

Lab Status/ AEM Meeting Notes

Monday July 10, 2017

<https://indico.fnal.gov/conferenceDisplay.py?confid=14857>

Incidents:

- None.

Accelerator Operations:

- Summer shutdown of the accelerator complex has started. Beam shutdown to experiments Friday July 7th afternoon.
- All machines ran well last week. Laser notcher commissioning done in preAcc.
- NuMI: 1.17E19 POT; BNB: 0.55E19 POT.
- NUMI integrated POT for the year just over design. BNB well over baseline.
- 103 hours of beam to SeaQuest, 42 hours to MTest, 90 hours to MCenter (LArIAT).
- Muon Campus: delivered beam at 6.16e15. Studies all weekend.
- Power Outages: ComEd driven power outages (see slides/calendar); CUB cooling and power outage and X-gallery power outage on July 15, 16.
- Future schedule: <http://www-ad.fnal.gov/ops/schedule.html>
- PIP-II Injector test: Studies and commissioning. Prep for ORC to run new buncher cavity.
- FAST: Finite state machines conditioning CC1 and CC2. RF Gun cavity being prepared for power-up.
- CMTS1: LCLS-II proto-type CM03 tests. Evaluation ongoing.

MicroBooNE:

- 97.3% uptime. POT delivered: 0.55E19, recorded: 0.46E19.
- Integrated POT on tape: 6.6E20; with detector ON: 6.2E20.
- Computing: Job success rate 91%; CPU eff 66%. Working to improve analysis activities.
- Cryo maintenance starting next week.
- During shutdown, plan to take as much cosmic data as possible.
- Over the past year, submitted 5 papers and produced 15 public notes.
- Wine & cheese seminar Friday July 18 on results from first year's running.

MINERvA:

- Uptime 97.9%, with MINOS ND 97.4%.
- POT delivered from Nov. 14 to July 5: 5.07E20; 3.12E20 in anti-nu mode.
- Computing job success rate last week 87%, CPU eff. 79%.
- Improved database access efficiency; moving to mariadb production version on Aug 1.
- 4 publications in Phys. Rev., and PRL in 2016-17, one submitted; 3 wine & cheese in '17.

NOvA:

- POT-weighted Uptimes: 95.7% for FD and 99.1% for ND (last 8 weeks)
- FD: Unexpected power glitch on July 3 stopped data-taking. Took ~7 hours to recover and continued instability in DAQ on the 4th. ND: ~4 hours downtime on the 4th due to timing system errors. Will run tests and investigate during shutdown.
- Computing: job success rate 85%, CPU eff. 49%. Investigating efficiency.
- FY17: 4.9E20 POT recorded of 5.1E20 delivered. Anti-nu mode: 3.8E20 of 3.9E20 recorded. Two papers published in PRL; one submitted.

SeaQuest:

- FY17 Data taking: Delivered protons: $7.27E17$, Not vetoed: $2.62E17$, recorded: $2.27E17$.
- LH2 target warm up started Friday at noon.
- Now flushing all chambers with inert gas (Ar/CO₂). Liquid targets empty, cryo coolers off; FMAg, KMag off. Applying patches and updates to local computing.

g-2:

- Very successful run from April 5th –July 7th.
- Total of $\sim 2.7E16$ on target. Comparable dataset to CERN II and III runs.
- Successful trolley runs to map out B-field during data taking – Variation in B-field approaching desired level; First (uncorrected) wiggle plot made. Good statistics available for analysis.
- Work underway to analyze vacuum with Residual Gas Analyzer. Major peaks identified; prominent one from H₂O. Additional cryo-pumps needed to reduce water content.
- Summer shutdown plan in place. Looking forward to beam in November.

ND Operations:

- ICARUS
 - o The ICARUS detector shipped from CERN is now at a harbor in Indiana. It will remain there for two weeks. Road permits are to be procured to transport to Fermilab.
 - o Testing recycled MINOS CRT at wideband lab.
- SBND
 - o Assembled additional information regarding CRT bottom module installation needed for grounding requirement verification
 - o Work in progress on cryostat interface with cryogenic system.
 - o Several meetings with CERN on proximity cryogenics.
- DUNE
 - o The APA has been packed to put on a plane to CERN. Should be on a flight either July 13th or 17th. Photon detectors for APA#1 also ready to be shipped.
 - o Trouble cold testing of FE ASICs. Preparing electronics and deliveries slow. Schedule a bit tight.
- LAr R&D
 - o LArIAT took data with 3 mm wire planes before shutdown began.

LBNF Project:

- No report.

PPD Operations:

- Safety: No injuries or incidents
- Test Beam
 - o At MCenter LArIAT took data up through the shutdown.
 - o MTest experiments T1315 (LBNF Spectrometer, prelim r.f. bucket occupancy measurements) and T1041 (SIPM-on-tile test for CMS Forward Calorimetry) also wrapped up during last week while FTBF staff as well as AD did much needed beam studies on MTest beam.

- SCDMS
 - o Snolab will have a DOE/NSF Status Review at SLAC next week (July 18-20), to evaluate readiness to proceed to CD2/3 later this year.
- Mu2e
 - o Preparing for the upcoming IPR (July 25-27). Documents/Talks will be released to the reviewers tomorrow.
 - o Vito Lombardo and Vadim Kashikhin are in Brazil to witness the conforming and cold working of the PS conductor. These are the final 2 pieces of Rutherford cable that we currently have in hand. Furukawa has to make cable for the final piece. That won't happen until ~April 2018. All 3 pieces are spares. We already have sufficient good conductor to build the PS.
 - o PS/DS team will be traveling to GA Tupelo over the next 2 weeks to witness the winding of the model coil, which uses a combination of the PS and DS conductor.
 - o Tracker: The new MicroSemi FPGA (Polarfire) is in hand. Vadim Rusu will be radiation testing this device at the CDH Proton Therapy accelerator in the next couple of weeks.
 - o CRV: A second long pre-production module has been fabricated at UVA.
- CMS
 - o Great start to 2017 run. Over 6 fb-1 collected since mid-June, including a 48-hour period with nearly 1 fb-1. Already seen record instantaneous luminosity.

TD Operations:

- Cryo and IB1 infrastructure
 - o The cryo plants provided the necessary liquid helium. Maintenance period is coming in early August, along with trenching, water work, electrical work, floor painting, and more. Different operations will be off for different periods, up to four weeks.
- LCLS-II
 - o Cryomodules 03 through 07 are all still in the pipeline at different stages. CM03 is being warmed up at CMTF. It has more field emission than CM02, but the best Q0 yet at nominal voltage (3.5x10¹⁰). CM04 needed a repeat pressure test due to a cavity vendor not having done their job properly. CM05 has a damaged HOM feedthrough pin and we're working on a procedure to replace it. CM06 is on track. We are still trying to find enough good cavities to build CM07.
 - o The split quad pipeline is full.
- PIP-II
 - o Six cavities are in various stages of processing and preparation for testing.
 - o Last quad triplet from BARC is still on the test stand at MTF, to be followed by beam tube installation.
- LARP/HL LHC AUP
 - o Coil fabrication continues, including the last planned short coil
- Mu2e
 - o At the cryogenic test stand at HAB, the vacuum is still marginal. Electrical and power supply issues identified during the walkthrough have been addressed. Cooldown will start as soon as the cryo and control systems are ready.

- We are still waiting for ferrites for the 1-m model AC dipole. A few other parts are in the Village Machine Shop waiting for priority.
- Muon g-2, Muon Campus
 - All the parts for the first MSE pulse septum magnet are in hand, and more are promised this week. The first magnet is partially assembled. AD and TD engineers are working together on setting up a corona test to verify the integrity of the insulation. We have started stacking the core for the third (and last) magnet.
 - The coils for the spare EDWA magnet are ready. The vendor claims that we will have the core by the end of the month, now that their designated machinist is back from vacation.
 - We expect to start winding the outer coil for the inflector this week.
- Main Ring/Recycler
 - The MLAW Lambertson magnet assembly is resuming.
 - The rebuilt Main Injector quad is still puzzling.

Computing Operations:

CCD:

- All Ok.
- Announcement: Rolling out an updated version of the timecard system. Should be smooth transition; will allow usage with mobile.

SCD:

- Good week.
- 78% of jobs running on-site and 22% off-site.

Office of Communication:

- LBNF groundbreaking ceremony at SURF on July 21.
- Neutrino day at Sanford Lab celebrated Saturday, July 8th. Video conference from ROC-West.
- Fermilab staff participated in Railroad days festival in West Chicago during July 7-8.
- Batavia celebrates Windmill City festival this weekend, July 14-16. Volunteers welcome!

Directorate:

- PAC meeting took place at SURF July 6-9, 2017. Closeout report should be available in 2-3 weeks.

AOB:

- On Monday morning a facility issue was discovered at the Abri credit union space. What appears to be nonstructural mortar grout fell through the ceiling grid into the back office of the credit union. No injuries. The credit union space is closed until repairs and cleaning can take place.