Minutes of meeting: Radiation Safety Committee (sub-committee)

Date: Wednesday 22 February 1995

Present: D.Beavis, K.Brown, R.Connolly, K.Reece

Subject(s): Contamination in the SEB areas.

This Radiation Safety Committee (RSC) sub-committee was formed to address contamination found in the SEB areas recently. Specifically, those items noted in the Off-normal Occurrence report (ref. memo Reece to RSC 1/26/95 - attached). The sub-committee consensus is that items 1.1, 1.2 and 1.4 are presently followed in the design criteria for new and/or upgraded facilities and areas. In AGS OPM 9.1.15 paragraph 5.8, there is a reference to environmental consideration of "soil activation, air activation, and ground water activation" in the review process for facilities, experiments, etc.

The sub-committee believes (without specific corroboration) that it is unlikely that a 3 ft$^2$ opening around the new AD2 dipole in the SEB Switchyard is responsible for a significant change in the air circulation pattern of the primary beam caves. In all cases, the connecting apertures to these primary beam caves are too small for any appreciable conductance of air into or out of these areas.

The "B" target downstream gate and the "C" target gate have both been identified as contamination areas in previous operating periods.

Although both the "B" and "C" beamlines are "sequenced" to continuing primary beamlines, only the "C" target is a substantial target (>1 interaction length). The "C" target area has close-in shielding and (other than 2 locations of ~3' air gap) has been well considered for air activation. In order to enclose these two air gaps may be a substantial ALARA issue and should be carefully reviewed before any attempt is tried.

S&EP has documented the predominant component of the contamination to be Carbon 11 and the documented levels are far below the DAC that would require respirator use.
A review of some MCR operating procedures for beamline efficiency could lead to an improvement in the contamination problem, (comments form Reece 1/26/95 - attached). As an example, the "C" to "C3" target efficiency has been defined and maintained by MCR to be 25%+.

Sub-committee recommendations:
1. It may be appropriate to include the detailed phrasing of items 1.1, 1.2 and 1.4 in AGS OPM 9.1.15 paragraph 5.8 for additional guidance in the review process.

2. EP&S Tech. Note #136, "Activate Me" - D. Beavis, addresses the question of air activation and should be used as a reference for design of an area/ location.

cc: RSC
RSC file
A. Pendzick
Memorandum

Date: Thursday 26 January 1995

To: RSC

From: K. Reece

Subject(s): Contamination in the SEB areas.

Analysis of the recent contamination found outside the C3 primary and B primary beamlines suggest the probable source to be activation of air. One of the corrective actions from the Off-Normal occurrence report (RSC file) is as follows;

01) In order to reduce hadron losses in air, the AGS/RHIC Radiation Safety Committee Chair shall establish a sub-committee to recommend long-term design or operations policies. These policies should include:
   1) a policy that reduces or eliminates areas where primary beam goes through air,
   2) a policy to design targets and known loss points with close-in shielding in order to reduce hadron showers in air,
   3) a policy to ensure steps are being taken by the liaison physicists to improve and maintain a high transmission efficiency in C3 or any other primary beamline, and
   4) a policy that ensures beam switches are designed to minimize beam interactions in air.

The sub-committee shall also evaluate the possible use of loss monitors to prevent continuous running of poorly tuned beam.

To close-out this corrective action, the sub-committee shall write down the proposed policies and submit them for approval by the RSC, and incorporation into RSC procedures.

Target completion date: 04/01/1995

Those serving on this sub-committee are;
D. Beavis (chair)          K. Reece
K. Brown                  R. Connolly

Comments from RSC members are welcome and should be addressed to D. Beavis.

cc: RSC file              K. Brown
Comments regarding the contamination found in the SEB areas.

1. C-line should not operate for extended periods with C3P1 OFF. If C6/C8 accesses their area(s), they should;
   1. turn C3P1 OFF.
   2. turn C6D1 OFF.
   3. turn C3P1 ON (bringing the C3 primary beam back onto & through their primary target and into the primary beam dump).

2. If the B5 User turns of their B5 beamline, either;
   1. reduce the B primary beam intensity and ensure 100% targeting @ the B primary target.
   2. remove the primary beam from the B beamline.

3. (from empirical results): establish a maximum total loss (eg. % per TP) for each primary beamline using the Loss Monitor System. This includes Switchyard, A, B, B5, C, C3 & D.