Work on the Level 1 Calorimeter Trigger that is Currently Under Way

D-Zero Trigger Workshop Presented by D. Edmunds 22-APR-2002

• Work on the CTFE cards at SiDet
  – Hardware work on the 320 CTFE cards
    * ReWork the Trigger Pick Off Signal Analog Input Section
    * Install the Term-Attn-Brd’s
    * Instructions are on the Web
    * Will finish this work in 2 to 3 weeks
  – PROM re-programming 5,120 lookup PROM’s
    * PROM data files are ready for checking
    * Programming and Verification a combination of SiDet and LaPaz

• Timing and Control Signal: Generation, FanOut, Cabling
  – Requirements for normal operation and for Tester - Exerciser
    * TCC control of what Lookup Memory Pages are used per rack pair
    * Different signals require different processing for Tester - Exerciser
  – Setup for operation at 396 nsec
    * Not doing work to operate at 132 nsec at this time
    * All work being done supports 132 nsec operation
  – Sequencer No. 2 and Calorimeter Trigger Timing Helper
    * Designs similar to what is used for testing Trigger Framework

• Work on Tier’s 2 and 3
  – Need to start running Tier 3
    * With next pair of racks operation will require Tier 3
    * See http://www.pa.msu.edu/hep/d0/ftp/run1/l1/drawings/ for the layout
  – Generation of Global L1 Cal Trig And-Or Terms
    * How much eta coverage is needed before missing Et is of use
    * Should be using the CTRO but can probably skip it for initial operation

• Readout system work
  – Header/Trailer for L2
  – Seed Masks for L2
  – “Monitor Capture” of the readout data
* The above 3 items require work on the Bougie FPGA
  * Modern, big, easy to work on design
  - Speed up by a factor of 2
    * Should be straight forward to get to 6 or 7 usec.
  - Readout data besides the Trigger Tower related quantities, CTRO cards
    * Only functional description and design sketch exist
    * Not hard to work on
    * Needed for full rational operation

• DeBug the BLS cabling and bad channel issues
  - Lots of problems and different types of problems
    * Cables, Hybirds, Connectors
  - Need to keep track of information
  - Need to be able to make quick pulser runs
    * Debug problems
    * Periodic verification that all is OK for Physics operation

• Routine Cal Trig Operation
  - Need to start running the Power Supply Voltage Monitoring
    * Hardware is ready
    * Documented what is plugged in where
  - Repair of Power Supplies
    * 3 of the 4 types are still supported
    * The unsupported type can be replaced
  - ReStart the full cooling system
    * Speed up the air blower
    * Drip detection is on in all racks

• How well is the L1 Cal Trig Working ?
  - Study the Calibration and Resolution
  - Monitor and Study the Triggers turn on curves and such

• Control Software Work

L1 Calorimeter Trigger TCC Software Work
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15-April-2002

GENERATING LOOKUP PROMS
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Software support 100% done

Needed

Crisp summary (in words) of what needs to be done
[Monday -> sign-off Tuesday morning]

Source file to describe the PROMs
[Tuesday -> sign-off Wednesday morning]

Generate the PROM files
[Wednesday]

Scrubanize, consistancy, etc
[Wednesday]

Declared official
[Thursday]

DO Note about how these numbers were picked
[2 month ago?]

CONFIGURATION
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new analog front-end

75% done

underlying work already 100% done for prototype testing

needs to be integrated as part of running system
(and coexist with legacy system for a while)
[1 week]

need new pedestal finder (~ calibration)
[1 week]
readout
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75% done

  similar to L1FW
  [1 week]

COOR PROGRAMMING
===============

90% done

  missing quadrant term support in L1FW
  [1 week]

misc other
[1 week]

MONITORING
===========

75% done

  misc other
  [1 week]

  needs hardware support to capture event snapshot

TESTING
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  in situ PROM checker
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  CTFE and CHTCR
  [1 week]

Test/Diagnostics/Exercizer:
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25% done

we have the bricks to program the resources
   (= COOR programming)

but we need the exercizer software to exercize
   the system at design speed

implement in stages
   [5 weeks]

need additional hardware support to control PROM pages
   and data capture