

Minutes from meeting to discuss the TOFr Gas System

Meeting date: October 2, 2003.

Reported by: Bill Christie

Attending: J. Thomas, B. Stringfellow, B. Llope, G. Eppley, J. Schambach, B. Christie, A. Lebedev, F. Geurts, R. Brown

The goal of this meeting was to discuss the TOFr gas system design, and get a start on the integration of this system physically and interlocks wise.

The discussions started with a “walkthrough” of the current plan and design:

- The TOFr gas system will use some of the existing Stainless Steel (S.S) pipes which run from the gas mixing room out to the West wall of the Wide Angle Hall (WAH). They will be routed from the West wall to the North platform, and across to the East side of STAR.
- An electrical break will be put into the gas lines when they make the jump from the North platform to the STAR magnet.
- An exhaust (vent) pipe will have to be installed on the East wall of the Assembly Building (AB). The maximum flow rate through this vent pipe is estimated to be 450 ccm, the size of the pipe is estimated to be _ inch in diameter, and the pipe will likely have to extend to a height that is above the height of the berm wall.
- Estimated bottle changes for the system are:
 - Freon bottle changes about twice/year
 - SF6 (if used) about once/year
 - Isobutane about once/year
- It was discussed back and forth whether AC power would be necessary on the gas pad to the location of the Isobutane bottle to run a heat blanket.
- Two “fail-safe” (i.e. normally closed) solenoid valves will be installed on the gas system. One which is on the Isobutane line outside the building, and one that is just past (on the detector side) of the mixing volume. To hold these valves open it was estimated that 24V power supplies would likely be required which can provide a current of about 0.7 A for each valve.
- The suggested changes to the gas system diagram presented at the meeting (dated 9/1/2002) are:
 - Add pressure relief valves on each high pressure gas line between the pressure regulators on the gas bottles and the flow meters.
 - Add pressure meters on each of the gas lines just before the flow meters in the gas mixing room.
 - Add the “fail-safe” solenoid valve on the Isobutane line outside the building (same as mentioned earlier in minutes)
 - Add restricting orifices just before the flow meters on the three gas lines.
 - Add an Isobutane threshold sensing device that can sample both the gas being feed to the detector and the gas returning from the detector.
 - Add a containment vessel below the bubbler on the gas return line from the detector.
- Blair, as the STAR Gas pad Czar, will work with the TOFr group to identify space for them on the gas pad.

- There will be no SF6 gas sent into the gas system or detector without permission from the STAR Operations Coordinator.

The following ideas and topics were discussed in relation to Safety interlocks:

- The only tie to the TOFr gas system from the STAR Global Interlocks System would be a “gas permissive” signal that gets sent to the TOFr gas rack from the TPC gas system interlock system SLC crate in the gas mixing room. This is the same signal as was sent to the RICH gas system. It was suggested one route this signal (not clear at meeting whether TPC SLC system was providing 24V signal or a contact closure) from the SLC to the Isobutane threshold device, and then to the two fail-safe solenoid valves in series. In this scheme either the loss of the global gas permissive or the threshold Isobutane device would shut down the gas system.
- It will be checked that the existing HV permissive that the TPC interlock system sends to the TOFr rack is dropped for a gas leak detected in the STAR detector.
- It will also be checked that the HV permissive is dropped if there is a loss of TPC water system flow, and that this HV permissive could then be used to power off both the HV and LV for the TOFr detector.

The TOFr group needs their gas system running no later than January 1st 2003, and would prefer to get it up and running in time for the STAR integrated testing with gas in mid November.

End of meeting.