Cold Linac Non-Invasive Profile Monitor

Preliminary Design Review (PDR)
31 January 2017, Lund, Sweden

Charge for the PDR

Purpose of the PDR

The purpose of the preliminary design review is to verify that the requirements and interfaces are well understood and documented, and that the conceptual design is well matched to these boundary conditions. Also, the PDR covers planning, risks and safety issues.

Passing the PDR is a prerequisite for expending significant resources on detailed design.

Scope of the PDR

The PDR covers the NPM for the Cold Linac sections work unit, including deliverables from Saclay and ESS Lund. It also covers interfaces with, and related deliverables from the ICS divisions.

PDR Committee

The PDR committee consists of:

- Peter Forck, GSI, External Reviewer and Chair
- Tom Shea, ESS BI
- Andreas Jansson, ESS, Review secretary
- Fabio Ravelli, ESS vacuum
- Fabien Rey, ESS Alignment
- Inigo Alonso, ESS Linac Integration
- Mohammad Eshraqi, ESS Beam Physics
- Duy Phan, ESS Safety
- Enric Bargallo, ESS RAMI
- Frithiof Jensen, ESS Electrical
- Anton Lundmark, ESS Cooling
- Matthew Conlon, ESS AD QA
- Daniel Piso/Timo Korhonen, ESS ICS
- Annika Nordt, ESS ICS/Machine protection

PDR Presenters and Observers§

Presenting and otherwise participating in the PDR will be:

- Cyrille Thomas, ESS BI
- Jacques Marroncle, CEA Saclay
- Francesca Belloni, CEA Saclay
- Florian Benedetti, CEA Saclay
- Philippe Abbon, CEA Saclay

Agenda and Supporting Documentation

The agenda is available on Indico (https://indico.esss.lu.se/event/745/). Supporting material will be made available on this page about two weeks ahead of the review.

The studies and conceptual design for the NPM in the Cold Linac is presented in a list of document which is the following:

- Introduction and presentation of the NPM for the Cold Linac at the PDR level (ESS-0092063)
- Scope of Work for the In-Kind Collaboration with CEA SACLAY on the Non-invasive Profile Monitors for the ESS Cold Linac (ESS-0039088)
- Space Charge based model of an IPM (ESS-0092068)
- Electric Field Uniformity studies in the ESS LWU configuration for the NPM (ESS-0092070)
- Ion-Electron pairs production in the ESS Cold Linac (ESS-0092071)
- Readout Systems for the Cold Linac NPM (ESS-0092072)
- Interface and Risk Management for the Cold Linac NPMs (ESS-0092073)

Presentations will also be uploaded to Indico.

Committee Charge

The committee is asked to consider the following questions. Where appropriate, please organize the responses by component/system.

1. Are the operations and commissioning performance requirements for this system well understood and properly documented? Is the scope of the system well defined?
2. Are all interfaces properly understood and documented? In particular
    a. Is the interface with ICS well understood and functionality well covered? Is the control integration of the system properly addressed?
    b. Is the interface with the LWU (e.g. vacuum, mechanical, electrical) well understood and documented?
3. Is the conceptual design likely to fulfil all requirements and respect all interfaces, and is it mature enough to begin detailed design? Have alternate design options been properly considered?
4. Is the planning appropriate and consistent with the work unit scope and overall ESS plans and milestones? Are the key interface milestones (e.g. installation) identified in the planning?
5. Is there an acquisition strategy for major procurements appropriate for this design stage? In particular, is the lead time for procurements and contracts properly accounted for in the planning?
6. Is the verification strategy appropriate for this stage of the project?
7. Have RAMI aspects been considered in the design choices at a level appropriate for this stage of design?
8. Have the project risks and opportunities been properly identified and their impact considered in the conceptual design? If required, is there a mitigation plan?
9. Have potential safety hazards been properly identified and considered in the design choices? If required, is there a mitigation plan?
10. Were any other issues identified during the review?

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