

Weekly Report for 09/14/2015

Highlights

- This is a one-week report. (Kathy Harkay)
- Finalized DOE CD1 Review Injector Requirements presentation. (Kathy Harkay)
- Carried out preliminary heat load calculations for the helical SCU. (Kathy Harkay)

APS Renewal and Upgrade

- Participated in MBA beam physics meeting. (Jeff Dooling)
- Discussed an injector studies plan for the upcoming run with CY Yao and J. Calvey, and provided input to CY's presentation at the weekly MBA physics meeting. I proposed that we study 450 MeV injection energy and PAR ion effects, and to study the threshold for longitudinal instability. Spoke with Yin-e about her tuning up the linac to 450 MeV. (Kathy Harkay)
- Continued on the BTS line design. (Aimin Xiao)
- Prepare materiel for Beijing low emittance ring workshop. (Aimin Xiao)
- Started injection simulation with collimator system. (Aimin Xiao)
- Getting an adaptor for feedthrough and kicker TDR measurement. (Chih-Yuan Yao)
- Reviewed and modified Kathy's CD1 review talk. (Chih-Yuan Yao)
- Completed the simulation of the high voltage feedthrough design with COSMETEC and the statement of work for the procurement. (Chih-Yuan Yao)

MCR Operations

Storage Ring Operations

- Checked P0 feedback mixer delays for intermittent problem. Did not found problem. (Chih-Yuan Yao)
- Troubleshooted a non-volatile memory failure of the VSA with Rob Keane and Rany Zabel. (Chih-Yuan Yao)

Booster Operations

- troubleshooted a prolem of not be able to turn on Booster corrector. It was caused by a EPICS software update. (Chih-Yuan Yao)
- troubleshooted and fixed a ramp time problem of the Booster main ramp with Frank Lenkszus. (Chih-Yuan Yao)

Linac Operations

- With S. Shoaf, swapped out new EM2 digitizer (vmiVme3123) board with the old unit to determine if problem is with the digitizer or connections. (Jeff Dooling)
- By the end of the weekend, observed the triggering switching several times from "post" to "pre" indicating the problem is with the board. This digitizer is a spare for the CTR monitor in L2; will have to discuss with N. Sereno how to handle replacement. (Jeff Dooling)
- Looking into AR-coated laser injection window; discussing this with contacts at SLAC and FNAL. Checking with vendors who can supply high-damage-threshold coatings integrated into the required

2.75" CF vacuum fitting. (Jeff Dooling)

Procedures

- RF Test Stand Search (APS_1191884) (Randy Flood)
- Operation of the RF Area ACIS (APS_1192788) (Randy Flood)
- LOTO for the Gespac Control Power Upgrade (APS_1269780) (Randy Flood)
- Work Planning and Control at the APS (Randy Flood)

Training

- Conducted ESH114PR for RF group (Randy Flood)

MCR Operations administrative/misc.

- Approved operators' time cards (Randy Flood)
- Approved vacation requests, set up coverage and updated the online schedule (Randy Flood)
- Approve CTLs, IT and Other work requests (Randy Flood)

APS Machine Studies

Storage Ring Studies

- Analyzed ID1 BLM calibration data collected earlier in the summer from the US ID detector. (Jeff Dooling)
- Tested and optimized SR tune measurement with VSA+MXA. Assisted Louis and Kathy's test of CollectRFSpectrum. (Chih-Yuan Yao)

Booster Studies

- Troubleshooted an beam stability problem of the Booster with Doug and Tim Berenc. Will do more test to confirm. (Chih-Yuan Yao)

PAR Studies

- Radiation survey with John Vacca in order to assess injector high charge limit. And reviewed the data with MB and John. We need to do more test to verify the response of the rad monitors are linear to beam charge. (Chih-Yuan Yao)
- Performed 1Hz injector study. (Chih-Yuan Yao)
- Successfully commissioned the new AFG and ADC modules of the Booster corrector control and setup Booster beam with the new ramps. (Chih-Yuan Yao)

APS Machine Research and Development

Storage Ring Research and Development

- Spoke with B. Westland of Fiberguide regarding long decay of signals seen from the internal SCU fibers which looked to me like fluorescence. He confirmed that aluminum-clad fibers of the type we are using can in fact fluoresce. (Jeff Dooling)
- Carried out preliminary dipole radiation incident power calculations for a helical SCU in the APS,

assuming no photon absorber and no fringe field effect, which is the most conservative assumption. (Kathy Harkay)

Booster Research and Development

- Tested the booster tune measurement new configuration with only one single drive stripline. (Chih-Yuan Yao)
- Researched options to adjust the booster tuner with a controllaw process. Alternatively we may ask control to install EPICS process to do this. (Chih-Yuan Yao)

PAR Research and Development

- Inspected and discussed the PAR BM bake wire with Joe Gagliano. He said the wire is put there in a hurry and they can not be used for baking the chambers. (Chih-Yuan Yao)

Linac Research and Development

- Working on the pgun laser to reduce the IR spot size on the doubling crystals and increase power density. (Jeff Dooling)
- Using Gaussian beam calculation, found the beam size at L2 is too small to achieve the desired spot size on the doubling crystals given the distance between L2 and the crystals (4.37 m). Must use a different lens for L2 with $f > 15$ cm. (Jeff Dooling)
- Replaced the L2 lens and mount in the regen; L2 f.l. now 20 cm. (Jeff Dooling)
- Adding astigmatism control was able to provide a spot size at the doubling crystals close to the desired value ($w = 1$ mm). (Jeff Dooling)
- Worked on cathode cleaning optics design with input from Y. Sun. (Jeff Dooling)

Other Research and Development

- Attended a meeting held by A. Nassiri to discuss a high gradient rf structure (HGS) experiment in the ITS. (Jeff Dooling)

APS Machine Software

AOP Applications Software

- Updated various Tcl/Tk programs such as sddsedit, SaveCompareRestore, to use nicer looking ttk widgets. (Robert Soliday)
- Updated PSSGlobalWatchdog to filter out 17BM events with old dates because the IOC is acting up. (Robert Soliday)
- Updated APSCheckSDDSFile so that it works with SDDS2 and SDDS3 file formats. (Robert Soliday)
- Fixed a problem with DataLoggerViewer not listing all the readback names if the same PV was in different loggers with different readback names. (Robert Soliday)
- Fixed a problem with passManager if the password has special Tcl characters in it. (Robert Soliday)
- Fixed a problem with sddstranspose when the input file has no data. (Robert Soliday)
- Updated tdms2sdds so that it can handle TDMS files with different types of data in various

segments. It can now convert each segment into separate SDDS files. (Robert Soliday)

- Updated PSSGlobalWatchdog by adding some missing trip and warning descriptions for 35ID. (Robert Soliday)
- Fixed a bug in sddsprocess related to open and close braces in the commandline options. (Robert Soliday)
- Updated all the SDDS programs so that the usage messages contain the SVN revision number that they were compiled with. (Robert Soliday)
- Continued work on the experimentConfiguration script. (Robert Soliday)
- Updated LPL_Configure so that it only sets the timing source if the modulators or the rfgun is selected. (Robert Soliday)
- Updated LPL_Configure to properly handle setting up the rfgun if we are in PG1 mode. (Robert Soliday)
- Updated machine procedures and recoreSRBeamDumps to remove code related to the BPM history module that no longer exists. (Robert Soliday)
- Updated multiple programs after testing them with the latest version of Purify. Various memory leaks, uninitialized memory errors, and array bounds read errors were fixed. (Robert Soliday)
- Modified and tested BoosterCorrectorControl and Booster4CorrectorBumpScan tool for the new AFG ramp control. (Chih-Yuan Yao)

Storage Ring

- Fixed a bug in SRFillHistory that occurred when there was no downtime for a prolonged period of time. (Robert Soliday)

Injectors

- Updated LPL_Configure machine procedure after testing K2 down mode. (Robert Soliday)
- Reorganized the LPL SCR preferred file menu selection per Pasky's request. (Robert Soliday)
- Updated the LPL_Configure procedure to not check the acis state prior to displaying the initial selection dialog. (Robert Soliday)
- Updated APSMpPG1_SwitchToL3Down so that it can optionally switch to RG1 instead of RG2. (Robert Soliday)
- made changes to numerous booster software for booster correctors due to the hardware changes: replaced the new ramp boards with new AFG boards which are much more efficient and faster. Tested and installed booster corrector power supply software and ramp software. But some of the hardware connection still have problems, PS group are investigating. (Hairong Shang)
- Helped PS group setup the OAGapps gnome menu and tested the booster power supply turn on/off PEM with them. (Hairong Shang)

General

- Built EPICS/Base 3.15.2 on Windows 10 with Visual Studio 2015 and submitted two patches to fix compile problems with this setup. (Robert Soliday)

- Wrote Labview VI code to read and write SDDS files. (Robert Soliday)
- Updated Blue's Queue android app to fix a mislabeled job state. (Robert Soliday)
- Updated the Window's build of SDDS Toolkit to work with Visual Studio 2015 (Robert Soliday)
- Helped Dooling with some tcl script questions. (Robert Soliday)

Simulation Software

- Looked into memory bug in elegant. (Robert Soliday)
- Contacted the developers of Opera to get an evaluation license to test 16 threaded jobs. (Robert Soliday)

IOC/EPICS/Controls/Linux/Solaris/Linux Clusters/Data Loggers/Simulation software

- Helped setup Opera on the linux cluster. (Robert Soliday)
- Updated data loggers as needed. (Robert Soliday)
- Installed new GdfidL on linux cluster. (Robert Soliday)
- Acquired a new GdfidL license file that can now be used on the Blues cluster. (Robert Soliday)
- Worked on getting acis ioc databases updated (Randy Flood)
- Administer the EPICS CVS repository to ensure current versions are installed and conflicts are tracked down and eliminated. (Randy Flood)

Publications, papers and report

- Updated technical note: APS Higher-Current Operation Milestones, APS_1423957. (Kathy Harkay)
- Prepared slides for MB's IHEP meeting presentation on APS-U. (Chih-Yuan Yao)
- Presented a talk on fast kicker development for APS-U. (Chih-Yuan Yao)
- Presented injector study plan at APS-U weekly meeting. (Chih-Yuan Yao)
- Attended CD1 review and responded to questions. (Chih-Yuan Yao)
- Submitted a techNote on Booster corrector new ramp control test. (Chih-Yuan Yao)

Web Site

- Released a new version of Elegant for all the supported platforms. (Robert Soliday)
- Fixed a problem with the chooseBestID web page script. (Robert Soliday)
- Released new version of Spiffe for all supported platforms. (Robert Soliday)
- Updated chooseBestID.tcl and chooseBestMBAID.tcl so that the datafiles for the chosen devices can be downloaded when using the web interface. (Robert Soliday)

Meetings, workshops, conferences, committees, LMS related, and reviews

- Participated in an ASRC tour of the APS accelerator (Jeff Dooling)

- Conducted search committee work for TRIUMF ALD for Accelerators. (Kathy Harkay)
- Distributed announcement for a Beams and Applications Seminar on 9/21. (Kathy Harkay)

Safety and Required Training

- Took required training. (Robert Soliday)
- completed required trainings. (Chih-Yuan Yao)
- Wrote a SPOT nomination for one of my employees (Randy Flood)
- Completed ISM and Price Anderson training (Randy Flood)

Miscellaneous

- Tour Linac/PAR/Booster/SR to get familiar with the whole accelerator infrastructure, particularly the BTS line layout. (Aimin Xiao)
- Helped Yong-Chul Chae install SDDS on his Ubuntu laptop. (Robert Soliday)
- Helped Francois Meot (BNL) compile a 32bit version of elegant for linux. (Robert Soliday)
- Helped Piotr Traczykowski (Univ of Strathclyde) with Elegant2Astra (Robert Soliday)
- Helped Stephen Gierman (SLAC) build SDDS with Visual Studio 2010. (Robert Soliday)
- working on performance appraisal (Hairong Shang)
- Administer multiple mailing lists and the elegant forum (Randy Flood)