Component Design Review Process Overview

STEPS

1. CRITICAL DESIGN REVIEW

The CDR assesses if the design meets all system requirements with acceptable risk and demonstrates that its maturity is appropriate to support proceeding with full-scale fabrication, verification, integration and future operation and decommissioning.

2. TEST READINESS REVIEW

The TRR ensures that the product, its test equipment, support personnel, and test procedures are ready for the verification activities.

3. SYSTEM ACCEPTANCE REVIEW

The SAR examines the system end products and documentation, and inspection, demonstration, test data and analyses that support its verification. The SAR ensures that the all requirements have been satisfied.

4. OPERATIONAL READINESS REVIEW

The ORR examines the actual operational set up (e.g. spare parts availability), and ensures that the personnel and procedures have reached the required maturity.

COMPONENT NAME

<< Input PBS element name >>

CONTACTS

Project accountable:

Other contact:

STATUS SUMMARY

	CDR	TRR	SAR	ORR
	1	2	3	4
	☐	☐	☐	☐

Date

PURPOSE

Design reviews are formal assessments of items:

- To ensure the objectives and requirements are understood by the affected and associated ESS programme stakeholders,
- To review the relevancy of the proposed solution from design to verification,
- To show that the major risks and safety hazards have been identified and mitigated as appropriate,
- To check that interfaces are unambiguously defined and agreed upon,
- To ensure that it will possible to proceed to the next development phase,
- To baseline additional work products such that the baseline is more and more comprehensive and can serve as a single point of truth for the participants.
- To evaluate its adequacy, to identify potential inadequacies and issues and to institute changes accordingly.

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STAGES			
CDR	TRR	SAR	ORR
1			

CRITICAL DESIGN REVIEW

Goals

1. Assess if the design meets all system requirements with acceptable risk.

2. Demonstrate that the design maturity is appropriate to support proceeding with full-scale fabrication, verification, integration, and future operation and decommissioning.

ROLES & RESPONSBILITIES

REQUIRED ATTENDEES

1.Review leader

2.Reviewer

3.Reviewer

INVITEES

1.

SIGNATURE DATE

dd/mm/yyyy

WHAT GETS REVIEWED

1. System Design Description []
2. Operation and Maintenance Manual []
3. Interface Control Document(s) []
4. System Requirement Documents []
5. Verification Plan []
6. Integration Plan []

QUESTIONS TO CONSIDER

QUESTIONS TO CONSIDER	SUMMARY FINDINGS: Passed	Passed if	Not passed	N/A
1. Has the PDR of the parent system been completed successfully?	☐	☐	☐	☐
2. Has the design been properly documented? Drawings? P&ID? Material and part lists?	☐	☐	☐	☐
3. Are the design data properly controlled with approved configuration management procedures?	☐	☐	☐	☐
4. Does the equipment requirements address all the life cycle? Integration? Verification? Operation? Maintenance? Disposal?	☐	☐	☐	☐
5. Do design features trace to or cover all requirements?	☐	☐	☐	☐
6. Has the equipment been adequately designed for disposability?	☐	☐	☐	☐
7. Are ESS standardisation guidelines employed as appropriate? Mechanical? Electrical? Electronics? Vacuum? Data format?	☐	☐	☐	☐
8. Are key elements easily accessible for the performance of the maintenance activities?	☐	☐	☐	☐
9. Have adjustment/alignment/calibration requirements been defined and minimized? Do they trace to the appropriate maintenance	☐	☐	☐	☐

<<Insert reason>>
<<Reference>>

levels?

10. Are cables routed to avoid sharp ends? Pinching? Is cable labelling and clamping adequate? Are connectors and receptacles appropriately labelled?	☐	☐	☐	☐
11. Is the equipment properly designed for packaging, handling, storage and transportation?	☐	☐	☐	☐
12. Is the Operation and Maintenance adequately developed? Verification plan? Integration Plan? Are they compatible with the proposed design?	☐	☐	☐	☐
13. Have the criteria and procedures for the initial selection of the suppliers been established?	☐	☐	☐	☐
14. Have the appropriate quality control procedures been established for the monitoring and control of supplier activities?	☐	☐	☐	☐
15. Are supplier design data and documentation compatible with the requirements of the programme?	☐	☐	☐	☐

APPROVAL

☐ APPROVED AS IS ☐ APPROVED WITH CHANGES ☐ REJECTED

APPROVER **DATE**

<<Insert reason>>
<<Reference>>

Detailed Findings

1. Has the PDR of the parent system been completed successfully?

2. Has the design been properly documented? Drawings? P&ID? Material and part lists?

3. Are the design data properly controlled with approved configuration management procedures?

4. Does the equipment requirements address all the life cycle? Integration? Verification? Operation? Maintenance? Disposal?

5. Do design features trace to or cover all requirements?

6. Has the equipment been adequately designed for disposability?

7. Are ESS standardisation guidelines employed as appropriate? Mechanical? Electrical? Electronics? Vacuum? Data format?

8. Are key elements easily accessible for the performance of the maintenance activities?

9. Have adjustment/alignment/calibration requirements been defined and minimized? Do they trace to the appropriate maintenance levels?

10. Are cables routed to avoid sharp ends? Pinching? Is cable labelling and clamping adequate? Are connectors and receptacles appropriately labelled?

11. Is the equipment properly designed for packaging, handling, storage and transportation?

12. Is the Operation and Maintenance adequately developed? Verification plan? Integration Plan? Are they compatible with the proposed design?

13. Have the criteria and procedures for the initial selection of the suppliers been established?

14. Have the appropriate quality control procedures been established for the monitoring and control of supplier activities?

15. Are supplier design data and documentation compatible with the requirements of the programme?

<<Insert reason>>
<<Reference>>

STAGES			
CDR	TRR	SAR	ORR
	2		

TEST READINESS REVIEW

Goals

The TRR ensures that the product, its test equipment, support personnel, and test procedures are ready for the verification activities.

WHAT GETS REVIEWED

1. Verification Plan []

ROLES & RESPONSBILITIES

	SIGNATURE	DATE
REQUIRED ATTENDEES		
1.Review leader		dd/mm/yyyy
2.Reviewer		
3.Reviewer		
INVITEES		
1.		

QUESTIONS TO CONSIDER

	SUMMARY FINDINGS			
	Passed	Passed if	Not passed	N/A
1. Has the CDR been completed successfully?	☐	☐	☐	☐
2. Are all requirements traced to a verification activity in the verification plan?	☐	☐	☐	☐
3. Are proposed verification activities adequately defined with regards to requirements?	☐	☐	☐	☐
4. Is the support environment defined? Location? Involved personnel? Responsibilities?	☐	☐	☐	☐
5. Is the test equipment setup adequately defined? Available? Consumables?	☐	☐	☐	☐
6. Do all stakeholders understand their roles?	☐	☐	☐	☐

APPROVAL

☐ APPROVED AS IS ☐ APPROVED WITH CHANGES ☐ REJECTED

APPROVER DATE

<<Insert reason>>
<<Reference>>

Detailed Findings

1. Has the CDR been completed successfully?

2. Are all requirements traced to a verification activity in the verification plan?

3. Are proposed verification activities adequately defined with regards to requirements?

4. Is the support environment defined? Location? Involved personnel? Responsibilities?

5. Is the test equipment setup adequately defined? Available? Consumables?

6. Do all stakeholders understand their roles?

<<Insert reason>>
<<Reference>>

STAGES			
CDR	TRR	SAR	ORR
		3	

SYSTEM ACCEPTANCE REVIEW

Goals

The SAR examines the system end products and documentation, and inspection, demonstration, test data and analyses that support its verification. The SAR ensures that the all requirements have been satisfied.

WHAT GETS REVIEWED

1. Verification Plan []
2. Verification Report []
3. Integration Plan []

ROLES & RESPONSBILITIES

REQUIRED ATTENDEES

	SIGNATURE	DATE
1.Review leader		dd/mm/yyyy
2.Reviewer		
3.Reviewer		

INVITEES

1.

QUESTIONS TO CONSIDER

	SUMMARY FINDINGS			
	Passed	Passed if	Not passed	N/A
1. Has the TRR been completed successfully?	☐	☐	☐	☐
2. Are all verification records traced to the verification activities described in the verification plan?	☐	☐	☐	☐
3. Have test failures been adequately resolved?	☐	☐	☐	☐
4. Are verification records sufficiently comprehensive and positive for promoting the integration of the equipment within the parent system?	☐	☐	☐	☐

APPROVAL

☐ APPROVED AS IS ☐ APPROVED WITH CHANGES ☐ REJECTED

APPROVER DATE

<<Insert reason>>
<<Reference>>

Detailed Findings

1. Has the TRR been completed successfully?

2. Are all verification records traced to the verification activities described in the verification plan?

3. Have test failures been adequately resolved?

4. Are verification records sufficiently comprehensive and positive for promoting the integration of the equipment within the parent system?

<<Insert reason>>
<<Reference>>

STAGES			
CDR	TRR	SAR	ORR
			4

OPERATIONAL READINESS REVIEW

Goals

The ORR examines the actual operational set up (e.g. spare parts availability), and ensures that the personnel and procedures have reached the required maturity.

WHAT GETS REVIEWED

1. Training reports []
2. Operation and maintenance manual [].
3. Operation schedule []

ROLES & RESPONSBILITIES

REQUIRED ATTENDEES

SIGNATURE DATE

1.Review leader dd/mm/yyyy

2.Reviewer

3.Reviewer

INVITEES

1.

QUESTIONS TO CONSIDER

QUESTIONS TO CONSIDER	SUMMARY FINDINGS: Passed	Passed if	Not passed	N/A
1. Has the SAR been completed successfully?	☐	☐	☐	☐
2. Are the roles and responsibilities for operating the system defined? For maintenance?	☐	☐	☐	☐
3. Do the key stakeholders understand their responsibilities?	☐	☐	☐	☐
4. Is the operating schedule consistent with the stakeholder's expectations?	☐	☐	☐	☐
5. Have all external programmatic dependencies been coordinated? Warehouse? Workshops?	☐	☐	☐	☐
6. Have subcontractors supporting operation roles and responsibilities defined?	☐	☐	☐	☐
7. Is the operation team trained in accordance with its tasks?	☐	☐	☐	☐
8. Is the equipment user trained in accordance with its tasks?	☐	☐	☐	☐

APPROVAL

☐ APPROVED AS IS ☐ APPROVED WITH CHANGES ☐ REJECTED

APPROVER DATE

<<Insert reason>>
<<Reference>>

Detailed Findings

1. Has the SAR been completed successfully?

2. Are the roles and responsibilities for operating the system defined? For maintenance?

3. Do the key stakeholders understand their responsibilities?

4. Is the operating schedule consistent with the stakeholder's expectations?

5. Have all external programmatic dependencies been coordinated? Warehouse? Workshops?

6. Have subcontractors supporting operation roles and responsibilities defined? Contract signed?

7. Is the operation team trained in accordance with its tasks?

8. Is the equipment user trained in accordance with its tasks where applicable?