

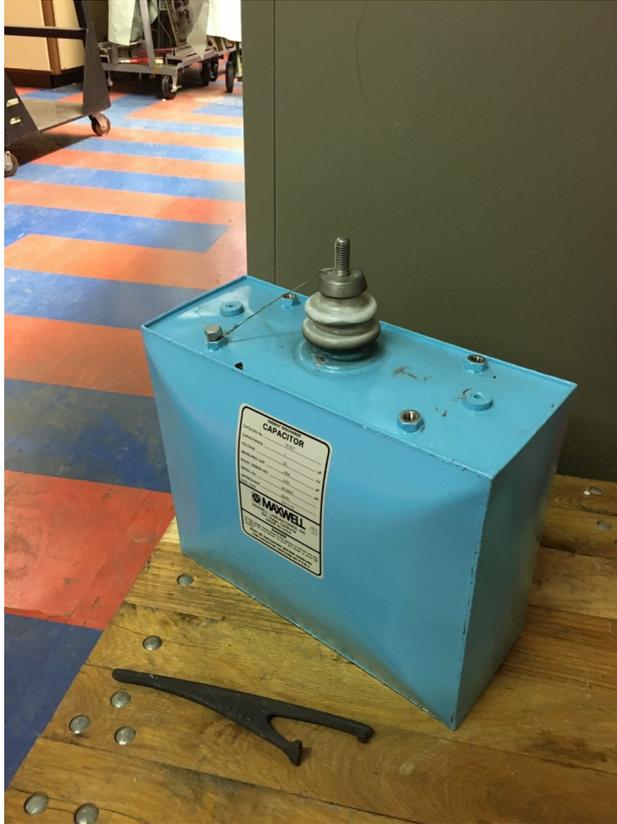
Summary of work done

C.Y. Tan
02 Jan 2020

Status of PSP projects

| MachineStu | Description | People | Status |
|---------------|---|------------------------------------|--|
| Pre-Acc | Improve neutralization in LEBT with N or Xe. | Kiyomi/Dan/ Pat | More beam to Tank 1 |
| Pre-Acc | Penning source and test stand | Dan/Pat | Magnetron being modified ... Revisiting arc modulator design |
| Pre-Acc | Laser collimation of head/tail of longitudinal beam. (LDRD) | Dave | New style flange designed for easy install/uninstall. Waiting for quote. |
| Pre-Acc/Linac | Simulation of PreAcc + Linac | Valeriy/Kiyomi/Dan | Permanent magnets being considered. |
| Pre-Acc/Linac | Re-aligned RFQ | Kiyomi/Dan/Pat | Realigned during shutdown |
| Linac | Klystron testing | Kiyomi | One spare tested. Now testing klystron which had a repaired water leak. |
| Booster | Flat injection porch | Kiyomi/Bill/George/ Howie/Chris | Quick study on 11 Dec. |
| Booster | Adiabatic capture | Chandra/Tan | Studies done of 26 Nov. |
| Booster | 2 nd harmonic | Robyn/Tan | Repair should start this month (Jan) |
| Booster | Wide bore cavity | John/Robyn | In test cave being tested. Plan is to install in Booster before shutdown. Write up has been sent out to discuss the number of wide bore cavities that are really required. |
| Booster | 2 stage collimators | Valeriy/Chandra | Meeting after Valery K. comes back from vacation (10 Jan) |
| Booster | Injection girder and injector civil construction to Booster | Dave/Salah/ Tan | PDR on 20 Nov |
| Booster | Garnet loss improvements | Robyn/Tan/louri/ Gennady | Mechanical engineer has been assigned: Noah Curfman |
| Booster | Mode 2 longitudinal damper | Nathan | Victor and John did studies on 31 May to characterize mode 2 from cavity signals. |
| LLRF | GMPS machine learning (get rid of reference magnet) | Bill/Brian/Kiyomi | ??? |
| LLRF | Complete DDS upgrade, paraphase controller | Brian/Ed | Studies on 11 Dec. Able to get beam through transition. Delays have to be corrected. Very close to operational. |
| LLRF | Phase feedback, radial feedback | Brian/Ed/Bill/Tan/ Valeri/Craig | Expect first test before end of May. |
| | | | |

It's the holidays so ...



KRF6 cap shorted to ground on 24 Dec. just past midnight.

Took us nearly 16 hours to find this and change it out.

Power glitch on 01 Jan 2020

- BRF22 modulator died
- Linac QPS303 died

Thanks to everyone who came in to fix the machine! Kiyomi, Salah, and techs. and people who were here over the holidays who chipped in as well.

Task force updates

- Injection girder
 - Talked to Dan Wolf and Howie Pfeffer, we will have to do a SPICE calculation as to whether there will be an “imbalance” (transmission line modes) that will shake the beam because of the addition of 4 D magnets that are not identical to the D magnets in Booster. (30 and 31 Oct 2019)
 - Absorber review (20 Nov 2019) <https://indico.fnal.gov/event/22416/>
- Lattice
 - Method to reduce 1/2 integer tested.
 - Studies on 11 Dec.
 - See today's talk.
- Digital LLRF
 - Meeting on 22 Nov
 - Ed will discuss with Bill and Kiyomi about 2nd pass of signals required for Booster from PIP-II Linac
- Magnet girder tests
 - E4R has been cleaned up
 - Lead person has been identified for install/cleanup: Fernando Juarez (Mechanical)
- 20 Hz infrastructure
 - Plan to have meeting soon

Task force updates (cont'd)

- 2 stage collimators
 - Task code has been supplied. Drawings started.
- Tall aperture gradient extraction magnets
 - See injection girder about the problem with GMPS with non-identical D magnets.
 - Calculation for gap size first pass says about +/- 5 mm required. However, needs benchmarking with current operations.
- 20 Hz cavity tests
 - Report is being written. Status?
- 50 kV in situ cavity test. Required for PIP-II
 - Plan is to test soon. 2 cavities will be chosen. Will run at 50 kV until shutdown.
- Shielding assessment
 - First meeting held. M. Vincent (Safety) will be leading.
- Tevatron tunnel mods for BTL
 - New lattice means no more rolled dipoles to get above the ceiling.
 - A beam pipe will go straight through the tunnel. Removed when necessary to move magnets.
- BTL to L11 changes
 - In BTL, a (de)buncher to rotate bunch to get smaller dp/p . Space charge increases dp/p by 2x.
 - Collimators. 2 stage? Instrumentation?