
ESS Procedure for Change Control of ESS Facility

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1. PURPOSE

The purpose of this procedure is to ensure during the complete system lifecycle that changes having an impact on the program baseline of the ESS facility are properly assessed and managed, and that full traceability is provided.

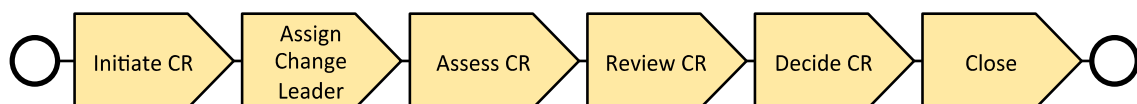
The procedure is aligned with the ESS Process for Configuration Management [1].

2. PROCEDURE APPLICABILITY

This procedure is applicable for change of all baselines of the ESS facility. Although the procedure is needed for all system life cycle stages, the current revision of the procedure is adapted for the construction phase of the ESS facility.

3. ESS PROCEDURE FOR CHANGE CONTROL OF ESS FACILITY

3.1. Procedure map



3.2. Procedure details

3.2.1. Input

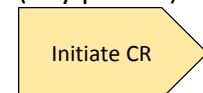
Procedure input is a request for a change that has an impact on technical, cost or schedule baselines. See Configuration Management Plan [2]. The request may be based on, but not limited to stakeholders' requirements, recommendations or non-conformities.

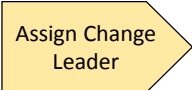
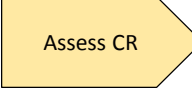
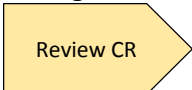
3.2.2. Initiate Change Request

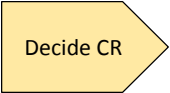
Any person can identify the need for a change that impacts technical, cost or schedule baselines.

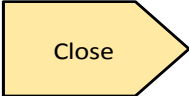
- Initiate the Change Request (CR) by assigning a unique CR ID and documenting the request using a CR form
 - For Level A, B and C (see Table 1 page 7) changes it is mandatory to use the ESS Template for Change Request [3]
 - For level D corresponding information should be kept but the structure for this can be decided by each PM
- Complete the *Change Data* section of the CR form

Responsible:
Change Initiator
(any person)



Output/product	A created CR with a unique CR ID
3.2.3. Assign Change Leader	
<ul style="list-style-type: none"> The Change Initiator communicates the proposal for a change to the relevant Work Package Leader (WPL) / Project Manager(PM). The relevant WPL / PM assigns a Change Leader. <p>The task of the change leader is to promote the change forward to a decision.</p>	<p>Responsible: WPL / PM</p> 
Output/product	An assigned Change Leader
3.2.4. Assess Change Request	
<ul style="list-style-type: none"> The change leader secures that an impact analysis is done for all affected projects. The analysis should cover as relevant: <ul style="list-style-type: none"> Cost, Schedule, Risk, Technical feasibility, Performance, Safety, Interfaces, Contracts and agreements The impact analysis is documented in the CR form with relevant references to supplementary reports and other documents etc. The sections <i>Change Analysis</i> and <i>Change Impact</i> of the form should be completed. A deeper assessment of the change may be requested depending on magnitude of impact. The change leader promotes the CR for review. 	<p>Responsible: Change Leader</p> 
Output/product	An Impact Analysis of the CR
3.2.5. Review Change Request	
<ul style="list-style-type: none"> WPL / PM or the change leader appoints one or more reviewers. These should include representatives from all affected projects. The reviewer(s) reviews the impact analysis and reports back to the change leader, and when relevant advise on any needs of further elaboration of the assessment. The Change Leader promotes the CR to a decision making body, see section 3.2.6. 	<p>Responsible: Change Leader</p> 

Output/product	A reviewed Change request
3.2.6. Make decision	
<p>The decision about implementing a change is done by a Change Control Board (CCB, appointed at the relevant levels A-D as indicated to the right) with mandate to approve requests with regard to technical scope and schedule, but also to reject, escalate or ask for more information. Decision regarding cost baseline can only be made at each level by the ESS Board, Director General (DG), PM or WPL respectively.</p> <p>CCB is responsible for keeping track of impact with regard to schedule and cost</p> <ul style="list-style-type: none"> • The CCB assesses incoming CRs, approves or rejects these and then update the CR form. <ul style="list-style-type: none"> ○ If CR is approved, the decision maker promotes the change for implementation of the activities related to the change. ○ If CR is rejected, the decision shall be communicated with a rationale. ○ If the decision about the CR exceeds the mandate or threshold of the CCB, the change shall be escalated to a higher level according to Table 1. ○ If a deeper analysis is needed before the change can be endorsed, the decision maker returns the change to the change leader for additional assessment following section 3.2.4. • The CR form should be completed in the section <i>Change Decision</i> 	<p>Responsible:</p> <p>Level A: - ESS Board (CCB)</p> <p>Level B: - DG (CCB)</p> <p>Level C: - Project CCB</p> <p>Level D: - WPL CCB</p> 
Output/product	A decided or rejected CR, or a decision about the need for a deeper assessment of a CR

3.2.7. Close	
<ul style="list-style-type: none"> The CCB follows up on the reported completion of CR. <ul style="list-style-type: none"> The CCB shall regularly monitor all open CRs 	Responsible: CCB 
Output/product	Updated and closed CR

3.2.8. Output

A new baseline for the object under configuration control with a completed CR, or a rejected CR.

4. RESPONSIBILITIES AND AUTHORISATIONS

4.1. Roles and Responsibilities

The following roles are defined for this procedure. Note that one person can have several roles over time.

- CCB Chairman: Responsible for meeting the requirements of the CCB.
- CCB Secretary: Responsible for maintaining an updated register of all open CRs.
- Change initiator: Responsible for creating a CR and proposing a CR to a WPL / PM.
- Change leader: Responsible for promoting the CR to a decision. Provide an initial impact analysis.
- Change Reviewer: Responsible for reviewing analysis of a CR and to advise the change leader on any issues or need for further elaboration.
- Subject matter experts: May be consulted for advice in any procedural activity.
- WPL / PM: Responsible for appointing a change leader and for implementing approved changes within their area of responsibility.

4.2. Change Control Thresholds

The Authorisation and delegation plan [4] governs the authority for decision making within ESS. For the ESS facility the authority relating to changes in technical, cost and schedule baseline is defined in a hierarchy of approvals.

Changes to released configuration items are accomplished through this change control procedure. Changes are decided based on the ESS Process for Decision Management [5]. Level of Change are categorised according to the authority level required for approval and are defined in Table 1. In this table L1, L2 and L3 refer to ESS system levels in the

overall ESS Facility Breakdown Structure (FBS).

Level (L) of change related to the Approving entity	Technical Baseline	Schedule Baseline	Cost Baseline
Level A ESS Council	Changes that impact the technical goals stated in the Programme Plan [6].	Changes that impact the programme phase tollgates as stated in the Programme Plan [6].	Changes that impact the cost of the construction, operation or decommissioning as stated in the Programme Plan [6].
Level B Director General (DG)	Changes that impact the configuration items (L1) including changes to ICDs between FBS L2 systems.	Changes that impact the construction phase L1 milestones or change to L2 milestone ≥ 3 months.	Changes that impact the contingencies or the total cost of the ESS construction phase cost.
Level C Project Manager	Changes that impact the configuration items for FBS L2 systems.	Changes that impact the construction phase L2 milestones < 3 months or change to L3 milestone ≥ 1 month	Changes cost and risk neutral to the Programme and the Project.
Level D WP Manager	Changes that impact the configuration items FBS L3	Changes that impact the construction phase L3 milestones < 1 month	Changes cost and risk neutral for the WP.

Table 1: Hierarchy of approvals in Change Control for the ESS facility.

4.3. Change Control Board (CCB)

CCB is used in this document meaning a board consisting of several members depending on the level of change. In everyday conversations, “the Change Control Board” (CCB) refers to the board for Level A and B changes. For the other CCBs it is recommended to refer to them as “CCB Level C” or “CCB level D”. Note that for level C and D there will be separate CCBs for each project so that the reference is not unique without adding a reference also to the concerned project/WP.

The CCB level A and B is represented by a permanent committee consisting of at least a chairman and one representative from each major ESS project and Administration (usually the project manager or deputy). A CCB may also be supported by technical expertise from different areas called in for the meetings depending on the subject to be addressed.

5. DOCUMENTATION REQUIREMENTS

The following documentation requirements apply to this procedure:

- All CRs shall be documented and managed in Chess.
- An updated register for all CRs shall be managed in Chess.

6. GLOSSARY

Term	Definition
CCB	Change Control Board
CR	Change Request
DG	Director General
FBS	Facility Breakdown Structure
ICD	Interface Control Document
L1-L3	Referring to Level 1– Level 3 system levels according to the FBS structure.
PM	Project Manager
WP	Work Package
WPL	Work Package Leader

Document Type	Procedure
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Date	Apr 18, 2016
Revision	4
State	Released
Confidentiality Level	Internal

7. REFERENCES

- [1] ESS Process for Configuration Management (ESS-0018781)
- [2] Configuration Management Plan (ESS-0003688)
- [3] ESS template for Change Request (ESS-0012363)
- [4] Authorisation and delegation plan 20150309 (ESS-0027645)
- [5] ESS Process for Decision Management (ESS-0018638)
- [6] Programme Plan for the European Spallation Source (ESS) (ESS-0001122)

DOCUMENT REVISION HISTORY

Revision	Reason for and description of change	Author	Date
1	First issue.	Lena Berden	2013-05-20
2	Revised document. Focused on general process matters.	Lena Berden	2014-07-04
3	Updated table 1. Changed all Levels 1-5 to Classes A-E. Updated phrases in sect 3.1 and 3.3.	Ola Ejnarsson	2014-10-09
4	Document changed from process to procedure, and referring to top document ESS-0018781. The title has been updated to reflect a narrowed scope. Change Order part being removed, and clarified in sect. 3.2.6 about mandate for decisions.	Roland Garoby, Carl Tillman	2016-03-09