



## HAZARDS ANALYSIS

## **1.0 Purpose**

This element identifies Petsec's hazards analysis process in compliance with its Safety and Environmental Management System (SEMS) Program and applies to all Petsec structures permanently or temporarily attached to the seabed (gulf floor) and used for drilling, development, production and/or transportation activities for oil and gas operations. Hazards Analyses are conducted in order to identify and evaluate the likelihood and consequences of uncontrolled releases and other safety and environmental incidents.

## **2.0 Process**

The Production Superintendent is responsible for documenting and maintaining current hazards analyses for each operation covered by this element for the life of the operation on each facility. Hazards analyses are conducted appropriate to the complexity of the operation and identify, evaluate and manage the hazards involved in the operations. An analysis is updated when the internal audit is conducted to assure it is consistent with the current operations on your facility.

Hazards Analysis is divided into two parts: Facility Level and Job Safety and Environmental Analysis (JSEA). The Facility Level analysis is performed on each facility, appropriate to the complexity of the operation. The JSEA addresses the hazards associated with jobs and tasks related to work performed on the facility.

### **2.1 Hazards Analysis (Facility Level)**

The Hazards Analysis is performed on Petsec facilities by personnel with knowledge of engineering, production operations, the production process, the facility's equipment and systems and the hazards analysis methodology selected for the evaluation. Employees and/or contract personnel conducting the Hazards Analysis identify the hazards within the production process, review incidents and high risk near hits that have occurred and Incidents of Non-Compliance (INC) that were received, consider the control technologies applicable to the operations being evaluated and conduct a qualitative evaluation of the possible safety and health effects on personnel and potential impacts to humans and the marine environment, which may result if that control technology fails. Hazards analyses have been performed on all Petsec facilities prior to November 15, 2011.

The Hazards Analysis process utilizes a site-specific facility risk calculator to evaluate main facilities or group simple, nearly-identical facilities (satellites, well jackets and single well caissons); nearly-identical facilities are those that have approximately the same risk calculation. The facility risk calculator and the hazards analysis are used to determine if significant risks changes occur. Significant risk is any risk greater than eight (8) on the risk matrix.

## 2.2 Procedure

### 2.2.1 Hazards Analysis Schedule

An initial Hazards Analyses is conducted within six (6) months after the new facility is acquired or installed; analyses are conducted every five (5) years for high priority facilities (main structures) and every ten (10) years for low priority facilities (satellites, well-jackets and caissons) thereafter.

2.2.2 Competent and experienced Production Superintendent and Lead Operator conduct a top-side structural, equipment and systems survey of the facilities (main platforms, satellites, caissons and well jackets) using Safety Flow Diagrams, SAFE Charts, Equipment Arrangement, Pipe and Instrument and Mechanical Drawings. This team:

2.2.2.1 looks for physical signs of corrosion, damage, improper installations, etc. that are hazardous to humans or the environment.

2.2.2.2 documents the consequences of the hazards on a Checklist or red-lines the existing drawings.

<b>NOTE</b>	<b>Hazards that can be corrected are corrected immediately.</b>
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2.2.2.3 lists safeguards in place to mitigate the effects of these consequences or reduce their frequency.

2.2.2.4 generates recommendations if existing safeguards are inadequate and/or further review or evaluation is needed.

2.2.2.5 generates a report of all hazards found, consequences, levels of risks, safeguards and recommendations, and gives to production or construction for handling.

2.2.2.6 if safeguard has no recommendation, no hazard exists.

<b>NOTE</b>	<b>For new or acquired facilities, Petsec utilizes the Pre-Startup Review procedure; refer to Pre-Startup Review element.</b>
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2.2.3 For main structures, competent and experienced Production Superintendent and Lead Operator conduct a component-by-component evaluation on each facility using the What If/Checklist in API RP 14J, drawings, observations, incidents, incidents-of-non-compliance (INC) and other resources.

For hazards analyses performed on new or modified facilities, special considerations are given to previous experience with a similar facility; design circumstances (changes in design team or design itself) after project begins; any findings that need to be brought to resolution before startup; and operating procedures and practices, including simultaneous operations guidelines.

This team:

- 2.2.3.1 prints out and separates all incidents and INC for the last two years by production process component; this is used when evaluating hazards.
- 2.2.3.2 evaluates each operation, component and applicable incident and/or INC from the wellhead to the departing pipeline (following oil, gas and water flow) by asking “what if?” Refer to *API RP 14J*.
- 2.2.3.3 identifies the consequences that could be hazardous to personnel, the environment and the facility equipment and systems.
- 2.2.3.4 documents consequences of the hazards on a Checklist or red-lines the existing drawings and/or diagrams.
- 2.2.3.5 lists safeguards in place to mitigate the effects of these consequences or reduce their frequency.
- 2.2.3.6 generates recommendations if existing safeguards are inadequate and/or further review or evaluation is needed.
- 2.2.3.7 generates a report of all hazards (risks), consequences, levels of risk, safeguards and recommendations and gives to Petsec production or construction for handling.
- 2.2.3.8 edits drawings and diagrams for any deficiencies found based on red-lines generated during survey.
- 2.2.3.9 if safeguard has no recommendation, no hazard exists.

<b>NOTE</b>	<b>For new or acquired facilities, Petsec utilizes the Pre-Startup Review procedure; refer to Pre-Startup Review element.</b>
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2.2.4 For satellite platforms, well jackets and caissons, clusters of structurally interconnected platforms are analyzed together:

- 2.2.4.1 Facilities nearly-identical in size, layout and production process are grouped together.

- 2.2.4.2 One representative facility is selected from each similar grouping of low priority facilities and evaluated for hazards.
- 2.2.4.3 All facilities in the group are checked for site-specific deviations from the representative facility; if deviations from the representative facility are found, they are evaluated and included in the Hazards Analysis Report.
- 2.2.5 Recommendations that are not corrected in the field are reviewed by production/construction operations and become action items and are posted on the Petsec *Corrective Action Plan* form; refer to *Audit* element.
- 2.2.6 Reports with the respective Corrective Action form are distributed to the Operations Manager.
- 2.2.7 Production and construction assure the hazards are corrected within 30 days (or have a written correction plan) after receiving the Report, if practical.
- 2.2.8 Reports are updated as a result of corrective actions follow-ups.
- 2.2.9 Production Superintendent monitors the action items to assure production and/or construction complete the action items in a timely manner.

### 2.3 Hazards Analysis Teams

Hazards Analysis teams are assembled to conduct the facility evaluations and use Petsec employees, contract personnel and/or third-party companies. The hazards analyses are performed by persons knowledgeable in engineering, operations, process, safety, and the environment, with experience in the operations being evaluated. At least one person is proficient in the hazards analysis methodology being used. Petsec does not conduct a hazards analysis with only one person.

These team members are familiar with health, safety and environmental policies and procedures, have knowledge of Petsec facilities, and have expertise and experience in engineering and/or process operations; refer to *Training* element.

## 2.4 Job Safety and Environmental Analysis (Job or Task Level)

Job Safety and Environmental Analyses (JSEA) are completed by operators and/or contract personnel prior to performing work that is risk-ranked greater than one (1) or unusual or infrequent (refer to **Job Safety and Environmental Analysis** procedure; see **Attachment A**). The JSEA addresses the jobs and tasks performed on the facility and includes the activities discussed in the SEMS Program. The JSEA identifies, analyzes and records the following:

- 2.4.1 The location and a description of the work to be performed.
- 2.4.2 The names and signatures of the people involved in the work.
- 2.4.3 The steps to be used when performing a specific job or task.
- 2.4.4 Existing or potential safety, health and environmental hazards associate with each step of the job or task.
- 2.4.5 Recommended action(s) and/or procedure(s) to eliminate or reduce these hazards (medium and high risk levels) and the risk of a workplace injury or illness or damage to the environment.
- 2.4.6 The personal safety equipment, permits and the tools needed to perform the work.

The supervisor of the person completing the report approves the JSEA prior to the start of work. A copy of the most recent JSEA is kept on the facility for 30 days, then placed in the SEMS file; this copy is readily accessible by employees.

## 3.0 Training

- 3.1 Train all affected employees and contract personnel on the contents of this element and in the hazards analysis process prior to conducting a hazards analysis or every five (5) years (whichever comes first); refer to the Training element.
- 3.2 Train all affected employees and contract personnel on the Job Safety and Environmental Analysis (JSEA) process every three (3) years; refer to the Training element.
- 3.3 Train all affected, newly hired production operations employees and contract personnel on the Job Safety and Environmental Analysis (JSEA) within 30 days from hire date; refer to the Training element.
- 3.4 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 JSEA are maintained on the facility for 30 days, then placed in the SEMS files within 60 days after completion.
- 4.2 Copies of Hazards Analysis Reports are placed in the SEMS files within 30 days after completion.

## **5.0 Attachments**

- 5.1 Attachment A: Job Safety and Environmental Analysis (JSEA) procedure.

**Attachment A**

**Job Safety and Environmental Analysis (JSEA)  
Policy and Procedure**

**NOTE**

Each facility inserts a copy of the JSEA procedure behind this sheet in its SEMS Program manual.