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| Gamma Blockers CDR Charge Document |
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| Critical Design Review (CDR)  17 November 2017, Lund, Sweden |
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| **Charge for the CDR** |
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**Purpose of the CDR**

A CDR is scheduled as a milestone event for approving the transition from detailed design to manufacture (or to material or component procurement, to software coding, to construction etc.).

The design is reviewed against all design inputs, including technical and interface requirements. A successful CDR gives confidence that the proposed design will meet all technical requirements and interface properly with all relevant accelerator subsystems. The completion of a CDR fixes the baseline design of the component being reviewed.

The objective and purpose of this CDR is to confirm that the designs for the gamma blockers for the A2T and Dump Line sections are likely to meet all requirements and are specified in sufficient detail for manufacturing and installation.

In general terms, the expected outputs of detailed design, which should be presented and reviewed in the CDR, are:

* Requirements specification document
* Detailed Design Report
* Radiation Shielding Report
* CAD models and drawings
* Verification Plan
* Project Quality Plan

**CDR Committee**

The CDR committee consists of:

* John Weisend, Accelerator Projects Deputy Project Manager - Chair
* Lali Tchelidze, ESS AD Safety
* Kent Wigren, ESS AD QA
* Riccardo Bevilacqua, Target Division
* Enric Bargallo, RAMI
* Fabio Ravelli, Vacuum
* Szandra Kövecses, Machine protection
* Stuart Birch, Personnel Protection System
* Timo Korhonen, ICS

Presenters and Observers:

* Karol Szymczyk, NCBJ
* Marcin Wojciechowski, NCBJ
* Sławomir Wronka, NCBJ
* Iñigo Alonso, WP6 Deputy Manager
* Julen Etxebarria Malkorra, ICS Motion Control

**Committee Charge**

The supporting documentation will be provided to the committee about ten days in advance, on the review Indico page, which also contains the agenda and presentations: <https://indico.esss.lu.se/event/879/>

* 9:00 Committee discussion (closed)
* 9:15 Gamma Blockers overview and schedule
* 9:35 Requirements and interfaces
* 9:55 Radiation studies
* *10:35 Coffee break*
* 10:500 Mechanical design
* 11:30 Safety, Machine Protection and RAMI
* 11:45 Quality and Verification plans
* *12:00 Lunch*
* 13:30 Committee deliberations (closed)
* 14:30 Closeout
* *15:00 end*

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

1. Has the design of the Gamma Blockers reached a level of technical maturity in accordance with the activities and milestones for the work unit recorded in the ESS ACCSYS Project and been documented sufficiently and presented in a suitable format to enable review at this CDR?
2. Are all or a sufficient coverage of requirements and specifications within the scope of this CDR, including for its interfaces with other systems, documented and understood?
3. Does the design meet these requirements and specifications?
4. Is the verification strategy appropriate for this stage of the project?
5. Have safety issues and technical risks been identified and eliminated or otherwise mitigated for in the detailed design or identified for managing for manufacture, assembly and installation?
6. Have quality assurance and quality control activities been planned?
7. Have reliability aspects been considered in the design choices at a level appropriate for this stage of design?
8. Are the strategy, policies and regulations for procurement, manufacture and installation sufficiently identified, defined, documented and understood?
9. Is the schedule for manufacture and installation sufficiently understood and in accordance with activities, durations and milestone dates shown in the ESS ACCSYS project plan?
10. Does the partner require additional input from other ESS groups/WPs, or seek additional review, decision or approval from ESS to proceed with all work planed?
11. Are there any outstanding agreements to be made or other actions necessary to allow the work unit to achieve the Plan?

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 SAR
* Must be addressed at some time during the project