EUROPEAN SPALLATION SOURCE

ESHAC #7

Safety Readiness Review

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Outline

1. Purpose of the Safety Readiness Review (SRR)
2. Background
3. Existing ESS framework to consider
4. ESS reviews
5. ESS Management System (ESSMS) Expectations
6. Next steps

Purpose of the Safety Readiness Review

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Purpose

To review ESS's readiness to safely commission/operate the ESS facility.

The SRR is a process by which HARDWARE, PERSONNEL and PROCEDURES associated with commissioning/operation are verified.

The scope is safety, both conventional safety and ionizing radiation.

Background 1(2)

The specific Safety Readiness Review is an officially decided ESS process, to be established before the end of 2017.

The ownership of the process lies within ESH division.
ESH division will also coordinate performance of the SRRs.

SRR needs to be connected to already existing processes, activities and deliverables. For instance to internal readiness activities.

Background 2(2)

Installation permit received from SSM during 2017.
Commissioning is getting closer (first parts during 2018).

The scope of SRR1 will be limited to the commissioning of the Ion Source (IS) and the Low Energy Beam Transport (LEBT) and will be conducted mid-end March 2018.

Existing ESS framework to consider

Project Management Handbook, ESS-0091812

- *"Before transitioning into a new phase, the necessary maturity is typically verified by an internal or external **review** (Preliminary Design Review (PDR), Critical Design Review (CDR) etc.)."*
- *"Verification of suitable In-Kind contributions is subject to review and recommendation by the **In-Kind Review** Committee (IKRC)...".*
- *Additional ESSMS documents are available and must be observed related procurement and contracting, including.....ESS rules for **contract review** and approval [ESS-0003893], and...."*
- ***Test Readiness Reviews** (TRR): "Describes the verification activities, their resources, the associated requirements prior to commissioning and after parts have been built and installed. Specifying documents are "As-built".*
- *"(Project) Risks are highlighted at monthly **project review** meetings and are included in the monthly and quarterly evaluation ..."*
- *Specific Change Control Boards exist at the sub-project and ESS level to facilitate **change review** and approval*
- *"....verification of the achievement must be performed and project completion must be approved by ESS Management. ..... the closeout process culminates with an **Operation Readiness Review** and acceptance by the ESS DG.*

Configuration Management Plan, ESS-0003688

Construction Phase Management Plan ESS-0005380

} (both referring to **Systems Engineering Management Plan** ESS-0002980)

Design Review SOP (Standard Operating Procedure), ESS-0008910

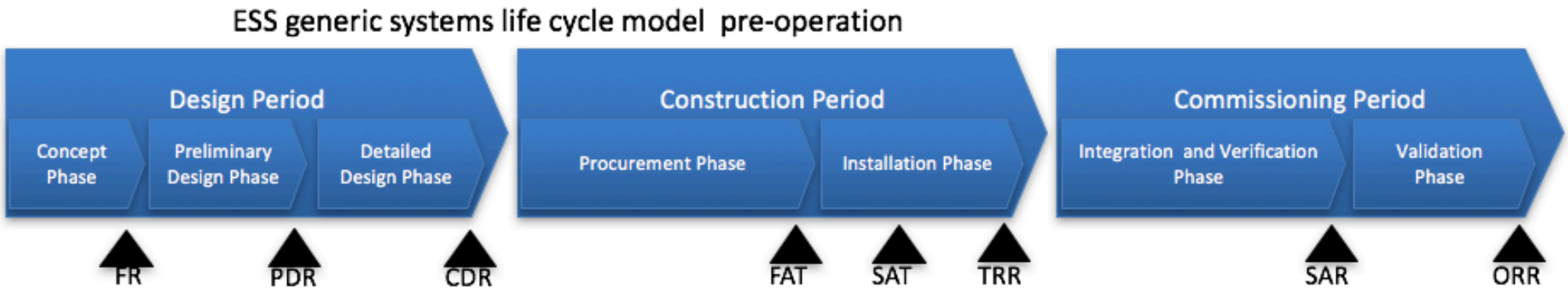
Guideline for establishing a design review panel ESS-0011298

System Design Review Process form template ESS-0011297

Component Design Review form template ESS-0010471

ESS system documentation table (draft), ESS-0046977

ESS Reviews during lifecycle (ESS-0091812)



FR, system **Functional Review**
PDR, system **Preliminary Design Review**
CDR, system **Critical Design Review**

FAT, system **Factory Acceptance Test**
SAT, system **Site Acceptance Test**
TRR, system **Test Readiness Review**

SAR, **System Acceptance Review**
ORR, system **Operation Readiness Review**

Internal Readiness vs *ESS Safety* Readiness Review

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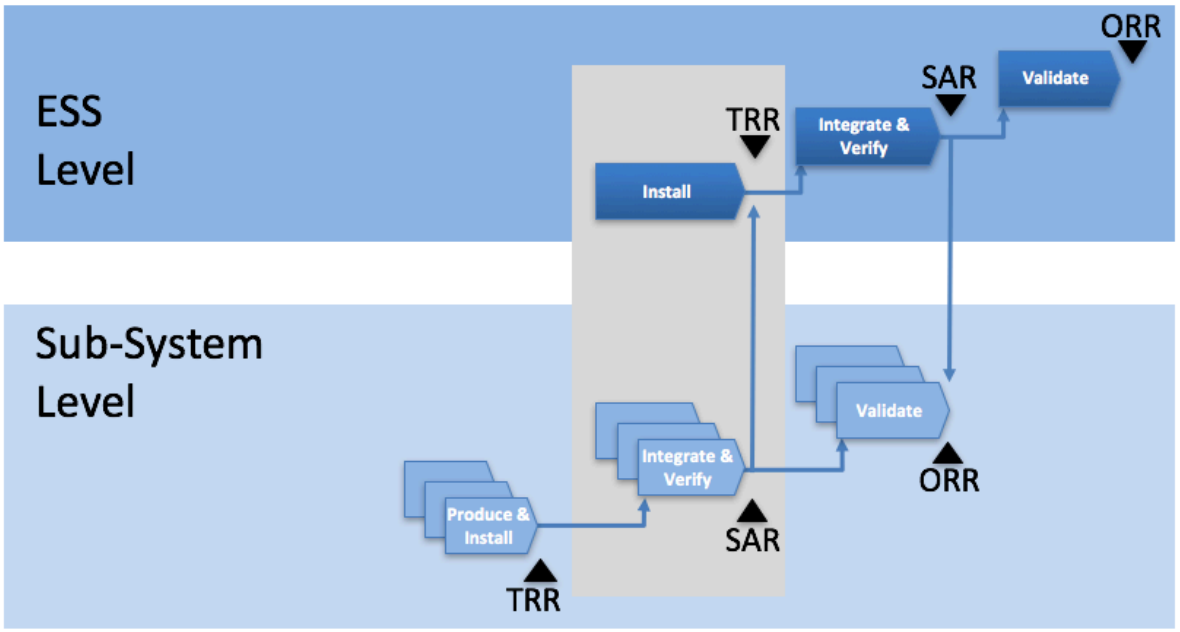
How does these two activities relate to each other?

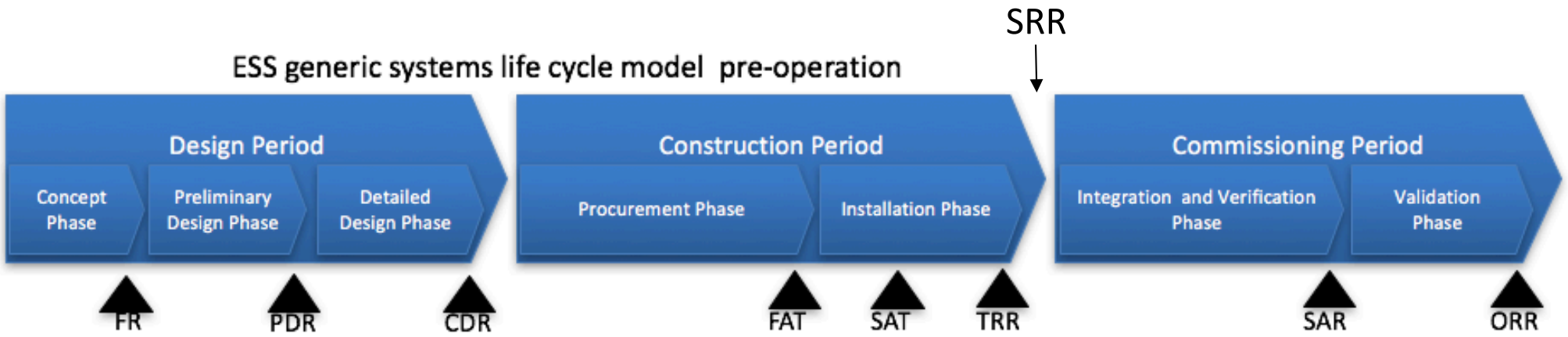
"*Internal readiness*" is owned by the System Owners and accomplished by:

- lower level SAR and ORR for all concerned sub-systems (for instance "sub-system level" below)
- the specific level of TRR (for instance "ESS level" below)



A SRR is
an independent review
of the safety aspects, after
the corresponding TRR.

ESS Reviews during lifecycle (ESS-0091812)



Describes verification activities, resources, associated requirements prior to commissioning, after parts have been built and installed. Specifying "As-built".

Reports the outcomes of the verification activities. Specifying "As-verified".

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ESS Management System Expectations

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ESSMS expectation	SRR focus prior to commissioning	Comment
Design descriptions	Description of the purpose of the system and the technical solution.	
Architecture description	Description of the system, involved equipment and devices.	
Concept of Operations	Descriptions of operation modes including maintenance modes and need of operators, their disciplines and their training requirements.	
Requirements Specification	Descriptions of operational limits and conditions for the specific testing envelope, belonging hazard identification together with the requirements for engineered controls and administrative controls (preventing and/or mitigating controls).	
Interface descriptions	Interfaces and boundaries to the surrounding structures, systems and components, for instance access control, supporting systems, power supply, etc.	
Integration Plan	The integration plan is expected already in connection to the CDR, and includes intermediate demonstrations finally leading to the main validation activity; commissioning.	
Operation and maintenance documents	The specific operating and maintenance procedures including the allowed testing envelope, list of administrative and engineered controls together with emergency response procedures.	
Verification Plan	Prior to any verification activity a test readiness review (TRR) will assess the maturity of the resources for supporting the verification activities for a system (test stand accessibility, test equipment readiness, availability of the personnel). The System Verification Plan documents the detailed steps to be followed to verify and ensure that a product or system meets its specific list of requirements. The verification plan defines: who does the verification; when and where it is to be done; the responsibilities of each participant before, during, and after each verification; the hardware and software to be used (and other systems if applicable); and the documents to be prepared as a record of the verification activity.	Could also consider validation plans, and even validation reports, from underlying subsystems.
Verification Report	-	Identifies the type of verification performed and reports on the results of the verification activities.

Next steps

Activity	Deadline
- ESS-0046977 to be further developed	Oct 20th
- Draft “SRR process description” for review/approval	Nov 1st
- “SRR process description” approved and released	Nov 15th
- Internal communication	Dec 1st
- Scheduling of the specific SRR for IS & LEBT	Dec 15th
- Invitation for the internal/external SRR team	Dec 20th
- Safety Readiness Review of IS & LEBT *(Commissioning mid-end March 2018)*	T -2 weeks

Thank you!

Questions?