



SafeOCS Program

Safety and Pollution Prevention Equipment (SPPE)

SPPE User Guide

SAFE OCS SPPE User Guide

Office of Safety Data and Analysis (OSDA)

Bureau of Transportation Statistics (BTS)

Department of Transportation (DOT)

1200 New Jersey Avenue

Washington, DC 20590

1-844-OCS-FRST (1-844-627-3778)

SafeOCS@dot.gov

February 15, 2021

Version 3.0

TABLE OF CONTENTS

1	Background, Scope, and Purpose	5
1.1	Background	5
1.1.1	SafeOCS SPPE Failure Reporting Program.....	5
1.1.2	CIPSEA Data Protection	6
1.1.3	Brief Overview of Safety and Pollution Prevention Equipment.....	6
1.2	Scope	7
1.3	Purpose	8
2	Accessing the SafeOCS Reporting System	9
2.1	Go to the Program Website	9
2.2	Create a User Account	10
2.2.1	Complete the Account Registration Form	10
2.3	Validate Your Email Address	11
3	Submitting an SPPE Failure Notification – Process Overview	12
3.1	Log in to Your SafeOCS Account	12
3.1.1	Agree to the Confidentiality and Burden Statements	13
3.2	Select a Mode of Submission	14
3.3	Complete the Online SPPE Failure Notification Form.....	15
3.3.1	Fill Out the Online Form.....	15
3.3.2	Review and Edit the SPPE Failure Notification Before Submitting	16
3.3.3	Submit the Completed Notification Form.....	16
3.4	Complete the Word SPPE Failure Notification Form	17
3.4.1	Download the Word Fillable Form	17
3.4.2	Complete the Fillable Form.....	18
3.4.3	Upload the Fillable Form.....	18
3.5	Update and Add Files to an Existing SPPE Component Failure Notification	21
4	Submitting an SPPE Failure Notification – Detailed Instructions	24
4.1	Notification Identification.....	24

4.2 Operator/Location Data.....	25
4.3 Description of the Failure	26
4.4 SPPE Details and History	27
4.5 Additional Failure Details.....	34
5 Requirements for Investigation and Failure Analysis (I&A)	39
5.1 Submitting I&A Information to SafeOCS.....	39
5.2 Failure Causes	40
5.2.1 Physical Causes.....	40
5.2.2 Human Factor Causes.....	40
5.2.3 Systemic Causes	40
5.3 Types of Investigation and Failure Analysis	40
5.3.1 Failure Cause Known	41
5.3.2 Root Cause Failure Analysis Required (RCFA).....	42
5.4 Capture and Share Lessons Learned.....	43
6 Reporting Design and Procedural Changes	44
Appendix 1: Acronyms and Abbreviations.....	45
Appendix 2: Definitions	46

1 Background, Scope, and Purpose

1.1 BACKGROUND

1.1.1 SafeOCS SPPE Failure Reporting Program

SafeOCS is a confidential reporting program for the collection and analysis of data to advance safety in oil and gas operations on the Outer Continental Shelf (OCS). The objective of SafeOCS is to capture and share essential information across the industry about accident precursors and potential hazards associated with offshore operations. The SafeOCS safety and pollution prevention (SPPE) failure reporting program is one of three under the SafeOCS umbrella, in addition to the well control equipment failure reporting program and the industry safety data reporting program.

Under the Bureau of Safety and Environmental Enforcement (BSEE) Oil and Gas Production Safety Systems Rule, all oil and gas operators on the OCS must submit a failure report when specific SPPE does not perform as designed.¹ Operators are required to submit these reports directly to the Bureau of Transportation Statistics (BTS) as BSEE's designee under the rule for the collection of SPPE failure data and reports.² BSEE and BTS have a memorandum of understanding that provides for BTS collection of equipment failure reports.³

¹ The rule is codified primarily in 30 CFR part 250, subpart H. The failure reporting requirement is codified in 30 CFR 250.803.

² 30 CFR 250.803(d).

³ Memorandum of Understanding Between U.S. Department of the Interior, Bureau of Safety and Environmental Enforcement and U.S. Department of Transportation, Bureau of Transportation Statistics (Aug. 18, 2016), available at <https://www.bsee.gov/newsroom/partnerships/interagency>.

1.1.2 CIPSEA Data Protection

Any SPPE failure event information submitted to directly to BTS is accessible only by BTS-authorized personnel and BTS-designated agents under the Confidential Information Protection and Statistical Efficiency Act of 2002 (CIPSEA) (44 U.S.C. 3501 note). As an independent federal statistical agency, BTS has the authority and obligation under CIPSEA and BTS's authorizing statute to protect the confidentiality of submitted data, including but not limited to company information, personally identifiable information, and sensitive or proprietary information. Additionally, CIPSEA protects confidential data from release to other government agencies including BSEE, Freedom of Information Act (FOIA) requests, and subpoenas. More information about BTS and CIPSEA confidentiality protections can be found at www.safeocs.gov.

SPPE failure event information submitted to BTS goes through a detailed quality evaluation and statistical analysis. It is then aggregated so that industry-wide patterns and results can be discerned. This aggregated information is then shared with stakeholders in published reports and data dashboards.

1.1.3 Brief Overview of Safety and Pollution Prevention Equipment

In general, SPPE promotes the safety and protection of human, marine, and coastal environments. The specific SPPE covered by the Production Safety Systems Rule protects personnel and the environment by controlling the flow of well fluids (crude oil, natural gas, and water), especially in case of an emergency or system failure. The SPPE consists of specifically designated safety valves, actuators, and their control systems, which are required by BSEE regulations, industry standards, and in most cases, company policies. SPPE includes the following valve types:⁴

- Surface safety valves (SSVs)
- Boarding shutdown valves (BSDVs)
- Underwater safety valves (USVs)

⁴ 30 CFR 250.801.

- Subsurface safety valves (SSVs)
 - Surface controlled subsurface safety valves (SCSSVs)
 - Subsurface controlled subsurface safety valves (SSCSVs)
- Gas lift shutdown valves (GLSDVs)

Under the failure reporting requirement of the Production Safety Systems Rule,⁵ operators must follow the failure reporting requirements contained in section 10.20.7.4 of ANSI/API Spec. 6A for SSVs, BSDVs, GLSDVs and USVs and section 7.10 of ANSI/API Spec. 14A and Annex F of ANSI/API RP 14B for SSSVs, to provide a written report of equipment failure to the equipment manufacturer and to BTS, as BSEE’s designated third party, within 30 days after the discovery and identification of the failure. An investigation and failure analysis must be performed within 120 days of the failure. 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. Any subsequent design or procedural changes taken as a result of the failure must be reported to BTS as BSEE’s designated third party.

1.2 SCOPE

This document provides instructions and guidance for the submission of SPPE failure notifications to SafeOCS under 30 C.F.R. 250.803. This document gives guidance on the following:

- Accessing the SafeOCS Reporting System (**Section 2**)
- Submitting an SPPE Failure Notification – Process Overview (**Section 3**)
- Submitting an SPPE Failure Notification – Detailed Instructions (**Section 4**)
- Requirements for Investigation and Failure Analysis (I&A) (**Section 5**)
- Reporting Design and Procedural Changes (**Section 6**)

⁵ 30 CFR 250.803.

1.3 PURPOSE

BTS developed this document to assist offshore oil and gas operators with completing and submitting SPPE failure notification forms and supplemental information, including investigation reports and reports of design changes or modified procedures.

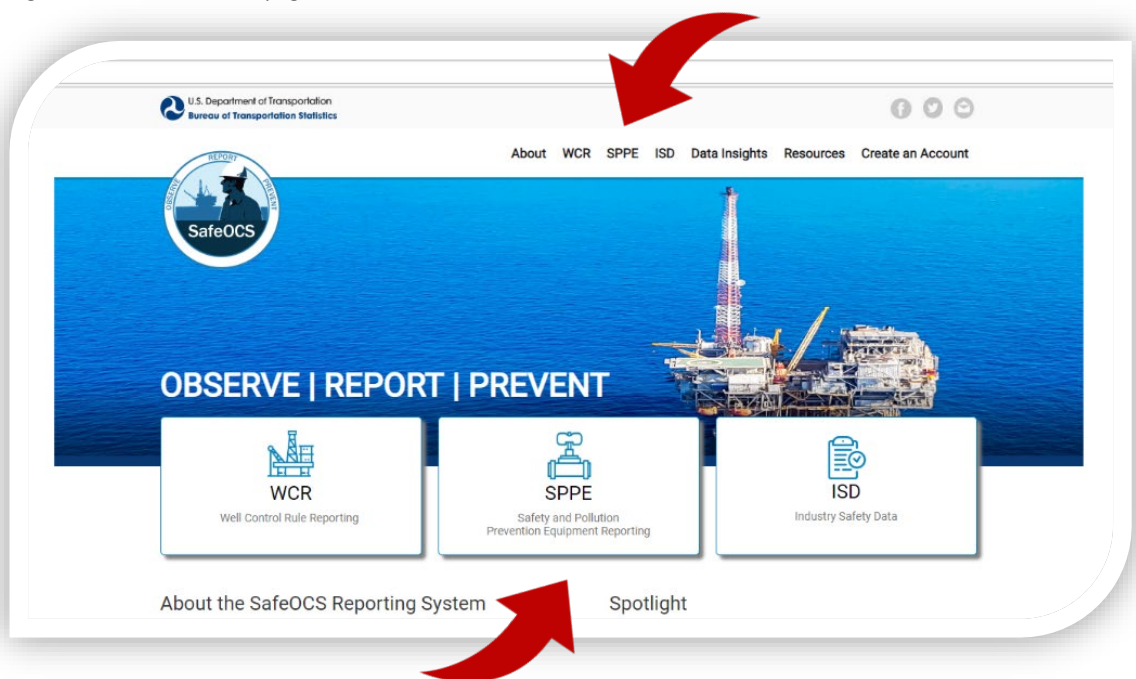
The purpose of the SPPE failure reporting program is to capture and share essential information about SPPE, which play a critical role in protecting workers and the environment.

2 Accessing the SafeOCS Reporting System

2.1 GO TO THE PROGRAM WEBSITE

1. Go to www.safeocs.gov to access the SafeOCS Reporting System (Figure 2-1).
2. Select the SPPE button on the home page or the SPPE Failure Notification tab on the main navigation bar to submit a Safety and Pollution Prevention Equipment (SPPE) failure notification.

Figure 2-1: SafeOCS Homepage



2.2 CREATE A USER ACCOUNT

Data reported to SafeOCS are confidential and protected under the Confidential Information Protection and Statistical Efficiency Act of 2002 (CIPSEA) (44 U.S.C. 3501 note). Therefore, users must register and create an account for the SafeOCS reporting system before submitting equipment failure notifications or supplemental information.

2.2.1 Complete the Account Registration Form

1. Click on the *Create an Account* tab from the SafeOCS home page.
2. Complete the *Account Registration Form* (Figure 2-2).
3. Click *Create Account* to complete registration.

“Thank you for registering for a user account. To complete your registration, check your email for a validation link.”

4. The pop-up message below confirms the successful submission of the registration form.

Figure 2-2: SafeOCS Account Registration Page

U.S. Department of Transportation
Bureau of Transportation Statistics

About WCR SPPE ISD Data Insights Resources [Create an Account](#)

SafeOCS Account Registration

Enter your information to create an account.

Company Name	<input type="text"/>
Your First Name	<input type="text"/>
Middle Name	<input type="text"/>
Last Name	<input type="text"/>
Your E-mail	<input type="text"/>
Choose Password (ex: SamplePassword123)	<input type="password"/>
Re-enter Password	<input type="password"/>
Supervisor's Name	<input type="text"/>
Supervisor's Email	<input type="text"/>
Supervisor's Phone Number	<input type="text"/>

[Create Account](#)

[Log in](#) [Forgot password?](#)

Note: Choose a password with 12 or more characters with a mix of letters (uppercase & lowercase) and numbers.

Registration Instructions:

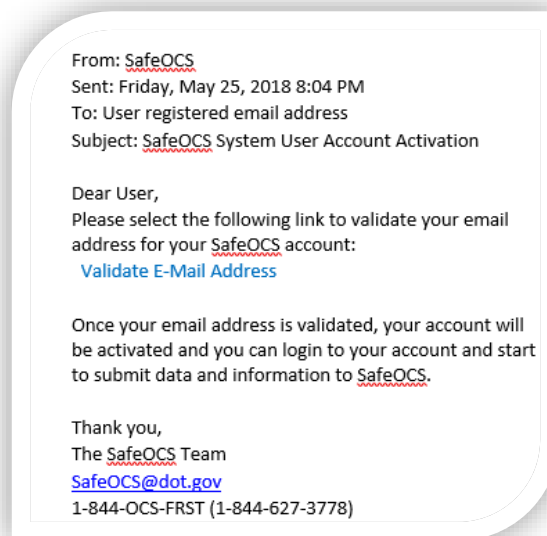
1. Complete registration form.
2. Validate registration by following the link provided in e-mail from SafeOCS@dot.gov.
3. Use your e-mail and password to log in to your account.

NOTE: Select a password with 12 characters, with a mix of letters (uppercase and lowercase) and numbers.

2.3 VALIDATE YOUR EMAIL ADDRESS

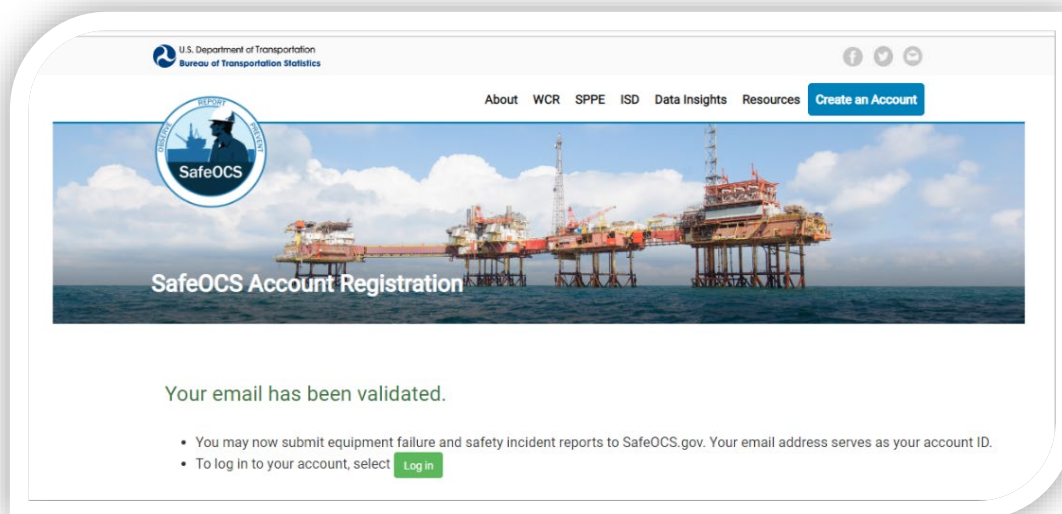
1. Review the email sent from the *SafeOCS system* to the email address you provided in your *Account Registration Form* (Figure 2-3).

Figure 2-3: Figure 3 4: SafeOCS Account Registration Validation Email



2. Validate your email address by following the instructions in that email.
3. You will see a *Registration Confirmation* screen (Figure 2-4).

Figure 2-4: SafeOCS Account Registration Confirmation



3 Submitting an SPPE Failure Notification – Process Overview

3.1 LOG IN TO YOUR SAFEOCS ACCOUNT

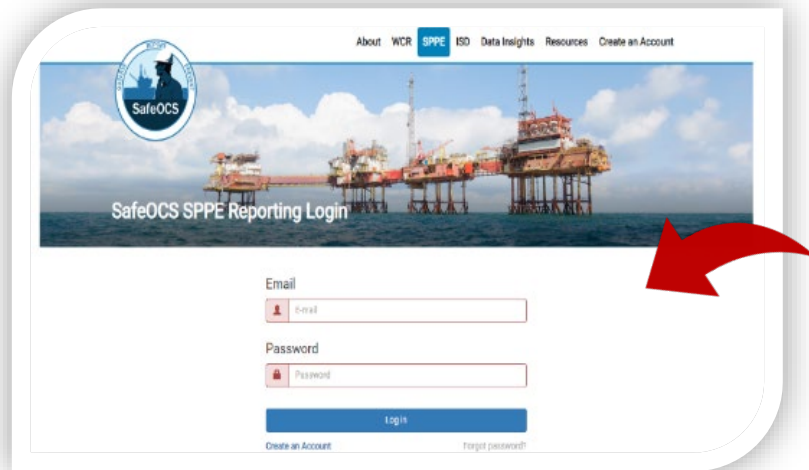
1. Navigate to www.safeocs.gov.
2. Select the *SPPE* button from the homepage to go directly to the SPPE Failure page (Figure 3-1).
 - Alternatively, click the *SPPE* tab on the main navigation bar and then *the SPPE Submit Notifications and Supplemental Files* button on the right navigation bar.

Figure 3-1: SafeOCS Homepage



3. Enter *Email* and *Password* to log in to your SafeOCS account (Figure 3-2).

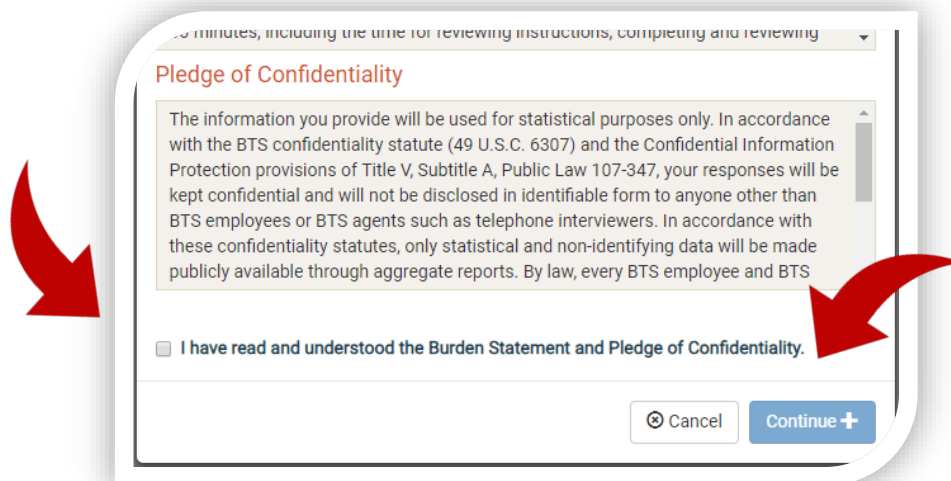
Figure 3-2: SafeOCS SPPE Login Page



3.1.1 Agree to the Confidentiality and Burden Statements

1. Read and consent to the Pledge of Confidentiality and Burden Statement.
2. Check the box for the “I have read...” statement and click on the Continue button (Figure 3-3).

Figure 3-3: Pledge of Confidentiality and Burden Statement Page



3.2 SELECT A MODE OF SUBMISSION


SafeOCS offers two ways to submit SPPE component failure notifications (Figure 3-4).

1. Submit Online Form (*preferred method*)
 - a. Go to section 3.3.
2. Upload Word Form
 - a. Go to section 3.4.


Figure 3-4: Submit New SPPE Failure Notification Page


Submit New SPPE Failure Notification


Use the options below to submit a **new** SPPE failure notification: complete online form, download form, or upload form. To modify a previously submitted notification use the "Update and Add Files" option further below.

 Complete online form

OR

 Complete Word form

 Download Form

 Upload Form

Update and Add Files to an Existing SPPE Failure Notification

Search by BTS Reference Number to **add** files to a previously submitted SPPE failure notification. These files can include, but are not limited to, additional information or corrected forms.

Select by a BTS Reference Number to add files to a submitted report:

3.3 COMPLETE THE ONLINE SPPE FAILURE NOTIFICATION FORM

3.3.1 Fill Out the Online Form

1. Select “Complete online form” (Figure 3-4). The online form will come up (Figure 3-5).
2. Go to section 4 of this document for detailed instructions on completing the online form.

Figure 3-5: SPPE Online Failure Form

The screenshot shows the 'SPPE (Safety and Pollution Prevention Equipment) Failure Notification Form' on a web portal. The page header includes navigation links: About, WCR, SPPE, ISD, Data Insights, Resources, Create an Account, and Project Activity Tracker. A 'SafeOCS' logo is visible in the top left. The main content area is titled 'SPPE Failure' and features a background image of an industrial worker. Below the header, there are tabs for 'Overview', 'SPPE Online', and 'Form Upload', along with a user profile 'Clenda Lopez' and a 'Log out' button.

The form itself is titled 'SPPE (Safety and Pollution Prevention Equipment) Failure Notification Form' and includes the following sections:

- Please provide the information listed below:**
 - Operator/company assigned reference number: [Text input]
 - BTS reference number(select if assigned): [Dropdown menu: '-Select BTS Reference ID-']
 - Submit date: [Text input: '02/01/2021']
- I. Operator/Location Data**
 - 1. Provide operator and submitter details.**
 - A. Operator name: [Dropdown menu: '-Select operator-']
 - B. Submitting company name: [Text input] (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: [Text input]
 - D. Operator primary contact name: [Text input]
 - E. Operator primary contact info: [Text input] (Tail) [Text input] (Email)
 - F. Name of person completing form: [Text input]
 - 2. Provide location details.**
 - A. Complex ID / OCS block number: [Text input] / [Text input]
 - B. Lease number: [Text input]
- 3. Well API number and completion name:**
 - Text: OCS-XXXX#, where X indicates C, P, or A for the Gulf of Mexico, Pacific, or Alaska OCS Region, respectively
 - Text: Dual completions: list the well name for the correct production string - short or long string.
 - Text: GLSDVs & BSDVs: list all wells. If more than 4, list wells in the configuration section (IV.S.)
 - Table with 2 columns: 'API well number (12 digit)' and 'Well completion name'. It contains 4 rows of empty text input fields.

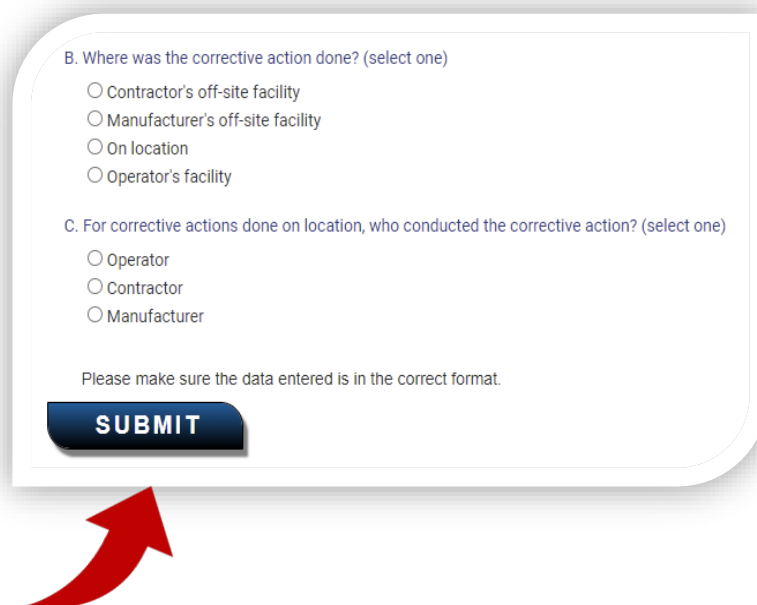
3.3.2 Review and Edit the SPPE Failure Notification Before Submitting

1. Review and edit the completed notification **before** submitting it to correct any data-entry errors.
2. Update an original notification to correct errors **after** you have submitted a notification.

3.3.3 Submit the Completed Notification Form

1. Submit the completed notification form by selecting the *Submit* button (Figure 3-6).
2. Select the *Submit* button.
 - Saves data and generates a *BTS reference number* for the notification.
3. Close the form only after clicking submit; otherwise, you will lose all the data entered.

Figure 3-6: Submit Completed Notification Form



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

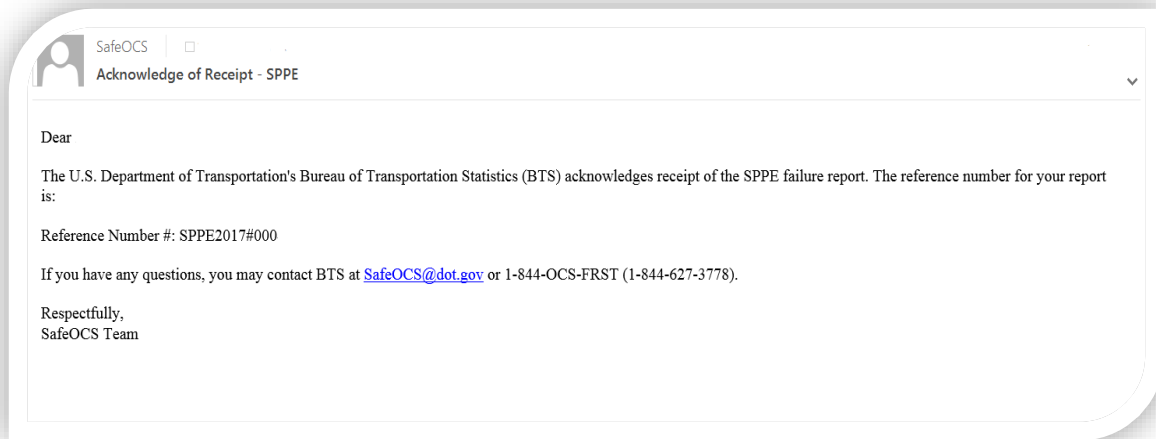
Please make sure the data entered is in the correct format.

SUBMIT

A red arrow points to the SUBMIT button.

4. You will see a confirmation message on the screen, if you successfully submitted a notification.
5. You will also receive an Acknowledgment of Receipt email at the account you registered with SafeOCS (Figure 3-7).

Figure 3-7: Acknowledgement of Receipt – SPPE Email



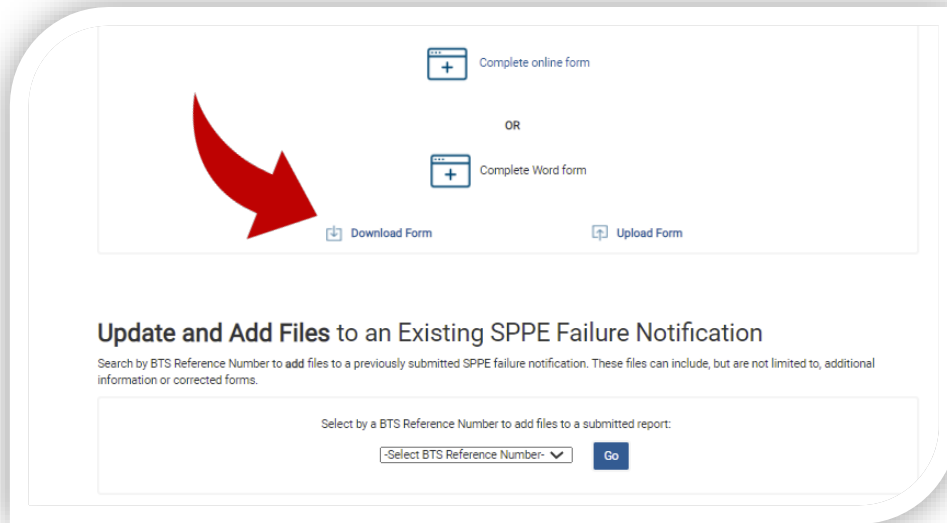
3.4 COMPLETE THE WORD SPPE FAILURE NOTIFICATION FORM

3.4.1 Download the Word Fillable Form

1. Click the *Download Form* button if you do not already have a copy (Figure 3-8).
 - If you have saved an electronic copy for easy access, remember to check for the latest version periodically.

2. Open the form.
 - Depending on your browser, it might open automatically, or you may need to find it in your downloads folder.

Figure 3-8: Download and Upload Fillable Form



3.4.2 Complete the Fillable Form

1. Complete the form as thoroughly as possible. Go to section 4 of this document for detailed instructions on completing the online form, which are also applicable to the Word form.
2. Save the form.

3.4.3 Upload the Fillable Form

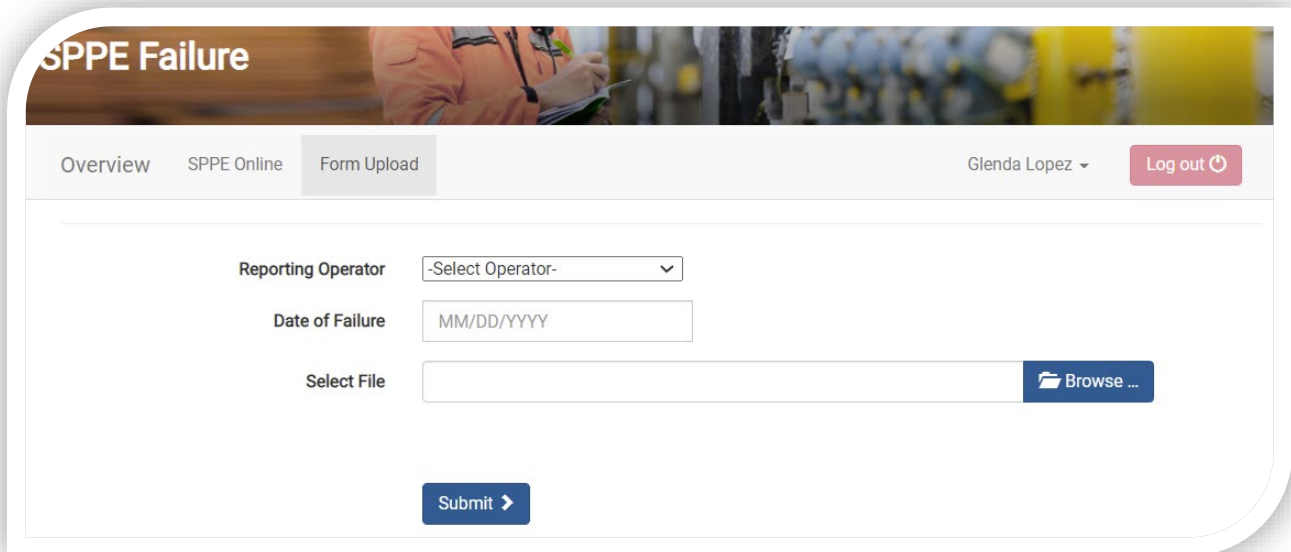
1. Select the *Upload Form* button (Figure 3-8).
2. Complete the three required fields (Figure 3-9):
 - ***Reporting Operator***: select from the drop-down menu. If the operator's name for which you are submitting a failure notification is not in the drop-down list, please

select *Other* at the bottom of the drop-down list, then type in the operator's name in the pop-up text field.

- *Date of Failure*: enter or select from the calendar the date of the failure event.
- *Select File*: browse to the file location and load a file. The *Browse* function allows the user to select and upload only one file at a time.

3. Click *Submit* to submit the uploaded failure notification.

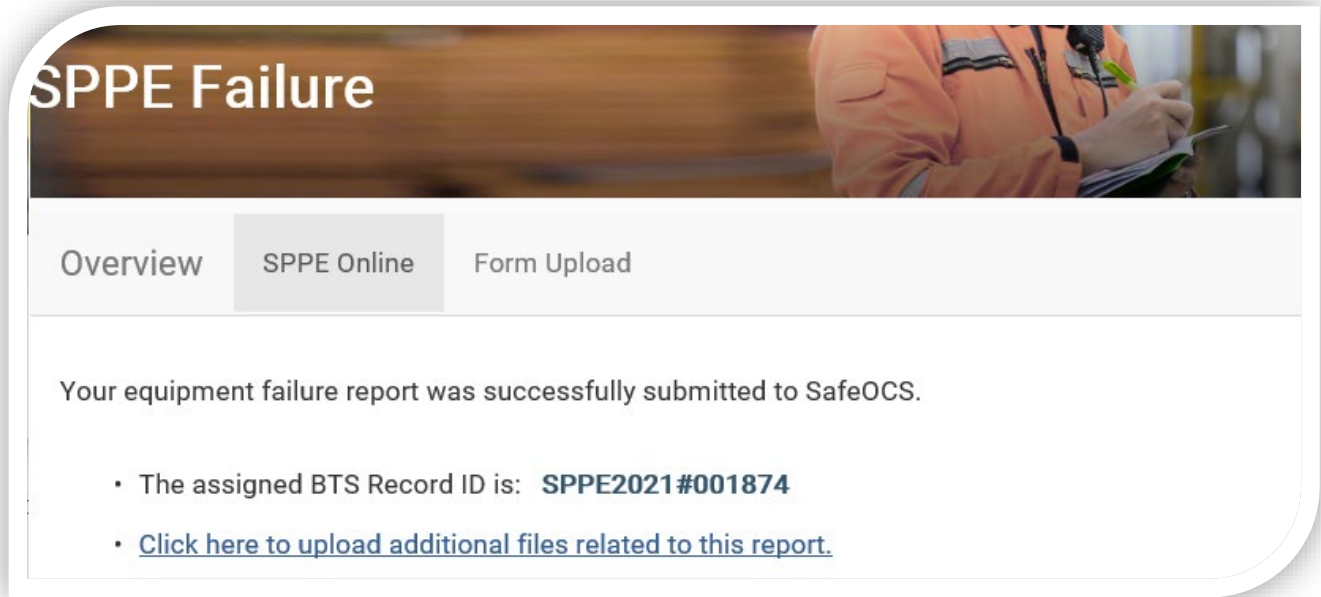
Figure 3-9: Upload the Word Form



The screenshot shows a web application interface for uploading a failure form. At the top, there is a header with the text "SPPE Failure" and a background image of a worker in an orange safety vest. Below the header is a navigation bar with three tabs: "Overview", "SPPE Online", and "Form Upload". On the right side of the navigation bar, the user's name "Glenda Lopez" is displayed with a dropdown arrow, and a "Log out" button with a power icon is visible. The main content area contains three input fields: "Reporting Operator" with a dropdown menu showing "-Select Operator-" and a downward arrow; "Date of Failure" with a text input field containing the placeholder "MM/DD/YYYY"; and "Select File" with a text input field and a blue "Browse ..." button with a folder icon. At the bottom of the form, there is a blue "Submit" button with a right-pointing arrow.

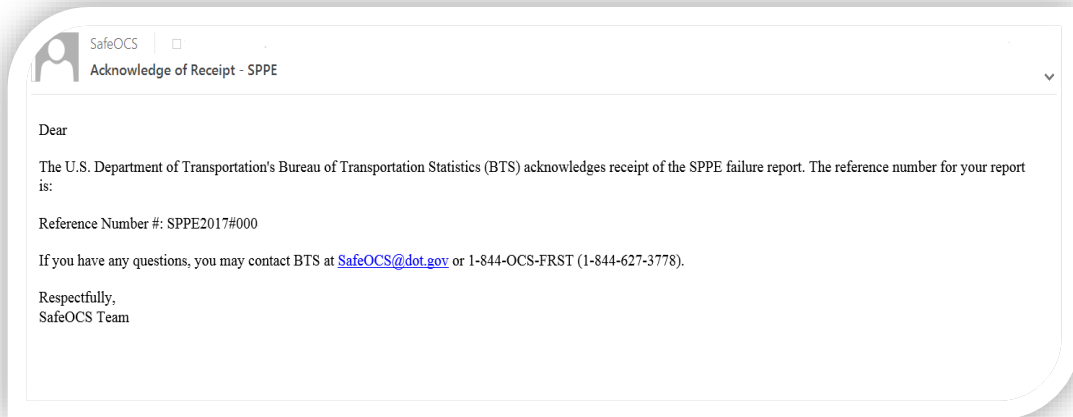
4. Look for the submission confirmation to ensure your upload was successful Figure 3-10).

Figure 3-10: Confirmation of SPPE Failure Notification Submission



5. Look for a confirmation email message as well (Figure 3-11).

Figure 3-11: SPPE Acknowledgement of Receipt Email



3.5 UPDATE AND ADD FILES TO AN EXISTING SPPE COMPONENT FAILURE NOTIFICATION

1. Select *Update and Add Files* (Figure 3-12). Use it to upload additional information to a previously submitted notification, including:
 - Investigation and failure analysis information
 - Design or procedural changes taken as a result of the failure event
 - Pictures, graphs, detailed descriptions, or updates
2. Click on the *BTS Reference Number* drop-down and select the BTS reference number for the notification you want to update (Figure 3-12).

NOTE: For confidentiality reasons, a **registered user** will see only the BTS reference numbers of their own submitted notifications unless the user is an authenticated operator’s representative. An **operator’s representative** can see the BTS reference numbers of all notifications submitted under the operator’s name and add additional information to those notifications.

Figure 3-12: Update and Add Files page

Complete online form

OR

Complete Word form

Download Form Upload Form

Update and Add Files to an Existing SPPE Failure Notification

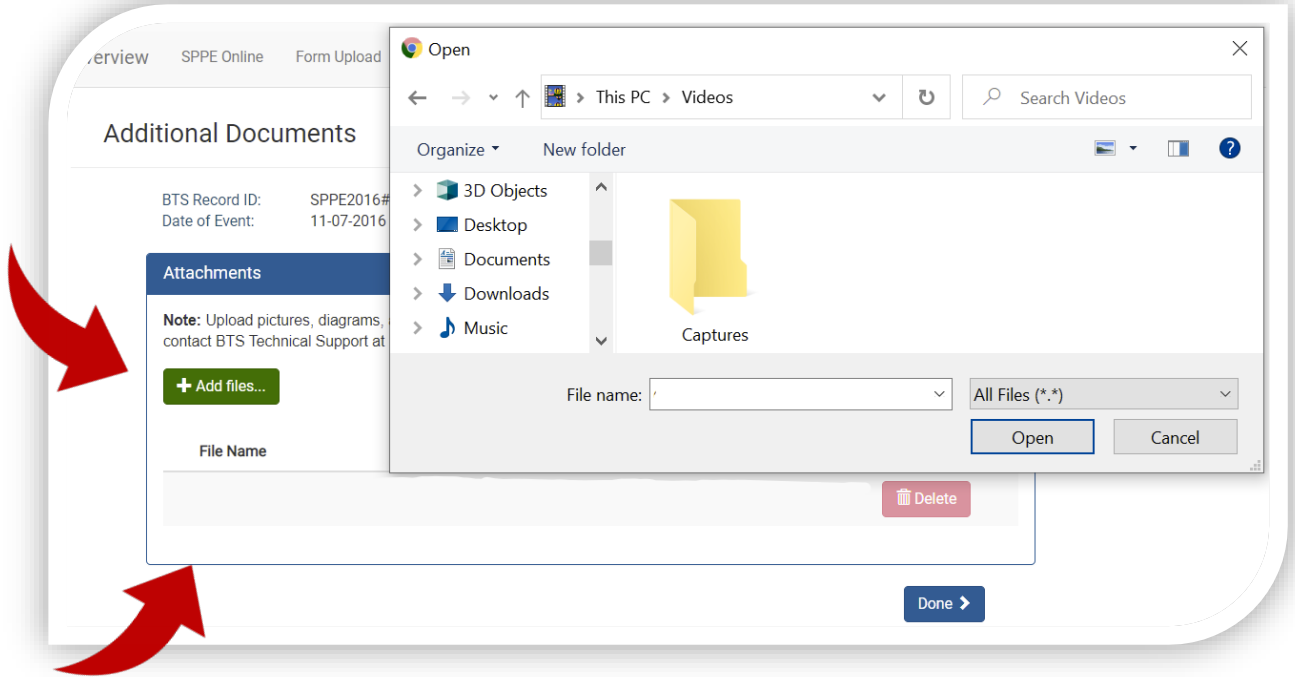
Search by BTS Reference Number to add files to a previously submitted SPPE failure notification. These files can include, but are not limited to, additional information or corrected forms.

Select by a BTS Reference Number to add files to a submitted report:

-Select BTS Reference Number- Go

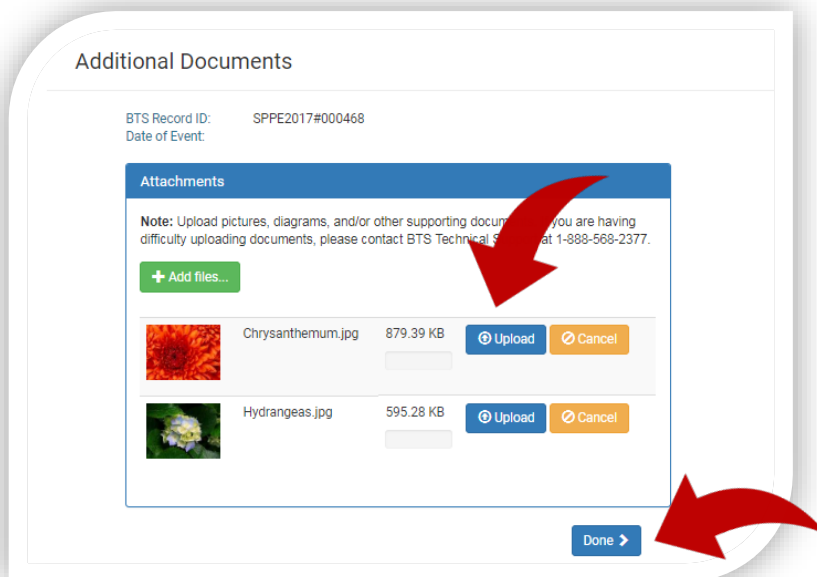
3. Click the *Go* button to bring up the file uploading interface.
4. Click *Add files* to browse to the file location (Figure 3-13).

Figure 3-13: Adding Additional Documents to Existing BTS Reference number



5. Review the files listed in the file upload interface (Figure 3-14).

Figure 3-14: Adding Additional Documents to Existing BTS Reference number



NOTE: Select the Cancel button to delete a file from the list. Click Delete to remove an uploaded file after it has been added to a notification.

6. Click on the *Upload* button to upload a selected file to SafeOCS.
7. Click *Done* when all the selected files have been uploaded. You will be returned to the *Update and Add File* interface.

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.

SPPE (Safety and Pollution Prevention Equipment) Failure Notification Form	
Please provide the information listed below.	
Operator/company assigned reference number:	<input type="text"/>

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: ▼

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. Operator/Location Data

1. Provide operator and submitter details.

- A. **Operator name** - Select the company name from the drop-down list provided or select *Other* and specify.
- B. **Submitting company name** - Enter the name of the company submitting the SPPE notification, if different than the operator name.
- C. **Submitting company type** - Select the company type from the list provided or select *Other* and enter the company type (lessee, compliance contractor, valve service company, etc.).
- D. **Operator primary contact name** - 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 (mm/dd/yyyy):

2. Provide a description of the failure to include, but not limited to:

- *Operating history*: provide operating history of the SPPE leading up to the malfunction or failure (e.g., field repair, modifications made to the SPPE, etc.)
- *Operating conditions*: thoroughly describe the operating conditions at the time of the malfunction or failure
- *Malfunction/failed component*: describe the specific malfunction or failed component

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)	
<input type="radio"/> Surface safety valve (SSV)	
<input type="radio"/> Boarding shutdown valve (BSDV)	
<input type="radio"/> Underwater safety valve (USV)	
<input type="radio"/> Surface controlled subsurface safety valve (SCSSV)	
<input type="radio"/> Subsurface controlled subsurface safety valve (SSCSV)	
<input type="radio"/> Gas lift shutdown valve (GLSDV)	
B. Equipment manufacturer:	<input type="text"/>
C. Model:	<input type="text"/>
D. Serial number:	<input type="text"/>
E. Working pressure (psig):	<input type="text"/>
F. Nominal size (inches):	<input type="text"/>
G. Was the SPPE designed for (HPHT) high pressure (15,000 psi or higher), high temperature (350°F or higher) conditions?	
<input type="radio"/> Yes <input type="radio"/> No	
H. Was the SPPE designed for arctic conditions?	
<input type="radio"/> Yes <input type="radio"/> No	
I. Specify the most extreme exposure conditions for which the SPPE was designed to function.	
Design pressure:	<input type="text"/> psi
Design temperature:	<input type="text"/> (min) to <input type="text"/> (max) °F
Design flow rate:	<input type="text"/> (number)
Flow rate units:	<input type="text"/> per <input type="text"/>
Other design environmental conditions:	<input type="text"/>

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. For a subsurface safety valve failure, provide installation details:

A. What was the type of subsurface safety valve (SSSV) that failed? (select one)

Surface controlled

- Tubing retrievable **surface** controlled subsurface safety valve (TRSCSSV)
- Wireline retrievable **surface** controlled subsurface safety valve (WRSCSSV)
- Through flowline (TFL) **surface** controlled subsurface safety valve (SCSSV)

Subsurface controlled

- Velocity-type **subsurface** controlled subsurface safety valve (SSCSV)
- Tubing-pressure-type **subsurface** controlled subsurface safety valve (SSCSV)

B. For subsurface controlled (SSCSV) failures, where was it installed? (select one)

- SSCSV valve inserted in landing nipple profile of a previously installed SCSSV (12-month test frequency)
- SSCSV installed in another landing nipple (12-month test frequency)
- SSCSV installed in the tubing string (6-month test frequency)

C. What was the service class of the SSSV that failed? (select one)

- Class 1 only standard service
- Class 2 sandy service
- Class 1 and 2
- Class 3 stress cracking
- Class 3s (sulfide stress and chlorides in a sour environment)
- Class 3c (sulfide stress and chlorides in a non-sour environment)
- Class 4 mass loss corrosion service

3. For a BSDV, SSV, or USV failure, provide installation details:

A. What was the service class? (select one)

- Class I: performance level requirement intended for use on wells that do not exhibit the detrimental effects of sand erosion.
- Class II: performance requirement level intended for use if a substance such as sand could be expected to cause a valve failure.

B. For a BSDV failure, what was the valve type? (select one)

- Automatic
- Manual

4. When was the SPPE installed?

Date (mm/dd/yyyy):

2. For a subsurface safety valve failure, provide installation details:

A. **What was the type of subsurface safety valve (SSSV) that failed?** - Select one from the list provided. Velocity type SSCSV is also known as a differential pressure type SSCSV.

B. **For subsurface controlled (SSCSV) failures, where was it installed?** - Select one from the list provided.

C. **What was the service class of the SSSV that failed?** - Select one from the list provided.

3. For a BSDV, SSV, or USV failure, provide installation details:

A. **What was the service class?** - 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)**

Newly installed; certified SPPE pursuant to ANSI/API Spec Q1
 Newly installed; certified SPPE pursuant to another quality assurance program
 Previously certified under ANSI/ASME SPPE-1
 Non-certified SPPE

6. **Was the SPPE previously repaired, remanufactured, or subject to hot work offsite?**

Yes No

7. **When was the affected component last repaired or maintained?**

Date (mm/dd/yyyy):

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:

B. Number of cycles since installation:

9. **Describe any repair or redress history for the SPPE that failed:**

10. **Provide the date and describe the last SPPE test prior to this failure:**

Date (mm/dd/yyyy):

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)

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: (64ths)
- 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: %
- H₂S
- CO₂
- Paraffin
- Scale
- Cement
- Salt
- Solids
- Other, specify:

1. **What type of tree was associated with the SPPE that failed?** - Select *Dry tree* or *Subsea tree* to specify the tree type.
2. **What was the type of well associated with the SPPE failure?** - 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. For an external leak, how much fluid leaked?

Amount: Units:

5. HSE incident details

A. Was the failure associated with an HSE incident?

Yes No

B. If yes, did the HSE incident involve any of the following? (select all that apply)

- One or more fatalities
- Injury to 5 or more persons in a single incident
- Tier 1 process safety event (API 754/IOGP 456)
- Loss of well control
- \$1 million direct cost from damage or loss of facility/vessel/equipment
- Oil in the water >= 10,000 gallons (238 bbls)
- Tier 2 process safety event (API 754/IOGP 456)
- Collisions that result in property or equipment damage > \$25,000
- Incident involving crane or personnel/material handling operations
- Loss of station-keeping
- Gas release (H₂S and other) that result in process or equipment shutdown
- Muster for evacuation
- Structural damage
- Spill < 10,000 gallons (238 bbls)
- Other, specify:

6. Under what conditions was the SPPE failure detected? (select all that apply)

- When activated during normal well (production) operations
- When activated in response to ESD testing
- When activated during emergency weather or other emergency conditions
specify the nature of the emergency:
- When activated during a process upset
- When activated in response to the detection of a high or a low-pressure condition by a PSHL sensor located upstream of the BSDV
- When the gas lift system introduced gas into the system
- When activated during a leakage test
- During well intervention or well work
- Other, specify:

4. For an external leak, how much fluid leaked? - Enter the amount and units that leaked.

5. HSE incident details:

A. **Was the failure associated with an HSE incident?** - Select *Yes* or *No* to indicate if this was a health, safety, and environment (HSE) incident.

B. **If yes, did the HSE incident involve any of the following?** - Select all that apply from the list provided or select *Other* to specify.

6. Under what conditions was the SPPE failure detected? – 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. **What factors contributed to the failure?** - 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 - H₂S or CO₂)
- 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 ₂ S	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 - H₂S or CO₂)

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.