g2p/GEp Beam Transport Meeting Minutes

Attendees: B. Dillon-Townes, K. Allada, D. Williams, T. Michalski, R. Lauzé, P. Degtiarenko, A. Gavalya, P. Kjeldsen, O. Garza

The following is a summary of issues discussed during the g2p/gep Beam Transport Meeting:

- We reviewed the action items with the following comments:
  - We do not have all the detail to finalize the BPM/harp design for the articulating arm. Omar Garza attended the meeting from the I&C group to discuss this topic further.
  - There is limited space in the area of the low current dump. The current proposed method for viewing the beam position on the dump is to use a bore-scope. The concern raised it darkening of glass and resulting loss of sight through the scope.
  - Chris Cuevas was contacted regarding the "hole" in the center of the slow raster pattern. He was not aware of this issue. He requested that we provide e-log entries or other information on the nature of the problem. He also requested details on the requirements for performance of the Slow Raster. Action assigned to Kalyan.
  - Tim has tried contacting Eric Forman (Accelerator Ops Liaison to Hall A) again to get involvement. Ron mentioned that Yan may be another avenue and to get it on his calendar. Action Tim
- Omar Garza attended the meeting to provide further information on the status of BPM development and a solution which will work to measure the g2p beam position with current down to 50 nA. The concern being that a low current beam may not produce enough signal for the BPM to discern signal from noise.
  - The only combination of BPM and electronics we have today which will measure down to 50 nA is a M15 antenna style BPM and current (SEE(?)) electronics.
  - The new stripline BPM is not going to be used on the 12 GeV upgrade to the arcs and therefore does not drive a need to complete the design, testing, and build in a timeframe which works for g2p.
  - The new diagnostic receiver development is underway but may not be completed in time to use on g2p.
  - The rastered beam diameter is to be 25mm (~1"). The ID between the antennas on a M15 BPM is nominally 1.36" per drawing 58432-0156. Therefore, radial clearance is 0.477cm, less than the desired 0.5cm clearance we have in our requirements.
  - The sensitivity of a M20 antenna BPM will be reduced because of the additional distance between the beam edge and the antenna.
  - Omar has promised that the I&C group will provide a table showing the performance of our different options (M15, M20).
  - It was noted that a new, "optimized" version is not really desired as it will have to be analyzed, prototyped, and tested; a large hit on schedule which we cannot afford.
- We would like to get the calorimeter out of Hall A during the next installation (January-February) in order to get in a lab to test and calibrate.

STATUS:

OPTICS:

- No status update

MAGNETS:

- The BDs have been secured.
- Ken Baggett and Neil Wilson will be reworking and remeasuring the FZ magnets for the new vacuum chambers.

BEAM TRANSPORT:

- The Experimental Definition Drawing was brought in for signature. Yves and Eric had reviewed and defined the nomenclature.
- The harp definition is a challenge as the documentation isn't straight forward due to the different versions developed over the years. Additionally, if we use a 2" beam pipe for the articulating arm, it will require a longer stroke on those harps (qty 2). The one on the upside down girder will be of the "standard" design, a 1.5" beam pipe.
- The slow raster – calorimeter stand is on track to be complete and ready to procure before Thanksgiving. The design has been reviewed by Installation, Alignment, Jenord Alston, and Mike Martin (for weld purposes).
- The upside down girder design is scheduled to complete and ready to procure before the Christmas break.
- The FZ1 support base has been analyzed via FEA.
- Expects a published schedule next week.
- The list of materials to be procured is being updated – assess $.

RAD CON:

- Nothing new to report

SOFTWARE:

- Communicated schedule drivers (handoffs from others) to the project lead.

VACUUM:

- No status update

INSTALLATION:

- No status update

ALIGNMENT:

- No status update

EES – I&C:

- The calorimeter controller is being worked on by Scott Windham

EES – OPS:

- Nothing new to report

EES – SSG:

- No status update

TARGET/DUMP DESIGN ACTIVITIES:

- Not strictly a low power dump. Work is ongoing to assess the detector for monitoring polarization vs. using the Compton Polarimeter with higher current beam.

PHYSICS

- Will gather requirements for fast/slow rastered beam.

Action Items:

Action Item #	Date Added	Action Item	Responsible Individual	Due Date	Date Closed
11	9/28/10	Define the settings for chicane magnet current monitoring.	Y. Roblin	10/19/10	
12	9/28/10	Define if instrumentation is required for the low current dump. If so, what should be monitored?	TBD	TRACK to close	
14	10/5/10	Need to assess if two harps will fit on the articulating arm.	L. Dillon-Townes	10/12/10	
16	10/5/10	Understand why there is a hole in the center of the rastered beam that comes from the faster raster/slow raster combination. Stated to be a waveform generator issue. Clarify this. If not HW, then probably SW?	C. Cuevas B. Gunning	TBD	
17	10/5/10	Get Accelerator Ops involved in reviewing the LC dump monitoring issues. New item 20.	T. Michalski	10/26/10	11/9/10
18	10/19/10	Set up separate subject meeting on BPM, alignment, harps, calibration issue(s).	T. Michalski	10/26/10	
19	11/9/10	Pull together requirements for the rastered beam and any details on the issue with a “hole” in the center of the slow raster beam.	K. Allada	11/23/10	
20	11/9/10	Get Accelerator Ops involved. Either Eric Forman, Yan Wang, or alternate.	T. Michalski	11/23/10	
21	11/9/10	BPM performance table – M15, M20, electronics	O. Garza/D. Williams	TBD	
22	11/9/10	Get calorimeter out of Hall A for testing/calibration and replace with a beamtube. • ATLis for having the work performed – Jan/Feb timeframe	TBD	1/?/11	

Design Decisions:

Date	Decision Item
8/31/10	The transport line exiting the FZ2 will have no vacuum connection to the target chamber. A beryllium window will terminate that line.
8/31/10	M20 BPM’s were decided to be used on the transport line exiting the FZ2.
9/14/10	The Target will only be set at 80° and 90°, not 70°, per Al Gavalya.
9/14/10	The gap between the beam tube end and the target window was discussed. It should be minimized – consider 1 cm as a maximum gap. Re-opened during 9/21/10 meeting – look at using helium bag.
9/30/10	The requirement for BPM accuracy is 0.1mm – per discussion at BPM requirements meeting and subsequent analysis/e-mail from K. Allada.