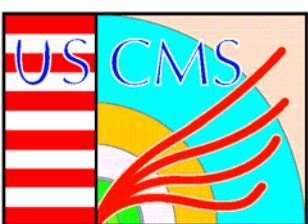




# CSC Shift Training and Operation

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# Overview

- Summary of Shifts/Operations to date
- Differences with Beam Operation
- Moving CSC Shifter DCS to cDCS?
- Validation Shifts?
- More formal shifter certification?

- CSC shifts are assigned to institutions
  - Tom Ferguson assigns institutional weekly shift blocks
  - Richard Breedon oversees
    - shift sign up
    - Shifter logistics – help getting to/from
    - Shifter problems – last minute changes



# Before Beam – After Beam

- What has shifter done on shift? CRAFT/CRUZET
- Watched the DCS page and responded to alarms
  - Single channel HV trips
  - Loss of communications
  - Chambers losing firmware
- Watched the EMU Page 1 and responded to cDAQ errors
  - Frequency has decreased significantly
  - Diagnostics have improved at CSC end
- Watched the online DQM and noted chamber errors
  - HV problems
  - Chambers losing firmware
  - Known problems
- Difference with beam
- Need to control HV to follow beam conditions
  - Now very intense, but will always be the case – between stores, filling and ramping the beam, and beginning of stable colliding beam.
  - For now CEO and experts, future CSC shifter, eventually cDCS shifter?
- Different pages are important depending upon beam status
  - CSCTF Rates and EMU Counters page to understand what the HV configuration should be
  - Online DQM chambers are only relevant when at full HV and 60+Hz trigger for CSC
  - Online DQM TF pages for new timing plots?
  - LHC pages to follow beam status

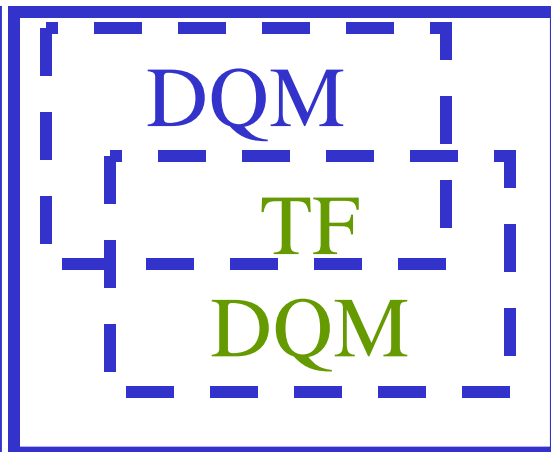
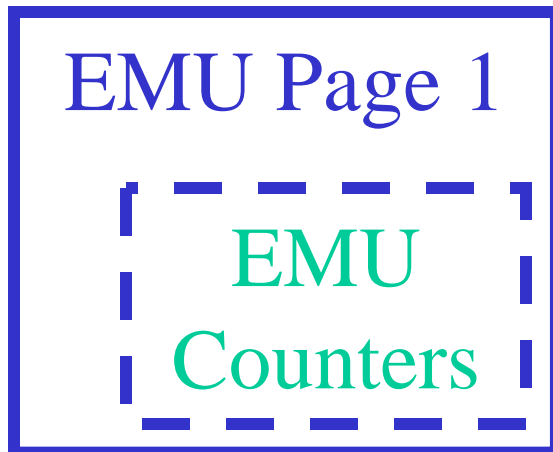


# Shifters Station Now

- EMU Page 1 always visible
  - TF page running in TAB
- EMU Counters page up and ready (partially on top of EMU Page 1)
  - Set to interval and LCT



- DCS UI always viaible
- HV Control up when going from STANDBY to all ON
- 'Other' pages on Auxiliary Station or shifters laptop





# Changes to Shifter Training

- Change venue of shifter training?
- Move training to Pt5
  - Classroom training in meeting room
  - With laptop can project slides and/or real-time views of shifter pages
- Points where I need help with training
  - Need more formal DQM training (& procedures)
  - Assistance with documentation
    - Need person who is familiar with software/page plus experienced shifter to work together to produce user manuals and procedures
  - Assistance with language
    - Often with training in English for non-native speakers question go unasked and misunderstanding is too common
- Make some things more formal?
- Set requirements on 1<sup>st</sup> shift(s) – interval return shifters?
- More formal shifter certification?
  - Now training is voluntary
  - Require minimum of training and hands on shift training for shift to count?
- Sit as 2<sup>nd</sup> shifter for ½ or 1 or more shifts to complete certification
  - Needs core of willing and capable experienced shifters
- Who certifies? Me, Richard, CEO, other volunteer?



# Shift Changes – c(entral)DCS

- **Moving CSC Shifter DCS to cDCS**
  - Quiet times at CMSCR
    - Global Shift Leader
    - Global Safety Shifter
  - Running times at CMSCR
    - Global Shifters + sub-system shifters
    - Global Safety Shifter
      - Follow beam states – between stores, fill/ramp, colliding
- **When is DCS Back to CSC?**
  - Ramping HV at beginning of store?
  - CEO and Experts fixing problems, calibrations other special operations
- **Stages of moving to cDCS?**
  - When CSC is OFF – HV & LV off, gas on
    - Trival, now CSC shifter leaves, could easily hand over to cDCS before leaving
  - When CSC is in STANDBY – LV on, HV at STANDBY
    - Fairly easy to implement
    - Start 2010 running with this option?
  - When CSC is ON
    - See HV discussion above
    - Difficult to implement

- **Pro**
  - Less work for CSC shifter
  - Move towards sharing muon shifts
  - More attention to DQM or other tasks
- **Con**
  - In times of ‘general’ crisis cDCS will have many other activities
- **Necessary either way**
  - more automatic actions
  - Reduce nuisance alarms



# Shift Changes - Validation

- Validation Shifts – what are they
  - Check results of Express stream
  - Pass results to run validation
  - Pass results to CSC ‘Repair’ team
- aka DPG Shifts
- How does this blend with DQM?

- Done so far -
  - Pages were set up
    - Instructions by Michael Schmitt on how to do the validation - [CSCValidationForShifters](#)
    - Twiki page listing runs - [CSCDPGValidationDuringFirstBeam](#)
  - I followed instructions during owl shift and validated several runs
  - Comfortably did one run in about 15 minutes with a little practice
  - Possible to do as lower level priority during CMSCR shifts
  - Possible to do remotely anywhere at any time of day
- Neither Michael nor I have had time to follow up



# Summary

- What things are working well with shifts and what needs improvement?
- Is shift training OK?
  - Should be changed, made for normal?
- Is there enough documentation for shifters?
  - NO, need to push experts to provide operation manuals.
- Do shifters have a clear idea what to do?
  - Usually, but not in some cases
  - lapses do to lack of training, documentation, experience
- What is the progress on validation by shifters?
  - Not moving right now
- Are the main goals of shifts being achieved?
  - Yes, CSC is running well. The safety of the detector has been assured.





# Other Information

- Access to UXC requires access request filed well before any access
  - request via web interface
  - Then is reviewed, and approved
  - On any access possibility all approved access request persons are notified
- Firmware changes require formal testing and approval
  - CSC now – test at B904, test at Pt5 with global permission, implement with global permission
  - All of CMS – now same but soon test at B904 will be added
- Boards, cables and other hardware brought out of UXC fall under special INB rules
- Rad survey and special db logging in EMDB
  - Igor putting chambers and on-chamber boards into EMDB from Fast Site db
  - Vadim putting off chamber boards into EMDB - pcrates, UFHV, LV and other hardware in UXC
- Only hardware in UXC requires tracking but we are adding all spares at CERN and US as well so we can track operational history of each module