

# Examination of the Booster Short Straight Corrector Prototype Installation

October 13, 2008

Kicker Shop, Wilson Hall Ground Floor

## In Attendance:

Terry Anderson, Justin Briney, Craig Drennan, Scott Oplt, Jim Lackey, Jeff Larson, Joel Misek, Ben Ogert, Todd Sullivan, Kent Triplett.

## Introduction

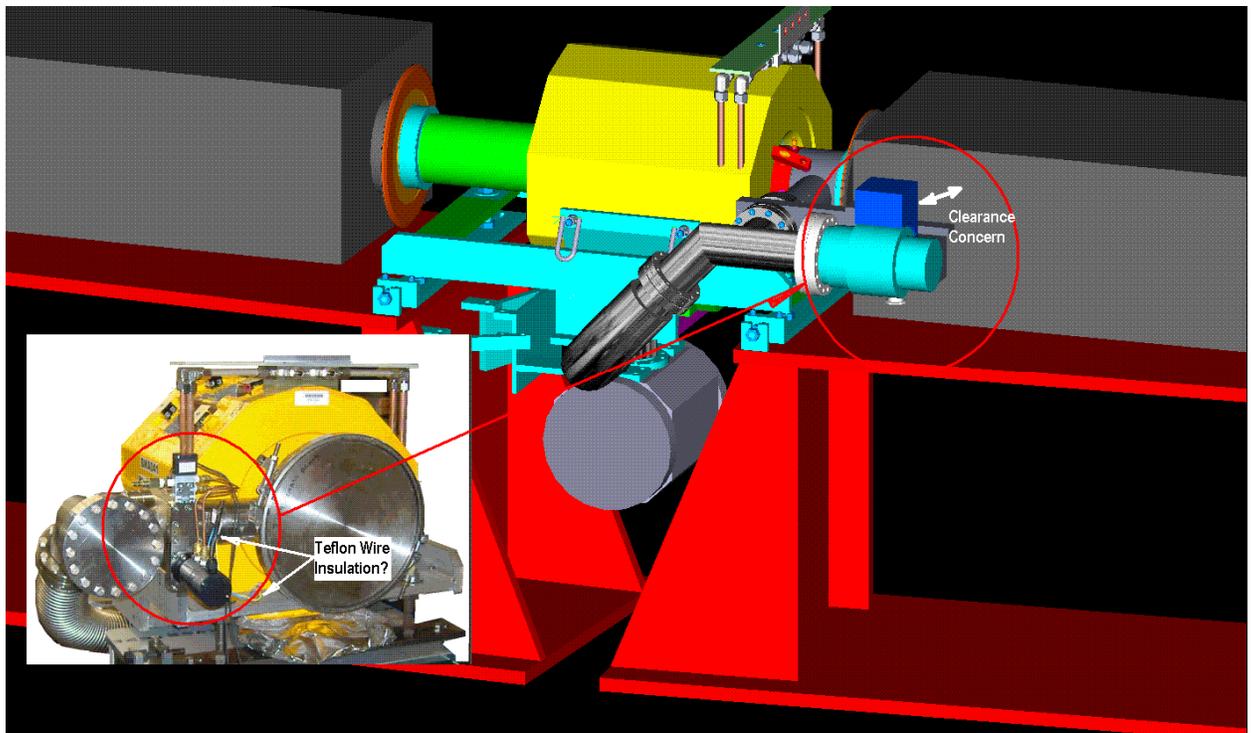
We met to have a look at a prototype “short straight” assembly of the new Booster corrector and BPM as it would be installed on the new stand with the new valve and vacuum connections to the vacuum system. Several issues were raised that will require some amount of follow-up. This note is written to document the issues coming out of this examination of the assembly for future reference.

## Issues

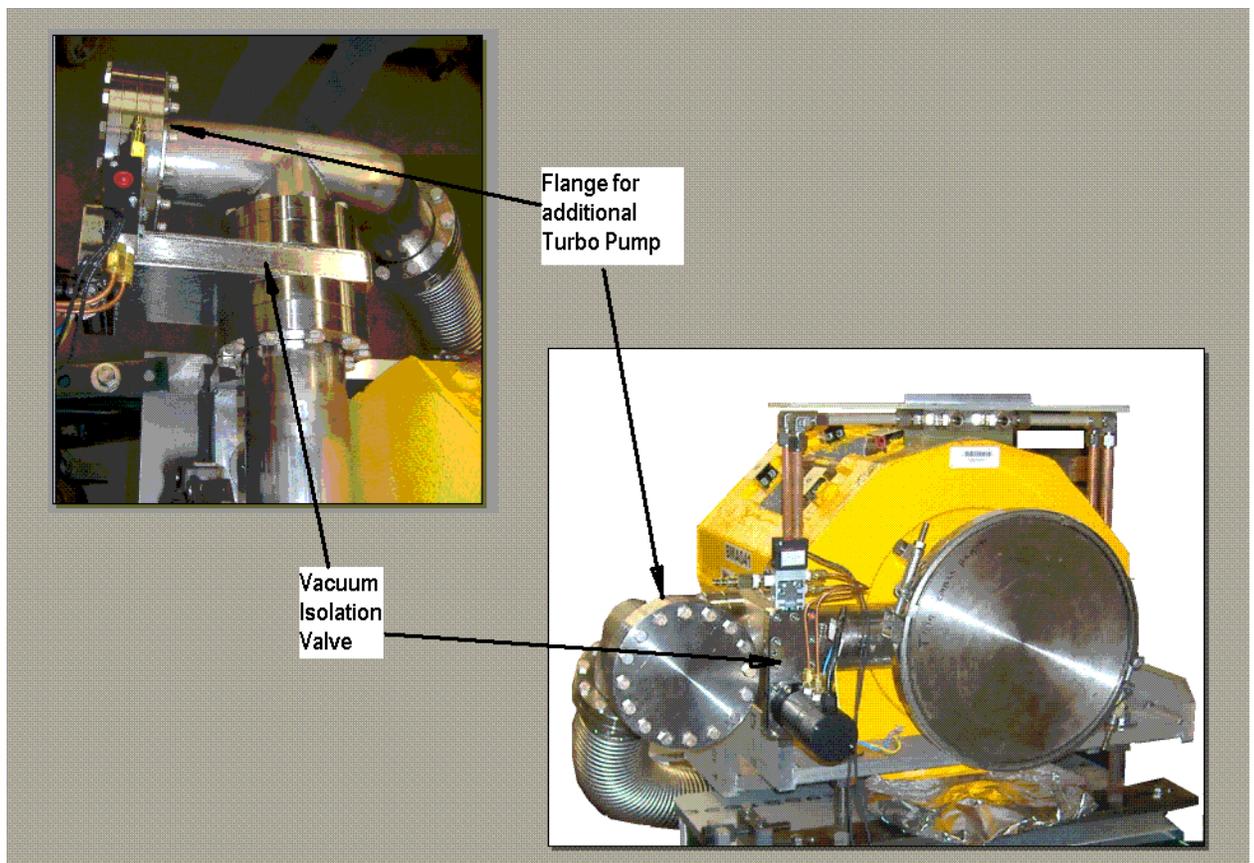
1. Jim Lackey took photo's of the assembly which appear throughout this note.



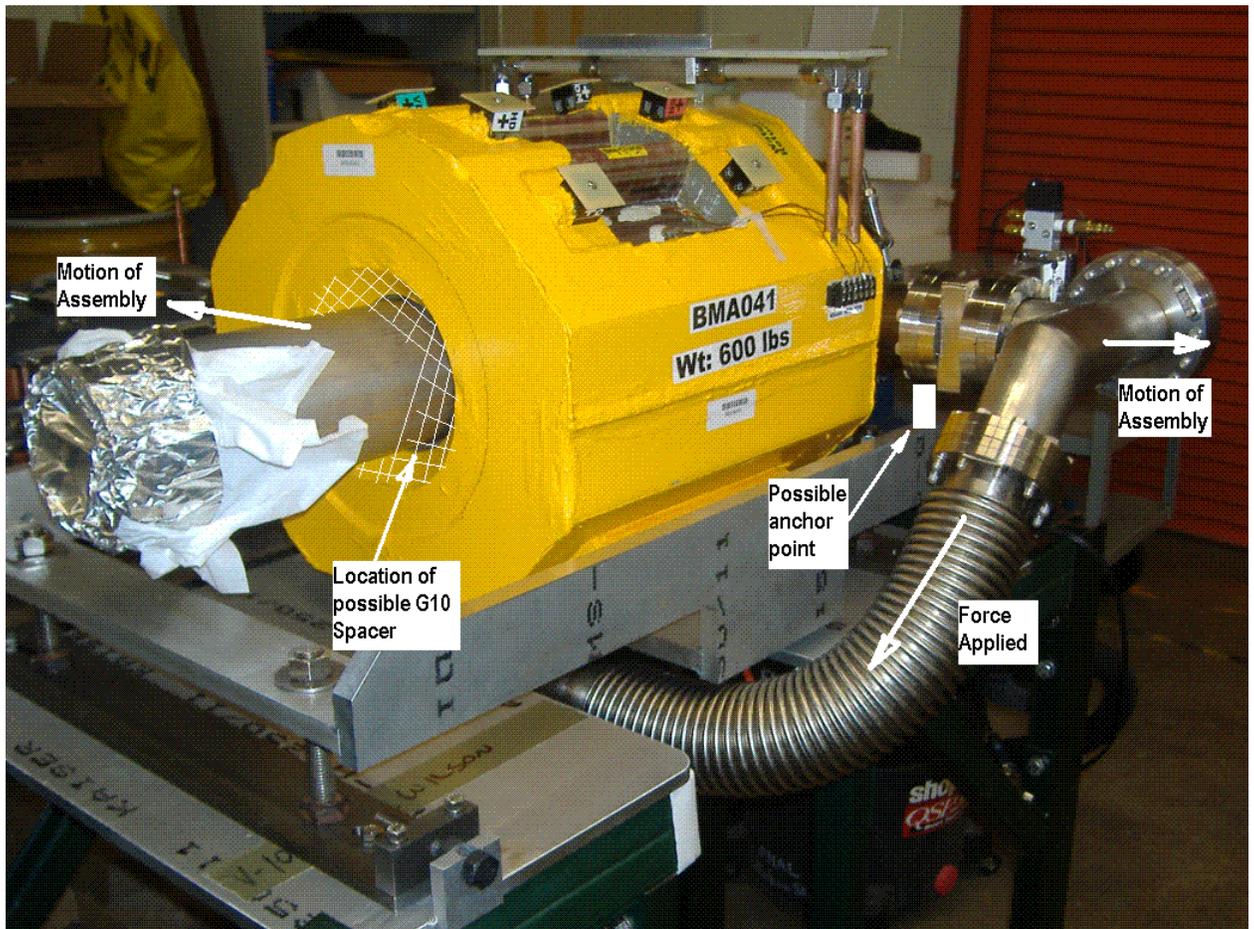
2. Ben Ogert took this opportunity to point that the current assembly layout will block a vacuum leak checking port such that the port adapter for his test equipment would no longer seat. Ben, Terry Anderson and Joel Misek discussed the options for alleviating the problem by providing another port or modifying a bracket that supports the turbo pump underneath the short straight assemblies.
3. Kent Triplett , Jeff Larson, and Jim Lackey examined the new vacuum valve, actuator, and valve position switch. Jim noted that the clearance between this assembly and the adjacent standard magnet in the tunnel would be very small. There may need to be a small modification to the pneumatic piping connecting the actuator and switch. Jeff questioned whether the insulation on the wiring coming out of the switch was Teflon. Teflon cannot be used in a radiation environment and Terry Anderson commented that such wires were often replaced in-house with wires of a suitable insulation. Kent commented that it would be beneficial if the vendor would supply the components with the proper wire insulation to us initially.



4. Ben and Joel briefly discussed the machining details of the end of the beam pipe and the welding of the mating flange. Joel and Ben, and perhaps some others, will be deciding on these final details before the drawings are completed and sent out for procurement bids.
5. A flange is available on the new assembly for the addition of a new turbo pump. MSD is planning to procure a few of these pumps for doing vacuum pump down test during the spring shutdown. There will need to be an additional valve added between this new pump and the existing vacuum pump in order to isolate the new pump from the older system. Tests will be performed to examine the pump down using the new valve alone and also in conjunction with the existing turbo pump. There will also need to be a provision for connection of the new pump to the roughing vacuum pump system.



- Joel Misek pointed out that with the current assembly there is some movement of the beam pipe and BPM when the vacuum is made. The flexible vacuum hose contracts and pulls on the downstream end of the beam pipe assembly. Joel is considering both anchoring the downstream end to the assembly to the stand, and providing a G10 wedge/shim between the beam pipe and the corrector at the upstream end of the corrector.



- It came out that there is discussion within MSD as to whether to try and upgrade or make more rugged the existing vacuum roughing lines. A significant increase the reliability of these connections can be made, but would require a non-trivial number of man-hours to accomplish. Including this job in the spring shutdown will require what is considered the longer shutdown option with appropriate man-power to meet the radiation safety requirements.

- Todd Sullivan pointed out that Booster has two short straight periods that make lifting the corrector assembly into place difficult. The first is S-24 where the 400 MeV line, crossing the aisle, gets into the way and will not allow the use of a fork lift, but may allow the use of a cherry picker type hoist. The second is at S-3 where the 8 GeV line becomes an obstacle along with unique girder arrangement and the overhead restrictions.

