

C-A Unreviewed Safety Issue (USI) Form

Title of USI: *Revision of RHIC SAD Section 2.5.2.1 (Chapter 4)*

Description of USI (use attachments if necessary):

- 1) The High Voltage for the Shower Max Detector (SMD) of the Electromagnetic Calorimeter (EMC) of STAR will use a maximum of 1.6 Kv not 2.0 Kv as listed in the STAR SAD.
- 2) The Photomultiplier Modules for the STAR EMC will not use water cooling as listed in the STAR SAD, but will use internal fans to equalize internal temperature.
- 3) The SMD front end electronics will use water cooling in place of the air cooling originally planned and described in the STAR SAD. The water system will be interlocked and protected using Tracetek technology that is already part of the STAR safety system.
- 4) The EMC tower crates will be locally powered rather than remotely powered from DC supplies on the support platforms. please see attached memo dated 2/17/01 "USI for STAR EMC"

Title and Date of Relevant SAD:

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: <u><i>RHIC SAD 12-30-99</i></u>	<i>ETZ</i> <i>ETZ</i> <i>ETZ</i>	
This Form and attachments, if necessary, shall be used to document the USI until the next revision of the appropriate SAD.		
Decision to submit a revised SAD and/or ASE to the BNL ESHQ Committee: The hazard associated with the proposed work is not appropriately included in an SAD.		<i>ETZ</i>

[Signature]
Signature of C-A Committee Chair or C-A ESHQ Division Head

2-16-01
Date

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

2-16-01
Date

Memo subject : USI for STAR EMC

To: Yousef Makdisi

From: Bob Minor (STAR EMC)

Date: Feb 15, 2001

Yousef,

During the review of the STAR EMC Electronics in December, four areas were where the STAR SAD no longer agrees with the current design. This memo is to support a USI attachment for the STAR SAD to clarify those areas.

Please refer to the STAR SAD section 2.5.3.1 Hazards, Electrical

- 1) The High Voltage for the Shower Max Detector (SMD) of the Electromagnetic Calorimeter (EMC) of STAR is stated to be a maximum of 1.6 Kv in one entry and 2.0 Kv in a second entry of the STAR SAD.

"The shower maximum detector will be biased up to 1.6 kV...."

"The wire/strip shower max. chambers will be biased up to 2 kV...."

The correct value is 1.6 KV with a current very much less than 1 ma. This item corrects a typographic error in the SAD.

- 2) The Photomultiplier Modules for the STAR EMC will not use water cooling as listed in the STAR SAD,

"The PMT light tight boxes will be cooled internally by a water chilled cooler system. One potential problem is the possibility of water leakage in the tube fittings at the tube-chiller joints. This problem could be solved by the usage of special quick connect-disconnect Dry-Break high pressure hose couplings. In addition, since the internal box temperature is monitored at several places along the length, a consistent change in the box temperature may indicate a problem with the chiller system (the fan system includes redundancies and therefore is much less likely to be the cause of a temperature rise)."

In the final design fans are used to equalize the internal temperature, but no water cooling is used. This represents a reduction in risk to the detector since water leaks are no longer an issue. Temperature monitoring remains for the PMT modules.

- 3) The SMD front end electronics (FEE) will use water cooling in place of the air cooling originally planned. The water system is interlocked and protected using Tracetek technology that is already part of the STAR safety system. The complexity of the original air cooled system was objected to by Ralph Brown, and an alternative water cooled system was chosen. The SMD FEE is located inside the STAR endcaps along with other water cooled electronics for both the TPC and SVT also protected with Tracetek hardware.
- 4) The STAR EMC has remarks referring to an early design of remotely powered readout crates on the detector, with power supplies in the south platform racks, and extensive distribution of DC power.

"The DC power supplied by the power supplies will be distributed via bus based metallic distribution boxes. The bus system shall adhere to the guidelines laid out in NFPA-70 (NEC). The hazards associated with power distribution will be abated by a lock-out tag-out (LOTO) procedure, mechanical barriers, electrical interlocks, and proper training of all personnel involved."

This system is not part of the final design and was replaced by local DC power at each readout crate. The SAD correctly describes the local DC design. This item is to correct a typographical error in the SAD.

Please contact me if you have questions or need additional support material.

Thank You,

Bob Minor
STAR EMC Electronics