

K701 A/B System Reliability Improvements.

Statement of Fitness (SoF)-PSSR

This SoF - PSSR is to Document

Check One

- Startup or commissioning a new asset or idled process / equipment, ☐
- Re-start after modification to an existing asset, ☒
- Re-start after an overhaul or a turnaround, or ☐
- Re-start after an Incident involving uncontrolled shutdown, the asset subjected to operating conditions outside the equipment constraints, or the asset experienced environmental conditions beyond the original design parameters or significant HSSE incident involving the equipment. ☐
- Startup after reverting a temporary change back to original conditions / extending a temporary change duration / converting a temporary change to a permanent change ☐

Operating Unit:

Equipment:

Incident report / Project # (if applicable):

U700

K701 A/B

MOC-27756

The following criteria have been met. These criteria have been identified by Shell as the criteria necessary for the facility to start up.

For restart after Incidents:

- o The cause(s) of the incident are understood through the incident investigation process.
- o Corrective actions required for restart are completed and address the incident causes. This could include any or all of: repairs, alterations or modifications, required monitoring, temporary equipment, mitigations.
- o A review has been conducted to assess implications for similar equipment or barriers on the asset
- o The Hazards and Effects Register has been reviewed and updated, as necessary, as it applies to this incident.
- o Incident report, if available, and other data and documentation are attached.

Statements of Fitness requirements specified in AI-PSM Application Manual Item 7.2 have been met where applicable:

- a. Process safety risks have been identified and documented and are either managed to ALARP or appropriately being managed to ALARP through application of HEMP;
- b. People executing HSSE Critical Activities are competent and fit to work;
- c. HSSE Critical Equipment meets its Technical Integrity requirements, and Modifications are complete and have been authorised as specified in the Management of Change Manual Section;
- d. Design and construction of New Assets and Modifications to existing Assets meet design and engineering requirements;
- e. The Process Safety Basic Requirements (i.e. DEM 2) are met, as applicable;
- f. Procedures are in place to operate HSSE Critical Equipment within its Operational Limits.

The facility therefore meets the criteria necessary to start up.

Signed:

_____, date,

Production Unit Manager / Production Manager

Lih Ren / PS & Tech
RE

Note: PEL is required to enter all outstanding 'B' action items into Cintellate for tracking.
PEL is required to upload the signoff into MOC Sharepoint folder and complete Readiness Review in eMOC before/on the same day the change is started up.
PUM / Area 1 Owner is responsible to complete the eMOC start up approval by the same day.

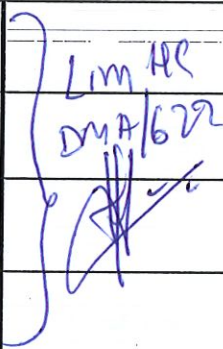
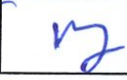
Checklist 1: Mechanical Completion Handover Checklist

Title	
Reference (Project) Number if any	
Unit / Equipment	
Date	
Project Handover Leader	

To be completed by Project Handover Leader with relevant discipline engineers from the RRA list

Category	Assessment Priority, if No	Sign Off
For Project Handover Leader		
1. Have all the Project Works been completed and all permits associated with the equipment been closed?	Y ☒ N ☐ NA ☐ A ☐ B ☐	
2. General field assessment – moving parts guarded, sharp edges removed, bump and tripping hazards guarded, obstruction of scaffoldings to equipment or for safe startup, adequate lighting and ventilation, etc.	Y ☒ N ☐ NA ☐ A ☐ B ☐	
3. Design and construction of new assets and modification to existing assets meet the design and engineering requirements, including any applicable DEM1 DEPs, DEPs, or approved deviation / derogation(s), and this is reflected in the project documentation. Attach and review punch list items from projects handover, if applicable.	Y ☒ N ☐ NA ☐ A ☐ B ☐	
4. Installation or modifications are complete and were authorised per applicable Management of Change requirements (including all precautions identified).	Y ☒ N ☐ NA ☐ A ☐ B ☐	
5. Check for adequacy of PEFS. Piping is routed and valved according to the PEFs / isometrics. Adequate drains and vents for depressurizing and means for LOTO.	Y ☒ N ☐ NA ☐ A ☐ B ☐	
6. HSSE critical equipment (plant equipment) meets its technical integrity requirements. Eg. Pressure relief devices, Interlocks provision, safe guarding mechanism installed as per design.	Y ☒ N ☐ NA ☐ A ☐ B ☐	
7. Have all flanges (excluding startup required vents/drains) been tightened and leak testing performed to ensure no leaking flanges or tubing connections? Sample checks for TFAs. Recommended at least 25% field TFA flange visual.	Y ☒ N ☐ NA ☐ A ☐ B ☐	
8. Have all the disturbed piping supports, spring hangers, removed insulation restored to normal conditions?	Y ☒ N ☐ NA ☐ A ☐ B ☐	
9. Pre-service required by vendors has been performed.	Y ☐ N ☐ NA ☒ A ☐ B ☐	
10. All safety and control devices are set and operate properly.	Y ☐ N ☐ NA ☒ A ☐ B ☐	

11. Have all the relevant PEFs, PCFs or other change documents been handed over to operations & maintenance? Red lined PEFs to be submitted to Operations before Operations PSSR check. (Note: Impacted PUs to receive their redlined PEFs for cross PU MOCs)	Y ☐ N ☐ NA ☒ A ☐ B ☐	ms
12. Non-Return Valves (NRV) have been visually inspected to ensure functionality (e.g., clean, no fouling/obstruction, flapper is free to move).	Y ☐ N ☐ NA ☒ A ☐ B ☐	ms
13. Check that eMOC Cintellate priority 'A' action items have been completed.	Y ☐ N ☐ NA ☒ A ☐ B ☐	ms
For Process Safety		
14. Process safety risks have been identified (e.g. through the Hazard and Effects Management Process) and appropriate safeguarding recommendations have been completed or appropriate interim mitigations are in place.	Y ☒ N ☐ NA ☐ A ☐ B ☐	Dupliker 27-8-21
For Technologist		
15. Is the equipment installed as per the agreed MOC scope?	Y ☒ N ☐ NA ☐ A ☐ B ☐	Dupliker 27-8-21
16. Have all PQ related recommendations necessary for start up (where applicable) been completed?	Y ☐ N ☐ NA ☒ A ☐ B ☐	Dupliker
For Utility Tech Assurance		
17. Is the utility impacted equipment installed as per the agreed MOC scope?	Y ☐ N ☐ NA ☒ A ☐ B ☐	ms
18. Have all utility related recommendations necessary for start up (where applicable) been completed?	Y ☐ N ☐ NA ☒ A ☐ B ☐	ms
19. 2 x backflow protection barriers are installed for connections of water streams in steam cycle to acid/caustic systems.	Y ☐ N ☐ NA ☒ A ☐ B ☐	ms
For Process Control		
20. Have all the ESP deliverables – variable tables, alarm setting etc been implemented?	Y ☐ N ☐ NA ☒ A ☐ B ☐	} ms After I/A Start up, P.C will reconfirm the scheme as agreed WJ
21. Have DCS sequence changes been verified?	Y ☐ N ☐ NA ☒ A ☐ B ☐	
For Electrical		
22. Have all the electrical equipments as part of the scope execution been completed and safe for the start up?	Y ☐ N ☐ NA ☒ A ☐ B ☐	ms
23. Have all the MOVs been installed in the right direction and FFT done?	Y ☐ N ☐ NA ☒ A ☐ B ☐	ms
For QMI		
24. Have all the analyzers/detectors as part of the scope execution been completed and safe for the start up?	Y ☐ N ☐ NA ☒ A ☐ B ☐	ms
25. Are all the critical analyzers/detectors available for the start up and plan in place to validate during the start up phase?	Y ☐ N ☐ NA ☒ A ☐ B ☐	ms
For Rotating Equipment		
26. Are all the identified (scopes) critical rotating equipments checked for safe starting up of the units?	Y ☒ N ☐ NA ☐ A ☐ B ☐	Reg. 27-8-21

For Instrument				
27. Have all the instruments works as part of the scope execution been completed and safe for the start up?	Y ☒	N ☐	NA ☐	
	A ☐	B ☐		
28. Actual device function tests are complete, and control and safety system logic match the design requirements.	Y ☒	N ☐	NA ☐	
	A ☐	B ☐		
29. Have all the ROVs/ CVs installed in the right direction and FFT done?	Y ☐	N ☐	NA ☒	
	A ☐	B ☐		
30. All protective shipping brackets and packing have been removed from controllers & instruments.	Y ☐	N ☐	NA ☒	
	A ☐	B ☐		
For Civil				
31. Have all the civil works as part of the scope execution been completed and safe for the start up?	Y ☐	N ☐	NA ☐	
	A ☐	B ☐		
For Inspection / Corrosion				
32. Non-destructive testing requirements have been completed.	Y ☐	N ☐	NA ☒	
	A ☐	B ☐		
33. IOWs reviewed based on new design operating parameters and new metallurgy of equipment.	Y ☐	N ☐	NA ☐	
	A ☐	B ☐		
For Mechanical				
34. Have the mechanical scope of the change been implemented in accordance with the design details?	Y ☐	N ☐	NA ☒	
	A ☐	B ☐		
For Maintenance				
35. Maintenance procedures and commissioning spare parts are in place	Y ☐	N ☐	NA ☒	
	A ☐	B ☐		
36. Maintainability of equipment at the field.	Y ☒	N ☐	NA ☐	
	A ☐	B ☐		
For Reliability				
37. Identified Reliability risk control plan actions from Risk analysis have been implemented or appropriate interim mitigations are in place.	Y ☐	N ☐	NA ☒	
	A ☐	B ☐		

The Projects Handover Leader shall assemble a PSSR team based on the actual scope of works and / or the approved MOC authorizing the change and seek PUM consent for any waiver of disciplines from PSSR. If an item in the checklist is not applicable then please indicate as "NA" and sign off. The Projects Handover Leader is responsible to ensure that all items on the checklists are duly completed and signed off, even if the checklist item is NA.

PEL is responsible to transfer all outstanding action items into eMOC Cintellate for tracking to closure. The relevant discipline engineer shall be identified from the list of PSSR team members in the "Management of Change - Roles, Responsibility and Authority" document for Capital and Plant Change Request.

Punch Listing for Mechanical Handover

Note: Priority A – Required prior to startup. Priority B – Can be accomplished after startup. All priorities identified must be assigned to someone with a completion date.

No.	Action Items	Priority	Assigned by	Assigned to	Target Date	Completed by (Name / Sign / Date)
1.	Drain lines tubing and vent line tubing at diaphragm seal transmitter need to be capped off	A	LimHC	PEL	28/8	Ynn witness on behalf of RL
2.	OTLS-033 m PEFS need to be updated in	B	LimHC	PEL		
3.	Update PEFS / Iso for instr. tags.	B	Tech	PEL		
4.	To confirm and seal pressure and reset PCV	B	RCE	Ops		
5.						

Signature of those who conducted the review.

SN	Name / Indicator	Discipline/Function	Signature
1	Kim Wj	PSSR Team Leader	Kim Wj
2			
3	Lim Huat Cheh DMA/622	Instrument	Lim Huat Cheh
4	Ong Lih Ren DMA/630	Technology/PS	Ong Lih Ren
5	Yong Rucy Chyi DMA/626	RCE	Yong Rucy Chyi
6	Ng Kock Sn.	Reliability	Ng Kock Sn.
7			
8			
9			
10			

Acceptance of Mechanical Handover by Operations:

The Operations Focal accepts the facility from the project team -

Operations Focal Signature / Indicator: Ynn DMA/611 Date: 28/8/21

Acceptance of Punch List by Operations:

The Operations Focal confirm and accept the punch listing by the project team -

Operations Focal Signature / Indicator: Ynn DMA/611 Date: 28/8/21

Checklist 2: Operations Pre-Start up Safety Review (PSSR) Checklist

PSSR Title	
Reference (Project) Number if any	
Unit / Equipment	MOC 27786
Date	
PSSR Leader	

To be completed by the Operations PSSR Leader

Category	Assessment			Priority, if No	
DESKTOP REVIEW	Y	N	NA	A	B
1. Are Start-up, Operating, Shutdown and Emergency response/evacuation/PIP procedures updated and in place?	☒	☐	☐	☐	☐
2. Have all affected employees been notified and/or trained, especially on any changes, new hazards and any new/updated procedures that have been put in place?	☒	☐	☐	☐	☐
3. Specific to the event, is there any specific Hold Points established or in place and communicated to the start up crew?	☒	☐	☐	☐	☐
4. Has communications been made to other departments & third party personnel that might be affected during start-up?	☒	☐	☐	☐	☐
5. Has the start-up been cross-referenced with other permits?	☒	☐	☐	☐	☐
6. Has issues with simultaneous operations been considered?	☒	☐	☐	☐	☐
7. Have the supplying and receiving units / facilities been notified?	☒	☐	☐	☐	☐
8. Is the startup and subsequent operation sufficiently staffed?	☒	☐	☐	☐	☐
9. All impacted personnel are informed of the impending startup, and plans are in place for all non-essential personnel, equipment and potential sources of ignition to be removed from the area?	☒	☐	☐	☐	☐
10. Are all Toxic Gas and Flammable Gas Alarms systems functioning and available at the DCS?	☒	☐	☐	☐	☐
11. As part of any projects implementation, are all the critical and standard alarms defined and available in DCS?	☒	☐	☐	☐	☐
12. Is there a plan to screen the ZMVC, checking the modes of the controllers, sequence before starting up the units?	☒	☐	☐	☐	☐
13. Have red lined PEFs been received and made available for use?	☒	☐	☐	☐	☐

FIELD WORK - Walk down based on PEFS marked up required.	Y	N	NA	A	B
14. Have project works been completed, Mechanical Completion Handover Checklist signed off and all permits associated with the equipment been closed?	☒	☐	☐	☐	☐
15. Are appropriate interim mitigations (Process safety, HSE, PQ, reliability if applicable) been put in place as defined in the MOC?	☒	☐	☐	☐	☐
16. Is necessary safety equipment (respiratory protection, chemical protective clothing, safety shower/eyewash stations, etc.) available?	☒	☐	☐	☐	☐
17. Have all the fire fighting equipments – Steam Lances, Sprinklers, Poly Flo Tubes etc been restored to normal positions and available on demand?	☒	☐	☐	☐	☐
18. Is all equipment in start-up ready condition (spades, blinds removed, valves in correct position)?	☒	☐	☐	☐	☐
19. Have appropriate Lock Out Tag Out devices and safety tags been removed?	☒	☐	☐	☐	☐
20. Are drain/vent valves closed and plugged and end blinded with right gasket and right tightness?	☒	☐	☐	☐	☐
21. Have all the low points drains (attention to those that could be masked by insulation or other obstructions) been closed, plugged and end blinded or capped?	☒	☐	☐	☐	☐
22. Have all temporary piping and hoses (process or utility) connections not required for start-up been removed? Is there necessary MOC in place for any temporary connections required for commissioning or start-up?	☒	☐	☐	☐	☐
23. Have all the field trip switches (for equipments, safeguarding and Fire Fighting) been restored to normal positions?	☒	☐	☐	☐	☐
24. Have CNRVs been restored to normal condition and checked for the direction in the field?	☒	☐	☐	☐	☐
25. Have Critical ROs installed at the appropriate locations?	☒	☐	☐	☐	☐
26. Have all the Relief valves been installed, normalized – inclusive of the normalization of the interlocks and bypass valves?	☒	☐	☐	☐	☐
27. Have all the LO and LC valves (including any new ones from the project / modifications) been identified and appropriately sealed onsite?	☒	☐	☐	☐	☐
28. Have all the ROVs been restored to normal positions including the Field Switches turned to Remote?	☒	☐	☐	☐	☐
29. Have all the control valves been properly lined up, bypass valves verified and stroke tested?	☒	☐	☐	☐	☐
30. Have the Fire and Gas console been screened to ensure that all the fire fighting equipments and auxiliaries are available and on Auto position (example – Fire Water Pumps, Field Trip Switches etc)	☒	☐	☐	☐	☐
31. Is the panel been screened for all the safeguarding overrides – from DCS, PLC and Field forcing?	☒	☐	☐	☐	☐
32. Has the screening been done for all the AOF, CAL status on the panel?	☒	☐	☐	☐	☐

33. Have necessary barricades been removed?	☒	☐	☐	☐	☐
34. Has the system been O2 freed and Leak Tested?	☒	☐	☐	☐	☐
35. Have all the Field Line Up been verified – inclusive for NNF Lines, Flushing Lines?	☒	☐	☐	☐	☐
36. Is the area sufficiently clean and tools returned to proper location?	☒	☐	☐	☐	☐

Others if any specific to the event or the equipment

Category	Assessment			Priority, if No	
37.	☐	☐	☐	☐	☐
38.	☐	☐	☐	☐	☐
39.	☐	☐	☐	☐	☐
40.	☐	☐	☐	☐	☐
41.	☐	☐	☐	☐	☐
42.	☐	☐	☐	☐	☐

If an item in the checklist is not applicable then please indicate as "NA". The Operations PSSR Leader is responsible to ensure that all items on the checklists are duly completed

Punch Listing for Operations PSSR

Note: Priority A – Required prior to startup. Priority B – Can be accomplished after startup. All priorities identified must be assigned to someone with a completion date.

No.	Action Items	Priority	Assigned by	Assigned to	Target Date	Completed by (Name / Sign / Date)
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

Signature of those who conducted the review.

SN	Name	Discipline	Signature
1	<i>[Signature]</i>	Operations PSSR Leader	<i>[Signature]</i>
2			

28.8.21