g2p/gep Beam Transport Meeting Minutes

Attendees: J.P. Chen, E. Folts, A. Gavalya, P. Degtiarenko, B. Dillon-Townes, A. Camsonne, K. Allada, D. Williams, R. Lauzé, T. Michalski, J. Benesch, Y. Roblin, M. Ivanco, K. Mahoney, G. Kharashvili, S. Higgins, A. Freyberger, D. Higinbotham + 2 in the back whom I have yet to meet.

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

- We reviewed the minutes from the previous meeting with a few comments.
- We need to get commitments for the hardware required for g2p. This should result in a list of all hardware required and owners for each item. Also need nomenclature defined for all items, sooner than later.
- Mark Jones has been contacted for the FZ1 and FZ2 magnet power supplies out of Hall C. Note that the existing PS's are wired in series in Hall C. We will need 1 each for g2p due to different currents for the FZ1 and FZ2.
- The voltage for the FZ1/FZ2 magnets is 40 VDC.
- There were comments about required ion chambers. It will depend upon where the BCM for the BCA is placed. It will be good if we can keep the number the same or fewer than the existing setup. If we need more, it is best to know sooner than later.
- The Target will only be set at 80° and 90°, not 70°, per Al Gavalya. Yves will run orbits for this and finalize the chicane layout.
- Review of the actions list:
    - Action 1/2 – yes, we will remove the existing girder and a new one will replace it (expect to be shorter), with the corrector magnets.
    - Action 3 – The magnets are in storage. Need the power supplies. Follow on topic is the slow raster – it is around somewhere and I thank Butch for volunteering to track this down along with its supporting PS and controller.
    - Action 4 – All complete except the window and durations (but these are available now from JP). Kalyan will be the actionee for this.
- Highlighted the fact that a Project Plan and Design Requirements Document are being developed for the beamline activity. This is to help the project lead clarify details and keep track of all that is required. Request for Task Lists from all the group leads, including task duration. We can turn these into a schedule later. Also, if there is material that we know must be bought, list it too.
- Need to setup a separate meeting focused on insuring all Accelerator Ops, Safety, PSS, MPS, FSD, and RADCON issues are addressed for the experimental setup.
- It was asked that we get a spreadsheet (or means to copy data without re-entering) from Survey & Alignment Group. Right now, PDF files are generated.

STATUS:

OPTICS:

- Layout is complete except for running the 80° setpoint.
- It was discussed that the BCM for the MPS is no longer on the girder that was in Region 3. It will have to be placed somewhere upstream of the chicane. Location is TBD. May require walking the beamline to identify a good location. It does not have to be near the calorimeter.

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MAGNETS:

- Need to define, acquire (from Mag Meas?) 2 corrector magnets.
- The expectation is that the existing trim cards in Hall A will be reused (have 4 now, need 2).

BEAM TRANSPORT:

- Awaiting new orbit DIMAD deck for 80° setpoint. Can we lock down the layout after this?
- Need to verify CAD layout agrees with as-built. MEG will measure.
- The existing vacuum pump locations were being eliminated and locations for 2 vacuum pumps will have to be defined.
- Isolation and pump out valves for vacuum will need to be defined as well.

RAD CON:

- Ion chambers – hardware will come from SSG.
- Position definition of the ion chambers will require input from several folks. Yves will make initial recommendation. JP will verify for the experimental needs. Others may need to assess for MPS and Accelerator Ops.
- Pavel introduced George Kharashvili as a new member of RADCON.
- A request was made to add material samples in/near the dumps for characterization and future analyses.

SOFTWARE:

- Anything that can be done to allow starting sooner than later would be greatly appreciated – calorimeter code, new BPM control definition, etc.

VACUUM:

- No status update

INSTALLATION:

- No status update

ALIGNMENT:

- No status update

EES – I&C:

- M15 stripline BPM is in the north linac now.
- If this works well, it will be resized for M20 size. Also evaluated for manufacturability/cost.
- Due to length of the articulating arm, smaller is better – planning on 5.5” length(?) for g2p.
- They are pulling the control chassis for the calorimeter to troubleshoot.

EES – OPS:

- Nothing new to report

TARGET/DUMP DESIGN ACTIVITIES:

- Al detailed the needs and plans for the target window: longitudinal pumping will use a Be window, transverse pumping will have a 8mm Al window. (notes a bit fuzzy on this – may need clarification)
- The gap between the beam tube end and the target window was discussed. It should be minimized – consider 1 cm as a maximum gap.

DIAGNOSTICS DISCUSSSION:

We need to define the specifics for each of the diagnostic components in the system. We started to outline the questions that must be answered for each item. They are listed below. Once we can get the questions listed, we can start to fill in the blanks.

BPM(s):

- Current range of beam – 50-130 nanoamps for the g2p/gep runs. Max of 30 microamps for Compton measurement.
- Carbon target runs for spectrometer setup requires ~1-2 microamps.
- Energy and position locks are required.
- Precision – 30 microamp runs don't require extraordinary precision – desire 1% at low current
- Integration time and resolution – the desire is to know position event by event. More detail required here.
- 0.1mm resolution required due to need to measure beam incident angle (due to short length of articulating arm)

BCM for BLA:

- Standard item with "standard" setup. No new requirements.
- BLMs used after the BLA – to be defined.

Low Current Dump Viewer:

- Viewer required on the BeO target at the low current dump
- Are other sensors/monitors required for the low current dump? Power is ~450W. Current plan is to air cool.

Chicane Viewer:

- Proximity of the camera to the beam tube
- Focal lengths for the different runs
- Requires zoom capability – what limits/magnification
- Remote control zoom

Tungsten (Silver) Calorimeter

- Desire 1% accuracy
- FSD monitoring?
- Current limit
- Data to be presented on control screen?

Notes:

- DC Current Monitoring and Hall Probes on FZ PS's. Are these required?

- Need to plan for care in de-installing items currently in the Hall. (labeling items, cable marking, etc.)
- If you are aware of other required diagnostics or know of additional features/requirements that must be defined, please send them to Tim Michalski via e-mail or bring them to subsequent beam transport meetings.

Action Items:

Action Item #	Date Added	Action Item	Responsible Individual	Due Date	Date Closed
1	8/31/10	Upside down quad girder to be removed from Region 2 of the layout	LAD-T	9/21/10	
2	8/31/10	Move corrector magnets from eliminated upside down girder in Region 2 to beamline before the FZ1 magnet	Y. Roblin	9/21/10	
3	8/31/10	Contact Mark Jones from Hall C to secure commitment to HALL A for the usage of the FZ1 and FZ2 magnets and their associated power supplies	J.P. Chen	9/21/10	
4	8/31/10	Provide data on target thickness, duration of run times, and energy during those runs, etc. to develop radiation events for the experiment to RADCON	K. Allada	9/21/10	
5	9/14/10	Need to setup a separate meeting focused on insuring all Accelerator Ops, Safety, PSS, MPS, FSD, and RADCON issues are addressed for the experimental setup.	T. Michalski	9/21/10	
6	9/14/10	We need to get commitments for the hardware required for g2p. Need list of all components, owners, nomenclature.	J.P. Chen T. Michalski	10/5/10	
7	9/14/10	Locate the slow raster from Hall C. Includes controller and PS.	LAD-T	9/28/10	

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.