RETURNED, SO KHURBIR SPENT
A SHORT TIME LOOKING AT NEW FIRMWARE. THIS
WAS AGAIN HAMPERED BY DAQ PROBLEMS, TRIGGERED
BY NETWORK PROBLEMS. HOWEVER IT WAS NOT ENTIRELY
CLEAR THAT THERE WEREN'T OTHER LINGERING FAULTS.

TRYING TO SEND A RUN TO RECORD GOOD BEAM
DATA NOW.

19:00 (KM). finally DAQ is running fairly stable. We have changed to
a different clock, which had better quality at the input of the TTCex.
Output of both of the clocks look identical, so but we nevertheless
changed to the 2nd clock source.

It might have been contact problems (or cable!)

20:00 (KM): we took a short run, stand alone. Went OK!

we decided to join the combined run.

23:30 (KM): Still in the combined run. Will be continued till tomorrow.

| 02/10/2004 |

Debugging session on the new JEM (Uli, Stefan)

Debugging session on the PPM f/w (the new version)

LVDS SCAN ON CPM INPUTS WITH
PPM AT DEFAULT TTC SETTING

BAD TTC SETTINGS (DESKEW 1)

SERIALISER 2	CHANNEL 0	EM	103 — 118
" 2	" 1	EM	103 — 118
" 3	0	HAD	69 — 79
" 3	1		72 — 82
" 4	0	EM	100 — 112
" 4	1		94 — 121
" 5	0	HAD	82 — 88
" 5	1		76 — 87
" 6	0	EM	98 — 108
" 6	1		100 — 112
" 7	0	HAD	73 — 82
" 7	1		79 — 87
" 8	0	EM	83 — 93
" 8	1		85 — 96
" 9	0	HAD	79 — 86
" 9	1		81 — 92

WE WERE SITTING AT 90 !!
ALMOST THE WORST POSSIBLE SETTING !!!

SO CHANGED CPM DESKEW SETTINGS

NOW: DESKEW 1 — 210
      DESKEW 2 — 60

TO RE-CENTRALISE & PULSE PEAK IN CPM
NEED TO RESET SERIALISER DAC OFFSET TO 102
(FROM 103)

```
Oct 02, 04 23:37   log_daq_SFI-111_with_jem_input_masks_000   Pa

RDO Object Type: JetHit  Crate: 4  Module: 9  Eta: 0  Phi: 0  Layer: 0
     Values:  52000 52000 249000 0 52000        Flags:  30002 30102 5e5158 0 40003
     Jet Hits: 0 0 0 0 2 2 1 0          Energies: 2  0  3
            CPM | JEM   CPM | JEM
  Slice 0 Em:   5   3 Had:   1   0 Ex:   2 Ey:   0 Et:   3 Jet: 0 0 0 0 2 2 1 0  Clu
 0 0 0 0 0  CMM: 0
  Slice 1 Em:   1   1 Had:   2   2 Ex:   2 Ey:   1 Et:   3 Jet: 0 0 0 0 2 2 1 0  Clu
 0 0 0 0 0  CMM: 0
  Slice 2 Em:   2   2 Had: 124 120 Ex:  96 Ey:  68 Et: 120 Jet: 0 0 0 1 1 1 1  Clu
 0 0 0 0 0  CMM: 0
  Slice 3 Em:   0   0 Had:   1   0 Ex:   0 Ey:   0 Et:   0 Jet: 0 0 0 0 0 0 0 0  Clu
 0 0 0 0 0  CMM: 0
  Slice 4 Em:   4   4 Had:   2   0 Ex:   3 Ey:   0 Et:   4 Jet: 0 0 0 0 2 2 1 0  Clu
 0 0 0 0 0  CMM: 0

RDO Object Type: JetHit  Crate: 4  Module: 9  Eta: 0  Phi: 0  Layer: 0
     Values:  49000 0 292000 252000 52000        Flags:  30002 0 75606a 60304 30002
     Jet Hits: 0 0 0 0 1 1 1 0          Energies: 2  0  3
            CPM | JEM   CPM | JEM
  Slice 0 Em:   3   3 Had:   3   0 Ex:   2 Ey:   0 Et:   3 Jet: 0 0 0 0 1 1 1 0  Clu: 0 0 0
 0 0 0 0 0  CMM: 0
  Slice 1 Em:   0   0 Had:   2   0 Ex:   0 Ey:   0 Et:   0 Jet: 0 0 0 0 0 0 0 0  Clu: 0 0 0
 0 0 0 0 0  CMM: 1
  Slice 2 Em:   5   5 Had: 209 209 Ex: 168 Ey: 128 Et: 212 Jet: 0 0 0 0 2 2 2 1  Clu: 0 0 0
 0 0 0 0 0  CMM: 1
  Slice 3 Em:   2   2 Had:   5   4 Ex:   4 Ey:   3 Et:   6 Jet: 0 0 0 0 2 2 1 1  Clu: 0 0 0
 0 0 0 0 0  CMM: 0
  Slice 4 Em:   3   3 Had:   0   0 Ex:   2 Ey:   0 Et:   3 Jet: 0 0 0 0 2 2 1 0  Clu: 0 0 0
 0 0 0 0 0  CMM: 0
```

after some
alignment

— Stefan masked out 2 "hot channels" on JEM input
  in db (produced 255 always in earlier runs)
     ↳ parity problem again?

— Standalone test performed:
   · Entries of 255 from hot channels gone ✓
   · Alignment of CPM / JEM em/had
     input data successful.
   · very little energy in E/rCAL. HN scan announced?
   · nice big energies in HCAL.

─────────────────────

3/10   ADDED some histos to look at timing
       of the CPM hit, JEM hit and JEM energy
       data in CPM/JEM data readout.

Stefan: Change the TTC Phase for in the JEM
        from 0x0 to 0xB (use LUT to find
        value in φ).

       for Thresholds, testbeam_menudata.xml

       0   0x3ff
       1   0x3ff
       2   0x3ff
       3   0x3ff
       4   0x14 $\stackrel{\triangle}{=}$ 20$_{10}$ GeV
       5   0x1e $\stackrel{\triangle}{=}$ 30$_{10}$ "
       6   0x32 $\stackrel{\triangle}{=}$ 50$_{10}$ "
       7   0x64 $\stackrel{\triangle}{=}$ 100$_{10}$ "

SETTING HIT OFFSET FOR COM

CURRENT VALUE OF DAQ OFFSET IS → | 102 |
EQUIVALENT HIT OFFSET IS → | 111 |
ROI OFFSET → | 12 |

Stefan: After we have changed the TTCrx

phase shift to 0x8 we must also change
set the daq following offset:

daq offset : 0x22

roi offset 0x27

FURTHER TO CHANGE OF DESKEW 1+2 IN COM TO FIX
LVDS A INPUT TIMING, WE NOW NEED TO CHANGE CMM A
BACKPLANE BURST TIMING — VALUE FOR SLOT 3 GO FROM
2 BACK TO ZERO (0) AGAIN !

NO GOOD BEAM AT THE MOMENT, BUT USING COM
PLAYBACK DATA, I'M TRYING TO SET THE CMM DAQ
DELAYS. I CAN'T GUARANTEE THIS IS CORRECT, BUT
SO FAR I'VE GOT
        BP DAQ DELAY (FOR COM HITS) = 0xF0

NOW WE HAVE A LITTLE (POOR) BEAM I CAN CHECK
THIS RESULT

        GOOD! IT IS CORRECT CMM BP DAQ OFFSET = 0xF0
                        FOR COMS
                ALSO CHECK RESULT = 0xF1

CONFIRMED THAT COM RoIs hits (WHEN SEEN) ARE
        ALSO SEEN BY CMM WITH THESE SETTINGS.

        ALSO HAD A LOOK AT JET HITS AS SEEN BY
CMM — BP OFFSET OF 0xEC WORKS WELL

        IE JET HITS HAVE A LATENCY OF 4 TICKS
                        LESS THAN COM HITS.

Jet results:
- Multiplicities fire even at very little energy
  • Incoming data checked in standalone dump
    (simple TBA) → o.k.! Do not expect high
    energy jets at all! → Problem in Jet Algo
    (1-2 GeV entries   Inputs ?
    in clusters)

- Investigate: Maybe clk of Jet -FPGA wrongly
  aligned? (Half heal switch?) 1 GeV → 32 GeV
  → no sign yet that is problem delay clk 2 changed
  by Stefan, no change of Mult. output.
  (0-239°)

- Standalone test using playback/spy memory
  of Jet Algo?

- "Switched off" Jet Mult sometimes fire! (=1)
- Nearly all data in slice 3, some in 2 & 4

         Timing in done.

Oct 04, 04 1:00	**log_0001400.txt**

```
daq_SFI-111_better_cpm_jem_timing_0001400_file01.data
daq_SFI-111_better_cpm_jem_timing_0001402_file01.data
```

(pctb-La--sf0401)
/data

```
-------------------- 0001400

JEM Inputs: Slice = 3   (4×11)
0 0  0 0  0 0  0 0
0 0  0 0  0 0  0 0
0 0  0 0  0 0  0 0
0 0  0 0  0 0  0 0
0 0  0 0  0 0  0 0
0 0  0 0  0 0  0 0
0 0  0 0  2 0  0 0
0 0  0 0  0 0  30 0
0 0  0 0  0 0  0 0
0 0  0 0  0 0  0 0
0 0  0 0  0 0  0 0
```

Em had
```
             CPM | JEM   CPM | JEM
Slice 1 Em:    2    1 Had:   3   1 Ex:    1 Ey:   1 Et:    2 Jet: 0 0 0 0 0 0 0 0  Clu: 0 0 0 0 0 0 0 0
Slice 2 Em:   13   12 Had:   1   0 Ex:   11 Ey:   2 Et:   12 Jet: 0 0 0 0 0 0 0 1  Clu: 0 0 0 0 0 0 0 0
Slice 3 Em:   33   33 Had:   3   0 Ex:   31 Ey:   9 Et:   33 Jet: 1 1 1 1 1 1 1 1  Clu: 0 1 0 0 0 0 0 0
Slice 4 Em:    3    3 Had:   3   1 Ex:    3 Ey:   0 Et:    4 Jet: 0 0 0 0 0 0 0 0  Clu: 0 0 0 0 0 0 0 0
Slice 5 Em:    6    5 Had:   5   3 Ex:    6 Ey:   2 Et:    8 Jet: 0 0 0 0 0 0 0 0  Clu: 0 0 0 0 0 0 0 0
--------------------
```

176 GeV/W4 ⚠
3FF

```
JEM Inputs: Slice = 3   (4×11)
0 0  0 0  0 0  0 0
0 0  0 0  0 0  0 0
0 0  0 0  0 0  0 0
3 0  0 0  0 0  0 0
0 0  0 0  0 0  0 0
0 0  0 0  115 0  0 0
0 0  0 0  0 0  0 0
0 0  0 0  0 0  0 0
0 0  0 0  0 0  0 0
0 1  0 0  0 0  0 0
0 0  0 0  0 0  0 0
```

Em had
```
             CPM | JEM   CPM | JEM
Slice 1 Em:    5    4 Had:   0   0 Ex:    3 Ey:   0 Et:    4 Jet: 0 0 0 0 0 0 0 0  Clu: 0 0 0 0 0 0 0 0
Slice 2 Em:    6    5 Had:   3   1 Ex:    5 Ey:   1 Et:    6 Jet: 0 0 0 0 0 0 0 0  Clu: 0 0 0 0 0 0 0 0
Slice 3 Em:  118  118 Had:   5   3 Ex:  112 Ey:  35 Et:  120 Jet: 0 0 0 0 0 0 0 (1)  Clu: 1 1 1 0 1 1 0 0
Slice 4 Em:    1    1 Had:   4   1 Ex:    1 Ey:   1 Et:    2 Jet: 0 0 0 0 0 0 0 0  Clu: 0 0 0 0 0 0 0 0
Slice 5 Em:    4    4 Had:   0   0 Ex:    3 Ey:   1 Et:    4 Jet: 0 0 0 0 0 0 0 0  Clu: 0 0 0 0 0 0 0 0
```

1 Jet Threshold
set: 176 GeV/W4 ⚠

```
-------------------------------------
JEM Inputs: Slice = 3
0 0  0 0  0 0  0 0
0 0  0 0  0 0  0 0
0 0  0 0  0 0  0 0
0 0  0 0  0 0  0 0
0 0  0 0  0 0  0 0
0 0  0 0  0 0  0 0
0 0  0 0  207 0  0 0
0 0  0 0  0 0  2 0
0 0  0 0  0 0  0 0
0 0  0 0  0 0  0 0
0 0  0 0  0 0  0 0
               em head
          CPM | JEM   CPM | JEM
Slice 1 Em:   1   1 Had:  1   1 Ex:   1 Ey:   0 Et:   2 Jet: 0 0 0 0 0 0 0  Clu: 0 0 0 0 0 0 0
Slice 2 Em:   0   0 Had:  0   0 Ex:   0 Ey:   0 Et:   0 Jet: 0 0 0 0 0 0 0  Clu: 0 0 0 0 0 0 0
Slice 3 Em: 214 214 Had:  1   0 Ex: 204 Ey:  61 Et: 212 Jet: 0 0 0 0 0 0 1  Clu: 0 0 0 0 0 0 0
Slice 4 Em:   4   2 Had:  5   5 Ex:   5 Ey:   4 Et:   7 Jet: 0 0 0 0 0 0 0  Clu: 0 0 0 0 0 0 0
Slice 5 Em:   3   3 Had:  3   0 Ex:   2 Ey:   1 Et:   3 Jet: 0 0 0 0 0 0 0  Clu: 0 0 0 0 0 0 0
-------------------------------------
JEM Inputs: Slice = 3
0 0  0 0  0 0  0 0
0 0  0 0  0 0  0 0
0 0  0 0  0 0  0 0
0 0  0 0  0 0  0 0
0 0  0 0  0 0  0 0
0 0  3 0  0 0  0 0
0 0  0 0  215 0  0 0
0 0  0 0  0 0  3 0
0 0  0 0  0 0  0 0
0 0  0 0  0 0  0 0
0 0  0 0  0 0  0 0
               em head
          CPM | JEM   CPM | JEM
Slice 1 Em:   1   0 Had:  1   1 Ex:   0 Ey:   0 Et:   1 Jet: 0 0 0 0 0 0 0  Clu: 0 0 0 0 0 0 0
Slice 2 Em:   0   0 Had:  1   0 Ex:   0 Ey:   0 Et:   0 Jet: 0 0 0 0 0 0 0  Clu: 0 1 0 0 0 0 0
Slice 3 Em: 221 221 Had:  0   0 Ex: 208 Ey:  64 Et: 220 Jet: 0 0 0 0 0 0 1  Clu: 0 0 0 0 0 0 0
Slice 4 Em:   4   3 Had:  1   0 Ex:   2 Ey:   0 Et:   3 Jet: 0 0 0 0 0 0 0  Clu: 0 0 0 0 0 0 0
Slice 5 Em:   1   1 Had:  6   4 Ex:   3 Ey:   2 Et:   5 Jet: 0 0 0 0 0 0 0  Clu: 0 0 0 0 0 0 0
```

4-Oct-2004.   LLc2004.

Steve has updated readout delay for cmm system results (approx values).
Also set cmm bitmask to enable cPM + JEM. ff00 on cmm 0, (en of
                                          ffff on cmm 1 (jet + electn)

Now must start RC on pctb-LAr-sfo01

Callses has put on New firmware for CP Chip - This seems
to improve the threshold setting, but not quite
fixed yet.

Also did a Timing scan CP serialisr → CP chip
for new firmware.
Deskew 1 is set at 210 for PPM inputs
Good range for Deskew 2 is now 104-122
   So will change database to a value of 115

These data offsets will also need new values
for the faster CP chip algorithm.

ML 16.30   Make all our installed database files world writeable.

Also change dbfiles requirement so that any changed
database files are also installed world writeable.

4-Oct-2004.   Rem FPGA

Checks of MCM readout.   Firmware version   v 1000 ebg 560

                                        2004/10/4   13:10:21

MCM 0   AB ✓   CD ✓   Nearly right

3   AB   CD
             └ Mostly 200   └ one 200, not all 0

4   AB all 0   CD all 0

7   AB all 0   CD mix of 100, 200, 300

8   AB 100-300 CD   ⟨ Has PHOS4 ⟩
                         └ large numbers.   errors.

11   AB = constant   CD = constant
                  300   300

12   AB = const 300   CD = const 300   Has Phos4 error.

15   AB = const 300   CD = const 300   Has Phos4 errors

Phos 4 delay written into CD can be read sometimes into AB
(reads old data on bus)

CTP - decided not to change CTP-in Firmware.

TGC to start
L1A out system-by-system.

CTP → LTP. Trig type goes to MUCTPI rod.

Rate limit with TGC readout

ML : Number of ticks per SPS orbit is 924   (cf 3564 at LHC)

ML: added ~/play-daq-userinit and ~/play-daq-userexit scripts

    these will (hopefully) take backup copies of IS parameter saved files
    and store them in ~/myparams-backup/$TDAQ-PARTITION.

Noisy Trigger towers in FADCs even when cables removed.

MCM 4	7 φ	phi 5	→ 4 is emph.
7		6	
7		7	

4	7 1	4
4		5
7		6
7		7

Correlates with pattern of phi 4 which are not returning correct status.

DAC changes on the PPM

MCM 7,	Ch A	177	→	163
;	Ch B	176	→	168
	ch C	179	→	167
	ch D	177	→	165

Wednesday 6 Oct. 10:00 meeting.

Timing: now LIA from TSC and cabs.
Two cross-system scintillators. Mail sent round. Cabs 6 earlier.

Max - Fix timing.

RPC had DAQ problems but now cured.

Removed PPM1 MCM 4 (s/no 0064)
inserted 0058.

EM: DAC setting

MCM 4	ch A	~~X~~ 168	MCM
	ch B		
	ch C		
	ch D		

MCM 7	ch A	164	
	ch B	165	→ in deVasap
	ch C	165	file
	ch D	164	

HAD)	TCT #8	chA	174	
		chB	178	
		chC	171	
		chD	174	put in
				=> Database XML
	TCT #11	chA	176	
		chB	175	m 06/10/09
		chC	178	
		chD	177	
	TTT #15	chA	179	
		chB	180	
		chC	184	
		chD	175	
	TCT #4 (when responding)	chA		
		chB		
		chC		
		chD		

I have modified the old CMM-CTP cable, so that 1 single bit has the correct polarity. This is the LSB of the CMM SE_T multiplicity.

To use this thresholds 2-4 for Sum E_T should be set High. Threshold 1 is the only one which can be used.

The second cable should be used for electron.

Proposed checks prior to trigger running.

1. Check all FADC pedestals - adjust DAC to give pedestal of 120

2. Check FADC timing. Adjust Phos4 where possible. Adjust pipeline delay. Final result should be BCID output in the middle readout sample (no 3 of 5).

3. Disable all output from MCM4, which has problems. Add to database.

4. Check that em and hadronic data are in time - using Jem readout.

5. When connected to CTP:

    a. check (by removing analogue em or analogue hadronic cable) that esum trigger comes at same time from LAr and Tile. Needs em trigger disabled.

    b. Check that jet cluster and esum triggers are in time at CTP out (needs Ralf to insert CTP delay of 2 in esum channel)

These will need repeating when we change to later trigger.

Setting Phos4 delay for each on saturated pulse (had) expect sharp rising edge + plateau
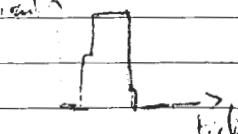
		Delay	
MCM #11	ch B	8	
	ch C	12	
MCM #3	ch B	12	→ put in Database
			f. li on 06/10/04
MCM 11	ch B		
MCM 11	ch C	4	

Stefan: I check the Jet-Algo, again.
For this test I use the SpyMem inside the
Jet-FPGA. To verify the Algo, I use beam data that's
kc-e from PRM. I couldn't see any error with
up to three different thresholds on the same time

Kambiz and Giller have tuned the saturated-pulse BCID.

Parameters of saturated pulse algo for Tilecal Signals:

Thresholds now set to

1023 (Sat Level)   BCID Ptr delay 2→3.
1020 (Sat High)
32 (Sat Low)

Algo looks for 1 sample below 1020, 1 sample above 1020, but
of when 1023 is reached. Also, the OR of sat and unsat is used.

We will run with all hadronic to this, and also all e.m. since we
don't see sat pulse there.

Kambiz has set these values for ALL MCMs.

We have forced MCM 4 LUTs to 0 in module services-

Now choose a value for Sum E_T threshold.

Jem Total energy: mean 20, RMS 4.5.   Set Sum E_T thr to 50.₁₀.

—

Now set up to run in combined partition. Measure delay from
scint trigger to common L1A

Find exactly 300ns = 12 BC !! Delay our scint signal by this

Previous
    CPM: dag = 0x66, roi = 0x6c, hit = 0x6f ✓
New   → 0x5a → 0x18 → 0x63 ✓

Old JEM: dag = 0x22, roi = 0x27,
New   → 0x26 . → 0x33
          0x16   0x16

Old CMM deg sp.link = 0x2c, cMMs = 0x22, cMMm = 0 sys kn = 0x50
New   → 0x2c   → 0x22   → 0x24

old CMM1   diagSpData = 0xf0, cbRes = 0x51, cbData = ..., SysRes = 0x53
new   → 0x84   → 0x85   → 0x87.

(RH). 21:50 : 1st Combined run attempt with ~350 GeV beam

               run #   2101545   (evnt# ~ 10k)

         Will be included in the Combined run overnight!

         JEM $\overline{DAQ}$ offset is set to 0x16, but end up in the slice 3 → offset should be shifted by one

22.55:   Move offset for ~~CMM0~~ CMM 1

             daq Bp Data : 0xe4 → 0xe3
             daq G Result : 0xe5 → 0xe4
             sys Res   : 0x7 → 0x6

                   JEM0

             daq Offset : 0x16 → 0x17
             RoI offset : 0x1B → 0x1C

     These settings should be valid from combined run 2101549 onwards

TM 7:25

       10:45 ML+KH+NG : Run 2101550 clean (highest statistics)
                   & JEM & CMM ~~slices~~ perform now correct - slice2

Note for all runs so far the Isolation threshold was disabled. At present the s/w does not set threshold - they are the default firmware version.

Delay measurement — relative to start of EH1   (our undelayed trigger)

~~1·3μsec~~ — CMMØ — jet input   (esum)
1·08

electron trigger   1·04 μSec after non-busy scintillator   em only.

esum   ~~0·98 for~~ after "   "   em and had
0·98 & 1·02 for had   measured separately)
1.01 for em

jet   ~~0·98 & 0·958~~   ⌠ had
1·02 μsec
1,04 μs   ⌡ .em

- We have made timing measurement which confirms that the CTP output LIA timing (relative to a scintillator/clock combination) is identical for e⁻, esum and jet trigger (actually the e and h component have been checked separately).

The delay in the CTP to achieve this are:

esum   2 BC
em   (bit 0 — 11)   Ø BC
jet   (bit 12 — 23)   2 BC

However, this mean that the jet and em timing in the <u>CMM</u> are 2 tick apart, so if we look in the histos, we ought to see

cmm
esum readout shifted by 2 ticks.

cmm (jet +e⁻) not shifted - 2 peaks

jet   e⁻   (e⁻ comes later).
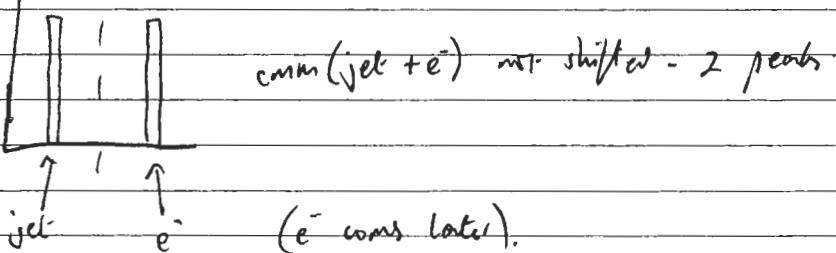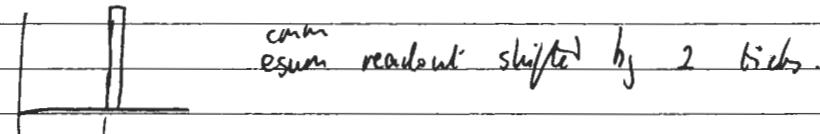
When we have done this, do some combined calo runs.

08/16/04

digital LIA : New Readout offset

CCM   DAQ offset   0x5A → 0x59
               RoI offset   0x63 → 0x62
                           0x1A → ~~0x18~~ 0x19

JEM   DAQ offset 0x17 → 0x15

        RoI offset ~~0x1d~~ 0x1b →

CMM0   dayBpdata: 0xe0
      crateRes : 0xe2
      sysRes : 0xe4

CMM1   dayBpdata: 0xe4   D0
      crt Res : 0xe5   → DE
      sys Res : 0xe7   E2

CP threshold : 20, 50, 100, 200, 255, 255 ... 255
         th   1   2   3   4   5 6   8

CCM : Sum Et : 50, 0xFFFF, 0xFFFF, 0xFFFF

      Miss Et : all 0xFFFF

      Jet Sum Et : 0x3F   0xFF   0x1FF   0x7FF

JEM :   th   0x3FF, 0x3FF, ...   0xAA
         th   1   2   8

      cluster Size: 1

~~2101-6601   Combined run all triggers — wrong tile cal timing.~~

2101 663   Good timing, all triggers. Need to be repeated

   664   esum only, Thr = 50 GeV.

   665   esum only, Thr = 150 GeV.   1KHz allow

   666   electron only   706 Hz
   667   suicide
   668   Jet only cool   600 Hz   ⎫ Sum ET w/o
   669   All Triggers Jet   500-700 Hz ⎭ set to 150

670   All triggers.

17³⁰ — CPROD ∅ is now "neutral" format,
         (E72C∅)
      but still CFM - RoI.

      — Fixed Hcvi-services so that start/stop w/o config(out)
      works again

9 — Oct — 2004

Thontien is working at CTP Latency.

   Relative to -ve edge of 10×10 fanout

* We make a direct measurement of the LAr, TileCal arrival times

at the input to the PPM, using the prototype LAr Rx module CMM

which provides 16 channels of single-ended 50Ω signals from one

16 ch differential cable. Use differential probe on TileCal tower

— look @ Δt at peak.

      LAr is 70 nsec early wrt TileCal pulses
                        ~ 2.5 BC

   CTP measurements

* c/h saint → CTP o/p   Δt :- 1.32 μsec

In PPM, LAr FIFO │ Δt = 1.32 μsec (ΣE = 40 GeV   LArt only)
delay = 2 ticks   │
TileCal FIFO delay│ Δt = 1.32 μsec   TileCal only
= 0 ticks

              measured for earlier of 2 pulses in 2 adjacent BC.

              — due to 2.5 BC Δt between LAr + TileCal
                only partially corrected by 2 BC Δt in FIFO

Checked that jet Trigger are also in Time — OK separately

Checked " em " " " " " — OK separately

changes made in database:

1. esum thr 1 returned to 50_{10}

2. Jet thr 1 set to 40_{10}

3. llr — no fifo delay on Tilecal (yesterday had 1 tick, (LAr had 2)
   2 ticks on LAr
   (i.e. Tilecal brought forward by 1 ticks (i.e. earlier)) .

10-Oct-2004

Measurement of Latency   Using   Calibration Pulse.
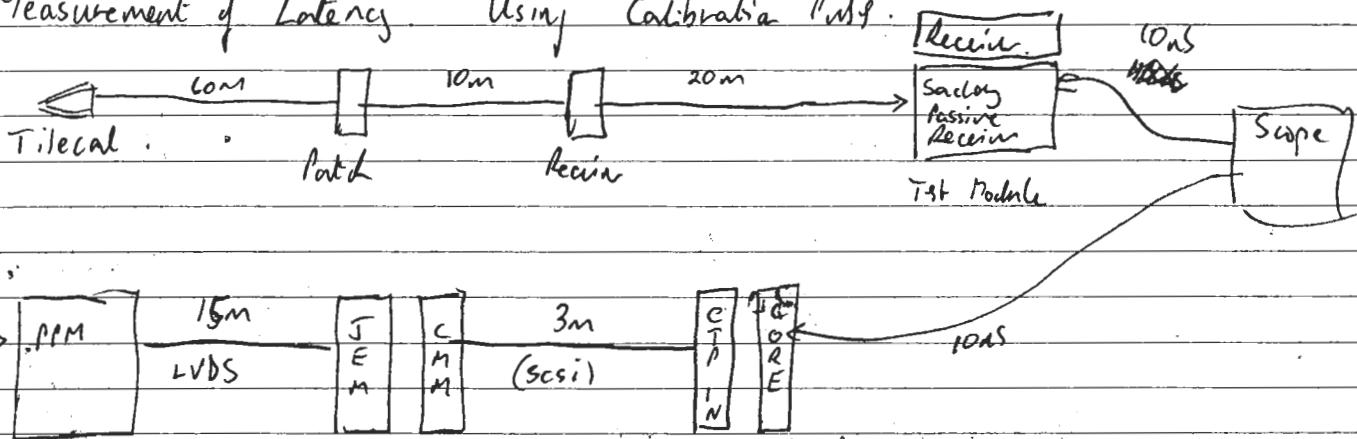
Delay from Peak of Tilecal to leading edge of CTP CORE LIA out.

			charp
$1.16 \mu sec$ or $1160 nS$ =			$120 nS$ on contro
46.5			398.6
Add about 1 clock for CTP OUT (5ns)			
4	TTCvi (5ns)		
18	90m cable at present @ 5nS/m		
16	Return Path		
85.5			

Delay Measurement — S2 discriminator to LAr. 614 nSec. TileCal o/p (in lower barrique, via cable 77)

Reflection on cable 77 to upstair ~ $\frac{(306 - 20)}{2}$ = 143 nS one way.

Need cable length to S2. $\frac{238 - 10}{2}$ = 114 nS.


10 nS

1 nS D_1 S_C This port.

→ S2

52 up   passive splitter
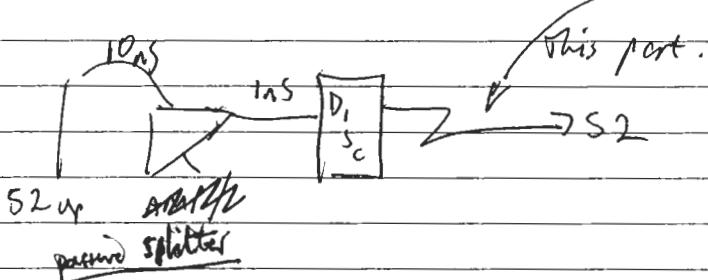
Sent a calib pulse into area. Measure time from beginning of S2 cable (taken from scintillator) to output into S2 cable.

Assume $\underline{10 n}$, t_{pd} in discriminator (couldn't trigger it to measure)

so   S2 → discriminator o/p = 21 nsec.

Total delay — S2 → (upstairs cable 77 end) = (21 + 114 + 143) = 135 m

$S2$ $T = 0$ 10 nsec   ToF ~ 13 m   43 nsec   TileCal t_1 Cabling to PPM t_2 P P M   cable 77   143 nsec

split   1 nsec   Disc ~10 nsec   114 nsec $\Delta t = 614$ nsec
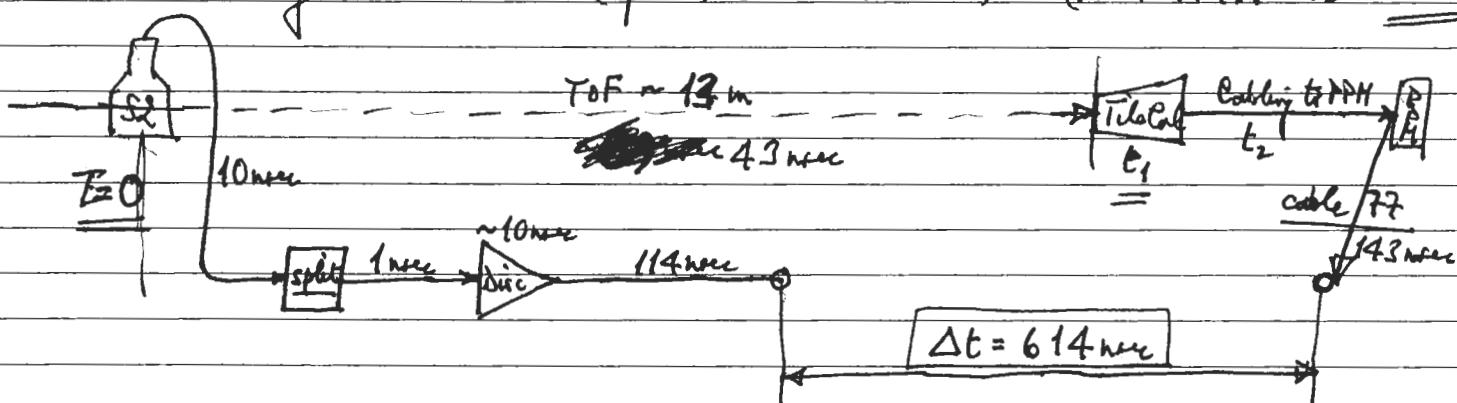
$(43 + t_1 + t_2 + 143) - 614 = (10 + 1 + 10 + 114)$

$t_1 + t_2 = \underline{563}$ nsec

$t_2 = 483$ nsec   (Cable to PPM):- TC 60m → T C P P 10m → R X 21m → P P M
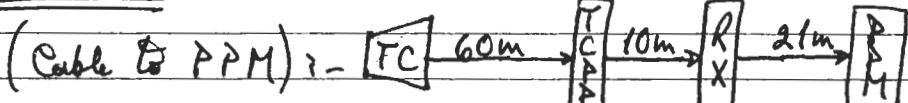
Total ~ 91 m ☓ 5.28 nsec/m = 483 nsec

∴ $t_1 = 80$ nsec — TileCal + FE electronics

POWER

WHITE
BLUE
YELLOW

CRATE

Red
Black
Blue
BLUE
BROWN
YELLOW

POWER

BLACK
RED
WHITE

CRATE

Red
Black
Blue
BROWN
BLUE
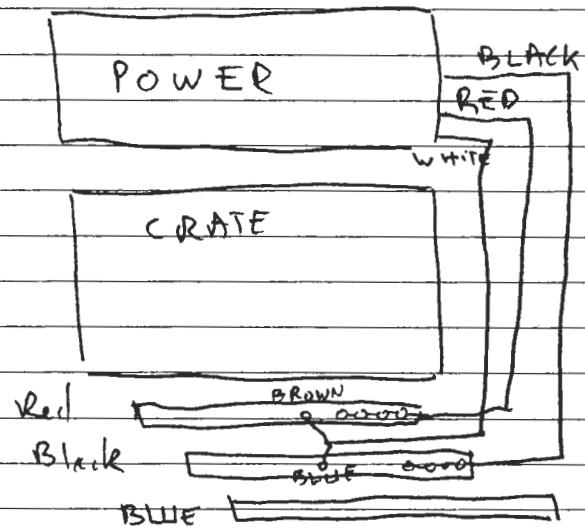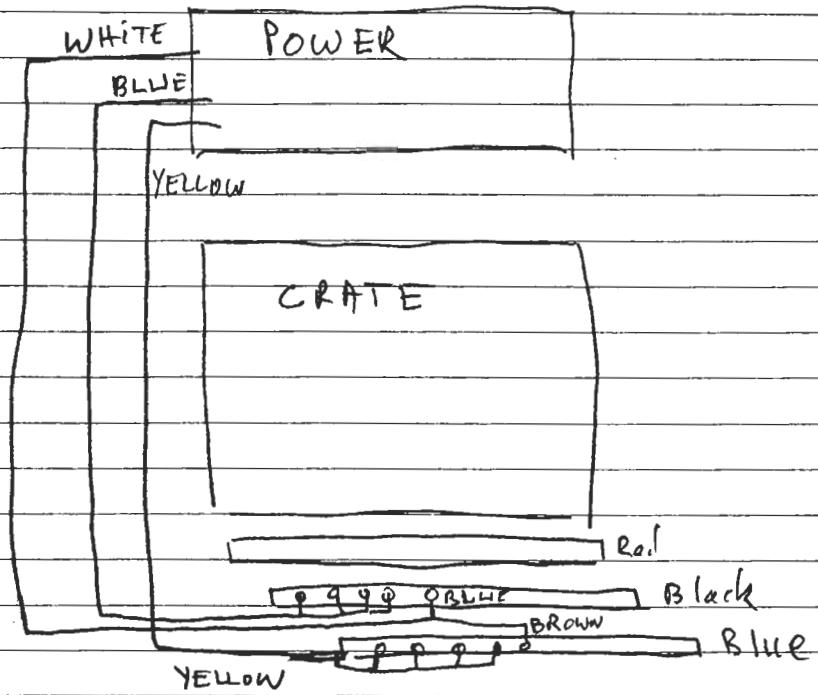
Time	RUN #	BEAM	E(GeV)	E+a	#evts	MT06	Comment
0:18	2100825	π	20	1.1	30K	4.1K	OK but didn't finish properly
0:49	2100826	π	20	1.1	30K	1.1K	OK (1270 e⁻; 370 π)
1:02	2100827	π	20	1.1	30K	1.1K	OK
1:23	2100829	π	20	1.0	30K	1.1K	OK (some "e" with more than
1:34	2100830	π	20	1.0	30K	1.1K	OK
1:48	2100831	π	20	1.0	30K	1.1K	OK
2:09	2100832	π	20	0.9	30K	1.1K	OK
2:22!	2100833	π	20	0.9	30K	1.1K	OK → large energy deposits
2:37	2100834	π	20	0.9	30K	1.2K	OK
23:10	2100835	π	10	0.9	30K	460	OK (already to increase the 21st Sept
0:01	2100837	e	10	0.9	30K	2.1K	OK 2181 Sept
00:19	2100838	e	10	1.0	30K	2.1K	OK
00:34	2100839	π	10	1.0	30K	450	OK Incorrectly set to 'e
01:04	2100841	π	10	1.1	30K	454	OK
01:27	2100842	e	10	1.1	30K	2.1K	OK
01:32	2100843	e	10	1.2	30K	2.1K	OK
01:50	2100844	π	10	1.2	30K	459	OK
02	~~2100845~~	~~π~~	~~9~~	~~1.2~~	~~30K~~		
02:29	2100846	e+π	9	1.2	30K	1.1K	OK
02:48	2100847	e+π	9	1.1	30K	1.1K	OK
03:03	2100848	e	9	1.0	30K	1.1K	OK
03:19	2100849	e	9	0.9	30K	1.03K	OK
03:55	2100850	π	20	0.8	100K	2K	OK LEAD PRE-SHOWER
04:17	2100851	π	20	1.0	100K	2.4K	OK
04:39	2100852	π	20	1.0	100K	2.5K	OK
05:00	2100853	π	20	1.0	200K	2.5K	OK
05:31	2100854	π	20	1.0	200K	2.5K	OK
06:02	2100855	π	20	1.0	200K	2.5K	OK
08:53	2100857	π	20	1.0	200K	2.5K	OK
09:25	2100858	π	20	1.0	200K	2.5K	
10:15	2100859	e+π	-20	1.1	30K		HV 250 V run stopped
	2100860	e+π	-20	1.07	30K	3.4k	HV 250 V
11:10	2100861	e+π	-20	1.075	30K	3.4k	HV 0 V
11:17	2100862	e+π	-20	1.075	30K	3.1k	HV 120 V
11:30	2100863	μ	-15	0.8	30K		stopped HV 120V

Time	Run #	Beam	E(GeV)	Eta	#event	MTRG	Coment
14.15	2100864	e⁻	-20	0,9	30K	3K	HV 120 Phi displacement fires trg with
14:49	2100866	e⁻	-20	0,9	30K	1,6k	HV 120 " "
							HV back to nominal (250) }
15:04	2100867	e⁻	-20	0,9	30k	1,6k	phi displacement with MBPS to 400
15:22	2100868	e⁻	-20	-0,9	30k	1,6k	MBPS at 400 A
15:41	2100869	"	"	"	50k	1,k	Stopped, no good beam
21:02	2100883	e⁻	-20	-1,0	30k	1,3k	phi = 0,05 0 } should be
21:30	2100884	e⁻	20	-1,1	30k	1,3k	phi = 0,05 0 } repeated
21:44	2100885	e⁻	20	-1,2	30k	1,3k	phi = 0,05 0 } with 0,05.
22:00	2100886	e⁻	20	-0,9	30K	1,5k	φ = 0,05 0
22:22	2100887	e⁻	20	-0,9	30k	1,3k	φ = 0.05 problem in ae 6
22:30	2100888	e⁻	20	-1,0	30k	1,3k	φ = 0,05
22:44	2100889	e⁻	20	-1,1	30k	1,3k	φ = 0,05
22:52	2100890	e⁻	20	-1,2	30k	1,3k	φ = 0,05
23:1F	2100892	e⁻	20	-1,2	30k	1,3k	φ = 0,1
23:xx	2100893	e⁻	20	-1,1	30k	1,3	φ = 0,1
23:xx	2100894	e⁻	20	-1,0	30k	1,3	φ = 0,1
00:12	2100896	e⁻	20	-0,9	30k	1,3	φ = 0,1
01:00	2100900	π⁻	10	-1,0	200k	330	Increased coll 2 and 3 to slit 40 to
3:51	2100902	π⁻	10	-1,0	200k	330	Same as above.
6:54	2100904	π⁻	10	-1,0	57k	330	- " - No Beam
	2100905 - 2100914			DEBUG RUNS			
1:49	2100928	e	9	0,905	30K	1K	PIXEL Enabled OK }
2:02	2100929	e	9	0,905	-	-	error ROS 41 }
2:19	2100930	e	9	0,975	30K	1K	OK } MG
2:28	2100931	e	9	1,075	30K	1k	OK } instead
2:44	2100932	e	9	1,2	-	-	ERROR ROS 41 } of autoG
2:54	2100933	e	9	1,2	30K	1K	OK }

start	run #	beam	E	η	#evt	TRG rate	
	2101663	p	350				ALL TRIGGERS , SWITCHED TO
	664	p	350				EN. SUM ONLY $E_{THRES} \gtrsim 50\,GeV$
	665	p	350				" $E_{THRES} \gtrsim 150\,GeV$
	666	p	350				EL CLUSTER TRIGGER ONLY
	667						CRASH
	668	p	350				JETS ONLY
	669	p	350				ALL TRIGGERS — CRASH
	670	p	350				ALL TRIGGERS OR
6.52	2101703	π	110		10K	300	LARG with DRP code in PHYSICS MODE
	210 681	π(μ)	180		23k		4μ combined run. hodoscope trigger
0.27	2101689	π	180		7k		— μ —
0.47	2101691	μ	180		70945		4μ combined + MDT, Hodoscope
.58	2101694	π	180		75k		4μ comb. + MDT, hodoscope with
.16	2101695	π	180		6k		4μ comb + MDT → CTP μ trigger
.55	2101696	μ	180		8k		4μ comb + MDT → hodoscope
1.09	2101697	μ	180		5k		μ
.55	— 1700	μ	100		10k		4μ comb + MDT → 10×10
.09	1701	μ	180				4μ comb + MDT → 10×10
12.11 9:15	start of good runs						
9:15	2101925	π	180		32k	1.6L	ID + Calos bad timing for