HSE
Occupational Health & Safety
and Environmental Protection unit

Risk Assessment

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Risk at CERN

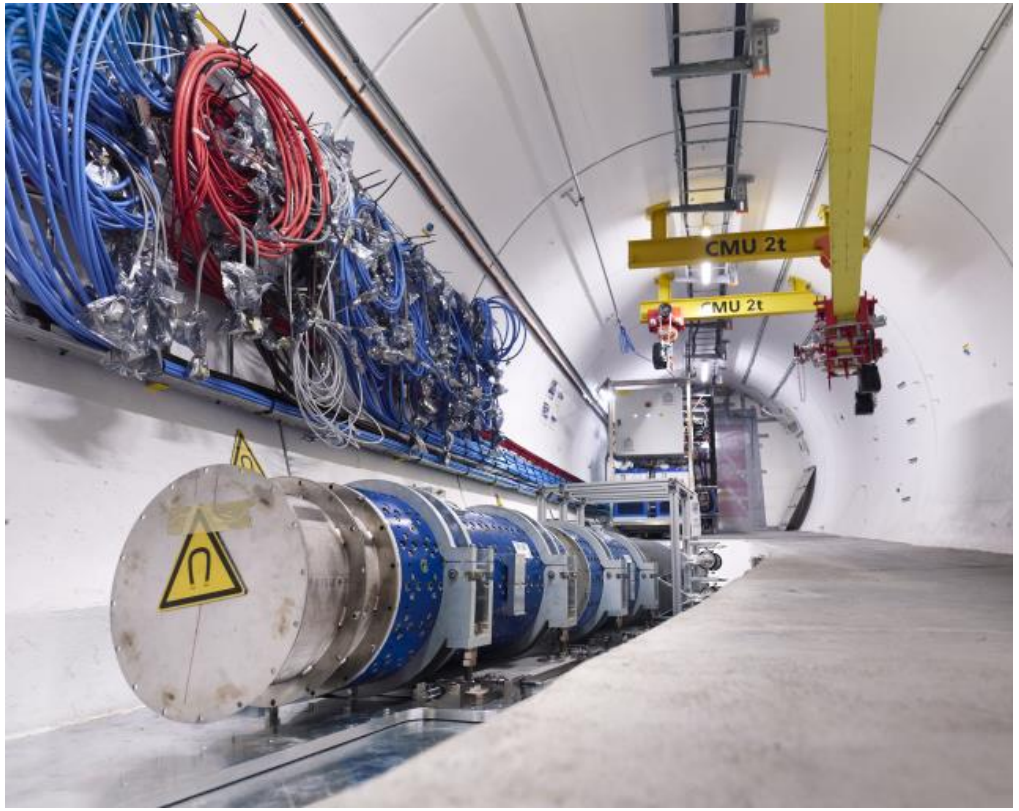
- Enterprise Risk Management
- Risk in projects
- Risk in activities
- Risk-based integrity management

Enterprise Risk Management

- Holistic approach to the most significant threats to the Organization
- Defined a number of high risk themes
  - Covering a number of items such as:
    - Member State withdrawing from CERN
    - Lack of direction in the physics programme
    - Terrorist attacks
    - Major incidents
    - Pandemics
    - Etc…

Risk in projects

- Project Leaders are responsible for the management of project risks and the safety aspects of their projects
- PESS (Project and Experiment Safety Support) offered from CERN HSE Unit as a service to Project Leaders
  - Aim: to support the variety of projects being conducted at CERN from an occupational, environmental and process safety perspective, and assist Project Leaders in fulfilling their responsibilities in matters of safety
- The PESS service is currently supporting 68 projects and studies, across the full range of CERN's activities, with a number identified in the pipeline



Safety domains

- Acoustics and noise
- Asbestos / lead – other pollutants
- Chemical / gases (including explosion risk assessment and hazardous area classification)
- Civil / structural
- Confined spaces
- Electrical
- Emergency / evacuation
- Workplace ergonomics
- Environmental protection
- Fire prevention and intervention
- HVAC
- Laser
- Legionella
- Oxygen Deficiency Hazards
- Mechanical (lifting, pressure equipment, cryogenics)
- Worksite
- (Radiological risk assessment carried out as a separate process by HSE-RP in its authority role)

PESS process

Initial conversation with PESS coordination member to determine the applicable level of service

Preliminary hazard identification, facilitated by the PESS Correspondent

Summary of requirements and recommendations given by HSE Specialists

Summary of the inspections and checks performed, with any outstanding actions identified

If required, for projects defined as liable to have Major Safety Implications

Projects ‘liable to have Major Safety Implications’ (MSI)

- MSI criteria have been defined by the relevant safety specialists
  - Cover all conventional safety domains
  - Some MSI criteria are already cited in the CERN Safety Rules
- Based on specific risks and overall risk profile, projects are currently defined as ‘MSI’ or not by the PESS processes and hierarchical line within the HSE Unit
  - Key factor here is that by aiming to provide ‘Safety Authorisation’, the HSE Unit is taking on an additional portion of the hierarchical line responsibility for the safety and compliance of a project
  - Currently there are 6 project/studies followed by the PESS activity that are classified as ‘liable to have Major Safety Implications’
- Specific (additional) safety checks relating to the MSI criteria are directly incorporated into the PSR document

Risk in activities

- Assessed and owned at a departmental level
  - Primarily looks at whether the risks are adequately mitigated in case of an issue, rather than a statistical approach of the issue itself
  - CERN's HSE Unit provides a verification role for certain items (e.g. oxygen deficiency hazard assessments)
- Identification of hazards
  - Primarily using the Swiss SUVA 'portfolio of hazards' list but adapted/broadened to CERN's activities and installations
- Use of various risk assessment techniques
  - Depending on scope of tasks, facility etc.
  - No one-size-fits-all approach but a suite of tools available (e.g. FMEA, HAZOP, etc.)

Risk-based Integrity Management

- Currently implementing Risk-Based Inspection for pressure equipment
  - Increased amount of equipment items
  - Resource constraints
  - Previously applying same inspection programme to all pressure equipment, regardless of risk of degradation
- In-house developed ‘CERN RBI’
  - Compliant with Host States approaches
  - Externally benchmarked with the hazardous process industry
  - Uses a consequence vs likelihood approach for determination of inspection intervals
    - Risk to people, environment (air/waterways), assets and operations
  - Built directly into CERN’s asset management database

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