

Minutes for New Main Injector Group 27 August 2015

NEXT Meeting: 10 Sept 2015

Attendees: B Freeman, R Nelson, J Grames, P Vasilauskus, S Suhring, A Freyberger, M Poelker, P Kjeldsen, O Garza, A Kimber, R Sulieman, H Robertson, J Benesch

Scribe: R Legg

### **Meeting notes.**

#### **Introduction:**

This meeting was for Reza, Joe and Jay to talk about what they want to include in the new injector and think about what gets included in the UITF for testing. It also creates a WAG on what the schedule for installation looks like. For the support groups, hearing the wishlist now, means they have a chance to judge how extensive the work will be, so they can plan their work loads more than a year ahead.

#### **Grames:**

Joe talked about why we want a higher voltage gun and new Wein filters.

- 1) Need to determine the optimal voltage for gun.
- 2) Assess the baseline 200 kV design to determine how well it meets our needs over the next 15 years.
  - a. Chopping - 3 or 4 independent beams
  - b. Improved optics
  - c. Improved vacuum
  - d. Improved diagnostics

Joe then talked about a vision for injector if it was built on a green field. He suggested a second injector line, a la' the nuclear physics bypass to service long term, stringent requirement experiments.

Arne suggested that it should include capability to allow operation of injector at 5 MeV with NL occupied.

Pam suggested improved insertion device protection system.

Arne also said the scope of the work for FY16 was to have a design complete for review. Installation would be in summer of 2018.

#### **Kazimi:**

The new injector needs a carefully selected set of diagnostics which allow the injector components to be set with a resolution and precision sufficient to allow the EPICS settings to be used in the model and vice-versa. In effect making the injector truly a model based machine.

Steve asked if there was an error budget for the settings such that a requirement document could specify the setting precision? Reza said he had started such a budget.

Arne asked about a stability and ripple requirement for the elements such that it can be reproduced. Reza said he had some of that information in papers.

Reza did emphasize upgrading the viewers and video system components to make machine reproducible, since much of the injector setup depends on viewers. See Reza's slide.

Reza's talk emphasized less green field and more the requirements for all the elements in the new injector that will be needed to make it more deterministic.

**Benesch:**

Jay started with the NP experiments' demands on the injector. The Moller and Qweak make very stringent demands; they would like to get rid of all halo from the injector and have tight energy spread and emittance specs. Jay agreed to incorporate the NP experiments' requirements into a set of injector specifications which could be used in the design of the new injector.

As a green field design, Jay suggested maximizing aperture, minimizing the length of the beamline in front of the quarter (this made Henry happy) and metal plating the walls to shunt transverse magnetic fields. See his slides for notes on a new Wein design, solenoids to improve the beam functions, etc. They make good reading.

Matt also said the UITF would be installing the older quarter and running HDICE in Aug. The QCM would be installed in the UITF maybe in quarter one of calendar '17 and being tested there summer '17.

I thanked the system owners for listening to the presentations; we plan to convene a smaller group to flesh out the new injector design. We'll ping them again for cost and schedule info when the design is more concrete.

Arne asked how often we will have these meetings. I responded every two weeks, but I needed to think about the next steps to be ready for a design review in FY 16.

We thanked the speakers and Meeting adjourned.

Next Meeting:

Sept 10 at 11 AM