



TE SEMINAR

SPEAKER: Maciej Chorowski, Wroclaw University of Technology, Poland

TITLE: **UPDATE OF THE CRYOGENIC RISK ANALYSIS FOLLOWING THE 19 SEPTEMBER 2008 INCIDENT**

DATE: Thursday, 12 November, 14:00

PLACE: CERN Main Auditorium

ABSTRACT

On 19 September 2008, during powering tests of the main dipole circuit in sector 3-4 of the LHC, an electrical fault occurred producing an electrical arc and resulting in mechanical and electrical damage, release of helium from the magnet cold mass to the insulation vacuum enclosure and consequently to the tunnel, via the spring-loaded relief discs on the vacuum enclosure. The helium discharge from the cold mass to the vacuum enclosure exceeded by an order of magnitude, the maximum credible incident (MCI) flow described in the preliminary risk analysis performed in 1998. Basing on the experience gained from the 19 September incident, a new MCI has been formulated and the cryogenic risk analysis has been revised and updated. The performed simulations enabled the revision of the helium discharge system protecting the vacuum enclosure against the over-pressurization.

During the incident the amount of about 6 ton of helium has been released into the LHC tunnel in the way that can be classified as a physical phenomenon with a high rate volume production. The performed analysis has shown that any shock phenomena can be excluded, and the pressure distribution has been uniform along the tunnel during the discharge process. The recommendations concerning the mechanical properties of the doors installed in the tunnel have been formulated.

Organized by: Gijs de Rijk / TE-MS