OPERATING PROCEDURES

1.0 Purpose

This element identifies Petsec's Operating Procedures for its Safety and Environmental Management System (SEMS) Program; it applies to all Petsec operations. Petsec is responsible for the development and implementation of procedures for initial startup, normal operations, temporary operations, by-passing and flagging, simultaneous operations, emergency shutdown, startup after an emergency shutdown and normal shutdown and startup.

2.0 Process

Petsec has established its written operating procedures to enhance efficient, safe and environmentally sound operations; human factors were taken into consideration when developing these procedures. The designs of and the equipment placed on most Petsec facilities are similar, so the operating procedures are similar. However, Petsec has generated site-specific operating procedures for each facility that follow the guidelines identified in 30 CFR 250.1913 (Subpart S) and in this element. The Facility PIC assures contractor personnel are trained in the Operating Procedures on his facility; the Foremen and Production Superintendents supervise the Facility PIC during the development, implementation and training processes. This ensures that the interaction between facilities and personnel is effective and efficient.

2.1 Initial Startup

If a new facility is constructed or a major renovation is made in the future, a *Safety, Pre-Commission and Startup Plan* is developed and used for "initial startup". This Plan contains all of the steps to safely, efficiently and effectively start up the facility and minimize the health, safety and environmental hazards. During initial startup, the following actions are accomplished (not necessarily in sequence):

- Vessels and piping are flushed and purged of debris and to avoid explosive mixtures.
- Vessels are inspected for debris and loose materials.
- Process safety and control systems are put in service for pressure and atmospheric vessels and other production components.
- Relief and vent systems are put in service.
- Process fluids are slowly allowed into vessels and components to pressurize components and/or establish liquid levels.
- Vessels/components are checked for gas and liquid leaks.
- Fired components are lit and temperatures established.
- Compressors are pre-serviced, started and loaded according to the manufacturer's sequence.
- If applicable, contact upstream and downstream facilities.
- Flow is slowly established from the well head to the pipeline until fluids are flowing through the production equipment and the components are producing oil, gas and water.

2.2 Normal Operations

The production operations personnel on the facility perform these and other day-to-day tasks:

2.2.1 **Monitor** safe operating limits of production components: pressures, temperatures, flow rates and liquid levels.
2.2.2 **Adjust** pressures, temperatures, flow rates and/or liquid levels as the operating limits change.
2.2.3 **Test** production safety system devices according to API RP 14C to ensure operating conditions ranging outside of the established parameters are detected.
2.2.4 **Calibrate** production sales meters to ensure they are operating effectively and efficiently.
2.2.5 **Maintain** equipment and safety devices to ensure they are operating according to manufacturers' specifications.
2.2.6 **Inspect** production process and facility equipment to ensure all are in good, working condition.

2.3 Temporary Operations

It may be necessary (from time-to-time) to operate under other-than normal conditions; this is referred to as "temporary" operations and does not involve a shutdown. Examples include flaring gas from oil wells when the compressor goes down, bypassing vessels or components when performing maintenance, unloading wells, using the diesel generator when working on the gas generator, etc.

2.3.1 Generate a JSEA and conduct a safety meeting on project requiring the temporary operations.
2.3.2 Redirect flow or power for the component or equipment affected by temporary operations.
2.3.3 Shut down production component or equipment; lock and tag using proper procedure.
2.3.4 When project complete, start up the production component or equipment and direct flow or power back to re-establish normal operations.

2.4 By-Passing and Flagging

Safety devices that are by-passed and flagged for startup, maintenance and testing must be monitored by personnel according to API RP 14C.

2.5 Simultaneous Operations

If construction or rig activities are conducted at the same time as production operations are conducted, the Petsec *Simultaneous Operations Plan* is engaged; refer to this Plan for details.

2.6 Safety and Environmental Consequences

Petsec has identified the expected causes and results of each process parameter going outside of its range, along with the steps required to correct or avoid deviations. Refer to the Table of consequences associated with production operations in API RP 14C. Each facility has its own “steps to avoid or correct deviations”; refer to **Attachment A: *Operating Procedures***.

2.7 Facility Shutdown

Facility shutdowns are either controlled (at the discretion of the operator when maintenance or service of a vessel or component is required) or automatic (system shutdown when a safety device senses an abnormal condition); this guideline deals with a “controlled” shutdown.

2.7.1 Conduct a safety meeting on project requiring shutdown and review specific shutdown procedure.
2.7.2 Contact upstream and/or downstream facilities that may be affected by shutdown, if applicable.
2.7.3 If necessary, switch to diesel generator using proper procedure to maintain power.
2.7.4 Shut in all wells.
2.7.5 Shut down all incoming flow lines and pipelines.
2.7.6 Shut down compressor.
2.7.7 Isolate all SCSSV.
2.7.8 Shutdown chemical injection.
2.7.9 Control hazardous energy sources (lockout/tagout).
2.7.10 Shutdown specific component(s) to be serviced or maintained.

2.8 Facility Startup

Once the project is complete, the facility is started up according to the following guideline:

2.8.1 Contact upstream and/or downstream facilities affected by shutdown.
2.8.2 Ensure safety devices, control devices, relief systems and safety systems are ready to be placed back in service.
2.8.3 Ensure devices used to control hazardous energy are removed.
2.8.4 If panel instrument gas is lost during shutdown, restore instrument gas using proper procedure.
2.8.5 Ensure component(s) is (are) ready to be placed back in service using proper procedure.
2.8.6 Take all tripped indicators on panels out of service using proper procedure; by-pass or flag as necessary.
2.8.7 Pump down storage volumes to avoid premature shut-ins.

2.8.8 Restore hydraulic communications with all SSV and SCSSV.
2.8.9 Open each well until all wells are flowing into the production components.
2.8.10 Start up compressor.
2.8.11 Open all incoming flow lines and/or pipelines.
2.8.12 Open all wells on satellites.
2.8.13 Check all indicators on panels to see if they are in service (showing "green"); if not, correct discrepancy.
2.8.14 Monitor process until normal operating conditions are restored.
2.8.15 Start up chemical injection.
2.8.16 Place all components and safety devices (indicators, relays, etc.) in service at panels.
2.8.17 If necessary, switch back to gas generator.

2.9 Emergency Shutdown

Emergency shutdown is defined as the total and complete shutdown of a platform when an emergency occurs: relays and indicators in panels trip, automatic valves close (or open), alarm sounds, etc. Each facility has an ESD (Emergency Shutdown) system, TSE (Fire Loop) system and an ASH (Analyzer Safety High) in gas detection system conveniently and strategically located throughout the facility through which total shutdown is accomplished. These systems are shown on the facility's equipment layout drawings and platform paperwork. An emergency shutdown occurs when any of the following happen:

- Activate ESD at ESD station.
- ESD relay trips in Master Panel.
- Break fire loop (tubing) at boat landing.
- TSE melts at production component.
- Detect excessive gas in building.

An alarm sounds indicating the emergency shutdown. Facility personnel then implement the *Emergency Evacuation Plan* (EEP); refer to the Plan for specific actions to take during an emergency.

2.10 Startup After Emergency Shutdown

Startup after an emergency shutdown does not begin until the emergency situation is addressed (fire is extinguished, etc.), the incident, near hit or INC is investigated and any damaged or malfunctioned equipment or component is repaired or replaced.

2.10.1 Contact upstream/downstream facilities affected by the shutdown, if required.
2.10.2 Reset ESD relay or replace melted TSE or repair fire loop at boat landing or reset ASH at gas detection panel.

2.10.3 Take tripped indicators and relays out of service at panels using proper procedure.
2.10.4 If necessary, start up diesel generator or switch from gas to diesel generator using proper procedure.
2.10.5 Open one high pressure well to pressure up equipment.
2.10.6 Start up production process (including compressor, glycol, etc.) using proper procedure.
2.10.7 Monitor production process until conditions return to normal.
2.10.8 Place indicators and relays back in service using proper procedure.
2.10.9 Switch back to gas generator using proper procedure.

2.11 Chemicals Used in Production Operations

The properties of, and hazards presented by, the chemicals used in the production operations are covered in the Petsec *Hazard Communication Policy and Procedure*. Operations personnel take precautions to prevent chemical exposure to personnel and the environment; these include technology, personal protective equipment (PPE), control of the facility's hazardous chemical inventory and measures to take if physical contract or airborne exposure occurs are also covered in this Procedure.

2.12 Review

These operating procedures are reviewed every three (3) years during the SEMS Program audits (see *Audit* element) and when MOC are generated (refer to *Management Of Change* element) to ensure they reflect current and actual operating practices (including changes) and the impact they make to the human and marine environment through hazards analysis. Safe and environmentally-sound work practices for identified hazards during operations and the degree of the hazards presented are developed and implemented after each process hazards analysis; refer to *Hazards Analysis* element.

3.0 Training

3.1 Train all Petsec production operations employees and contract personnel every five (5) years on the contents of this element; refer to the Training element.

3.2 Train all newly-hired production operations employees and contract personnel within 30 days of arrival at the facility 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 Operating Procedures are available to all production operations personnel working on the facility and maintained by the Facility PIC.

4.2 Facility Operating Procedures are updated when changes occur and communicated to all facility production operations personnel.

4.3 Copies of Operating Procedures are maintained in a SEMS file at the facility for the life of the facility.

5.0 Attachments

5.1 Attachment A: Operating Procedures (site-specific)

Attachment A

Operating Procedures

NOTE	Each facility inserts its site-specific Operating Procedures behind this sheet in its SEMS Program manual.