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Date: December 13, 2007
To: S. Hoey
Subject: Static Magnetic Field Measurements of LakeShore Probe Station (1L35)
From: W. Litzke

On December 12, 2007 a survey was done for static magnetic fields (SMF) exposure in building 735, room 1L35. The magnetic field source is the LakeShore Model HFTTP4 cryogenic probe station used for non-destructive magnetic testing of devices at variable temperatures. The probe station is equipped with a 10 k0e (1 T) horizontal split-pair superconducting magnet. The magnets are cooled by liquid He and Liquid N2 in a vacuum chamber. A magnetic field is present only during operation of the probe station. This survey was done during the initial installation.

SMF measurements were taken at discreet locations from the source. The instrument used was the 3-Axis Hall Magnetometer (THM 7025) and was operated in accordance with SOP IH 99370.

The purpose of the survey was to determine hazard and exposure potential, controls, and posting requirements. The accepted safe field is 5 Gauss and this is indicated by the 5 G magnetic field line (tape on the floor around the magnet). Magnetic fields may affect certain heart pacemakers. Persons fitted with pacemakers should not be permitted in the area.

The maximum field strength was measured at 73 mT (730 Gauss) at the surface of the magnetic coils. The ceiling limit for ferromagnetic objects is 600 Gauss, and this poses a potential hazard of attraction of metal objects placed next to the magnet. During normal operations the SMF exposure to the workers would be minimal. The following recommendations should be considered:

- 1) Posting at the door is required for magnetic fields ≥ 5 Gauss.
- 2) Have supervisors, ESH coordinator and work planners take web-based training, Static Magnetic Fields (TQ-SMF). Document a procedure to address operational issues and ESH concerns when using the microscope.
- 3) Medical approval for individuals with medical electronic devices and prostheses shall be obtained from OMC if they work or enter the area. Training is required for these users.
- 4) Administrative controls should be instituted to control the distance and placement of objects sensitive to magnetic fields near the source. Credit cards, badges, disks may be damaged in fields at 10 mT (100 G).

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