ASD Weekly Highlights for the Week Ending 19-May-2006

Operations

- ASD Operations:
    - Operated accelerator facilities in support of the Accelerator Physics and Neutron Sciences program.
    - Worked with XFD on the Beamline 2 IRR
    - Continued development of the database beam accounting and reporting system
    - Continued work on the June/August shutdown activities

May 10-16, 2006

From 10-MAY-2006 to 16-MAY-2006
Generated 16-MAY-2006 22:14

Recorded Activity Type	Hours	Percent of Total
Beam Time	60.40	35.95
Machine Startup (from a Planned Shutdown)	14.00	8.33
Planned Shutdown (no Beam, no Testing)	34.00	20.24
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Total Activity Recorded	**108.40**	
Total Downtime Recorded	**59.60**	**49.67**
Total	**168.00**	

Equipment Breakdown by Group, SubGroup and Sub_SubGroup

Group	SubGroup	Sub-SubGroup	Hours	% of Breakdown Total
Controls	Software - EPICS		1.00	1.68
RF Systems	Cavities and Structures		3.50	5.87
RF Systems	HPRF - High Power RF		1.00	1.68
Electrical Systems	LEBT Chopper		3.00	5.03
Electrical Systems	Power Supplies		1.60	2.68
Electrical Systems	HVCM		41.50	69.63

Protection Systems	Radiation Monitors	Chipmunk	1.00	1.68
Accelerator Physics	Application Programs		.50	.84
Machine Protection System	Fast Protect - Latched		.30	.50
Cooling Systems - Accelerator	DI		.50	.84
Cooling Systems - Accelerator	QMCS		2.00	3.36
Cooling Systems - Accelerator	RFQ Chiller		3.70	6.21

Accelerator Physics

Physics

- On May 17th beam was delivered to the target for the third time, for second round of systematic measurements of beam parameters using the target view screen. For the first time, we were able to deliver a non-skewed beam distribution with approximately the nominal horizontal and vertical dimensions. The source of the skewed beam appears to be horizontal and vertical coupling in the ring. On Friday, May 19, we delivered approx. 420 Watts to the target to produce the first cold neutrons for the inauguration of beam line #2 and the backscattering spectrometer.

Diagnostics

- Wire Scanners: All Wire scanners in the RTBT transfer-line are tested and timed in for beam-on-target emittance measurements.
- Laser system: Laser stripping laser in the HEBT tunnel was turned on. First path calibration has been successful. We only need one shift to align the laser for the LDRD experiment at 860 MeV.
- Neutron Detector is ready for calibration at 1 GeV. Wim Blokland has prepared a special LabView program for the HEBT-wire-scanner-16 to perform on demand multiple data acquisition from this wire scanner.
- Beam Position Monitors: New feature is added to all Ring BPMs to measure turn-by-turn current. Cary Long and Craig Deibele will add current measurement capabilities to all LINAC BPMs today.

RF Systems

Ring RF

- We have continued to experience random water flow faults on Station RF-11 that do not appear to be real. We have traced the problem to a poor connection in the cabling to the high voltage power supply. We have changed out all of the cables that could be at fault and have not experienced the fault but do not yet know we have fixed the problem.
- We had numerous real water flow faults on the high voltage power supply rack for Station RF-12. The flow control valve for this rack was removed and the manual valve closed down to allow just enough water flow to make up the interlocks. No faults have occurred since this change.
- We had a shift with reasonable intensity ring beam and were able to adjust the Low Level RF System for moderate intensity beam. We had all four stations operating at near design levels and were able to adjust the phase of each station for proper bunching. Since the RF-21 station operates at the 2nd harmonic of the ring revolution frequency we were able to observe the desired reduction of peak circulating current with the addition of 2nd harmonic bunching voltage.

Ion Source

- A spare lens 2 has been successfully glued together following exactly the procedure used at LBNL. The original lens 2 from LBNL has successfully survived all commissioning runs on the Front-end, holding with ease voltages as high as 48 kV. The spare LEBT was assembled and is currently being degassed in the vacuum oven.

- Since 9 weeks the ion source on the FrontEnd has delivered ~25 mA with an air-cooled Cs-collar. The beam is normally lowered by lowering the e-dump voltage.

- We have identified beam current fluctuations with a broad frequency spectrum above 2 MHz, which is driven by the voltage between the e-dump and the outlet aperture. The fluctuations can be reduced by either reducing this voltage or increasing the gas pressure.

- We have confirmed a strong correlation between the e-dump voltage and the lens 2 voltage that optimizes the performance of the chopper.

- We have submitted a LDRD proposal for building a prototype Helicon H- source. Helicon ion sources promise high output currents with modest RF power levels, and therefore with high availability.

Instrumentation and Controls

SRF Facility

Project Upgrade

Survey and Alignment

- **Network**
    - The field work was completed this week for the exterior network annual elevation re-observation.
- **Target**
    - On BL2, marks were scribed on the can for the 2TU tank. Then the center of the can mount was located, as well as the center of the can in the 2TU tank after it was installed
    - On BL18, we aligned the 1st guide on BL 18 (Z dimension only). After Swiss Neutronics finishes their work on May 19, S&A will begin an as-built survey to relate the installed guides to the local network (both BL17 and BL18. This will provide us a baseline location which we can use to monitor deformation and disturbance.

Cryo Systems

Mechanical Systems

Electrical Systems

Modulators

- Removed and replaced A phase transformer inside RFQ Modulator
- Removed and replaced A phase IGBT assembly in RFQ mod
- Removed and replaced B phase IGBT assembly in RFQ mod
- Processed the oil in RFQ Modulator
- Continued repairing IGBT assemblies and driver cards
- Repaired LEBT Choppers A and B

Power Supplies

- Replaced HEBT_Mag:PS_DCV17, pc board caught fire
- Repaired DTL_Mag:PS_DCH155, blown pc board fuses
- Received and tested two new SCL (525A, 35 V) power supplies and placed them in storage at the Klystron gallery to facilitate a speedy change out if needed
- Started repairing surface mount devices on the PSIs
- Repaired SCL_Mag:PS_QH32, low water flow

Power Distribution and Installation

- Review and approval of Design Change Notice (DCN) for adding receptacles in Target Building Sample Environment Cage.
- Review and approval of DCN for adding receptacles for Target Building Large Shop Equipment.
- Review of CLO 3rd floor office space buildout.
- Review of CLO Cafeteria slab electrical layout.
- Job package to complete the Power Monitoring of the SNS UPS and Emergency Generators was completed
- Upgrade of the SNS Power Monitoring server completed
- Completion of the SNS fiber backbone as-built drawings
- CHL Circuit Breaker Operation for Maintenance

Other

- Kevin Norris attended a one-day seminar on NFPA-70E in Nashville, TN
- David Anderson and Ken Rust both attended and presented papers at the IEEE International Power Modulator Conference 2006 in Washington, DC