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12 October, 2005

MRI Facility Owners & Operators

Posted: www.MRI-Planning.com

re: Roofing Service Near MRI Cryogen Vent

Dear Colleague:

We're pleased to help you address your concerns about safety and liability of maintenance or service near the cryogen vent for your MRI in the unlikely event of a quench.

First, you are to be commended for seeking out the 'best practice' method of working in proximity to the cryogen vent and any emergency exhaust discharge for the MRI(s) at your facility. As you may be aware, superconducting magnets have the potential to quench at any time. In addition to a manually-triggered quench, environmental factors such as significant shim disturbances, high amplitude or sustained vibration, thermal shock and cryogen depletion can also cause a spontaneous quench. Add to that the fact that one or two magnets quench annually with no discernable cause.

To help protect those who need to work near the cryogen vent or exhaust, we would like to share with you the following guidelines. We hope that these serve both the more frequent need for roofing repair as well as ongoing issues of building maintenance and access.

General Cryogen Safety At Discharge Points:

- Restrict access to rooftops or other cryogen discharge areas to only those who have received appropriate training from the MR staff on the potential hazards. This includes maintenance personnel, inspectors, contractors, etc… All doors / hatchways leading directly to areas with discharge zones should be provided with warning signage.
- Provide all-weather marking that clearly identifies a minimum 25-foot radius from vent / exhaust locations. In locations that may receive snowfall that could cover rooftop markings, this suggests some form of vertical barrier or stanchion.
- Do not install any equipment or operable windows within the 25-foot discharge zone.

Roofing / Rooftop Service Near Discharge Zone:

- All incidental / contractor personnel must be appropriately trained to remain outside the discharge zone unless specific job duties require them to be within it.
- All personnel must be appropriately trained to evacuate the discharge zone if they hear or see anything coming from the cryogen vent pipe or exhaust fan. Provide redundant ladders or other means of escape if vent pipes are between areas of work and rooftop access.
- For work within the discharge zone, erecting a temporary open-top enclosure around cryogen vent and exhaust discharges to a minimum height of 6 feet would reduce the

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immediate spread of a discharged cryogen vapor cloud. This enclosure would need to be securely constructed to withstand the pressure blast from a quench discharge, and appropriately weighted to prevent blowing / tipping over.

- Rooftop work should be coordinated and sequenced to minimize the duration of activities inside the discharge zone and to reduce the potential for incidental workflow through the discharge zone for other phases of the work.

- As a part of reviewing the completion of any rooftop work, the facility owner should re-verify that all warning signage, enclosures and markings relevant to cryogen safety are undisturbed at the completion of construction activities.

We hope that this information is helpful to you in planning both your immediate roofing work as well as establishing a 'best practice' model for ongoing safety at your facility. For other aspects of facility safety issues, we invite you to visit our website (www.MRI-Planning.com).

We also invite you to share this information with your associates and colleagues. Keeping MRI safe for incidental staff and contractors is a crucial part of the overall MRI safety effort.

Please feel free to contact me if you have any questions.

Sincerely,

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enclosures: none
cc: File: MRI Cryogen Roof Safety.doc