4 Submitting an SPPE Failure Notification – Detailed Instructions

This section contains detailed instructions and information on completing the SPPE failure notification form. Complete the failure notification form with all available information.

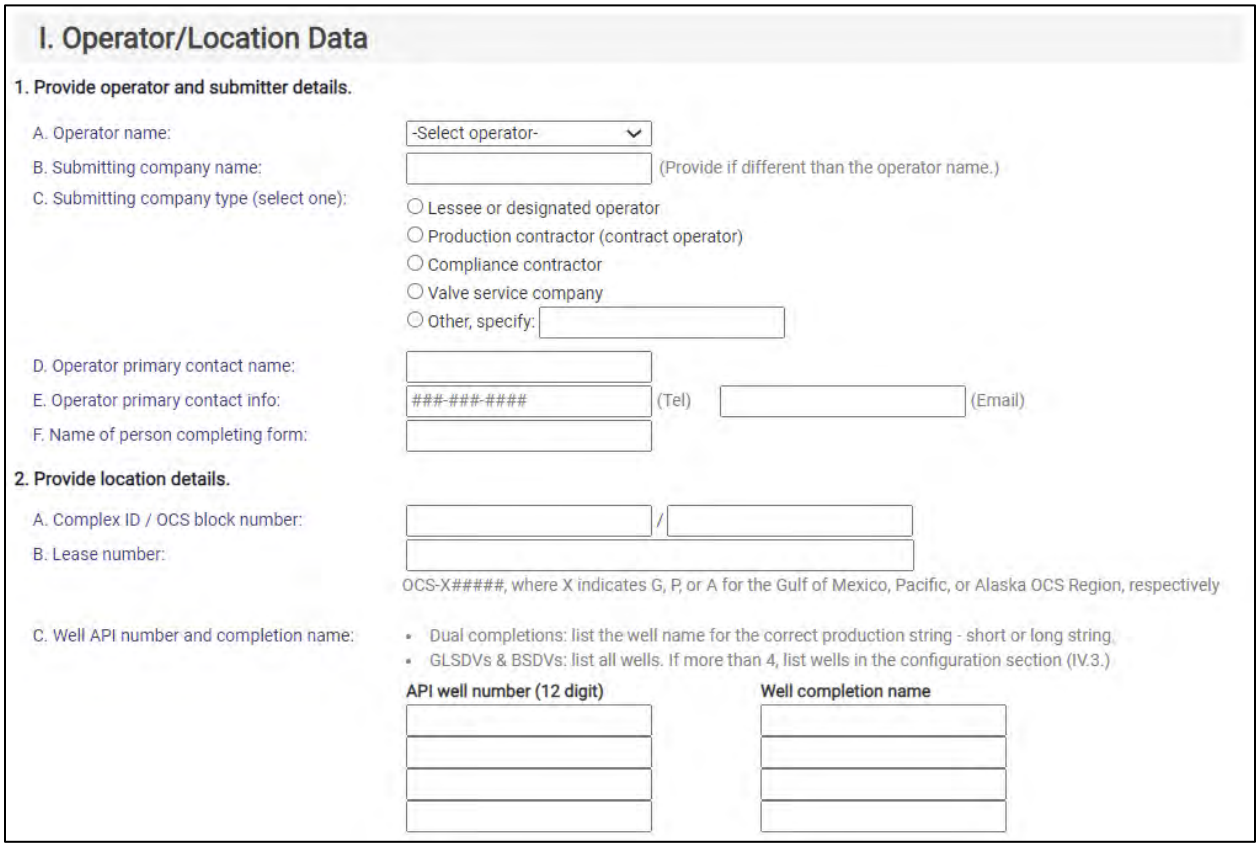
After completing the form, press the *Submit* button to save the data. Data will not be saved until you press the *Submit* button.

4.1 Notification Identification

The SafeOCS database will automatically assign each submission a BTS reference number—a unique identifier. The system will also provide an optional data field for the operator/company-assigned reference number, if applicable.

Operator/company assigned reference number: provide the company reference number for the event that you are reporting.

4.2 OPERATOR/LOCATION DATA



I. Operator/Location Data

1. Provide operator and submitter details.

A. Operator name: -Select operator-

B. Submitting company name: (Provide if different than the operator name.)

C. Submitting company type (select one):
- Lessee or designated operator
- Production contractor (contract operator)
- Compliance contractor
- Valve service company
- Other, specify:

D. Operator primary contact name:

E. Operator primary contact info: ###-###-#### (Tel) (Email)

F. Name of person completing form:

2. Provide location details.

A. Complex ID / OCS block number: /

B. Lease number:

OCS-X#####, where X indicates G, P, or A for the Gulf of Mexico, Pacific, or Alaska OCS Region, respectively

C. Well API number and completion name:
- Dual completions: list the well name for the correct production string - short or long string.
- GLSDVs & BSDVs: list all wells. If more than 4, list wells in the configuration section (IV.3.)

API well number (12 digit)	Well completion name

I. <u>Operator/Location Data</u>

1. **Provide operator and submitter details**.

   A. **<u>Operator name</u>** - Select the company name from the drop-down list provided or select *Other* and specify.

   B. **<u>Submitting company name</u>** **-** Enter the name of the company submitting the SPPE notification, if different than the operator name.

   C. **<u>Submitting company type</u>** **-** Select the company type from the list provided or select *Other* and enter the company type (lessee, compliance contractor, valve service company, etc.).

   D. **<u>Operator primary contact name</u>** - Enter the name of the primary contact person representing the operator.

E. **Operator primary contact info** - Provide the phone number and email of the primary contact person at the operator company.

F. **Name of person completing the form** - Enter the person's name completing the detailed sections of the failure notification form (i.e., someone familiar with the equipment).

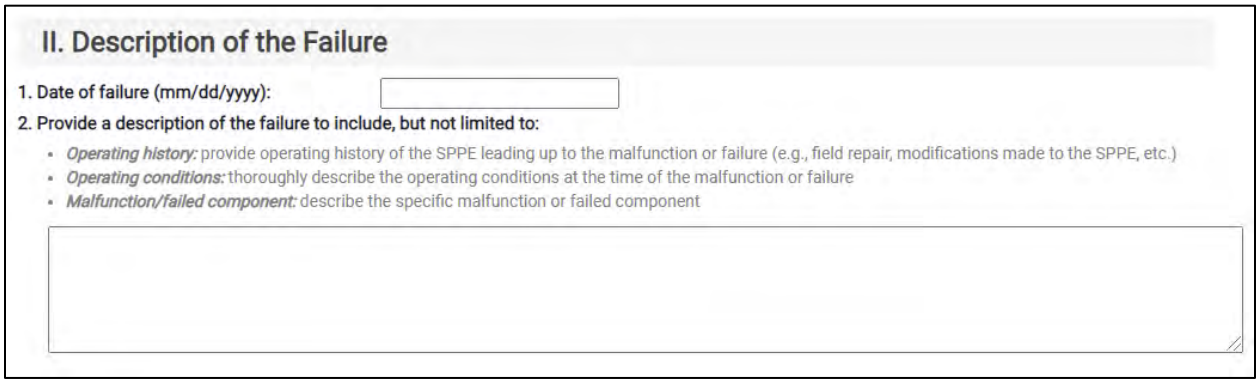
2. **Provide location details**

A. **Complex ID/OCS block number** – for the complex ID, enter the BSEE-assigned unique numeric identifier (1-5 digits) that corresponds to a production platform or group of platforms. For the OCS block number, enter the block abbreviation (e.g., MC) and the block number that represents the bottom block where the well is located.

B. **Lease number** - Enter the BSEE designated lease number (OCS-X#####, where X indicates G, P, or A for the Gulf of Mexico, Pacific, or Alaska OCS Region, respectively).

C. **Well API number and completion name** - Enter the BSEE designated well completion name (e.g., A001). Dual completion wells have two well completion names. Be sure to submit the one associated with the failed SPPE. For GLSDVs and BSDVs that are associated with multiple wells, list all wells serviced by the SPPE device. If there are more than four wells, go to the well configuration section (IV.3.). Under section IV.3, select *Other, specify configuration* and describe the configuration (including the additional well API numbers and well names) in the text field.

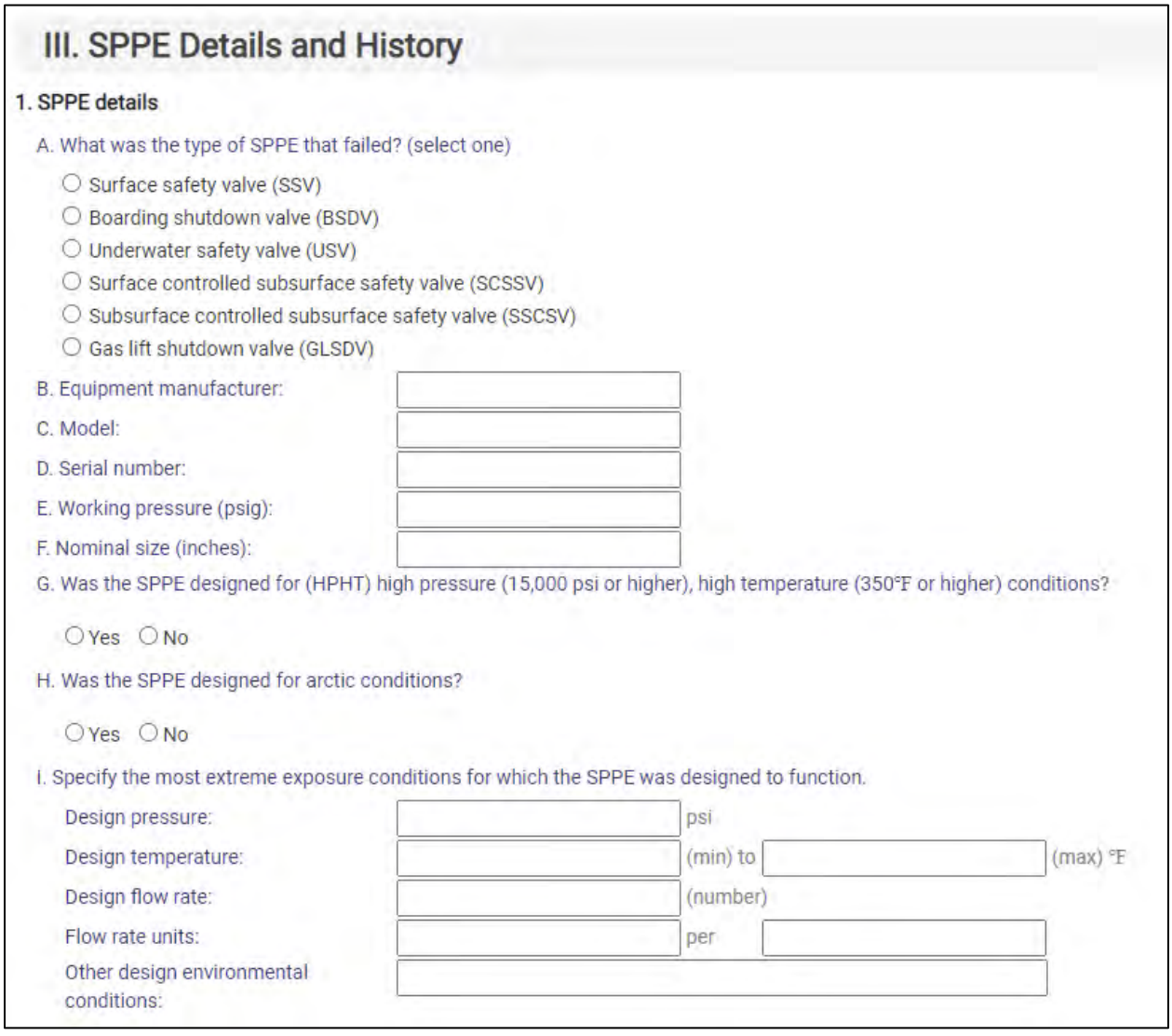
4.3 Description of the Failure



II. Description of the Failure

1. **Date of failure** - Enter the date of the failure or select from the calendar.
2. **Provide a description of the failure** - Provide a complete description of the failure to include operating history, operating conditions (e.g., notable changes to the valve's operating environment), and malfunction/failed component or part (e.g., findings from disassembly and inspection). Include any other relevant information about the failure, equipment, and the well that is not covered elsewhere within the form.

4.4 SPPE Details and History



III. SPPE Details and History

1. SPPE details

A. What was the type of SPPE that failed? (select one)

- ○ Surface safety valve (SSV)
- ○ Boarding shutdown valve (BSDV)
- ○ Underwater safety valve (USV)
- ○ Surface controlled subsurface safety valve (SCSSV)
- ○ Subsurface controlled subsurface safety valve (SSCSV)
- ○ Gas lift shutdown valve (GLSDV)

B. Equipment manufacturer:

C. Model:

D. Serial number:

E. Working pressure (psig):

F. Nominal size (inches):

G. Was the SPPE designed for (HPHT) high pressure (15,000 psi or higher), high temperature (350°F or higher) conditions?

○ Yes ○ No

H. Was the SPPE designed for arctic conditions?

○ Yes ○ No

I. Specify the most extreme exposure conditions for which the SPPE was designed to function.

Design pressure: psi

Design temperature: (min) to (max) °F

Design flow rate: (number)

Flow rate units: per

Other design environmental conditions:

1. **SPPE details**

   A. **What was the type of SPPE that failed? -** Select the type of valve involved in the reported failure from the list provided.

   B. **Equipment manufacturer** - Enter the principal agent in the design, fabrication, and furnishing of original safety and pollution prevention equipment.

   C. **Model** - Enter the equipment model number of the defective component.

   D. **Serial number** - Enter the unique identifying serial number of the component.

   E. **Working pressure** - Enter the standardized working pressure rating. Working pressure should be in pounds per square inch gauge (psig) units (e.g., 5,000 psig).

   F. **Nominal size** - Enter the whole and fractional size for the equipment. The nominal size should be in inches (e.g., 2-9/16").

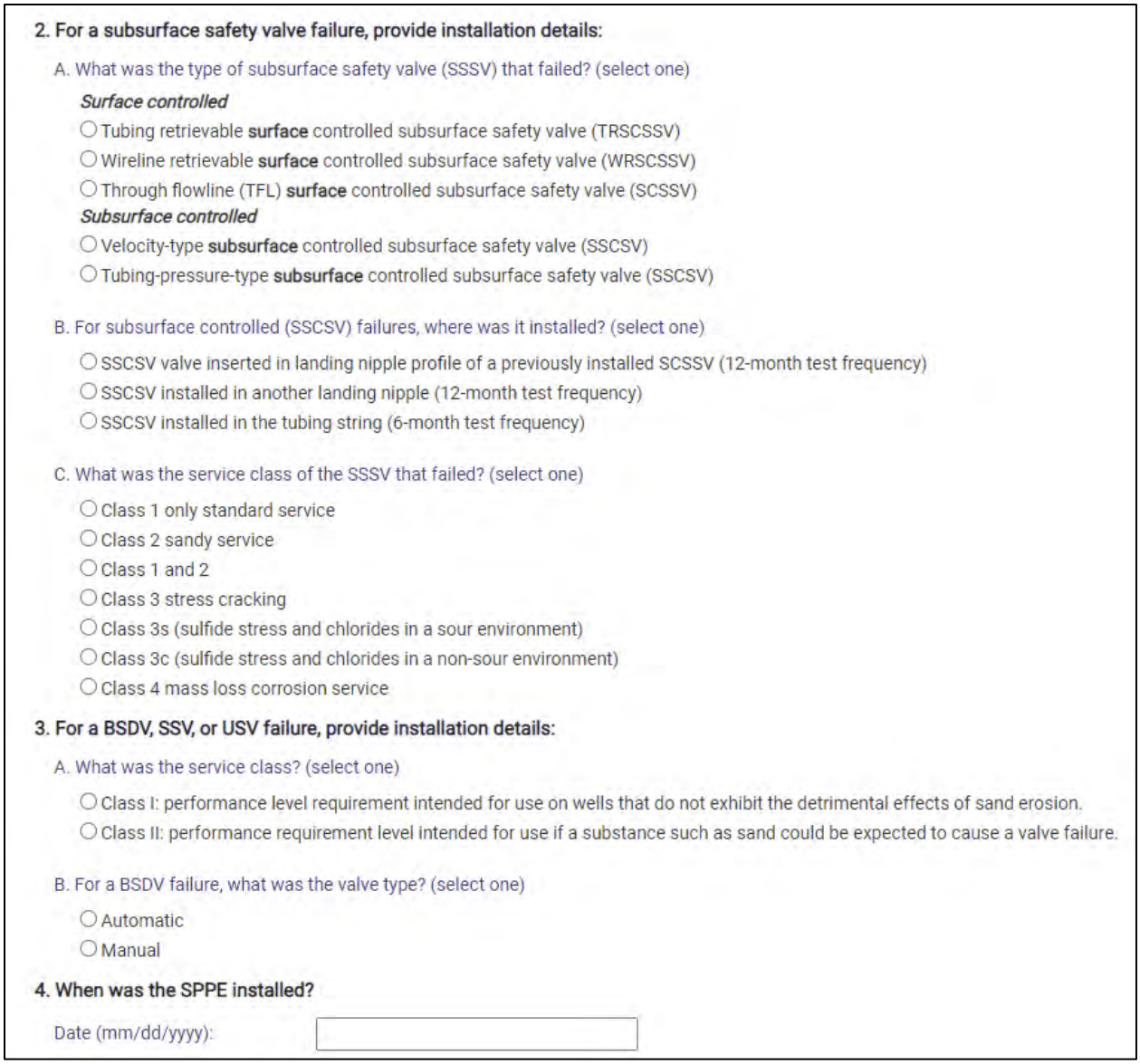
   G. **Was the SPPE designed for (HPHT) high pressure (15,000 psi or higher), high temperature conditions?** - Select *Yes* or *No*.

   NOTE: HPHT environment means that one or more of the following well conditions exist: (1) The completion of the well requires completion equipment or well control equipment assigned a pressure rating greater than 15,000 psia or a temperature rating greater than 350 degrees Fahrenheit; (2) The maximum anticipated surface pressure or shut-in tubing pressure is greater than 15,000 psia on the seafloor for a well with a subsea wellhead or at the surface for a well with a surface wellhead; or (3) The flowing temperature is equal to or greater than 350 degrees Fahrenheit on the seafloor for a well with a subsea wellhead or at the surface for a well with a surface wellhead. 30 CFR 250.804(b).

   H. **Was the SPPE designed for arctic conditions?** - Select *Yes* or *No* to record whether the equipment was designed for extreme cold weather conditions. (Not applicable in the GOM).

   I. **Specify the most extreme exposure conditions for which the SPPE was designed to function.** - Enter five fields to record the pressure, temperature, rate, units, and other design environmental conditions (i.e., limits) of the equipment.

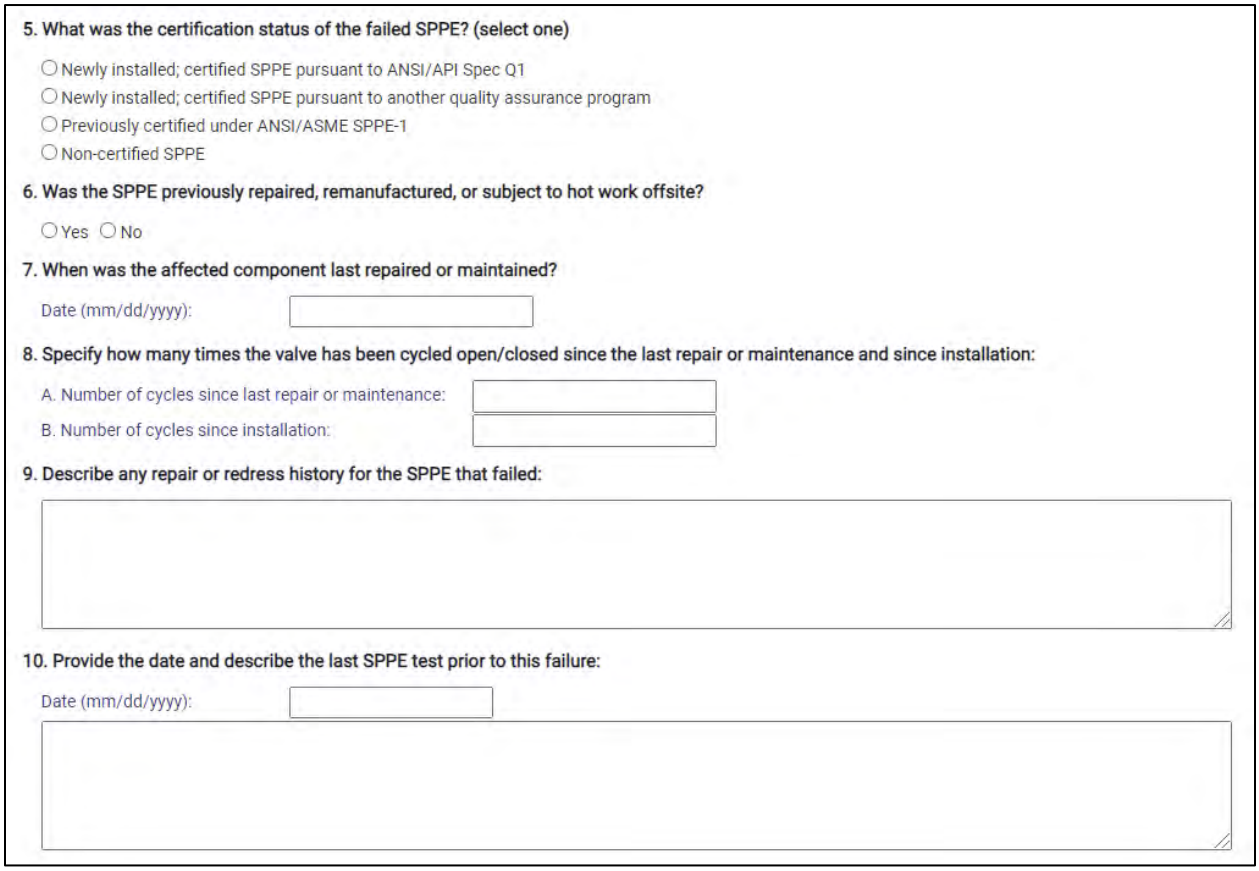
   NOTE: Gas rate= thousand cubic feet (mcf) or liquid rate. Liquid rate= barrels per day or velocity. Velocity= ft./sec (feet per second). Please also include water depth and other environmental conditions.



2. **<u>For a subsurface safety valve failure, provide installation details</u>**:
   A. **<u>What was the type of subsurface safety valve (SSSV) that failed?</u>** - Select one from the list provided. Velocity type SSCSV is also known as a differential pressure type SSCSV.
   B. **<u>For subsurface controlled (SSCSV) failures, where was it installed?</u>** - Select one from the list provided.
   C. **<u>What was the service class of the SSSV that failed?</u>** - Select one from the list provided.
3. **<u>For a BSDV, SSV, or USV failure, provide installation details</u>**:
   A. **<u>What was the service class?</u>** - Select one from the list provided.

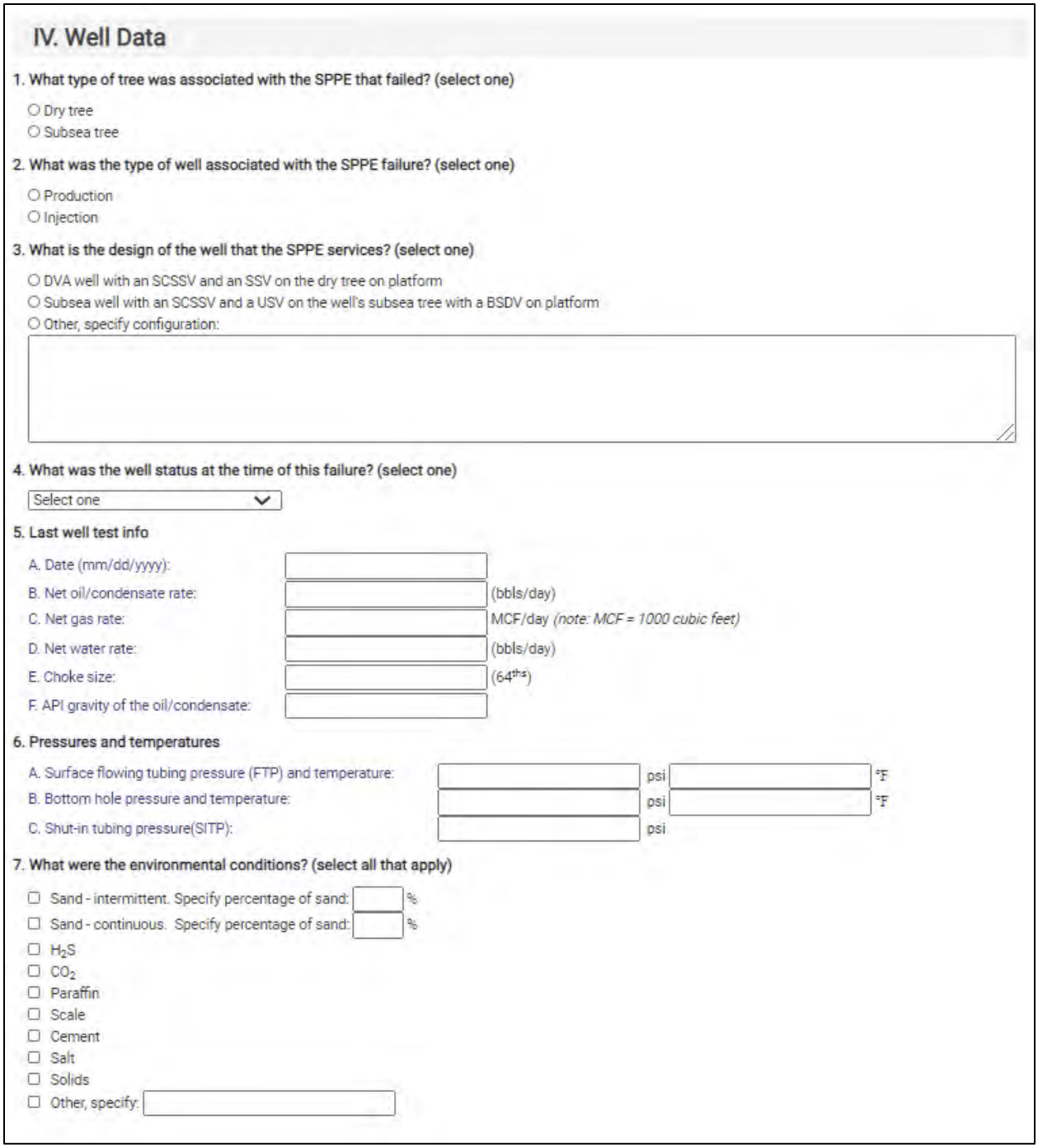
B. **For a BSDV failure, what was the valve type?** - Select *Automatic* or *Manual* to indicate the valve type associated with the BSDV failure.

4. **When was the SPPE installed?** - Enter or select from the calendar the date that the SPPE was first installed.



5. **What was the certification status of the failed SPPE?** - Select one from the list provided. Newly installed equipment must be certified under ANSI/API Spec. Q1 or accepted by BSEE under another quality assurance program (30 CFR 250.801). This certification is intended for companies that manufacture equipment or components used in oil and natural gas production. Certified equipment installed prior to the inception of ANSI/API Spec. Q1 2013 should choose *Previously certified under ANSI/ASME SPPE-1*. If not certified, select *Non-certified SPPE*.
6. **Was the SPPE previously repaired, remanufactured, or subject to hot work offsite?** – Select yes or no to indicate if hot work was performed offsite in a shop and not on the platform. Please provide details in the **redress history** box (question 9 below).

7. **When was the affected component last repaired or maintained?** – Enter or select from the calendar the date the component was last repaired.
8. **Specify how many times the valve has been cycled open/closed since the last repair or maintenance and since installation**:
    A. **Number of cycles since last repair or maintenance** - Enter the number of open-close cycles that the SPPE has encountered since the last repair or maintenance.
    B. **Number of cycles since installation** - Enter the number of open-close cycles that the SPPE has encountered since it was installed.
9. **Describe any repairs or redress history for the SPPE that failed. –** Enter details about repairs or redress history prior to this failure. This includes field repairs or shop repairs, overhauls, or redress.
10. **Provide the date and describe the last SPPE test prior to this failure. -** Enter or select the date from the calendar and provide a thorough description of the last SPPE test prior to the date of the failure being reported.



IV. Well Data

1. What type of tree was associated with the SPPE that failed? (select one)

- ○ Dry tree
- ○ Subsea tree

2. What was the type of well associated with the SPPE failure? (select one)

- ○ Production
- ○ Injection

3. What is the design of the well that the SPPE services? (select one)

- ○ DVA well with an SCSSV and an SSV on the dry tree on platform
- ○ Subsea well with an SCSSV and a USV on the well's subsea tree with a BSDV on platform
- ○ Other, specify configuration:

4. What was the well status at the time of this failure? (select one)

Select one

5. Last well test info

A. Date (mm/dd/yyyy):		
B. Net oil/condensate rate:		(bbls/day)
C. Net gas rate:		MCF/day *(note: MCF = 1000 cubic feet)*
D. Net water rate:		(bbls/day)
E. Choke size:		(64^{ths})
F. API gravity of the oil/condensate:		

6. Pressures and temperatures

A. Surface flowing tubing pressure (FTP) and temperature:		psi		°F
B. Bottom hole pressure and temperature:		psi		°F
C. Shut-in tubing pressure(SITP):		psi		

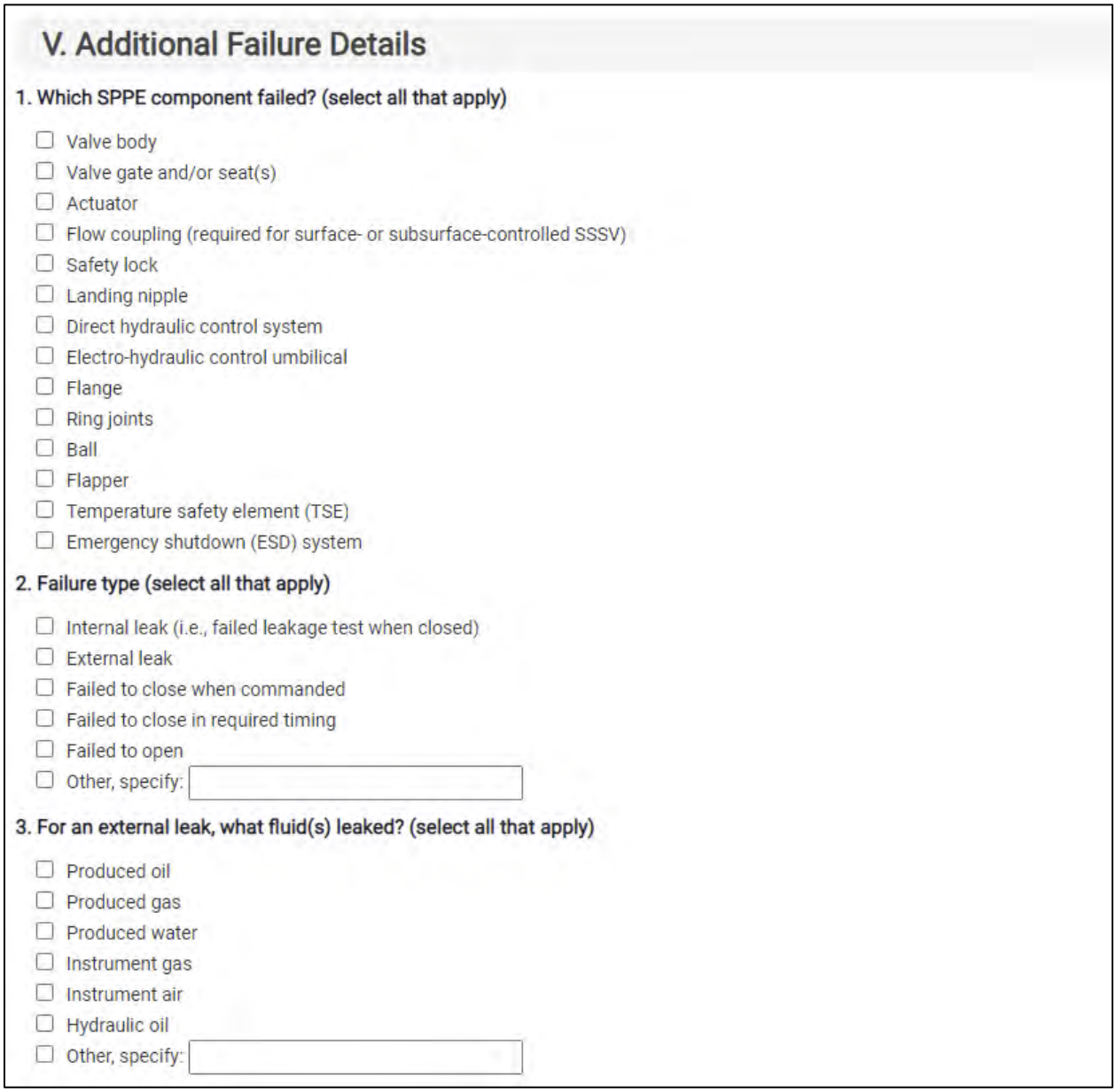
7. What were the environmental conditions? (select all that apply)

- ☐ Sand - intermittent. Specify percentage of sand: %
- ☐ Sand - continuous. Specify percentage of sand: %
- ☐ H_2S
- ☐ CO_2
- ☐ Paraffin
- ☐ Scale
- ☐ Cement
- ☐ Salt
- ☐ Solids
- ☐ Other, specify:

1. **<u>What type of tree was associated with the SPPE that failed?</u>** - Select *Dry tree* or *Subsea tree* to specify the tree type.
2. **<u>What was the type of well associated with the SPPE failure?</u>** - Select *Production* or *Injection* to specify the well type.

3. **What is the design of the well that the SPPE services?** - Select one of the options provided or select *Other* and specify the configuration.
4. **What was the well status at the time of this failure**? - Select one from the drop-down list or select *Other* and specify. This is the Oil and Gas Operations Report – Part A (OGOR-A) well status at the time of the failure.
5. **Last well test info**:
   A. **Date** – Enter or select from the calendar the date of the last well test.
   B. **Net oil/condensate rate** - See Instructions for Submitting Electronic Semiannual Well Tests for BSEE definition.
   C. **Net gas rate** - See Instructions for Submitting Electronic Semiannual Well Tests for BSEE definition.
   D. **Net water rate** - See Instructions for Submitting Electronic Semiannual Well Tests for BSEE definition.
   E. **Choke size** - See Instructions for Submitting Electronic Semiannual Well Tests for BSEE definition.
   F. API gravity of the oil/condensate - See Instructions for Submitting Electronic Semiannual Well Tests for BSEE definition.
6. **Pressures and temperatures**: If you don't have continuous gauge readings, please provide the last known value and explain its source in the *description of failure* field (section I.2).
   a. **Surface flowing tubing pressure (FTP) and temperature**
   b. **Bottom hole pressure and temperature**
   c. **Shut-in tubing pressure (SITP)**
7. **What were the environmental conditions**? – Select all that apply from the list provided or select *Other* and specify.

4.5 Additional Failure Details



V. Additional Failure Details

1. Which SPPE component failed? (select all that apply)

- ☐ Valve body
- ☐ Valve gate and/or seat(s)
- ☐ Actuator
- ☐ Flow coupling (required for surface- or subsurface-controlled SSSV)
- ☐ Safety lock
- ☐ Landing nipple
- ☐ Direct hydraulic control system
- ☐ Electro-hydraulic control umbilical
- ☐ Flange
- ☐ Ring joints
- ☐ Ball
- ☐ Flapper
- ☐ Temperature safety element (TSE)
- ☐ Emergency shutdown (ESD) system

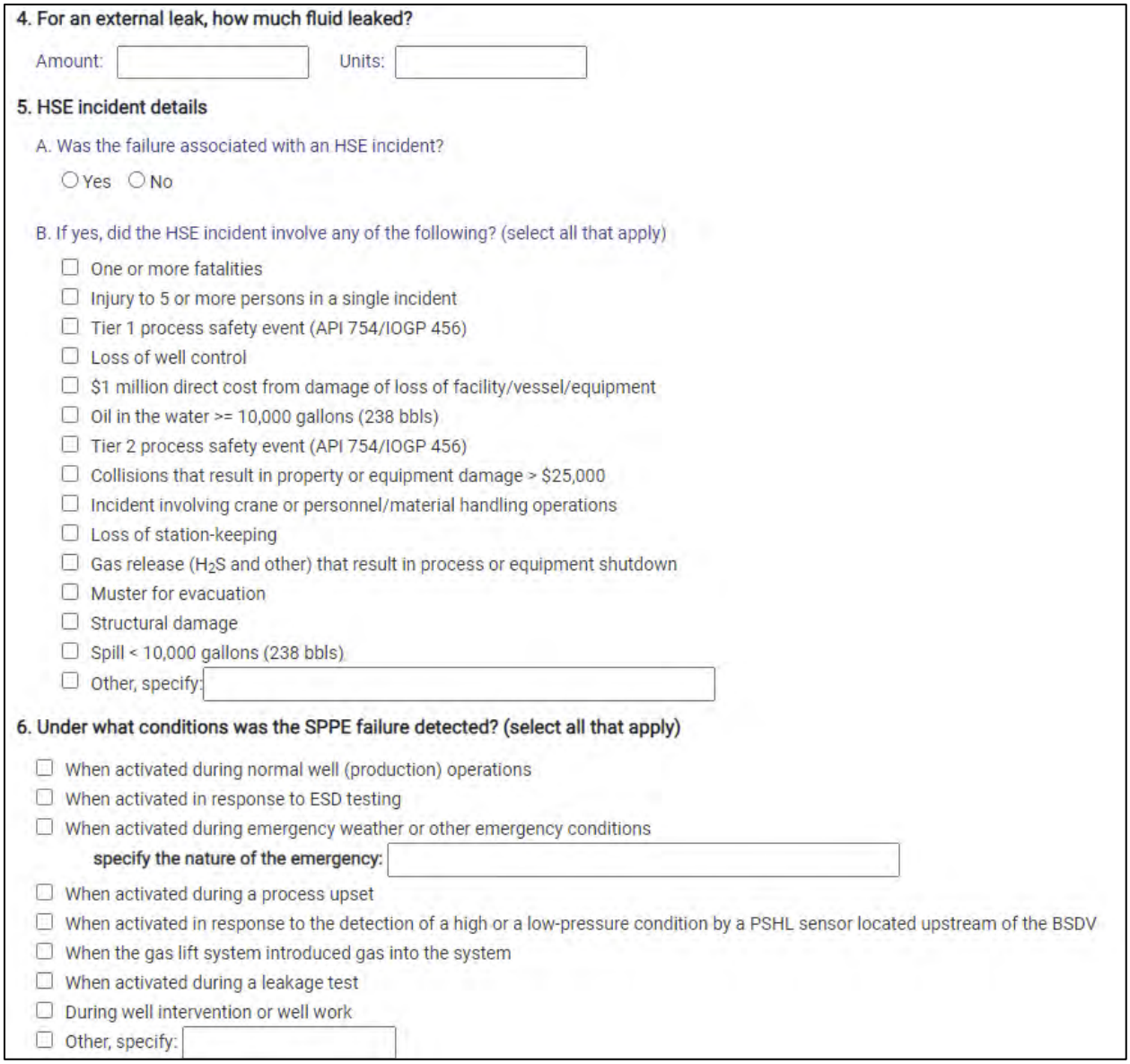
2. Failure type (select all that apply)

- ☐ Internal leak (i.e., failed leakage test when closed)
- ☐ External leak
- ☐ Failed to close when commanded
- ☐ Failed to close in required timing
- ☐ Failed to open
- ☐ Other, specify:

3. For an external leak, what fluid(s) leaked? (select all that apply)

- ☐ Produced oil
- ☐ Produced gas
- ☐ Produced water
- ☐ Instrument gas
- ☐ Instrument air
- ☐ Hydraulic oil
- ☐ Other, specify:

1. **Which SPPE component failed**? - Select all that apply from the list provided.
2. **Failure type** - Select all that apply from the list provided or select *Other* and specify.
3. **For an external leak, what fluid(s) leaked**? - Select all that apply from the list provided or select *Other* and specify.



4. **<u>For an external leak, how much fluid leaked?</u>** - Enter the amount and units that leaked.
5. **<u>HSE incident details:</u>**
   A. **<u>Was the failure associated with an HSE incident?</u>** - Select *Yes* or *No* to indicate if this was a health, safety, and environment (HSE) incident.
   B. **<u>If yes, did the HSE incident involve any of the following?</u> -** Select all that apply from the list provided or select *Other* to specify.
6. **<u>Under what conditions was the SPPE failure detected?</u>** – Select all that apply from the list provided or select *Other* and specify. Describe the conditions present at the time the failure was detected.

7. **<u>What factors contributed to the failure?</u>** - Select all that apply from the list provided or select *Other* and specify. Include any and all actions and conditions that contributed to the failure.

7. What factors contributed to the failure? (select all that apply)

Procedures and practices

- ☐ Assembly damage or error
- ☐ Improper maintenance or repair
- ☐ Improper use or valve alignment
- ☐ Company policy/practices
- ☐ Workplace documentation

Operating environment

- ☐ External corrosion (atmosphere)
- ☐ Internal corrosion (chemical - H_2S or CO_2)
- ☐ Paraffin build-up
- ☐ Sand cut erosion
- ☐ Scale build-up
- ☐ Wellbore debris

Mechanical failure

- ☐ Elastomer degradation
- ☐ Foreign object damage
- ☐ Hydraulic power failure
- ☐ Valve seat degradation
- ☐ Manufacturing defect

Human error

- ☐ Personnel skills or knowledge
- ☐ Quality of task execution
- ☐ Quality of task planning and preparation

Other

- ☐ Design issue
- ☐ Operating conditions out of range of device
- ☐ Other, specify:

8. Preliminary root cause (select one)

- ○ Assessment pending
- ○ Design issue
- ○ Documentation error
- ○ Maintenance plan and procedure
- ○ Manufacturing defect
- ○ Procedural error
- ○ Wear and tear
- ○ Other, specify: [ ]

9. Is a formal root cause and failure analysis (RCFA) planned? (select one)

○ Yes, done ○ Pending ○ No

10. Corrective action

A. What corrective action was taken related to the SPPE failure? (select all that apply)

- ☐ Adjust - a change was made to the operational settings (e.g., fine-tuning the speed)
- ☐ Modify SPPE - a change was made to the SPPE valve (e.g., different model or type)
- ☐ Modify well - a change was made to the well barrier configuration (e.g., set a plug)
- ☐ Shut-in well - the well was shut-in for at least 30 days
- ☐ Chemical soak - a chemical solvent was introduced to the valve (e.g., scale treatment)
- ☐ Cycle valve - the valve was stroked back and forth between fully open and fully closed
- ☐ Remanufacture - the valve was rebuilt by the manufacturer
- ☐ Repair - the valve was repaired, or part of the valve was replaced
- ☐ Replace - the entire valve was replaced with the same valve type
- ☐ Service - maintenance was performed on the valve (e.g., greasing)
- ☐ Other, specify: [ ]

B. Where was the corrective action done? (select one)

- ○ Contractor's off-site facility
- ○ Manufacturer's off-site facility
- ○ On location
- ○ Operator's facility

C. For corrective actions done on location, who conducted the corrective action? (select one)

- ○ Operator
- ○ Contractor
- ○ Manufacturer

Please make sure the data entered is in the correct format.

SUBMIT

8. **Preliminary Root Cause** - Select one from the list provided or select *Other* and specify the process or events that led to the failure.

   NOTE: If the choice is *wear and tear*, please refer to section *III. SPPE Details and History* and include the installation date and shelf life of the failed component in the **redress history** narrative box (III.9).

9. **Is a formal root cause and failure analysis planned**? – Select one from the list provided. Select *Yes*, *done* if the component required a root cause failure analysis (RCFA), and the RCFA has been completed. A formal RCFA includes the operator, original equipment manufacturer (OEM), and an inspection of the failed parts. See section 5.3.2 of this document for more information about RCFA requirements.

10. **Corrective action**

    A. **What corrective action was taken related to the SPPE failure?** - Select all that apply from the list provided or select *Other* and specify the corrective action taken on the platform to place the equipment back into operation.

    B. **Where was the corrective action done?** - Select one from the list provided. Select the facility that performed the corrective action on the equipment.

    C. **For corrective actions done on location, who conducted the corrective action?** - Select one from the list provided. Select the entity that performed the corrective action.

5 Requirements for Investigation and Failure Analysis (I&A)

In the event of a component failure, it is important to conduct an effective investigation and failure analysis to identify the causes (i.e., physical, human, and systemic) and root cause of a failure. This practice will establish a knowledge base that the industry can use to instill safety and improve equipment/component reliability.

There are several major approaches to investigation and failure analysis that are used within the industry. Select any of these approaches to verify the root cause and identify the causes (physical, human, or systemic) of the failure.

The scope of any investigation and analysis related to the equipment/component failure must be based on data (e.g., hose failure, valve leaking in closed position).

5.1 Submitting I&A Information to SafeOCS

Under the failure reporting requirement of the Production Safety Systems Rule, an investigation and failure analysis must be performed within 120 days of the failure.[6] If the investigation and failure analysis is performed by an entity other than the manufacturer, the analysis report must be submitted to both the manufacturer and to BTS as BSEE's designated third party. The results of the investigation and any corrective actions must be documented in the analysis report.

To submit I&A information to SafeOCS, follow the instructions in section 3.5 Update and Add Files to an Existing SPPE Component Failure Notification. Submitted information should include the unique reference number assigned by the SafeOCS system or an equivalent unique identifier established when the failure notification form was originally submitted.

[6] 30 CFR 250.803(b).

5.2 Failure Causes

As part of the investigation and failure analysis process, three types of causes are identified. These are: physical, human factors, and systemic causes.

5.2.1 Physical Causes

Physical causes are the consequences, manifestations, or results determined through evidence that have influenced or triggered a component failure. Examples include corrosion, fatigue, excessive stress, erosion, rupture, etc.

5.2.2 Human Factor Causes

Human factors are related to human activities that have contributed to the failure of a system or component. Identifying and understanding the contribution of human factors during component failure investigations will improve corrective action identification and component performance. Examples include maintenance errors and failure to follow procedures.

5.2.3 Systemic Causes

Systemic causes are related to any system or process activity rather than specific isolated factors, including failures in the procedures used to execute the work.

Note: If the failure is part of a wider event, then the proper investigative procedure may need to be followed in addition to the report on component failure.

5.3 Types of Investigation and Failure Analysis

This section presents the two types of investigation and failure analysis.

- **Failure Cause Known**
- **Root Cause Failure Analysis (RCFA)**

NOTE: If an investigation fails to determine the root cause(s) of the failure sufficiently, then analysis can proceed to an RCFA.

The *failure notification form* can be updated (as needed) during the investigation and analysis process. The document can be uploaded, along with additional information, using the SafeOCS unique reference number or identifier assigned to the original failure notification.

5.3.1 Failure Cause Known

The failure cause is known if a failure scenario was conducted and the conditions that led to the failure were carefully observed and described. A *failure scenario* is a process in which all the possible sequences and combination of events, conditions, and system states leading to the failure were identified.

EXAMPLE OF FAILURE CAUSE KNOWN

A valve damaged during installation can be easily categorized as *failure cause known*. It is important to report such issues. If this were to escalate to a systemic/reoccurring event, it may warrant a change to the design or installation/maintenance procedures.

RESOURCES

The Production/Senior Subsea Engineer should discuss what happened with another technical member of crew to determine:

- What happened?
- How it happened?
- Why it happened?

A description of the event and other appropriate information should be provided on or with the failure notification form.

CLOSURE

The investigation is marked closed when the *failure cause is known,* and the information is provided to SafeOCS. The system will process the resubmittal, thus fulfilling the regulatory requirement. Cases that do not show a *failure cause known* are discussed next under Root Cause Failure Analysis Required (RCFA) (6.3).

If the *failure notification form* has previously been submitted as *final*, it may still be modified or updated as appropriate. Just attach any supporting documentation using the unique reference number or an equivalent unique identifier assigned to the original failure notification by the SafeOCS system.

5.3.2 Root Cause Failure Analysis Required (RCFA)

The RCFA (sometimes called a formal root cause failure analysis) is a more detailed investigation requiring more time and resources to complete. The RCFA results can be used to correct specific problems and prevent their reoccurrence. For example, they may be used to create OEM product bulletins, equipment owner maintenance system changes, etc.

PHYSICAL EVIDENCE

In many instances, component failures are field repairable, though there may be cases when a replacement assembly is readily available. In such an event, the physical evidence of the failed component is provided. Photographs, dimensions, sketches, and written reports can be submitted as further evidence of the investigation.

RESOURCES

Typically, an RCFA includes at least one subject matter expert (SME), one or more appropriate representatives from the OEM, a suitably qualified third party, and the operator.

The RCFA report should include the causes (physical, human, and systemic) and the contributing factors for the failure occurrence.

Closure

The incident can be considered closed when the component failure report in the database is updated (closing the initial report), and the final report is published. A *failure notification form* that has either been modified or updated must include the necessary documentation supporting the identified cause(s) and attached using the unique reference number or equivalent unique identifier.

5.4 Capture and Share Lessons Learned

When developing protocols for identifying, investigating, reporting, and maintaining records of incidents and failures, remember that each of these activities serves multiple purposes. For instance, proper investigation and reporting assists OEMs and owners in identifying problematic areas and weaknesses that can be improved to ensure equipment safety and reliability. All investigation and lessons learned information should be submitted to SafeOCS as supplemental information to an equipment failure notification.

6 Reporting Design and Procedural Changes

Under the failure reporting requirement of the Production Safety Systems Rule, changes in design and operating procedures resulting from a failure that were not submitted as part of the failure notification reporting process must be submitted to SafeOCS within 30 days of such changes.[7] To submit I&A information to SafeOCS, follow the instructions in section 3.5 Update and Add Files to an Existing SPPE Component Failure Notification. This information should include the unique reference number assigned by the SafeOCS system or an equivalent unique identifier established when the failure notification form was originally submitted.

[7] 30 CFR 250.803(c).

Appendix 1: Acronyms and Abbreviations

ANSI	American National Standards Institute
API	American Petroleum Institute
ASME	American Society of Mechanical Engineers
BSDV	boarding shutdown valve
BSEE	Bureau of Safety and Environmental Enforcement
BTS	Bureau of Transportation Statistics
CIPSEA	Confidential Information Protection and Statistical Efficiency Act of 2002
CO_2	carbon dioxide
DOT	Department of Transportation
ESD	emergency shutdown
FOIA	Freedom of Information Act
GLSDV	gas lift shutdown valve
GOM	Gulf of Mexico
H_2S	hydrogen sulfide
HPHT	high pressure high temperature
HR	Human resources
HSE	health, safety, and environment
I&A	investigation and failure analysis
IOGP	International Association of Oil & Gas Producers
mcf	thousand cubic feet
OCS	Outer Continental Shelf
OEM	original equipment manufacturer
OGOR	Oil and Gas Operations Report
OSDA	Office of Safety Data and Analysis
psi	pounds per square inch
psia	pounds per square inch absolute
psig	pounds per square inch gauge
RCFA	root cause failure analysis
SCSSV	surface controlled subsurface safety valve
SME	subject matter expert
SPPE	safety and pollution prevention equipment
SSCSV	subsurface controlled subsurface safety valve
SSSV	subsurface safety valve
SSV	surface safety valve
TFL	through flowline
TSE	temperature safety element
USV	underwater safety valve
WR	wireline retrievable

Appendix 2: Definitions

Adjust
Maintenance was performed that involved fine-tuning the valve or operation settings.

API well number
A well identifier is assigned by the appropriate state or federal regulatory agency.

Assembly damage or error
Damage or mistake during assembly, usually during offsite repairs.

Assessment pending
The failure is or will be investigated to determine the root cause.

Boarding shutdown valve
A valve usually within 10 feet of a boarding pipeline riser (from a subsea well, flowline, or pipeline) that shuts off flow when closed. It is usually automatically operated and designed to close upon loss of power.

Chemical soak
A chemical solvent was introduced to the valve to dissolve buildups of contaminants such as scale.

Complex ID
Unique BSEE identifier assigned to a single structure or a group of structures connected by a walkway.

Company policy/practices
These include pressure to produce, HSE or HR policy such as incentives.

Corrective action
An action taken to correct a failure and restore equipment functionality.

Corrosion - external (atmosphere)
Chemical attack of the metallurgy.

Corrosion - internal (chemical - H_2S or CO_2)
Chemical attack of the interior of the equipment due to process fluids, etc.

Cycle valve
The valve was stroked, meaning it was moved from its fully open position to its fully closed position and back to open fully.

Design issue
Inadequate equipment design or configuration. This issue is typically identified after a root cause failure analysis (RCFA) has been completed or if a previous RCFA or manufacturer's notification have previously identified the design issue.

Dry tree
Surface assembly of valves, spools, pressure gauges, and chokes fitted to the wellhead of a completed well to control production, located on the production platform's deck.

Elastomer degradation
Elastomer damage or deterioration from incompatibility, age, or explosive decompression.

Emergency conditions
The SPPE was commanded to close for an emergency condition.

Emergency (specify)
Explain the emergency condition that prompted the SPPE to close.

External leak
Migration of fluid from a contained space to the atmosphere or environment.

Failed to close when commanded
Failure of the valve to reach the fully closed position when commanded to close. It may not close at all, or it may close partially.

Failed to close in required timing
The SPPE closed fully after being commanded to close, but it took longer than the required closure timing.

Failed to open
The valve did not leave the closed position or reach a sufficiently open position when commanded to open.

Failure
Any condition that prevents the equipment from meeting the functional specification or purpose. This includes, e.g., a condition that prevents the component from operating as designed, and improper performance of a device or equipment item that prevents completion of its design function.

Foreign object damage
Damage due to a foreign object internal to the equipment, such as failed or broken parts/components from upstream equipment (sand screen, etc.).

Gas introduced
The SPPE was activated when the gas lift was introduced to the well or gas lift system.

Gas lift shutdown valve (GLSDV)
A valve used in a gas-lift system to control the flow of lift gas into the production tubing conduit. The gas-lift valve is located in the gas-lift mandrel, which also provides communication with the lift gas supply in the tubing annulus. Operation of the gas lift valve is determined by preset opening and closing pressures in the tubing or annulus, depending on the specific application.

High / low pressure
The SPPE was commanded to close due to a high-pressure or low-pressure condition sensed by an instrument on the flowline upstream of the BSDV.

Hot work
Work that involves heat at temperatures above the hydrocarbon flash point (e.g., welding, grinding).

HSE incident
A health, safety, and environment (HSE) incident can generally be defined as an event that results in consequences to health, safety, or the environment.

Human error- quality of task execution
A poor job by someone who had knowledge and skills but did not perform as expected.

Human error- quality of task planning and preparation
Examples include wrong tools or materials present, insufficient back-up plans, or not enough consideration for uncertainties.

Human error- personnel skills or knowledge
Inadequate individual or group skills, knowledge, training, etc.

Hydraulic power failure
Failure of the hydraulic system to deliver the required control pressure.

Improper maintenance or repair
Improper or incorrect repair, wrong parts, or lubricant, etc.

Improper use or valve alignment
Improper use, valve sequencing, valve line-up for operation, maintenance, or testing.

Injection well
A well in which fluids are injected into the reservoir rather than produced from it, the primary objective typically is to maintain reservoir pressure.

Internal leak
Migration of fluid from one contained space to another contained space.

Leakage test
The SPPE was closed to perform a leakage test and the failure was detected during that test.

Maintenance plan and procedure
Mistake, misuse, or oversight during maintenance or a deficiency in the written maintenance procedures or frequency/scope of maintenance plans.

Manufacturing defect
Failure related to manufacturing or quality assessment/quality control, usually by the OEM. For example, a new SPPE was purchased from the OEM, but it had been machined incorrectly.

Maximum allowable working pressure
The highest operating pressure allowable at any point in any component during normal operation or disrupted conditions.

Modify SPPE
A change was made to the valve (e.g., replacing valve or component with a different model or type).

Modify well
A change was made to the well barrier configuration (e.g., setting a tubing plug).

Normal well operations
The SPPE was closed for an operational reason during production operations.

On / away
A calculated field indicating whether the SPPE is "on" or "away" from the platform. BSDVs, SSVs, and GLSDVs are "on" the platform. SSCSVs, SCSSVs, and USVs are considered "away" from the platform.

Operating conditions out of range
Pressures, temperatures, flows, chemicals, etc. not appropriate for the equipment.

Operator company
The operator or operating company named as the designated operator of the well associated with the SPPE.

Paraffin build-up
Internal blockage or incomplete seal due to paraffin solids/wax internal to the valve.

Preventive action
An action to address a failure’s cause to prevent reoccurrence.

Procedural error
Mistake, misuse, or oversight during operation

Process upset
The SPPE was commanded to close during a process upset such as a platform trip or well shut-in.

Production
The phase of oil and gas operations involved with well fluids extraction, separation, treatment, disposal, measurement, and sale.

Production contractor
A company hired by the operator to manage and operate their equipment.

Rated working pressure
The maximum internal pressure that the equipment is designed to contain or a design operating condition.

Redress history
The equipment history of any activity involving the replacement of qualified parts.

Remanufacture
The valve was rebuilt by the manufacturer using restored, repaired, or new parts.

Repair
The valve was repaired, or part of the valve (i.e., a component) was replaced.

Replace
The entire valve was replaced with the same valve type.

Response to ESD testing
The ESD was being tested and commanded the SPPE to close.

Root cause
The cause (condition or action) that begins a cause/effect chain and ends in the equipment component failure. If eliminated, it would prevent the reoccurrence of the event (under investigation) and similar occurrences.

Root cause failure analysis (RCFA)
A comprehensive systematic investigation process undertaken to identify the root cause of a component failure or other effect.

Sand cut erosion
Damage to the metal or elastomers due to velocity induced damage from sand particles.

Scale build-up
Internal sticking or incomplete seal due to scale accumulation internal to the valve.

Service
Maintenance was performed on the valve (e.g., greasing).

Shut-in well
The well was shut-in for at least 30 days, meaning valves were closed to halt flow from the well, either permanently or until remediation can be performed.

SPPE
The process or control equipment whose primary function is safety or the prevention of pollution in offshore oil and gas operations.

Subsea tree
An assembly of valves, spools, pressure gauges, and chokes fitted to the wellhead of a completed well to control production located on the seafloor.

Subsurface controlled subsurface safety valve (SSCSV)
A downhole safety valve designed to close automatically in an emergency. There are two basic operating mechanisms: valves operated by increasing fluid flow and valves operated by decreasing ambient pressure.

Subsurface safety valve (SSSV)
A device whose designed function is to prevent uncontrolled well flow when closed.

Surface controlled subsurface safety valve (SCSSV)
A downhole safety valve that is operated from surface facilities through a control line strapped to the external surface of the production tubing.

Surface safety valve (SSV)
The valve which contains the well stream and shuts off flow when closed. The SSV is usually operated by actuator that is designed to close the SSV upon command or loss of power.

Through flowline (TFL)
Pertains to treatments performed on subsea wells where the fluids and associated pump-down equipment, such as plugs or darts, are pumped through the flowline normally used for production fluids.

Tree
An assembly of valves, gauges, and chokes mounted on a well casing head, used to control the production fluid and flow of oil, water, or gas.

Tubing-pressure-type SSCSV
A type of valve designed to close when tubing pressure drops below a pre-set level referenced by a pneumatically charged container in the SSCSV.

Tubing retrievable
Type of subsurface safety valve that is run and retrieved as part of the production tubing string.

Underwater safety valve
Automatic valve assembly (installed at an underwater wellhead location) which contains the well stream and shuts off flow. The USV is typically operated by an actuator that causes the surface safety valve to open when power is supplied and to close automatically when power is lost or released.

Valve seat degradation
Damage to the metal or elastomers in the seating area of any type of valve due to repeated closures, misalignment, or other factors.

Velocity-type SSCSV
A type of valve designed to close when high well-effluent velocity causes a pressure differential across a bean (orifice) in the valve in excess of the design differential chosen by the installer.

Wear and tear
An expected condition of a component that has reached a point where it is unable to perform its intended function as the result of usage or it has met its expected life.

Well debris
Internal blockage or incomplete seal due to debris from the well (other than sand, scale, or paraffin) internal to the valve.

Well shut-in
A well which is capable of producing but is isolated with closed valves and not presently producing.

Well work
The failure was discovered during well work such as an intervention, usually a subsurface SSV failure discovered during inspection.

Wireline retrievable
Type of safety valve in which the principal components can be run and retrieved by wireline or slickline.

Workplace documentation
Operating, maintenance, or procurement procedures lacking or incorrect.