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Safety
and Safety Documentation
A German pole lathe of 1395
(Mendelesches Brüderbuch)
Safety in three Questions

• Why?
  • Providing a safe workplace is a legal and moral obligation on every undertaking, and avoids financial losses.

• Who?
  • Everybody in his area of technical or organisational responsibility

• How?
  • By following laws, regulations, standards and best practice in matters of safety
  • Comprehensive safety documentation enables traceability and preservation of future value
CERN Safety Policy

- CERN’s Safety policy defines and embodies the Organization’s commitment to safely carry out its mission as an international particle physics research laboratory by ensuring:
  - the **best possible protection** in occupational health and safety matters of all persons participating in its activities on its site and of those living in the vicinity of its installations, and by **limiting the impact of its activities** on the environment;
  - the use of **best practice** in the field of radiation protection and the safe operation of its installations.
Rules and Regulations

- **Safety Standards from different sources:**
  - CERN Safety rules
  - Areas where CERN rules are not available:
    - European directives and Harmonised standards
    - Host state rules (laws, ordinances, decrees)
  - International standards (IEC, ISO)
  - Best practice & return of experience always considered

- **HSE regulatory watch service** for safety regulations
Who is in charge?

Safety relies on the hierarchical structure of the project.

Persons are in charge for Safety of personnel and “items” under their responsibility.
Role of the PL’s office

- **Project Leader**
  - Overall responsibility
  - Approves the Safety Documentation ("Safety File", see later)

- **Technical Coordinator**
  - Provides coherent framework for edition and approval of technical documentation
Role of Work Package Members

• WP Leader
  • Implement Project Safety Policy in each WP
  • Assure use of agreed Safety Standards
  • Coordinate Safety documentation within the WP

• WP engineer / member
  • Work according to agreed Safety standards
  • Contribute to Safety documentation
Role of the Safety professionals

- **HSE correspondent**
  - Entry point to qualified Safety experts within the HSE unit
  - Establishes individual Launch Safety Agreements

- **Safety Officer**
  - Assists the PL in all aspects of Safety
  - Available for consultation to all project members
  - Editor-in-chief of Safety File
Safety Organisation

- Reference document
- Summarises the Safety Policy and its implementation
- In approval stage
- EDMS 1313247
3 Qs on Safety Documentation

- **Why?**
  - Comprehensive Safety documentation enables traceability and preservation of future value
  - Obligation w.r.t. to Host Sates, insurances, contractors, our own collaborators, …

- **How?**
  - Establishing a “Safety File”,
    - Demonstrating conformity of equipment
    - Performing Risk Assessment for activities

- **Who?**
  - PSO is the editor of the Safety File
  - All project entities contribute to the documentation
Two distinct purposes:

1. Assure that the project phase is Safe. i.e. residual safety risks are acceptable

2. Establish Safety documentation for all equipment produced within the project

→ LHC Safety folder
Conformity

• Equipment should generally be conform to an (inter)national standard:
  • Harmonised standards guarantee that equipment meets also European Directives
  • e.g. ISO-EN 1200x ↔ Machinery directive
• “Conformity” ascertains that the equipment is not inherently unsafe
• Conformity is demonstrated by certificates from notified or approved bodies
Risk Assessment

• Description of the Safety relevant aspects of an equipment or activity

• Hazard register :
  • which dangerous phenomena are present ?
  • which of them are sufficiently covered by procedures, rules, statements of work …

• Estimation of risk

• Where required, recommendation and implementation of protective measures
Safety Documentation Management

- Proven method, adapted to work in “matrix” structures
- In use at CERN for
  - Accelerators
  - Other facilities
- EDMS 1177755
Safety File Parts

1. Descriptive Part:
   - Brief Description of the equipment or activity with focus on Safety-relevant features

2. Demonstrative Part:
   - Hazard register
   - Risk Assessments

3. Operational Part:
   - Links to operational procedures

4. Return of Experience (REX)
What is in the Safety File?

**Documents**

- HL-LHC Safety folder
- Calculation reports
- Design reports
- Drawings
- Risk assessments
- Installation reports
- O&M procedures
- Conformity certificates
- Technical certificates
- Acceptance test reports
- Tests Records

**HL-LHC EDMS node managed by PSO**
# Step 1: Hazard Identification

- **Hazard Identification Table**
- Filled in jointly by WP members and Safety professionals
- EDMS 1361970
Step 2: Launch Safety Agreement

- Prepared by HSE correspondent

- Guidelines for all hazards identified:

  Applicable regulations (CERN, int. or nat’l.)

  Deliverable documents and certificates.
Further work

- The LSA is the start point for establishing Safety documentation
  - Describing equipment
  - Assembling requested documents and certificates (conformity)
  - Performing Risk Assessments
  - ...