Minutes of Meeting: Radiation Safety Committee

Date: Monday 10 June 1996


Subject: PASS system.

The focus of this meeting was to establish the guidelines for Radiation Safety Committee participation in the review, approval, implementation, testing and operation of the PASS access control system.

History:

With respect to access control system designs, the RSC is formally responsible (ref: AGS-OPM 9.1.13) "... to review logic designs to assure that the design provides the required level of protection". Additionally, formal review and approval of test procedures relating to the access controls for a given area has been a committee responsibility. Also, the RSC has traditionally been involved in the implementation of the approved design of access controls for AGS primary and secondary beam areas. This includes review of the Boolean (AND/OR gate) logic, relay logic and the wiring associated with the system. With the access controls developed for the AGS FEB areas and RHIC, the use of PLCs has added a new layer of complexity in the understanding and documentation of the PLC software.

Presentation:

A summary of the PASS system documentation was presented to the RSC by A. Etkin. Included were a list of the reviews conducted for the PASS system and the configuration control policy which is in the process of review by the RSC. Also, two examples of descriptions of subsystems of an access controls system were outlined ("beam enable state" and "CRASH"). Each sub-system will have a detailed description that can be referred to in access control designs for other areas. Content of these sub-system descriptions will be submitted to the RSC for review and comment; they will also probably be evolving documents as concepts and requirements change.
Discussion:

The Radiation Safety Committee requested guidance from AGS Department and RHIC Project management as to what the committee role(s) should be with regard to the formal responsibilities in the review and approval of PLC based access controls. The committee was, in general, uncomfortable with the limited number of people who understand the PASS system software and with the fact that the software itself has not been the subject of an independent review other than the individual programmers. [Reviews by outside experts have been done for the Access Control System PLC code at CEBAF and APS. A proposal for a possible method of documenting the PLC code was to write simulation code for each PLC to “benchmark” the PLC operation]. A lack of “logical overview” of the system in a concise perspective that could be presented to the RSC for review was also a concern. Some discussion focussed on the use of “analogue voltage multiplexing” in the PASS sub-systems for gates, CRASH activators, sweep stations and gate resets. Questions were raised concerning the additional code involved with use of this approach and the complexity of the code with regard to review and understanding.

If the RSC were to no longer be responsible for the implementation of the access controls related to PASS, then the question of what individual(s) would be responsible must be addressed.

Comments and recommendations:

The Radiation Safety Committee requested guidance from AGS Department and RHIC Project management as to the boundary conditions of the committee responsibilities regarding the PASS access control system. The following are possible scenarios for RSC involvement in the PASS system and the role(s) of AGS Department and RHIC Project management.

1. RSC continues to be responsible for the review of a written specification of the necessary access controls for a geographical area. This includes gate switches, reset stations, sweep station/resets, use of devices such as NMC’s and chipmunks, desired states (Restricted Access, Controlled Access, Beam Enabled, CRASH).

2. Other requirements (regulatory or AGS standard practice) for the access controls of an area would also remain under the purview of the RSC.

3. Review of the test procedures associated with the access controls of an area would remain a committee function.

4. Modifications to the access controls would continue to require an RSC review.
5. The RSC would still be obligated to report recommendations, comments and concerns regarding all aspects of the access controls for a given area to AGS Department and/or RHIC Project management.

6. Management would be responsible for the implementation of the access controls as reviewed and approved by the RSC. Included are the documentation of the logical operation of the PLC software and the architecture of the system design (e.g. use of the analog voltage multiplexing).

**Attachments:**
2. R. Frankel, “Particle Accelerator Safety System (PASS), 10 June 1996, ver. 03.

**cc:**
RSC w/o attachments.
RSC file w/attachments.