

C-A Unreviewed Safety Issue (USI) Form

Title of USI: **RHIC Refrigerator Upgrade**

Description of USI (use attachments if necessary):

The RHIC refrigerator System has been modified to improve reliability, availability, stability and efficiency. This upgrade has effectively reduced the power consumption during RHIC operations from 9.2 MW in 2002 to 5 MW in 2007. This is a savings of about 700 MW-hrs per week or \$50,000/week at the current electrical cost of about \$70 per MW-hr.

The refrigeration system is now run using the Ganni Cycle, which was developed by V. Ganni of Jefferson Laboratory. The refrigerator computer program was modified, and new piping, valves and components were installed. In addition the method used to circulate the helium flow through the magnet circuit was modified to eliminate the use of helium circulating pumps, more efficient heat exchangers were installed and a seventh turbine was added. Because the plant efficiency has increased, there are now more spare compressors which improve the system reliability.

Title and Date of Relevant SAD: Safety Assessment Document Linac, Tandem Van De Graaff, Booster, AGS, RHIC, Transfer Lines and Experimental Areas, Revision 2, August 2004

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

ITEM	APPLIES	DOES NOT APPLY
<p>Decision to not revise the current SAD and/or ASE at this time:</p> <p>The hazard associated with the proposed work or event is covered within an existing SAD and/or ASE.</p> <p>SAD Title and Date: Safety Assessment Document Linac, Tandem Van De Graaff, Booster, AGS, RHIC, Transfer Lines and Experimental Areas, Revision 2, August 2004</p> <p>This Form and attachments, if necessary, shall be used to document the USI until the next revision of the appropriate SAD.</p>	<p>ETZ</p> <p>ETZ</p>	
<p>Decision to submit a revised SAD and/or ASE to the BNL ESH Committee:</p> <p>The hazard associated with the proposed work is not appropriately included in an SAD.</p>		<p>ETZ</p>

Rae Harol
Signature of C-A Committee Chair or C-A ESHQ Division Head

2-9-08
Date

Edward T Lessard
Signature of C-A Associate Chair for ESHQ

2-9-08
Date