

Injectors Meeting 9Jun08

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next week: the Proton Interrogation Experiment

Kin Yip has agreed to discuss and enlighten us.

safety:

Some discussion of the hot weather that is suddenly upon us. Woody Glenn notes that sensitivity to the sun is affected by antibiotics.

Around the room:

Deepak Raparia: BLIP running is over for this period and the Linac is off. The upstream sections - LEBT, HEBT - are being taken apart to move toward the new geometry to get smaller, higher intensity beams into Booster. Deepak says the goal is a reassembled system by 1 November.

Peggy Harvey is present - listening for the rf group - and we take the opportunity to remind us of her suggestion to incorporate the Gauss clock and the radial loop function to allow predicting beam momentum from the resulting "Brho" clock. This to provide triggers to the horizontal pulsed quads planned for the next polarized run. Peggy points to John Morris and Controls. We need to generate a spec.

Paul Sampson: Booster finished for NSRL on 20 June. The Booster will be put on Restricted Access for the summer during the day on Monday the 23rd.

There was a brief discussion (Kevin, Paul, others) of the requirements including training and paper work required if one wants to take (a group of) visitors into one of the rings - into a High Radiation Area. Can be discouraging.

Kevin Brown notes that the modeling efforts for the Injectors and for RHIC are now available from a link on the accelerator physics page. I tend to travel from the "Accelerator Division" page to "Accelerator Physics" and then find "AGS and RHIC Modeling" under "Hot and/or Topical". Naturally. Click and get to <http://www.agsrhichome.bnl.gov/Model/>. Find for example minutes and presentations from Kevin's weekly modeling meetings.

Last week Peter Ingrassia brought up the problems with beam stability in the r line (showing up as a shifting of the beam uniformity with time). Kevin and Woody and Phil Pile doing the heavy lifting have been working on this observation. Kevin reports that Phil has modeled the expected sensitivity for the uniformity variation (beam position just upstream of the octupole doing the final flattening) and finds variation in  $rD2\&3$  at the few  $\times 10^{-5}$  level would explain, an impressive spec to get to let along beat. The similar requirement for the extraction septum (D6) is 1 in  $10^{-4}$ , which is still very good. We briefly discuss readbacks. Larry Hoff is looking into synchronizing the reading with the ac line. The beam extracts for a significant fraction of a second, the power supply ( $rD2\&3$ ) is dc, so very fast samples are not necessarily appropriate. Under some

conditions a feedback loop using a Hall probe readback is active, but apparently only at initial turn on. (More to get straight).

Dejan Trbojevic: there is a magnetic field measuring tool that Kevin and Tom Russo are exploring. I think I missed the point.

Peter Thieberger: What did we learn during this year's gold run about the BtA foils? What do we want to change for next year? This is the time to decide.

Today's presentations (by Woody):

- 1) A quick look at the sort of AGS machine parameters that can be extracted from the "snap ramp" data.
- 2) Ongoing study of flag materials - AtR flag materials - using the r line setup.

The slides are attached in an after-the-fact power point collection only.

[http://www.cadops.bnl.gov/AGS/Accel/Aphy/meeting\\_minutes/attachments/fy\\_08/20080609Glenn\\_Model.pdf](http://www.cadops.bnl.gov/AGS/Accel/Aphy/meeting_minutes/attachments/fy_08/20080609Glenn_Model.pdf)

1: Snap ramp model data: Periodically the AGS setup - the whole cycle - currents in the magnets - are measured and saved away. This is a snap ramp collection. Vincent Schoefer "on demand", (and in the fullness of time the Kevin's "Model Player" can take this snap ramp data set and translate it at any time in the cycle into the machine parameters we know and love: beta functions, dispersion, chromaticity, tunes at that time. Woody has collected some of these machine parameters for the polarized proton machine for several early energies (gamma 2.5 - 3.5, so Ggamma 4.5 (injection) - 6.25) for the zero Bdot injection machine AKA run06 AKA U2 AGS machine and for the "on the fly" injection AKA U4 AGS machine. See the pictures.

[http://www.cadops.bnl.gov/AGS/Accel/Aphy/meeting\\_minutes/attachments/fy\\_08/20080609Glenn\\_Flags1.pdf](http://www.cadops.bnl.gov/AGS/Accel/Aphy/meeting_minutes/attachments/fy_08/20080609Glenn_Flags1.pdf)

2: Flag studies using the r line setup. Here I cannot do justice at all. So what I say is sometimes wrong. Perhaps Woody would add comments to the power point if time allows. The first slides are looking at edges under various conditions. The third slide shows the sharpest resolution - two pixels span the edge. The pixels at the flag represent ~ 10 mils or half a mm each. This is the edge of the absorbing sheet (on the radlin). It is a proof of principal for at least this resolution in the system. Two later is the edge of the beam absorber - thick piece of tungsten. The edge is less sharp. The variation within a uniform region is explored on the AtR "Gadolinium" type flag. Here the response varies by ~10%. Some of this comes from the baseline variation. The signal is not very strong (but as strong as was available).

We did not get to the second set of slides - so for another meeting.

[http://www.cadops.bnl.gov/AGS/Accel/Aphy/meeting\\_minutes/attachments/fy\\_08/20080609Glenn\\_Flags2.pdf](http://www.cadops.bnl.gov/AGS/Accel/Aphy/meeting_minutes/attachments/fy_08/20080609Glenn_Flags2.pdf)