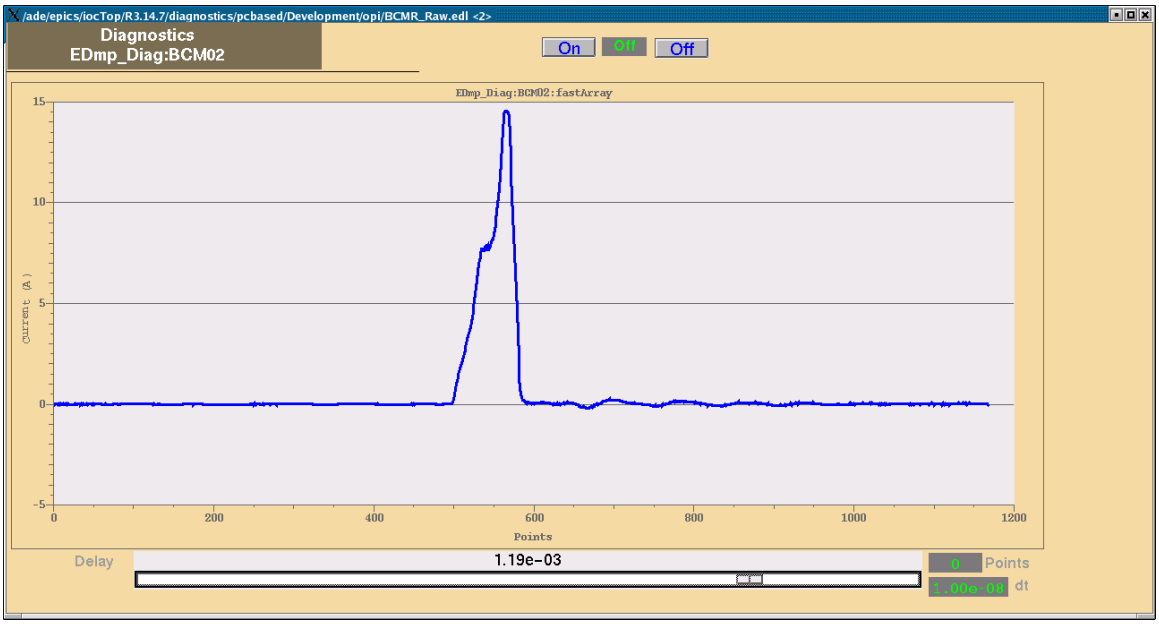
ASD Weekly Highlights for the Week Ending 3-Feb-2006

Operations

- Running beam for Commissioning Studies:
    - Running commissioning achieved the CD-4 criteria.
        - E-mail announcement was made Friday February 3, 2006
    - Fault Studies are complete,
        - Keep building access the way that it is for he RSB and RTBTSB
        - Continuing to track the Cooling Water for 3H and gamma emitters
    - Injection painting works
    - Need delta-P scrapers
    - Begin ¾ operation Monday 06-Feb
        - Run LDRD Laser, don't need magnet early in the program.
        - Install Optics Monday, BCM, HEBT wire scanner
- Problem areas
    - MPS Trips
    - Kicker noise
- ARR Meetings are planned
    - Wed. 2:00 from next week until the ARR
    - Post Start Action Items for Ring ARR went out yesterday
- CD-4
    - Continuing to meet and work with XFD on the CD-4 Plan
    - Mario heavily involved in Instrument Readiness Committee
- Beginning to look at Barcoded equipment in the Ring
- Integrating Work Flow and Datastream
    - First meeting tomorrow
- Working on Project Completion Report

Accelerator Physics

Ring commissioning continues to go well. Highlights from this week include successful tests of the injection painting system, improved setpoints for the injection chicane magnets, and initial tests at high beam intensity. The highest intensity obtained so far is 3.6E13 protons per pulse, or 5.9 microCoulombs. The figure below shows the 5.9 microCoulomb pulse at the entrance to the extraction beam dump. The present intensity limitation is due to beam loading effects in the ring RF buncher system. We are now working to commission the buncher feedback loop, which is designed to counteract the beam loading effects.



RF Systems

LINAC RF

Ring RF

- Completed a preliminary beam loading study with up to 3.6E13 protons injected into the accumulator ring. The Low Level RF feedback system does compensate to this intensity level but it is clear we will need the Cavity Dynamic Tuning feature to control the RF phase at higher intensities. We are just at the point of commissioning this part of the system.
- Continue to work on reducing interference with other ring systems.

Ion Source

- Ion Source Group Highlights for the week ending 2-3-06:

- A 3rd cesisation brought no net increase in H- output. This result confirms that 2 cesiations of 20 minutes at 550C dispense all of the 5 mg Cesium per cartridge, and that operating the cesium collar at 550C does not poison the source.

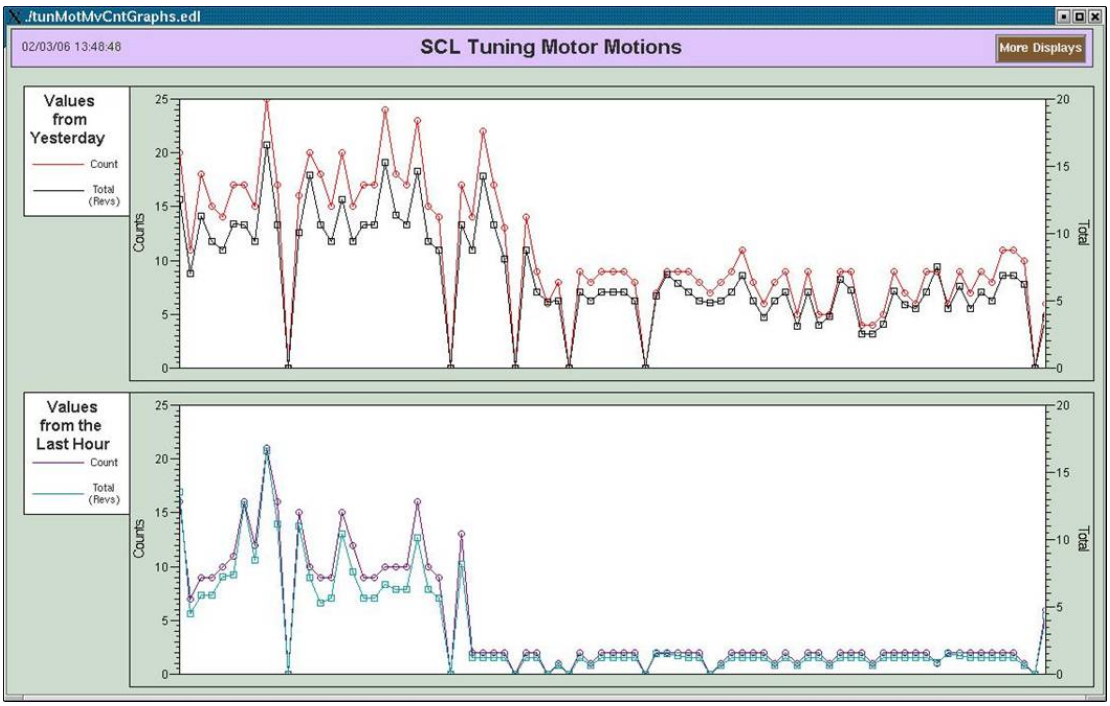
- The external antenna source with the electron injector produced on the test stand 1.23 ms long pulses with 17 mA average current at 1 Hz for about 2 days.

Controls/Diagnostics

- The Controls Group this week welcomed seven new members from the former Diagnostics Group. Along with a variety of other tasks, maintenance of all beam instrumentation has been added to the Controls Group scope.

- The group continued to support the Ring commissioning run. There were no significant control system issues. Some bugs in the display manager have been found and fixed, resulting in more stable operation.

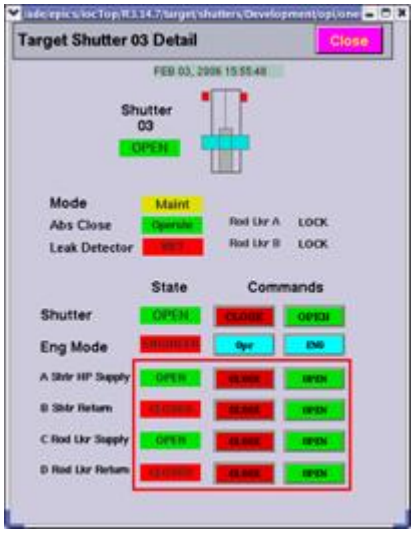
- A “blanking” feature for the LEBT/MEBT choppers that will allow beam only every Nth turn has been designed and is currently in simulation prior to deployment. The pulse width limit on the LLRF IOCs was increased from 1.3 to 1.4 useconds. This led to other limits and an unresolved discussion of how to mange them. On-line tests of the updated archiver began. The software for the CF system has been upgraded to to EPICS version 3.14.7 and all four IOCs are ready to be rebooted next week. As part of an effort to control tuning motor motion, a graphical screen was prepared to monitor tuning motor movement counts and totals. (Below)



- The Diagnostics team continued to support operations as well as an intense installation program. Improvements and modifications are being made in several areas including wire scanner motor drivers, BPMs and BCMs. Four wire scanners will be installed next week. A major effort for next week will be preparation and wiring of the Harp chamber, which arrived at the end of this week. In addition, a database was deployed this weekto track BLM system components and a Beam Size IOC (NAD) was created using a new motherboard type. Two BPM PCs were set up in the Diagnostics lab for board testing and troubleshooting.

- In the area of Personnel Protection, work continued on TPPS software specifications (SSRS), Integration Test Plan and PLC programming. Construction of the IPPS for Beamlines 2 and 4 also continued.
- As noted last week, a significant effort is being mounted by the controls team in support of Target system installation and testing and, starting this week, the Target system "FOIST" test. New OPIs were installed in the Target Control Room to support this test, and Channel Access Security was added to the Target System IOCs to prevent accidental operation from unexpected sources. A simple database was set up to track target issues, typically identified by Target test personnel. This provides a unified method for Target and Controls personnel to communicate needs and progress. At week's end 164 issues had been identified, of which 67 were marked as "done".

- Initial testing and checkout of the EPICS and PLC controls for the shutters was



completed with the shutters in Maintenance Mode. The local PanelView terminal that was to be used for checkout and diagnosing shutter problems was replaced by an EPICS screen. This saved significant fabrication and installation time and allowed the control system implementation to be completed early. The EPICS screen also provides additional features that could not be easily implemented with a PanelView. Channel Access Security will be used to limit the EPICS screen control of the shutters to specific qualified personnel. Checkout of the shutters in the normal Operations Mode is to begin next week.

SRF Facility

Project Upgrade

Survey and Alignment

Cryo Systems

Mechanical Systems

Shielding progress.

Ring Systems Installation Activities

Ring Water Systems Installation

Electrical Systems

Power Supplies:

- Assembled prototype PSI filter unit to go on the extraction kicker's PSI, 9 pin cables
- Received a prototype grounding shroud for the extraction kicker's high voltage cables outer shield at the magnet
- Wrote a list of items to do and had a meeting on how to reduce the extraction kicker noise
- Ordered spare fuses for all medium size magnet power supplies
- Repaired #5 extraction kicker by changing out the driver box and thyratron, will send the thyratron to vender for evaluation
- Tested RTBT 14, 15, 16, 17, and 18_24 power supplies (5) – 6 power supplies and 14 correctors remaining
- Repaired injection supply DHA10 (fuse, overheating)
- Noise Filter for PSI's at PFN Racks.

Modulator/Choppers:

- Conditioned MEBT choppers up to voltage and reconfigured system for operation
- Began design of new choke winding assembly
- Investigated new de-Queing resistor assembly
- Prepared abstract for Power Modulator Conference
- Working with vendor on alternative Rogowski coil design .
- Wound new chokes for modulator output filters
- Repaired defective Fiber optic SCR gate drives
- Repaired Personnel Protection Interlock chassis in RFTF MEC rack
- Currently working on DTL ME3 repairs
- Building spare Modulator SCR Firing Boards

Electrical Design:

- Completed harp wiring drawing
- Drawing of modulator choke is in final stages with a few revisions – ready to submit Dave's drawing out for manufacture
- Drawing design and supervision support for Beamline 4A and 4B
- Prepare SRO and schedules for Hazelwood work to start in RTBT area for next week
- Working on documents for ac power for Ring, RTBT and HEBT as built documentation.

XFD work:

- Cable assembly drawing completed for the last run of cables used on beam line 4A. It will be used to solicit bids today or Monday.
- Installation and fabrication of Instruments for 2TU and Beam Line 4
- Installation and Troubleshooting of Mercury Pump for Target

Other:

- Teresa Toomey Completed LSM training for Ring SB, HEBT SB and RTBT SB
- Interviewing candidates for Research Mechanic - Electrical