C-A Unreviewed Safety Issue (USI) Form

Title of USI: RHIC Beam Dump Liner Extension

Description of USI:
In September 2001, it was noted by the C-A Radiation Physicist that there were relatively high beam losses at the location of the RHIC abort kickers. In addition, the CASIM Code, originally used to compute the RHIC beam losses at the location of the RHIC beam dumps is known to underestimate the neutron fluence in the backward direction.

A new calculation by the Radiation Physicist (A. Stevens to E. Lessard, RHIC Beam Dump Liners, October 11, 2001) showed that the liners should be extended in the backward direction. The new liner was installed during the summer of 2002 and it satisfies the requirements of the SBMS on groundwater protection.

Reference:
Minutes of the RSC Sub-Committee of January 31, 2002 – The Proposed Extension of the RHIC Beam Dump Liners, Issued February 11, 2002 (Attached).

Title and Date of Relevant SAD: RHIC SAD, 12/31/1999.

Committee Chair or ESHQ Division Head must initial all items. Leave no blanks:

ITEM	APPLIES	DOES NOT APPLY
Decision to not revise the current SAD and/or ASE at this time: The hazard associated with the proposed work or event is covered within an existing SAD and/or ASE. SAD Title and Date: RHIC SAD, 12/31/1999 This Form and attachments, if necessary, shall be used to document the USI until the next revision of the appropriate SAD.	X X	
Decision to submit a revised SAD and/or ASE to the BNL ESH Committee: The hazard associated with the proposed work is not appropriately included in an SAD.		X

Ray Karol — 6-11-02

Signature of C-A Committee Chair or C-A ESHQ Division Head — Date

Edward T Lessard — 6-11-02

Signature of C-A Associate Chair for ESHQ — Date

C-AD

Radiation

Safety

Committee

Issued: February 11, 2002

Minutes of Radiation Safety Sub-Committee of January 31, 2002

The Proposed Extension of the RHIC Beam Dump Liners

Present: D. Beavis, J.W. Glenn , R. Karol, E. Lessard, D. Paquette, A. Stevens, and M. Van Essendelft

Alan Stevens has re-examined the calculations for soil activation in the vicinity of the RHIC beam dumps (see attachment 1). The present location and size of the liners was based on a beam loss scenario and CASIM. CASIM underestimates the neutron fluence in the backward direction. A compensation factor (at the time of design) was applied to the calculation to account for the low fluence. New calculations suggest that the liners should be extended in the backward direction.

The committee approved the liner extension.

The following comments and requirements are noted:

The beam loss scenario is very conservative and is not expected to be reached. However, the committee is basing its recommendation of the established beam loss scenario.

The proposed extension also takes into account the new SBMS on ground water. The proposed extension will take into account the new standard and also cover the abort kickers. High losses were detected on the abort kickers for the early part of the Au run. The losses on the kickers were substantially reduced after concern for the high losses was expressed. The kickers represent a unique aperture for the machine. It was considered a precaution to incorporate them into the liner extension.

A temporary liner was established during the run. This liner can be removed without special precautions. Measurements for Na^{22} in the soil were below the minimum detectable level.

The engineer has discussed with D. Paquette the precautions that will be taken to protect the monitoring well in the area. At present, it is expected that this well will be sufficient to monitor ground water.

(Ck-RHIC-fY03-294) Installed liner extensions for the RHIC beam dumps.

(CK-RHIC-FY03-295) Signed drawings of the extensions of the RHIC beam dump liners.

(CK-RHIC-FY03-296) The committee has requested that D. Paquette examine the water table depth in this area to ensure that it is not an issue.

(CK-RHIC-FY03- 297) The engineer will ensure that no pipes are under the liner extensions, which could potentially flush radioactive products from the soil.

(CK-RHIC-FY03-298) The committee requested that A. Stevens investigate whether any other location at RHIC might require re-evaluation for neutrons in the backward direction.

Attachments: (file copy only)
1) Memorandum A. Stevens to E. Lessard, 10/11/01, "RHIC Beam Dump Liners"

CC: RSC Present, A. Javidfar, C. Pearson, P. Pile, T. Roser