

Monday 6 December 1993

K. Reece

Minutes of meeting concerning RHIC/FEB fault studies;
Friday 3 December 1993.

Present: E. Lessard, W. MacKay, K. Reece, T. Robinson.

Intensity scaling for fault studies is generally down by a factor of a few hundred from the anticipated maximum intensity. RHIC operating intensity is nominally 1×10^{11} protons/bunch with 57 bunches. Presently, the AGS can operate in this intensity range without modification. However, to deliver an order of magnitude less beam may require some dedicated set-up of the AGS, (eg: RF system radial loop gain). Since few, if any, fault studies have been conducted in the FEB areas, it is suggested that these begin at low intensity.

A review of the FEB (ring) extraction area fault studies that have been completed should be done in a timely manner. Other associated (or repeated) FEB extraction studies could then be scheduled during the upcoming HEP run, (original meeting notes).

1. In the AGS ring FEB extraction area, there are several 2' penetrations to the right of the North plug door.
2. Upstream U-line (by FEB gate#1 inside) has little berm to the right where a sub-station is located.
3. There are several isolation valves in the upstream U-line and just past the g^{-2} bend.
4. A collimator is located in the upstream U-line.
5. By the 8 degree bend,
 1. large penetration (right) into the old "igloo".
 2. several floor trenches.
6. The berm top after the old 8 degree power supply house is only 10' sand.
7. W-line dump area a concern with respect to the left entry labyrinth.
8. X/Y-line road calculations/measurements.
9. In RHIC ring, only "warm" location fault studies (eg: Injection septa and beam dumps) and extend to other areas by similar shielding comparison.
10. A review of the details of these (and other) fault studies should continue after the holidays (MacKay, Reece, Robinson) and recommendations made to the Radiation Safety Committee (J.W. Glenn) for consideration.

[original meeting notes]

Monday 29 November 1993

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First pass at defining the necessary fault studies for RHIC. Without assuming responsibility for a particular area, the following suggests locations that should be reviewed and have developed plans for fault studies in order for RHIC beam commissioning to begin. These FEB areas service fast external beam operation for neutrino physics, g^{-2} and RHIC.

Fault locations include;

1. FEB extraction.
2. Upstream FEB tunnel occupancy with beam in AGS.
3. Upstream RHIC tunnel (after FEB wall and vertical bend) occupancy with beam to g^{-2} .
4. FEB tunnel, (side/top berm & penetrations).
5. RHIC transfer line tunnel, (side/top berm & penetrations).
6. RHIC transfer line 0 degree beam dump.
7. RHIC L/R arc tunnels, (side/top berm & penetrations).
8. RHIC ring (L/R) injection locations.
9. RHIC ring beam dumps.

Other considerations;

1. FEB/RHIC transfer line intensity limit, (GeV/c protons).
2. Limit intensity or inhibit extraction ? (fast, fail-safe current transformer in BTA for AGS FEB enable ?).
3. Review (walk-through and "as built" shielding maps) of transfer line(s) and RHIC ring shielding.
 1. Estimate (from calculation) pulsed radiation dose rate at measurement locations for Fault Study Plans.
 2. Note location with similar shielding and/or geometry so one fault study can be done as a reference and extend the results to those other locations.
4. Beam line review to identify "point loss" and "distributed loss" locations.
 1. vacuum chamber diameter changes.
 2. trajectory range(s) as a function of dipole field(s).
 5. Will there be a wall current monitor in the upstream FEB line ?

[Preliminary] fault studies with some survey locations, (surveys made with either hand-held meters (HPI-1010) or remotely read-out chipmunks). Numbers correspond with fault locations identified above.

- 1,2. Fault @ AGS ring FEB extraction region; survey at,
 1. Bldg.912 @ the North Plug Door.
 2. AGS ring berm over loss point.
 3. Inside AGS ring @ North Wiring Tunnel.
 4. Upstream FEB tunnel penetrations.
 5. Inside FEB tunnel @ interlocked gate.

3. Fault @ the bend region adjacent to the g^{-2} target; survey at,
 1. RHIC side of transfer line separation wall.
 2. FEB tunnel penetrations.
- 4,5,7. Locations to be determined.
6. Fault into RHIC transfer line beam dump; survey at,
 1. Tunnel penetrations.
 2. Access labyrinth door.
 3. Service building.
- 8,9. Fault at injection septum (L/R) and beam dumps; survey at,
 1. Adjacent Bldg.1005 locations.
 2. Ring penetrations.
 3. Ring berm.
 4. Outside of ring along 0 degrees from loss point(s).