

PRE-STARTUP REVIEW

1.0 Purpose

This element identifies Petsec Pre-Startup Review process as required by its Safety and Environmental Management System (SEMS) Program; it applies to all Petsec operations. Petsec has established and implemented this pre-startup review as part of its commissioning procedure when installing new facilities or making significant renovations to existing facilities.

2.0 **Process**

This element addresses procedures and processes for all of the elements in its SEMS Program. An example of the Petsec pre-startup procedure is attached; refer to **Attachment A:** *Safety, Pre-Commissioning and Startup Plan* (example). The following SEMS elements are a part of the commissioning process:

- Safety and Environmental Information
- Emergency Response and Control
- Management Of Change (MOC)
- Safe Work Practices and Contractor Selection
- Training
- Hazards Analysis
- Operating Procedures
- Mechanical Integrity (MI)
- Investigation of Incidents

2.1 **Design, Fabrication and Installation**

NOTE A list of critical equipment is found in the Mechanical Integrity element.

An engineering firm and/or a fabrication/installation company are selected to design, fabricate and install the equipment and systems associated with the Pre-Startup; refer to *Mechanical Integrity* element.

NOTETesting and inspecting procedures (with documentation requirements)
are found in the Mechanical Integrity element, section 2.5.

2.2 Procedure

The four-step process that must be completed for all new installations and/or major renovations before the equipment and/or systems are integrated into the SEMS Program.

- 2.2.1 The pre-startup review is conducted after the equipment and/or systems are installed on the new facility or major renovations are completed on an existing facility. The Facility PIC or construction consultant supervisor assures:
 - 2.2.1.1 All approvals are obtained before the startup begins.
 - 2.2.1.2 For a renovation of an existing facility, generates a Management Of Change (MOC); refer to the Management Of Change element

	The Pre-Startup Review element is used instead of the MOC
NOTE	element to address changes for new facility installations.

- 2.2.1.3 Assures employees and contract personnel receive an orientation and document their knowledge, experience and expertise using the *Knowledge and Skills Worksheet*; refer to *Safe Work Practices* element.
- 2.2.1.4 Assures safety and environmental information related to the new installation or renovation is collected and placed in appropriate files on the facility; refer to the *Safety and Environmental Information* element.
- 2.2.1.5 A hazards analysis of the equipment and/or systems is conducted; refer to *Hazards Analysis* element.
- 2.2.1.6 If necessary, critical equipment and/or systems are added to the *Testing and Inspecting Checklist*, refer to *Mechanical Integrity* element.
- 2.2.1.7 Operating procedures for the newly-installed or renovated equipment and/or systems are generated; refer to *Operating Procedures* element.
- 2.2.1.8 If new facility, emergency procedures and control documents are reviewed to ensure they are applicable to the new facility; if not, new documents are generated. Refer to *Emergency Response and Control* element.
- 2.2.1.9 If major renovations, emergency procedures and control documents are reviewed to ensure they are applicable to the renovations; if not, they are edited. Refer to *Emergency Response and Control* element.
- 2.2.1.10 If an incident occurs prior to or after the commissioning process, personnel complete an incident report and/or conduct an incident investigation; refer to *Incident Investigation* element.
- 2.2.1.11 A Safety, Pre-Commissioning and Startup Plan is generated and completed; refer to attached example.
- 2.2.2 The Lead Operator conducts inspections and commissions the equipment and/or systems associated with the new facility or major renovation on the existing facility in accordance with applicable specifications; refer to the newly-generated Safety, Pre-Commissioning and Startup Plan.

2.2.3 The Production Superintendent assures training of all production operations employees and/or contract personnel associated with the new facility or renovation; refer to *Training* element.

3.0 Training

- 3.1 Train all affected employees every five (5) years on the contents of this element; refer to the Training element.
- 3.2 Train all affected, newly hired employees within 30 days of the date of hire on the contents of this element; refer to the Training element.
- 3.3 Train or inform affected employees of any changes to this element within 30 days after the element changes have been approved and completed.

4.0 Recordkeeping

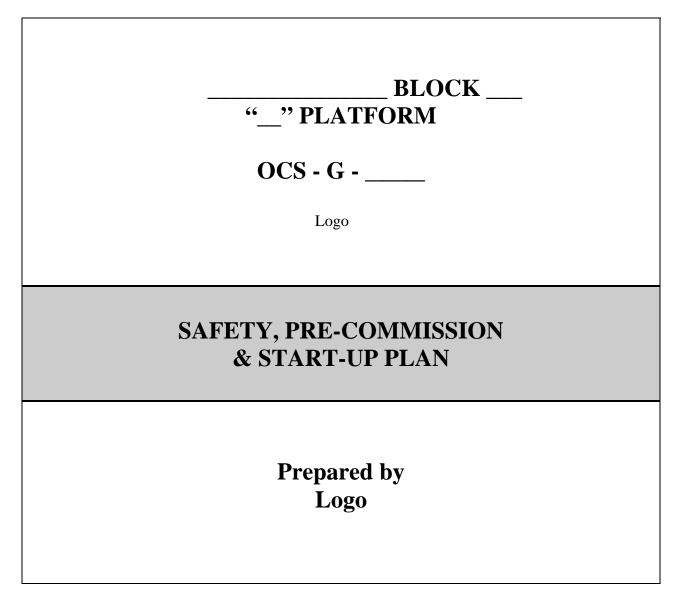
4.1 Copies of the Safety, Pre-Commissioning and Startup Plan are placed in the SEMS files within 30 days after the facility is commissioned.

5.0 Attachments

5.1 Attachment A: Safety, Pre-Commissioning and Startup Plan (example)

Attachment A

Safety, Pre-Commissioning and Startup Plan (example)



A.	SAFE'	TY, PRE-COMMISSIONING, & START-UP PLAN
	1.0	GENERAL
		1.1 Introduction
		1.2 Facilities Description
	2.0	SAFETY
		2.1 Safe Work Plan
		2.2 Responsible Parties2.3 General Safety Procedures
		2.5 Content Statety Frocedures2.4 Safety Meetings and Job Safety Analyses (JSA)
		2.5 Permits
		2.6 Safety Checklists
		2.7 Communications
		2.8 Incident Review
	3.0	PRE-COMMISSIONING
		3.1 Mechanical Test & Inspection
		3.2 Electrical Test & Inspection
		3.3 Safety System Testing
		 3.4 Valve Position and Instrument Setting 3.5 Pre-Startup & Review/Punch list
		 3.5 Pre-Startup & Review/Punch list 3.6 Instrumentation and Electrical Checklist
		5.0 Instrumentation and Electrical Checkinst
	4.0	COMMISSIONING AND START-UP
		4.1 Start-Up Personnel
		4.2 Commissioning Procedures
B.	GENE	ERAL DESCRIPTION OF FACILITIES AND FLOW OF PRODUCTION
C.	EQUI	PMENT DESCRIPTION & SET POINTS TABLES
D.	P & II	D DRAWINGS
E.	SAFE	CHARTS
APP	ENDIX	A: Mechanical Test and Inspection Checklist
APP	ENDIX	B: Instrument & Electrical Test and Inspection Checklist
APP	ENDIX	C: Safety Systems Testing Checklist
APP	ENDIX	D: Commissioning Valve Position and Instrument Settings Checklist
APP	ENDIX	E: Pre-Startup Review/ Punch list
APP	ENDIX	F: Instrumentation and Electrical Checklist
∆ DD	ENDIX	G: Initial Platform Start-Up Procedure
		6. Initial Flatforni Start-Op Flocedure

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PRE-COMMISSIONING VALVE POSITION Logo

AND INSTRUMENT SETTINGS

Client: Exploration Company Project: Platform Commission

Location: West Cameron 341-A

Checklist prepared by: Terry E Trahan

	A. PIPELINES	YES	NO	TAG
A1	Open the 8" block valve on the incoming pipeline CM-3/6700			
A2	Place the 8" Pig Ball Valve receiver in the "Ready to Receive" position			
A3	Close the 8" block valve on the incoming pipeline for the future 8700 production			
A4	Open the block valve at the "old" Transfer Platform to allow S/L 212 oil into the 6" oil inlet line			
A5	NOTE: The 8" SDV-1001 will be opened at Start-Up			

	B. TANKS (ABJ-1100, ABJ-1200, ABJ-1000)	YES	NO	TAG
B1	Open the two (2) 8" oil inlet valves on the dry oil tanks and close the 8" oil inlet valve on the wet oil tank			
B2	Close the three (3) 2" inlet valves from the Tank Bottoms Pump discharge on the three tanks			
B 3	Open both 2" block valves on both sides of the Blanket Gas Regulator, PCV-1001			
B4	Set PCV-1001 to 1 oz./in ² or 1.731 in. H_2O when instrument air is available			
B5	Close the three (3) 4" outlet valves to the Tank Bottoms Pump suction on the three tanks			
B6	Open the two (2) 12" oil outlet valves on the dry oil tanks and close the 12" oil outlet valve on the wet oil tank			
B7	Close all 1/2" instrument air valves that are not being used			

	C. TANK BOTTOMS PUMP (PBA-4000)	YES	NO	N/A
C1	Open the 2" suction valve and both 2" parallel discharge valves (one to Bulk Treater and one to tanks)			
C2	Open the 1" supply utility air valve			
C3	Set regulator PCV-4001 on the combination filter/regulator-lubricator to an initial setting of 80 psig when utility air is available			

	D. TANK DECK SUMP TANK PUMP (PBA-8010)	YES	NO	N/A
D1	Open the two (2) block valves on the suction and discharge of the pump			
D2	Open the 1" supply gas block valve			
D3	Set regulator PCV-8011 on the combination filter/regulator-lubricator to an initial setting of 80 psig when utility air is available			
D4	NOTE: The 1" SDV-8011 will be opened during Start-Up			

	E. NATURAL GAS GENERATOR (ZAN-8200)	YES	NO	N/A
E1	Open the block valves on the 1" fuel gas and 2" start gas line			
	NOTE: The 1" SDV-8201 will be opened during Start-Up			

	F. LACT SKID PECO FILTER/SEPARATOR (MAK-9000)	YES	NO	N/A
F1	Close the two (2) bridle test valves on LSH-9001			
F2	Open the two (2) 1" vessel valves on LSH-9001			
F3	Open the four (4) 1" block valves on the Armstrong fluid traps			
F4	Close the 2" vessel by-pass valve			
F5	Open the 2" gas outlet valve			
F6	Open the 2" gas inlet valve			
F7	Close all 1/2" instrument air valves that are not being used			
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NOTE: The 2" inlet SDV-9001 will be opened during Start-Up. Vessel pressure should be the same as on the S/L 212 structures

	G. LACT CHARGE PUMPS (PBA-3601/3602/3603) LACT UNIT (ZAU-3506)	YES	NO	N/A	
G1	Open only one charge pump train by closing the 6" block valves on the suction and discharge of two of the trains and opening the 6" block valves on the suction and discharge of the train to be used for initial production				
G2	Open only one LACT metering train by closing the 4" block valves on the inlet and outlet of two of the metering trains and opening the 4" block valves on the inlet and outlet of the train to be used for initial production				
G3	Open the final 10" block valve				
	NOTE: The 12" SDV-3601 that allows oil from the tanks to the charge pump skid will be opened during Start-Up				

	H. PIPELINE PUMP (PAX-6000)	YES	NO	N/A		
H1	Open the 10" suction block valve					
H2	Open the 6" discharge block valve					
Н3	Open the two (2) 2" block valves on both sides of the re-cycle valve, FCV-6001					
H4	Open & lock the 2" block valve below the relief valve PSV-6001					
H5	Open the 1" fuel gas block valve					
H6	Open the 2" block valve on the start gas line					
H7	Close all ½ instrument air valves that are not being used					
	NOTE: The 1" fuel gas SDV-6001 will be opened during Start-Up					

	I. LACT DECK SUMP TANK (ABH-8100) AND SUMP TANK PUMP (PBA-8100)	YES	NO	N/A
I1	Open the two (2) 2" block valves on the suction and discharge of the pump			
I2	Open the 1" supply gas block valve			
13	Set regulator PCV-8111 on the combination filter/regulator-lubricator to an initial setting of 80 psig when utility air is available			
	NOTE: The 1" fuel gas SDV-8111 will be opened during Start-Up			

	J. PIG LAUNCHER	YES	NO	N/A
J1	Place the 8" pig ball launcher in the "Ready to Launch" position			
J2	Open the 8" departing block valve			
	NOTE: The 8" sdv-7001 will be opened during Start-Up			

	K. EMPCO CONNECTION PLATFORM PIG RECEIVER	YES	NO	N/A
K1	Open the 8" SWIFT by-pass valve			
K2	Place the 8" pig ball receiver in the "Ready to Receive" position			
K3	Open the 8" incoming block valve			
	NOTE: EMPCO personnel to open their 8" EMPCO gate valve into their 12" pipeline			

Remarks:

Operations:	Date:
Engineering:	Date:

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INSTRUMENT & ELECTRICAL TEST AND INSPECTION							
System: WC 341A Sump System							
Re.: Spec. No.:	Client: Exploration Company	Inspection Date:					
P & ID: 4102	Project: Prestart up and Commission						
Ref. Dwg.: 0417	Location: West Cameron 341A	Date:					
Inspection Checklist prep	ared by: Terry E Taylor						
Pressure Safety Valve (TH-20	Yes No						
Pressure Control Valve (PCV-2	Yes No						
Level Safety High (LSH-100) ir	Yes No						
Shut Down Valve (SDV-0200)	Yes No						
ABH-0100 Sump Pump #2							
Regulator/Filter Lubricator insta	Yes No						
Flow Safety Valve (FSV-0100)	Yes No						
Inspected by:							

_ Startup Guidelines

Have all approved applications, flow and safe charts, safety equipment layouts, Coast Guard inspections, chemical in lieu of firewater, pipeline as-built and hydro test data, well head leak test, SSV and SCSSV certification, landing nipple certifications, prestartup function test records, aids-to-navigation, commingling permits, available for BOERME representatives.

____ Startup Checklist

- 1. Verify that all safety equipment is installed as per the approved safety equipment layout and is functioning.
- 2. Hold a safety meeting with all personnel to make sure that everyone is familiar with the safety equipment layout.
- 3. Perform annual Coast Guard inspection (third party).
- 4. Verify that all components are properly stenciled and tagged as per the approved safe chart.
- 5. Verify that all drip pans or containment cannot leak fluids overboard.
- 6. Verify that all open-ended valves have plugs in them.
- 7. Check chokes and zero all choke indicators on the wells.
- 8. Verify that all needle valves and gauges are installed and are the correct pressure ratings.
- 9. Make sure you have enough nitrogen (N2) on location for testing purposes.
- 10. Make sure all PSV isolation valves are tie wrapped in the locked-open position once the PSV have been tested.
- 11. Set all regulators.
- 12. Check hydraulic oil level in panel for SCSSV control lines.
- 13. Make a walk-through and verify all piping is properly hooked up (no missing spools).
- 14. Verify all flanges, hammer unions, studs and nuts are made up properly.
- 15. Verify turbine meters are installed on test separator (oil and water).
- 16. Verify Barton Recorder is installed on test separator (third party to calibrate).
- 17. Verify gas lift meters are installed.
- 18. Verify
- 19. FSV on gas lift lines are less than three (3) feet of casing valve.
- 20. Verify pigging program and required pigs are on location.
- 21. Verify all required chemicals are on location (along with MSDS).
- 22. Make sure radios and a bag phone is set up for communication with rig and host platform.
- 23. Make sure shake out bottles, hydrometers for gravity, sample bottles and a mudweight tester for weighing water are on location for start up.
- 24. Verify diesel generator is equipped with all proper safety devices.
- 25. Verify diesel generator is grounded to deck.
- 26. Verify diesel generator has TSE installed.
- 27. Verify that all nuts and ferrules are properly checked for correct torque (operators and third party to check).

Function Test

- 1. Hook up N2 to the master panel and test for leaks.
- 2. Set all regulators.
- 3. Make sure all sensing lines are open for PSHL.
- 4. Function test safety devices as per the approved process flow and safe charts. A full function test is required for every device listed on the safe chart: SDV, PSHL, LSHL, FSV on flow lines, SSV, master valves on well heads and PSV, Document all testing on your BOERME monthly worksheet.
- 5. Function test and record the timing of all ESD stations. Set SDV shut in timing at this point and verify that they are installed as per API RP 14C.
- Function test and time all TSE and verify that they are installed as per API RP 14C.
- 7. Witness SCADA shut in function and re-start, receiving signal from the host platform.
- 8. Hook up methanol injection where needed.
- 9. Hook up chemical injection where needed.
- 10. Establish a water level in all vessels utilizing sea water.
- 11. Verify that the isolation valves on the bridles for all LSHL are open and sensing.
- 12. Verify once again that all isolation valves under every PSV are locked in the open position.

Pre-Startup Meeting

- 1. Hold safety meeting with all personnel
- 2. Review startup checklist and verify that all items have been addressed.
- 3. Designate location of key personnel.
- 4. Implement no smoking policy at this time.
- 5. Implement no hot work or open flames at this time.
- 6. Review safety device bypass, flag, tag and monitor policy with all onsite personnel.

Purging System

- 1. Use N2 to operate master panel until system is purged.
- 2. Line up C-3 well to test separation.
- 3. Purge flow line, manifold and test separator to flare for one (1) hour or until full concentration of gas are reading with a calibrated portable gas sniffer.
- 4. Line up two (2) inch gas lift line to fuel gas scrubber.
- 5. With the host platform pressuring up two (2) inch gas lift line from EC 328B to EC 328C.
- 6. Purge two (2) inch gas lift line and fuel gas scrubber until free of air and full concentration of gas are reading with a calibrated portable gas sniffer.
- 7. Purge any other piping deemed necessary to properly purge the system free of air (fuel gas piping for panels, pumps, gas lift manifold, etc.).
- 8. Purge system and associated piping for one (1) hour or until free of air.
- 9. Use C-3 well to purge four (4) inch and six (6) inch pipelines flowing to EC 328B.
- 10. Establish good communication with EC 328B during this procedure.

Pressuring up System

- 1. Pressure up the test separator slowly in 300 psig increments to 7% below PSV or SITP of well C-3 if less than 7% of PSV.
- 2. Hold for 15 minutes and check for leaks from well head to test separator.
- 3. Pressure up on fuel gas scrubber to 7% of PSV.
- 4. Hold for 15 minutes and check fuel gas scrubber and associated piping for leaks.
- 5. Fine tune all BPV and regulators for correct operating pressures.
- 6. Pressure up four (4) inch and six (6) inch pipelines to MAOP of each pipeline or SITP of well C-3 if less than the MAOP of pipelines.
- 7. Disconnect N2 from master panel and tie in fuel gas supply.
- 8. Check supply pressure feeding vent scrubber pump and sump for correct set pressure.
- 9. Check operation of sump and vent scrubber pump.

Placing Production On-Line

- 1. Production Engineer contacts gas marketing in Woodlands office.
- 2. Get current SITP on C-3 well.
- 3. Production Engineer provides estimated rates for first production.
- 4. Open well C-3 to production in test separator.
- 5. Lead operator provides hourly flow back sheets of producing well to Production Foremen and Production Engineer.
- 6. Line out system.
- 7. Run four (4) hour range charts on all PSHL and set accordingly and record.
- 8. Have sample bottles on board for oil and water samples to be sent in for analysis.