

Machine Update

NSLS Town Meeting

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Tuesday July 29, 2014

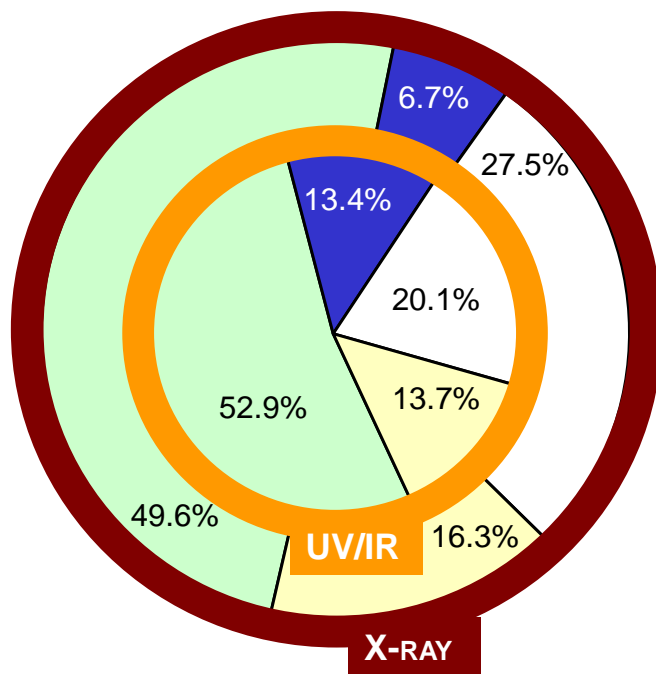
Topics

- FY 2014 Statistics
- X27 Safety Shutter Replacement (April)
- X21 Crotch Absorber Repair (May)
- Details of the Final NSLS Shut Down
- NSLS-II Commissioning
- Closing Remarks

FY2014 Statistics

FY 2014 NSLS MACHINE ACTIVITIES

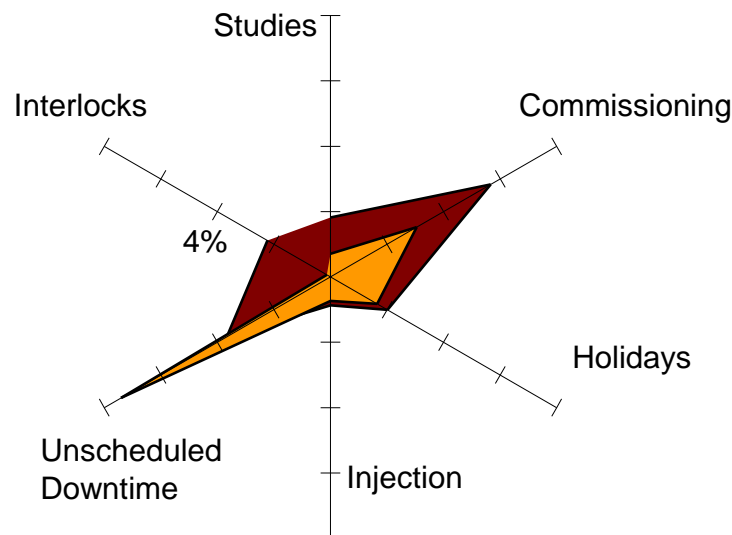
Status as of 1 July 2014



Activity /Hours	UV/IR	X-ray
Operations	3464.7	3248.5
Unscheduled Operations	876.9	436.6
Maintenance	1314.4	1801.0
Other	896.1	1065.9

Other Activities	UV/IR	X-ray
Studies	0.7%	1.8%
Com/Con	3.0%	5.7%
Holiday	1.6%	2.0%
Injection	0.7%	0.9%
Unscheduled Downtime	7.4%	3.7%
Interlock	0.1%	2.2%

YTD 6552 Hrs 100 Hrs= 1.5%



User Metrics	UV/IR	X-ray
Reliability	87.7%	93.1%
Availability	109.9%	105.6%

Reliability has been dominated by a few events but availability is strong



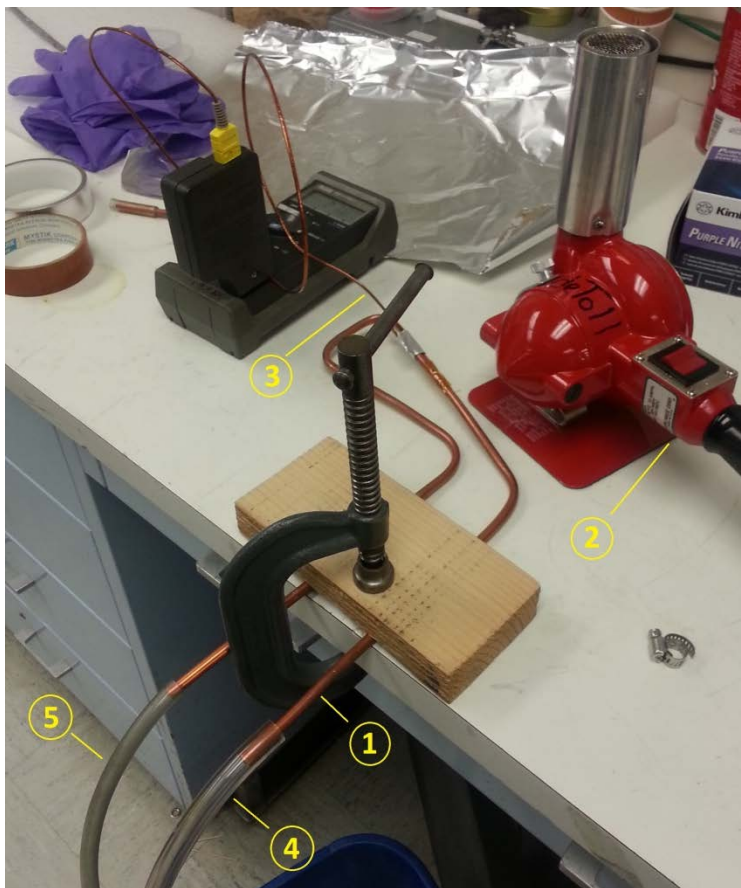
X27 Safety Shutter Replacement

- In April, we suffered a major water-to-vacuum leak in the X27B safety shutter
- Vacuum group (Walter & Pete) drained about 1 gallon of water from the front end vacuum pipe
- An identical spare replacement was installed
- The front end was baked
- It took several more days for the X27 suite to be re-enabled
- This had a successful conclusion but impacted X-ray reliability for the fiscal year

X21 Crotch Absorber Repair

- In May, 1 of 2 cooling lines in the X21 crotch absorber developed a water-to-vacuum leak similar to the X25 leak 1 year before
- Work began to prepare the X25 vacuum chamber for installation in X21 with a new crotch absorber
- The ring ran with 200 mA max for several weeks with 1 cooling channel in operation
- In parallel, from his background in material science, operator Rob Rainer proposed the use of an epoxy to seal the leak in place
- A two part epoxy used in high vacuum applications called Hysol 1C-LV made by Loctite was ordered

X21 Crotch Absorber Repair



Delivery of the epoxy to the mock up

- Delivery of the Hysol was tested on a mock up by Rob and the vacuum group with very good success
- The Hysol was injected into the cooling line in the ring and dispersed using compressed air left on overnight to ensure no clogs formed
- Ring vacuum began to recover within minutes of the application
- The repair remains intact allowing a return to 300 mA operation with full cooling



We believe the leak was here



Dissection shows good coverage of the interior

Details of the Final NSLS Shutdown

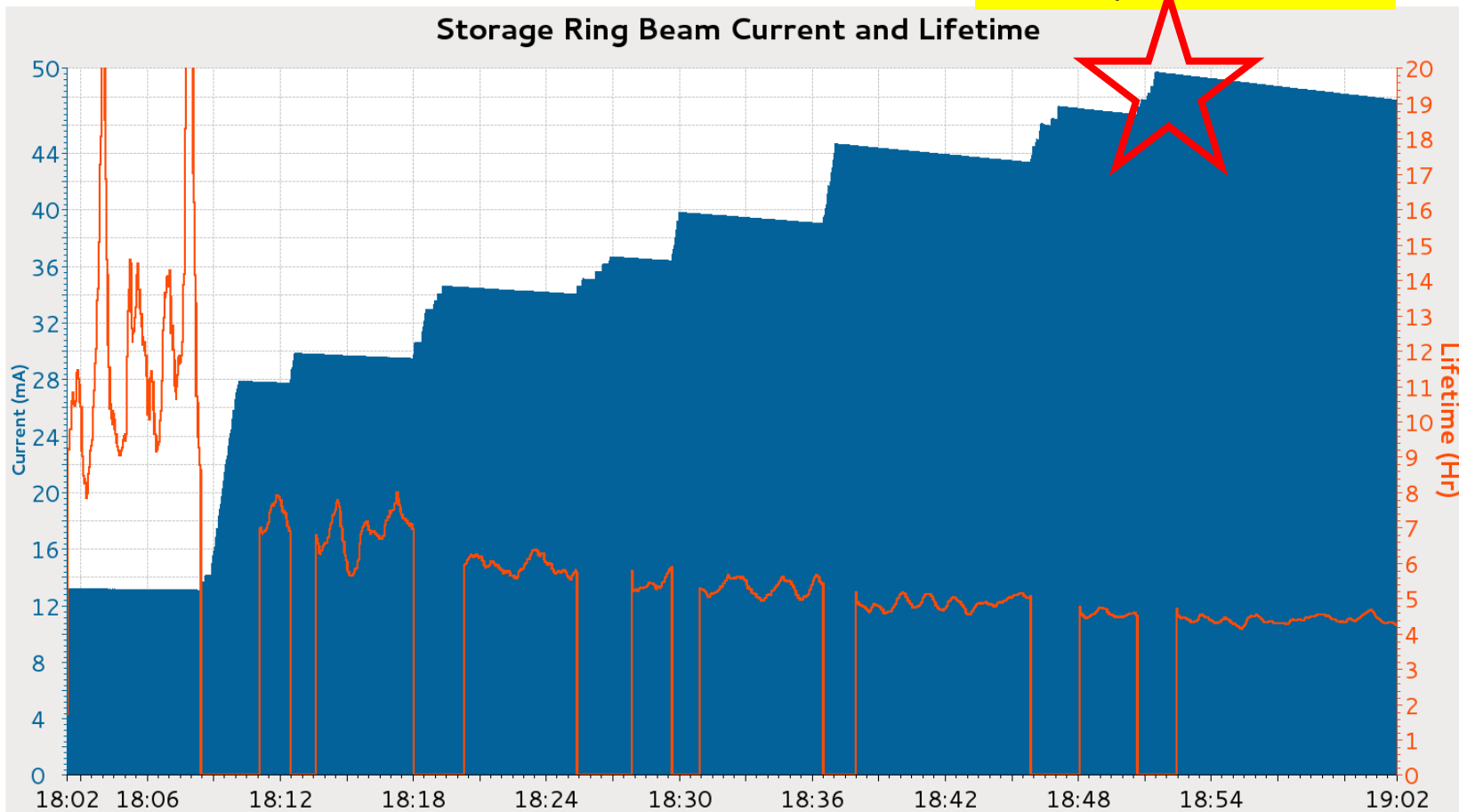
- Beam will be dumped at 4 pm on Sept 30th
- Control Room staff will execute the normal shutdown checklists (Control room staff remains on shift)
- ESH will red-tag the electron gun high voltage
- Water systems will be turned off at 8 pm. Compressed air to remain on?
- Beginning Oct 1st technicians from several groups will:
 - Isolate 208 and 480 VAC to high power equipment using disconnect switches
 - Short capacitor banks
 - Unplug corded equipment
 - Bleed up the vacuum pipes with dry nitrogen
 - Drain water from pumps and water-cooled components
 - Turn off micro's, UPSs & workstations
- In the weeks to follow, electricians will pull the line voltage leads from hard-wired equipment

NSLS-II Commissioning

- Commissioning of the storage ring has been very successful
- After instrument readiness reviews, accelerator readiness reviews and the resolution of pre & post start action items, early in April, 1/2 mA was stored in the storage ring with a warm cavity
- Then late in April the storage ring achieved 25 mA stored beam
- Testing of the superconducting RF cavity was going on in parallel in the RF “block house”
- Commissioning broke for the installation of the superconducting RF cavity as well as other critical installations such as insertion devices and front end components for the project beamlines
- We restarted commissioning and reached 25 mA with the SC cavity early in July and then achieved 50 mA on July 11th before shutting down for the remaining ID and FE component installation
- Many other tasks were also carried out by our accelerator physics group to characterize the beam, get feedback systems running and much more

NSLS-II Commissioning

At 6:52 pm we hit 50 mA



NSLS-II Commissioning

- During Shutdown:
 - The NSLS-II control room will be relocated to B744 in August and ready for commissioning restart early October
 - The remaining insertion devices will be installed
 - The project beamline front ends will be completed
 - Beamline PPS will be completed, tested and certified
 - The entire PPS will be recertified in September including the relocated PPS components in the new control room
- Commissioning the storage ring with ID's will begin in October following successful reviews

Closing Remarks

The NSLS has 2 months to go before shutting down

The last few months have been a challenge but despite a few failures, the outcomes were good and availability for the users remains strong

NSLS-II storage ring commissioning has gone well and we look forward to a bright future in our new home