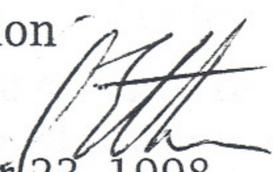


BROOKHAVEN NATIONAL LABORATORY
RHIC PROJECT
RADIATION SAFETY COMMITTEE

To: Distribution
From: A. Etkin 
Date: November 23, 1998
Subject: Radiation Safety Committee Meeting Minutes - RHIC RF System

Attending:-

- L. Ahrens
- D. Beavis
- M. Brennen
- A. Etkin
- R. Frankel
- W. Glenn
- S. Kwiatkowski
- W. MacKay
- S. Musolino
- J. Rose

The RHIC RF system is located in buildings 1004, 1004A and the sector 4 Q3-Q4 tunnel section. There are 4 - 28 MHz accelerating cavities and 10 - 197 MHz storage cavities. The cavities are a X-ray hazard that has been estimated to be 100 rad/hr max. for each accelerating cavity and 200 rad/hr max. for each storage cavity. The estimate is based upon test stands measurements that were extrapolated to a distance of one foot using a $1/r^2$ law and that were made under high field emission conditions. The cavities, power amplifiers and driver amplifiers are located in 1004 and sector 4 Q3-Q4 tunnel sections and the power supplies for the power amplifiers and RF control room are in building 1004A.

The 197 MHz cavity measurements were made in the labyrinth from 1004A into the tunnel. In their operating position the 197 MHz cavities are further from the occupied area and there is an additional leg to the labyrinth thereby significantly reducing the transmission from the tunnel to the occupied area which will be a radiation area.

The Critical Devices proposed were the AC input contactor in the final power amplifier plate power supply [CD-1] and the AC power to the driver for the amplifier [CD-2]. Confirmation of the proper status for CD-

1 was by voltage sensing relays across the 3 phases and for CD-2 auxiliary switches. There was no proposal for a reachback device and it was decided that an administrative procedure shall be provided. Concern was expressed about the engineering of the critical devices and an independent engineering review was requested.

Subsequent to the meeting it was proposed to use a shorting relay with auxiliary switches on the output of the plate supply as the second critical device. A. Soukas performed a review of the revised set of critical devices and concluded that this scheme is a robust approach and provides the necessary redundant protection. Review of the detailed implementation for the full system will be preformed by the PASS design review subcommittee. A proposal for a hardware reachback is presently being evaluated.

A minimalist PASS implementation was proposed for the initial testing of the RF system. The area involved extends from the 1003B alcove to the 1005A alcove and includes the 1004 open area. There are four normal exit/entry gates, one emergency exit and two monitored gates to the subway under the 1004 slab [this is internal to the area]. It was proposed that the gate into 1004A be the only normal entry and all other gates be used only for emergency exit/entry. Crash cords and the supervised sweep system will be operational. A chipmunk is located by the 1005A alcove to shut off the RF if a level of 2.5 mrem is detected. There will be no PLC control panel, and the system will be disconnected from all other PLC's. In order to enable the RF critical devices the monitored gates have to be reset and all gates closed, then the area can be swept and gates reset. When all gates are closed and reset, crash cord reset, chipmunk OK/not tripped, the area is swept and the sweep-gate key is captured in the RF control room then the RF critical devices are enabled after a 90 second audible and visual alarm. Loss of any one of these conditions disables the critical devices. If a gate opens or a crash cord is pulled the area must be reswept. A chipmunk trip/not-Ok or loop bad wiring latches and requires a reset by the Security Group. If the critical devices do not respond as safe-off PASS will not energize the gate strike.

A two person sweep is required. This may be performed by trained RF group personal.

Distribution:- RSC, M. Brennen, R. Frankel, File [with attachments], M. Harrison, S. Kwiatkowski, D. Lowenstein, S. Ozaki, J. Rose