Charge Document for the Accelerator Personnel Safety System 0 (PSS0) CDR

Critical Design Review (CDR)
8 February 2018, Lund, Sweden

Charge for the CDR

Purpose of this CDR

The purpose of this CDR is to confirm that hardware and software design and planning for the PSS0 are likely to meet all requirements and safety objectives and are specified in sufficient detail for design and integration testing, installation and commissioning.

The expected outputs of detailed design, which should be presented and reviewed in this CDR, are:

- Concept of Operations for the Accelerator Personnel Safety System 0 (PSS0)
- IEC 61508 Concept and Scope documents for PSS0
- Hazard and risk analysis document for PSS0
- IEC 61508 Safety Requirements Specification document for PSS0
- PSS0 Hardware Design Requirements Document (system architecture, circuit diagrams, mechanical design drawings, etc)
- PSS0 Software Planning document
- PSS0 Configuration Management Plan document
- PSS0 Verification and Validation Plan document
- PSS0 Installation and Commissioning Plan document

CDR Committee

The CDR committee consists of:

- John Weisend, AD - *Group Leader for Specialised Technical Services Group* (chair)
- Richard Scrivens, CERN - *Deputy Group Leader for BE-ABP (Accelerators and Beam Physics) Group*
- Edgar Sargsyan, AD - *Section Leader for Front End & Magnets Section*
- Duy Phan, AD - *Accelerator Safety Engineer*
- Jörgen Mattsson, ES&H - *Electrical Safety Engineer*
- Annika Nordt, ICS - *Group Leader for Protection Systems Group*
- Timo Korhonen, ICS - *Chief Engineer*

Presenters and Observers:

- Øystein Midttun, AD - *In-Kind Collaborator, Linac Hardware Section*
- Stuart Birch, ICS - *Senior Engineer, Personnel Safety Systems*
- Morteza Mansouri, ICS - *Engineer for Safety Critical Systems*
- Denis Paulic, ICS - *Deputy Group Leader for Protection Systems Group*
- Yong Kian Sin, ICS - *Electrical Controls Engineer*
- Alberto Toral Diez, ICS - *Technician, Personnel Safety Systems*
- Mattias Eriksson, ICS - *Technician, Personnel Safety Systems*
- Lali Tchelidze, AD - *Section Leader for Operations Section*
- Bertil Winér, ES&H - *Occupational Safety Engineer*
- Michael Plagge, ES&H - *Occupational Safety Engineer*
- Lena Johansson, ES&H -*Senior Radiation Protection Expert*
- Thilo Friedrich, ICS - *Systems Engineering and Engineering Process Coordinator/Engineer*
- Riccard Andersson, ICS - *Technical Project Coordinator/Engineer for Protection Systems Group*
- Nour Akel, ICS, *Installation coordinator*

Committee Charge

The supporting documentation will be provided to the committee about one week in advance, on the review Indico page, which also contains the agenda and presentations:

https://indico.esss.lu.se/event/973/

- 08:45 Committee discussion (closed)
- 09:00 Opening Session
- 09:10 Ion Source and fence designed for it
- 09:30 PSS0 Scope and Hazard and risk analysis
- 10:05 PSS0 Design and Concept of Operations
- 10:40 Coffee break
- 10:50 PSS0 Software
- 11:20 PSS0 Configuration management and V&V planning
- 11:50 PSS0 installation and commissioning plan
- 12:15 Lunch break
- 12:45 Committee deliberations (closed)
- 14:15 Closeout

The committee is asked to consider the following questions:

1. Are all or a sufficient coverage of requirements, safety objectives and specifications within the scope of this CDR documented and understood?
2. Have all activities related to the installation phase been documented sufficiently and presented in an appropriate way?
3. Have all hazardous events been identified and evaluated in the hazard and risk analysis?
4. Have all necessary operating procedures been addressed and are they properly documented?
5. Have all safety objectives been evaluated and addressed accordingly?
6. Does the hardware design meet the requirements within the scope of this CDR?
7. Does the software design meet the requirements within the scope of this CDR?

8. Are the installation and commissioning strategies appropriate for this stage of the project?
9. Is the validation and verification planning clear and appropriate for this stage of the project?
10. Is the configuration management plan appropriate for this stage of the project and is it clear how modifications will be traced?
11. Are there any outstanding agreements to be made or other actions necessary to allow the PSS team to transition to hardware and software design and integration testing, installation and commissioning phases?

The results of the review should be summarized in a short report, outlining the answers to the above review questions and whether the review is considered passed, passed with action items, or failed. The report may also provide findings, comments, and recommended actions. Actions should be clearly categorized as one of the following:

- Must be addressed before CDR is considered closed
- Must be addressed prior to the system verification
- Must be addressed at some time during the project