Subject: Upgrade of Booster Access Control System


The committee was asked to review a set of questions regarding options for the Booster access control system. The system is being upgraded to PLCs from 24 volt relays. The plan is to replicate the existing logic but to examine if some options should be changed. The committee was given a list1 of questions from the Access Control Group (ACG).

Radiation Monitors

There are four chipmunks presently in the Booster system. There is one at the plug door, two inside the fenced area over the Booster to AGS transfer line, and one at the EBIS penetration. Fault studies have shown that the one for the EBIS penetration is unnecessary. The other three are necessary. The committee asked if extra chipmunks could be coded in which would allow for easy expansion since the V&V would already be complete on the coding. This was recommended, however after the meeting the ACG requested that this be reconsidered.

(ATS-Sept. 1, 2015-Reich&Etkin): Three chipmunks in Booster ACS.
(Ck-June 15, 2015-Sandberg&Theisen-941): Reconsider the recommendation for coding of extra chipmunks.

The Chair will discuss with the Chief Mechanical Engineer whether devices with water cooling that are presently in the ACS need to stay or if they can be moved to the beam permit. It was decided that both the D3 and B6 water checks should be in the beam permit and not the ACS.

(ATS-Sept. 1, 2015-C. Gardner & G. Mahler): D3 and B6 water moved to the beam permit system.

Several devices that represent an electrical hazard are recommended to stay in the access control system. This will protect personnel if the Booster is accessed incorrectly. These electrical systems include the main magnet power supply, the quads, and the sextupoles. A final list will be established at the meeting scheduled for June 10, 2015. The present system requires that these devices are available to operate in order to test the access control system. It is recommended that the device and its shutoff not be included in the testing and that the ACS provide a set of contacts to tell the electrical

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1 J. Reich, April 16, 2015,” Booster ACS Upgrade: RSC discussion required for following changes”.
systems they should shutdown. The ACS testing will stop at the contacts and the gates will not be held locked if the systems do not shutdown.

(Ck-June 15, 2015-Sandberg&Beavis-942): Provide final list of electrical items to shutoff if a gate is opened.

Access with the C3 inflector is handled administratively. The radiation potential of the C3 inflector was evaluated\(^2\) and found to be small. The C3 inflector does not need to be in the ACS.

(ATS-Sept. 1, 2015-Reich&Gardner): The committee recommends that the system has a heat run mode.

The committee recommends that a EBIS diagnostic mode be created. This mode will allow operation of EBIS beam into the Booster enclosure but not around the Booster ring. Operation of EBIS beam into the open Booster enclosure is presently handled by multiple RS LOTO and jumpers in the access control system. An automated system would be less cumbersome. A fault in this mode could allow ion beams to be accelerated creating very high radiation levels and therefore must be redundant. Several options were discussed including using the main magnet power supply, the RF, a new dedicated vacuum valve installed, and an existing vacuum valve in the EBIS transport (valve 141). Two critical devices are required.

(Ck-June 15, 2015-Sandberg&Beavis-943): Determine the two critical devices for EBIS diagnostic mode.

The committee recommends that the beam stop lockout keys (one for each pair of stops) be moved to MCR as suggested by the ACG.

(ATS-Sept. 1, 2015-Reich&Etkin): Beam stop lock-out keys relocated into MCR.

The change in the Booster beam stop close/open command will be continued at the next meeting.

CC:

Present
RSC
RSC Minutes File
T. Blydenburgh
D. Passarello
G. Mahler

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