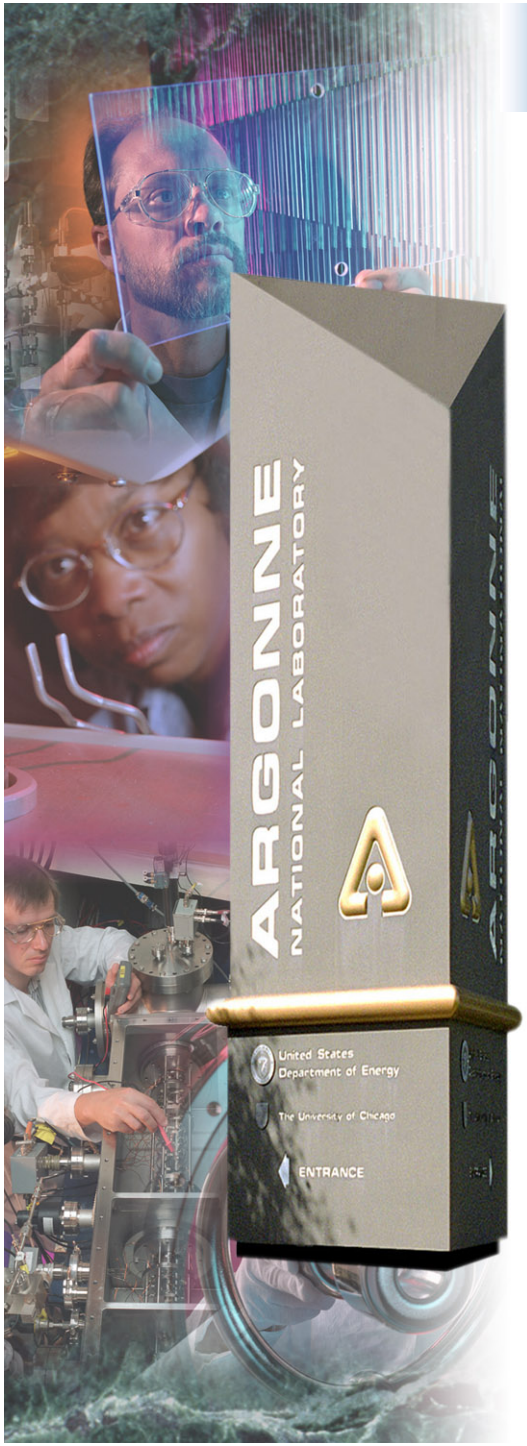

ARGONNE NATIONAL LABORATORY

Proposal Number **423**

Direct Support of XOR Beamline Equipment Protection Systems (BLEPS) was Project 191

Safety Interlocks Group

October 2005

THE UNIVERSITY OF CHICAGO

Office of Science
U.S. DEPARTMENT OF ENERGY

Argonne National Laboratory is managed by
The University of Chicago for the U.S. Department of Energy

Project: (ASD 423) Direct Support of XOR Beamline Equipment Protection Systems (BLEPS) was Project 191

Objective: The Beamline Equipment Protection Systems (BLEPS) are needed to protect the USERS beamline from damage due to x-ray heat load, vacuum events and other beamline equipment failures. The ASD/SIG would provide a semi-custom BLEPS, built to the UERS functional specifications within the frame work of a "standard" solution. ASD/SIG would maintain full control of the BLEPS and offer operational support.

Background Information:

- New Initiative
- Multi Year Funding
- High priority

Justification:
Currently, 15 XOR beamlines provide support for their BLEPS. Direct design and operational support of the XOR BLEPSs by ASD/SIG will allow XOR USERS to focus more resources on programmatic efforts. BLEPSs are programmable electronic systems, the design and operation of which is the strength of the ASD/SIG, consequently making support of these systems a good fit with the capabilities of the SIG.

Consequence:
Given the following: USERS have little obligation to the APS to protect their beamline, the diversity of implementations suggests gradations in BLEPS dependability, there is no obligation to provide documentation to APS about BLEPSs and the mission critical nature of these systems, the likelihood of a beamline accident involving equipment damage with programmatic impact is non trivial.

Requested Funds (FY06): $54.64 K (AIP)

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FY	2006	2007	2008	Total
Noneffort	$54.64 K	$163.92 K	$163.92 K	$382.48 K
Existing Effort	$248.58 K	$148.58K	$86.58K	$483.74 K
New Effort				
Total	$303.22 K	$312.50 K	$250.50 K	$866.22 K

- Direct design and operational support of the XOR BLEPS's by ASD/SIG will allow XOR USERS to focus more resources on programmatic efforts => Calls for “help” to upgrade/repair BLEPS’s

- If APS is responsible and/or liable for damage to XOR USERS beamline equipment then APS has a vested interest in providing reliable, available and maintainable beamline equipment protection.

- The diversity of existing implementations suggests gradations in BLEPS dependability, (Last 10 months – 10 BLEPS related beamline downtime events with a total loss of beam of 35 hours on 9 different beamlines)

- Given the mission critical nature of a BLEPS it will under go suitable engineering review, approval and testing when designed by the SIG to ensure high dependability.

- Evaluate existing XOR BLEPSs and establish a list of needed/requested upgrades.

- APS provides hooks into BLEPS for permissives and control of front-end and integral shutters (via PSS and FEEPS).

- PLC implementation of BLEPSs is a good fit with the capabilities of the SIG. Support PLC BLEPSs at the following beamlines: 30ID, 26ID, 4ID, 31ID and 32ID

- Providing support for BLEPS fits with SI Group's capabilities and mission.
- The diversity of implementations makes it difficult to assume responsibility for systems other than those we built.
- Providing any level of 24/7 operations support would take time and group training.
- We should offer BLEPS as part of the 'standard package' for new beamlines. This could probably be supported with existing resources and group training.