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| Bilbao MEBT Diagnostics CDR |
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| Critical Design Review (CDR)  12-14 July 2017, Bilbao, Spain |
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| **Charge for the CDR** |
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**Purpose of the CDR**

The purpose of the preliminary design review is to verify that the design fulfils the requirements, and is well matched to these boundary conditions. Also, the CDR covers documentation, verification, planning, risks and safety issues.

Passing the CDR is a prerequisite for starting production.

**Scope of the CDR**

The focus of this CDR is on several MEBT diagnostics delivered by ESS Bilbao, namely:

* The MEBT Emittance Measurement Units (including readout electronics)
* The MEBT Faraday Cup (including readout electronics)
* The MEBT BCMs (ACCT/FCT coils and integration/shielding only)
* The MEBT Wire scanner (fork/actuator and integration only)
* Integration of MEBT NPM (viewports and space allocation)

The MEBT BPM pickups have recently been reviewed in a separate event. There has also been a separate review on general integration of MEBT components. A separate review of BSM integration has also been held.

**CDR Committee**

The CDR committee consists of:

* Federico Roncarolo, CERN, External reviewer
* Andreas Jansson, ESS BI review secretary
* Henrik Carling, ICS
* Annika Nordt, ICS/MPS
* Tom Shea, ESS BI
* Mohammad Eshraqi, ESS Beam Physics
* Inigo Alonso, ESS Linac
* Edgar Sargsyan, ESS Linac
* Simone Scolari, ESS Vacuum
* Lali Tchelidze/Duy Phan, ESS AD Safety
* Enric Bargallo, ESS ICS RAMI
* Matthew Conlon, ESS AD QA
* Benjamin Cheymol, ESS

**Presenters and Observers**

* Zunbeltz Izaola (EMU)
* Angel Rodrigez Paramo (FC)
* Seadat Varnasseri (BCT, BPM)
* Alvaro Vizcaino (WS, SCRAPERS)
* Ander Serrano (Motion Control)
* Idoia Mazkiaran (Control Integration)
* Carlos de la Cruz (Analog Stage)
* Arturo Ortega (BPM machining)
* Igor Rueda (Mech. Team Head)

**Supporting Documents**

The supporting documentation will be provided to the committee about two weeks in advance, on the review Indico page, which also contains the agenda. Documents will include:

* FC
  + Design Documents\*
  + Technical Specification\*
  + Control Integration development document\*
  + Drawings (?) Depending on the call for tender process.
* EMU
  + Design Documents\*
  + Technical Specification
  + Control Integration development document\*
* WS
  + Design Documents\*
  + Technical Specification\*
  + Drawings (?) Depending on the call for tender process.
* BCM\*
  + Design Documents\*
  + Technical Specification\*
  + Drawings
* BPM\*
  + Design Documents\*
  + Technical Specification
  + 3D step models
* NPM
  + 3D models of the vessels\*

The items marked with \* have been already presented.

Presentations will also be available on Indico site: …..

**Committee Charge**

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

1. Does the design fulfil all requirements and respect all interfaces, and is the design sufficiently mature and level of documentation appropriate to start manufacturing/procurement?
2. Is the planning appropriate and consistent with the overall ESS plans and milestones?
3. Is there an acquisition plan for major procurements, and is the lead time for procurements and contracts properly accounted for in the planning?
4. Is the verification strategy appropriate?
5. Have potential safety hazards been properly identified and considered in the design choices? If required, is there a mitigation plan?
6. Have reliability aspects been considered in the design choices?
7. Have the project risks and opportunities been properly identified and their impact considered in the design? If required, is there a mitigation plan?
8. Were any other issues identified during the review? If appropriate, have issues raised in the PDR been properly addressed?

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 and production starts
* Must be addressed prior to the TRR
* Must be addressed at some time during the project