

Shielding Placed 2/28/95

Thursday 23 February 1995

K. Reece

AKR.

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

Date: Thursday 23 February 1995

Present: L.Ahrens, E.Lessard, E.Njoku, A.Penzick, K.Reece

Subject(s): AGS ring South Shield Door shielding.

In high intensity operation of the AGS there is an injection loss in the vicinity of the South Shield Door (approximately E13). The pulsed radiation outside of this shield door is presently one of the limiting factors of increasing the AGS intensity. A plan to add shielding in this large penetration to the AGS ring was reviewed and approved as **an interim solution only**. A permanent solution will have to be proposed for review to be implemented during the summer shutdown.

The present shield door is 5 feet thick (heavy concrete and steel) but has only 6 inch overlap of the sides and top with respect to the 10 feet by 10 feet square penetration. The addition of 4 feet of light concrete (near the AGS ring) to this penetration should provide a factor of 10 attenuation to the pulsed radiation outside the existing shield door. Two stacks of dimension 4'x4'x8'(high) will be placed in the ramp during the maintenance period Tuesday 28 February. They will be staggered with respect to each other (layout attached) such that there is a 48" aisle between them. They will stand-off each sidewall by approximately 8" due to existing conduit.

Rigging time required will be 4 hours for the initial installation but this time should be reduced to only 2 hours "out" and 2 hours "in" once experienced with the method of placement.

Health Physics surveys around the South Shield door and at the South Gate should be done before and after this shielding is added; the present South Shield Door chipmunk (NMO48) is also used to limit exposure in the magnet measurement area. A chipmunk may be required at the South Gate if the correlation between these two locations changes significantly. } here

The AGS ring sweep procedure should be modified to have the area around these new blocks searched when securing the AGS ring.

cc: RSC P. Ingrassia

RSC file

2. SEB Areas:

1. All the trenches (6) along the east side of the SEB Switchyard (SWYD) should be considered for shielding improvement. In most cases, not due to compliance concerns but to reduce chronic levels of ~10mrem/hr. For the upstream two trenches (especially the second), a significant reduction of the pulsed radiation is required. There are a few concerns and proposals to consider;
 1. How frequently is access to these trenches required ? This could impact the option chosen for additional shielding.
 2. "Blow" sand into the trenches to pack them completely, (and vacuum to remove the sand when necessary).
 3. Pack bags loaded with steel pellets for 3'+ on the inside of each trench and at least as much (3'+) of sandbags from the outside.
2. The C3 Target Downstream Gate labyrinth should be extended (and the access gate moved out); the pulsed radiation levels at the present access gate have been approaching 100mrem/hr on occasion.
3. "Old "D" Gate Trench (NMO45) should be packed both beam left AND right.
4. Trench West Side of "D" Line (NMO50) should be packed and the fault then re-correlated with levels measured on the right side of this beamline.
5. The "A2" beam dump is just acceptable at the present intensity limit.
6. There has been one measurement of the "A3" beam dump that suggested additional shielding may be required.
7. "Chronic" levels of low energy neutrons have been documented to be due to the neutral beam dump in the B5 beamline. A roof over this beamline would require significant engineering; this area should be investigated.

Again, this list is neither complete nor are the solutions offered necessarily appropriate, (simply ideas). Please review and comment so we may assign priorities.

cc: RSC file T. Roser
W. vanAsselt P. Pile
L. Ahrens D. Lowenstein
A. McNerney E. Lessard

BROOKHAVEN NATIONAL LABORATORY

Memorandum

Date: Wednesday 6 April 1995

To: A. Pendzick

From: K. Reece *KR*

Subject(s): Shielding modifications.

In order to operate routinely at the high intensities now possible in the AGS, there are several locations in the AGS ring and the SEB experimental area where the present shielding should be improved. The following list may not be comprehensive and is intended to initiate discussion on priorities and methods and not meant to "engineer" the solution options. }

1. AGS Ring:

1. South Plug Door [MNO48]: The attenuation of present "temporary" shielding labyrinth is appropriate (x10). The "permanent" shielding should be identical. }
2. North Plug Door [NMO22]: This tunnel is much shorter than that at the South Plug Door; however, a similar shield block labyrinth should provide the necessary attenuation for both the Plug Door and the adjacent man-gate. }
3. I13-15 "in-ring" shielding blocks should remain in place.
4. Target Building North Catwalk [NMO32]: The ring shielding is very thin at this location and should be improved if possible, (engineering review of options).
5. Northwest Corner Target Building [NMO76]: 3' of light concrete blocks were stacked in this alcove last year but have negligible attenuation of a loss in the area. The sum of the shielding to the inside target building location is only 5'- 6'; [possibility: from the target building, could "pour" sand into this large volume] (engineering review of options).
6. There is a muon beam that emerges from the AGS ring nearly parallel to and immediately outside of the upstream SEB switchyard. There is presently one "in-ring" shielding block intended to reduce this beam; additional "in-ring" shielding should be considered, (D.Beavis).
7. The Siemens trench (from the South Wiring Tunnel) is nearly empty and could be well attenuated with shielding blocks (as far toward the AGS ring as possible).