



A User Guide for Reporting Well Control Equipment Failure



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Abstract

This is a reference document to assist offshore drilling operators and their representatives with the completion and submission of required well control equipment (WCE) component failure notifications pursuant to 30 CFR 250.730(c). Specifically, this document provides guidance for submitting failure notifications for WCE failures to SafeOCS.

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1. Background, Purpose, and Scope

1.1. BACKGROUND

SafeOCS is a confidential reporting program for collecting and analyzing data to advance safety in energy 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 program is sponsored by the Department of the Interior's Bureau of Safety and Environmental Enforcement (BSEE) and administered independently by the Department of Transportation's Bureau of Transportation Statistics (BTS), a principal federal statistical agency.

The SafeOCS well control equipment (WCE) failure reporting program collects reports of events in which a WCE system or system component failed to function as specified. These reports are required under BSEE regulation 30 CFR 250.730(c), which requires operators to follow the failure reporting procedures in API Standard 53,¹ submit failure reports to BTS as BSEE's designated third party to receive this information and submit failure reports to the original equipment manufacturer. The rule requires accurate reporting of blowout preventer (BOP) system and component failures, from initial notification to investigation and failure analysis, communication of failure information and lessons learned, and design and procedural changes.

BTS protects the confidentiality of all submitted failure reports in accordance with the Confidential Information Protection and Statistical Efficiency Act, which requires the information to be used exclusively for statistical purposes and strictly prohibits the release of information that could lead to the direct or indirect identification of the information provider.²

1.2. PURPOSE

This is a reference document to assist offshore drilling operators and their representatives with the completion and submission of required WCE component failure notifications pursuant to 30 CFR 250.730(c). Specifically, this document provides guidance for submitting failure notifications for WCE failures to SafeOCS.

The document has been revised to reflect updates to the SafeOCS WCE failure notification form (Appendix A). Most of these updates focus on data quality, including clarifying field titles, ensuring mutually exclusive choices, clarifying potentially confusing terminology, and reducing the use of free text fields by providing additional dropdown choices. In addition, SafeOCS has streamlined form functions by regrouping fields into sections that emphasize equipment details and removing unnecessary fields. These updates are intended to promote the following:

- Improved data quality
- Reduced time needed to complete the form
- Increased focus on lessons learned and investigation details

¹ API Standard 53, Blowout Prevention equipment Systems for Drilling Wells, Fourth Edition. This guidance document also includes references to the fifth edition, which is not incorporated by reference into BSEE regulations but includes additional guidance for testing and other topics that may be useful to the industry.

² Confidential Information Protection and Statistical Efficiency Act of 2018, 44 USC 3561–3583, also known as Title III of the Foundations for Evidence-Based Policymaking Act of 2018 (Pub. L. 115-435).

1.3. SCOPE

This document applies to submissions of WCE failures to SafeOCS in accordance with 30 CFR 250.730(c), including failures related to the following WCE subunits and their components:

- BOP controls (primary, emergency, and secondary)
- BOP stack system
- Riser system
- Diverter system
- Choke manifold system

In the SafeOCS component failure database, a component is generally defined as the smallest element with an established maintenance routine within the relevant WCE system, with exceptions for certain elastomeric seals and other non-repairable devices to aid in tracking such failures. Components are listed in the separate SafeOCS publication, *Supplement: Estimated Well Control Equipment Component Counts*.³ Failures of parts, such as fasteners, should be reported for their associated component.

This document clarifies reporting criteria and provides guidance on the following:

- Submitting failure notifications to SafeOCS, including:
 - The site address: <https://www.safeocs.gov>.
 - Steps for creating a new account.
 - Steps for submitting a failure notification, uploading attachments, and submitting updates.
- Detailed instructions for completing the WCE failure notification form, including definitions of all data fields and values, as well as examples.

³ United States Department of Transportation, Bureau of Transportation Statistics. *Supplement: Estimated Well Control Equipment System Component Counts*. Washington, DC: 2024. <https://doi.org/10.21949/wrfz-nr33>.

2. How to Submit Failure Notifications to SafeOCS

2.1. LOG IN TO YOUR SAFEPCS ACCOUNT

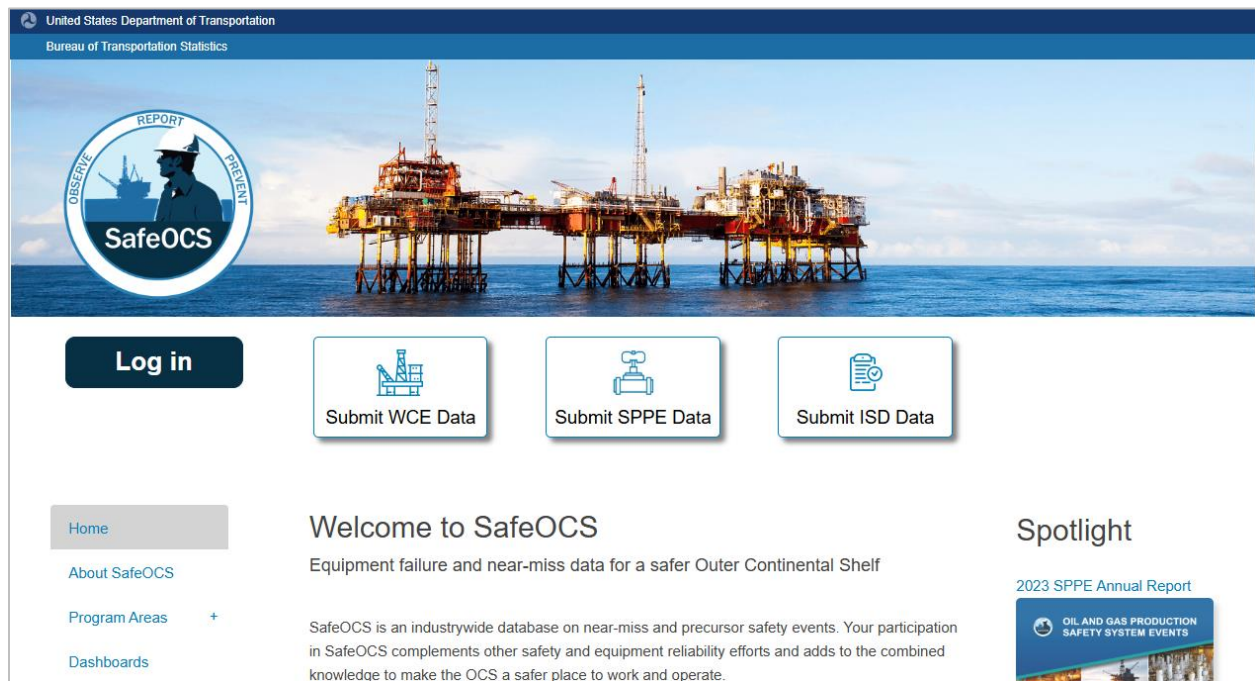
The SafeOCS Data Portal is accessed through the SafeOCS website, <https://www.safeocs.gov> (Figure 1). Selecting either **Submit WCE Data** or the **Login** button will direct you to the login page (Figure 2).

To log into the Data Portal, you must first register accounts with BTS and Login.gov using the same business email address, as described in the following steps:

1. To register an account with BTS, email your name, company name, and business email address to SafeOCS@dot.gov. You will receive a confirmation email from BTS, typically within one business day.
2. To register an account with Login.gov, visit <https://www.login.gov/create-an-account>. Please use the same business email address.
3. Once you receive a confirmation email from BTS (typically within one business day), sign into the Data Portal using the link provided in the email or visit <https://www.safeocs.gov/sdp>.

Additional login guidance can be found in the [BTS User Guide](#) for multifactor authentication.⁴

Figure 1. The SafeOCS Home Page



⁴ United States Department of Transportation, Bureau of Transportation Statistics. "Multi-factor Authentication (MFA) for BTS Confidential Data Systems: User Guide," Dec. 2023. https://www.safeocs.gov/sdp/resources/userguide/BTS_MFA_User_Guide.pdf.

Figure 2. The SafeOCS Data Portal Login Page

About SafeOCS

Program Areas +

Dashboards

Publications

FAQs

Newsroom

Create Account

Welcome to the SafeOCS Data Portal

The SafeOCS (Safe Outer Continental Shelf) data portal allows industry participants in the SafeOCS program to submit equipment failure reports and safety data files. To submit data files, please log in below.

If you are a SafeOCS participant and need access to the Data Portal, you must [register accounts](#) with BTS and Login.gov using the same business email address.

[Sign in with LOGIN.GOV](#)

[Questions about Login.gov?](#)
[Need SafeOCS Data Portal access?](#)

2.2. SUBMIT A FAILURE NOTIFICATION

SafeOCS offers several ways to submit **new** WCE failure notifications (Figure 3):

- Using the online form (preferred)
- Using the offline Excel form
- Uploading a completed PDF form

After submitting a failure notification, you can add attachments to it using the “Update and Add Files” function.

Figure 3. The SafeOCS WCE Form Submission Page

Submit New WCE Failure Notification

Use one of the options below (online, single upload, or batch upload) to submit a new WCE failure notification. To modify a previously submitted notification, use the “Update and Add Files” option.

[ONLINE](#)

OR

[PDF](#)

[Excel](#)
(Download [Excel Form](#))

Update and Add Files to an Existing WCE Failure Notification

[Use BTS Reference Number](#) [Use IADC Reference Number](#)

Search by BTS Reference Number to add files to a previously submitted WCE 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:

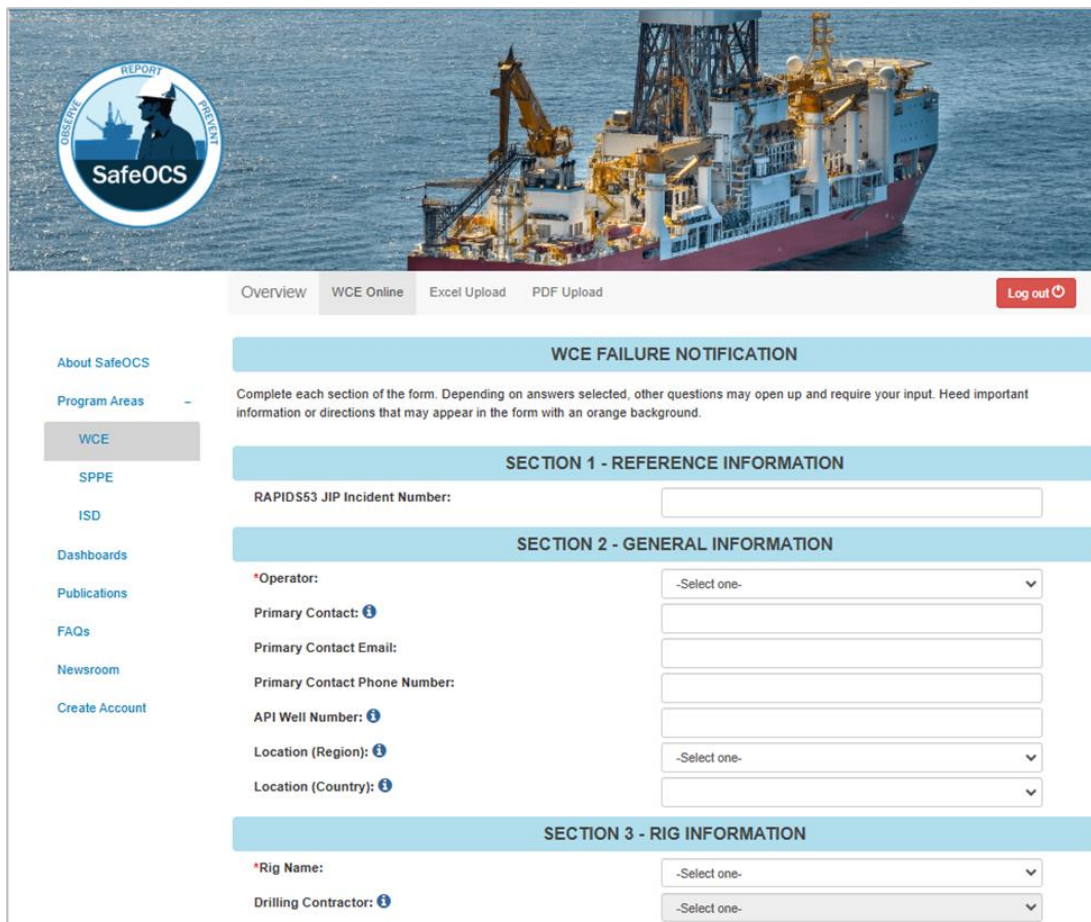
[Next](#)

2.2.1. Reporting via the Online Form

The following steps describe how to submit a WCE failure notification using the online form.

1. Select the online form icon to open the WCE online form (Figure 4). Note that [Section 3](#) of this document provides detailed guidance regarding the data fields. Please refer to that section if you have questions about the meaning or expected entries for any of the data fields.

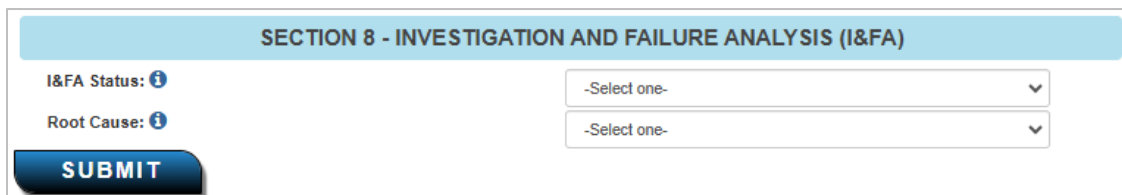
Figure 4. The WCE Failure Notification Online Form



The screenshot displays the 'WCE FAILURE NOTIFICATION' online form. At the top, there is a header with the SafeOCS logo on the left and a background image of an offshore oil rig. Navigation tabs include 'Overview', 'WCE Online' (which is selected), 'Excel Upload', and 'PDF Upload'. A 'Log out' button is in the top right corner. On the left side, a sidebar menu lists various options: 'About SafeOCS', 'Program Areas' (with a minus sign), 'WCE' (highlighted), 'SPPE', 'ISD', 'Dashboards', 'Publications', 'FAQs', 'Newsroom', and 'Create Account'. The main content area is titled 'WCE FAILURE NOTIFICATION' and includes a brief instruction: 'Complete each section of the form. Depending on answers selected, other questions may open up and require your input. Heed important information or directions that may appear in the form with an orange background.' The form is divided into three sections: 'SECTION 1 - REFERENCE INFORMATION' with a text field for 'RAPIDS53 JIP Incident Number'; 'SECTION 2 - GENERAL INFORMATION' with fields for '*Operator' (a dropdown menu), 'Primary Contact' (text), 'Primary Contact Email' (text), 'Primary Contact Phone Number' (text), 'API Well Number' (text), 'Location (Region)' (dropdown), and 'Location (Country)' (dropdown); and 'SECTION 3 - RIG INFORMATION' with fields for '*Rig Name' (dropdown) and 'Drilling Contractor' (dropdown).

2. Review and edit before submitting.
3. Submit the completed notification form by selecting **Submit** at the end of the form (Figure 5).

Figure 5. The End of the Online Form, Including the "Submit" Button



This screenshot shows the final part of the form, 'SECTION 8 - INVESTIGATION AND FAILURE ANALYSIS (I&FA)'. It contains two dropdown menus: 'I&FA Status' and 'Root Cause', both currently set to '-Select one-'. Below these fields is a large, dark blue button with the word 'SUBMIT' in white capital letters.

4. A confirmation message will appear, indicating you have successfully submitted the notification (Figure 6).

Figure 6: On-Screen Submission Acknowledgement

The screenshot shows the SafeOCS web interface. At the top, there are tabs for 'Overview', 'WCE Online' (which is selected), 'Excel Upload', and 'PDF Upload'. A 'Log out' button is in the top right corner. On the left sidebar, there are links for 'About SafeOCS', 'Program Areas', and a 'WCE' button. The main content area displays a confirmation message: 'Your report has been submitted successfully. The SafeOCS Reference Number assigned to the report is WCR2024#019885.' Below this message, there are two bullet points: 'Click this link to [Attach Additional Files](#) for this report.' and 'Click this link to [Submit a New Report](#)'.

5. Look for an email acknowledgment from SafeOCS (Figure 7). The email may also contain reminder instructions for uploading any investigation documentation or additional attachments.

Figure 7: Emailed Submission Acknowledgement

The screenshot shows an email from SafeOCS. The header information is: 'From: TEST', 'To: TEST', 'Subject: Acknowledgment of Receipt - WELL CONTROL', and 'Date: Wednesday, December 25, 2024 4:33:55 PM'. The body of the email starts with 'To whom it may concern:'. It then states: 'The U.S. Department of Transportation's Bureau of Transportation Statistics (BTS) acknowledges receipt of the WCR failure report. The reference number for your report is:'. This is followed by two bullet points: 'BTS Reference Number: WCR2024#019885' and 'IADC Incident Number: 123test'. The email concludes with 'Respectfully, The SafeOCS Team', 'SafeOCS@dot.gov', and '1-844-OCS-FRST (1-844-627-3778)'.

Before submitting, please note:

- You will not be able to review or edit the notification once you submit it. You may correct a submitted notification by submitting an update to the original notification. To do so, use the "Update and Add Files" function (Figure 3).
- Information entered in the online form will not save to the SafeOCS database and a BTS reference number will not be generated until you select the Submit button.
- If you close or refresh the online form before selecting "submit," all information entered in the form will be lost, and you must restart at the beginning of the form.

2.2.2. Reporting via the Offline Excel Form

The following steps describe how to submit a WCE failure notification using the offline form:

1. Select **Download Excel Form** under the Excel icon to download a blank offline form (Figure 3). Note that [Section 3](#) of this document provides detailed guidance regarding the data fields. Please refer to that section if you have questions about the meaning or expected entries for any of the data fields.
2. After completing and saving the form locally, return to the submission page and select the Excel icon. An interface will appear that allows you to select and upload the completed form (Figure 8).
 - A. Select **Reporting Operator** from the dropdown menu (required). If the name of the operator for which you are submitting a failure notification is not in the dropdown list of the field, please select “Other” at the bottom of dropdown list and then type in the operator’s name in the pop-up text field.
 - B. Select **Browse** to navigate to the file on your computer to attach to the submission (required). The browse function allows the user to select and upload only one file at a time. However, multiple failure notifications can be included in one Excel file.
 - C. Select the **Number of Notifications Included** via the dropdown menu (a default value of 1 and max value of 15). The value selected for this field will determine the number of BTS Reference Numbers the system generates for this submission. Since it is important to have a unique BTS Reference Number for each failure notification, this number should match the number of failure notifications included in the file.
 - D. **IADC Incident No.** is an optional field, allowing operators to match their records of failure notifications submitted to SafeOCS with those submitted to IADC. The number of rows is determined by the value of the “Number of Notifications Included” field.

Figure 8. The Excel Upload Screen

3. When you successfully upload a file, you will see an on-screen confirmation message (Figure 6). You will also receive an email confirmation (Figure 7).

2.2.3. Reporting by Uploading a Completed PDF Form

The following steps describe how to submit a previously completed WCE failure notification saved in PDF format:

1. Select the PDF icon (Figure 3). The PDF upload interface will appear (Figure 9).
 - A. Select the **Reporting Operator** from the dropdown menu (required).
 - B. Use the **Choose WCE reports to upload** button to attach one or more files.
 - C. Select **Upload**.

Figure 9: The PDF Upload Screen

The screenshot shows the 'PDF Upload' tab selected in the top navigation bar. On the left, there is a sidebar with 'About SafeOCS', 'Program Areas' (with a minus sign), and a list of program areas: 'WCE' (highlighted), 'SPPE', and 'ISD'. The main content area has a 'Reporting Operator' dropdown menu set to '-Select Operator-'. Below this is a 'Select File' section with a button that says 'Choose WCE reports to upload'. At the bottom, there is a table with columns 'File Name', 'Size', and 'IADC Incident No.'. An 'Upload' button with a right-pointing arrow is located at the bottom right of the table area.

2. Once uploaded, a confirmation screen will provide the reference number for the uploaded file (Figure 10). You will also receive an email confirmation (Figure 7).

Figure 10. List of Uploaded Files

The screenshot shows the 'List of Uploaded Files' screen. On the left is the same sidebar as in Figure 9. The main content area has a heading 'The BTS Reference Numbers for the submitted reports are:'. Below this is a table with four columns: 'IADC Incident Number', 'BTS Reference Number', 'Report File Name', and an empty column. The table contains one row of data. In the fourth column, there is a link 'Add an attachment to this report'.

IADC Incident Number	BTS Reference Number	Report File Name	
	WCR2024#019892	Upload test file.pdf	Add an attachment to this report

2.3. SUBMIT UPDATES TO FAILURE NOTIFICATIONS

Any submitted WCE failure notification, whether submitted via the online form, offline Excel form, or completed PDF, can be updated at any time by submitting a new notification form (using an offline Excel form with updated information as an attachment) or by submitting additional attachments.

To ensure that the updates are linked to the correct notification, select the BTS Reference Number of the initial notification from the dropdown list in the “Update and Add Files” interface (Figure 11). Please also ensure that this reference number is listed in the attachment(s). To protect confidentiality, you will be able to view and select only the reference numbers of the notifications submitted by you or authorized representatives of your organization.

Figure 11. The “Update and Add Files” Function

The screenshot shows the 'Update and Add Files to an Existing WCE Failure Notification' interface. At the top, there are two links: 'Use SafeOCS Reference Number' and 'Use IADC Reference Number'. Below these is a text block: 'Search by SafeOCS Reference Number to add files to a previously submitted WCE failure notification. These files can include, but are not limited to, additional information or corrected forms.' Below this is another text block: 'Select by a SafeOCS Reference Number to add files to a submitted report:'. This is followed by a dropdown menu with the text '-Select SafeOCS Reference Number-'. The dropdown is open, showing a list of reference numbers: 'WCR2024#019892', 'WCR2024#019891', and 'WCR2024#019885'. To the right of the dropdown is a 'Next' button.

3. Detailed Instructions for Completing the Online WCE Failure Notification Form

Detailed instructions and information on completing the WCE failure notification form are provided below. Please ensure the form is as complete and accurate as possible before submitting.

Note: Each failure should be reported separately, with only one failure per WCE failure notification.

3.1. SECTION 1: REFERENCE INFORMATION

SafeOCS Reference Number: This is the first field of the Excel version of the form (it is not present in the online form). Do not enter any information into this field unless you are submitting an update to a previously submitted failure notification. If you are submitting an update, include the BTS Reference Number assigned to the initial notification.

RAPID-S53 JIP Incident Number: If the report originated from a member of the IOGP/IADC BOP Reliability JIP,⁵ then enter the corresponding IADC incident number here. Do not enter any information into this field if the report originated elsewhere.

Figure 12. Section 1 of the Form: Reference Information

The screenshot shows the 'WCE FAILURE NOTIFICATION' form. At the top is a light blue header bar with the title 'WCE FAILURE NOTIFICATION'. Below this is a white box containing the instruction: 'Complete each section of the form. Depending on answers selected, other questions may open up and require your input. Heed important information or directions that may appear in the form with an orange background.' Below this instruction is another light blue header bar labeled 'SECTION 1 - REFERENCE INFORMATION'. Underneath, the label 'RAPIDS53 JIP Incident Number:' is followed by a white text input field.

3.2. SECTION 2: GENERAL INFORMATION

Note: The online form includes information icons that provide additional guidance when the mouse is hovered over the icon.

Operator: Select the name of the operator from the dropdown list. If the name of the operator for which you are submitting a failure notification is not in the dropdown list, please select *Other* from the dropdown. Type the name in the *Other, specify Operator* field.

Primary Contact: Enter the name of the person who is familiar with the issue and who can be contacted in case further information is required.

⁵ Int'l Assoc. of Oil & Gas Producers (IOGP) / Int'l Assoc. of Drilling Contractors (IADC) BOP Reliability Joint Industry Project (JIP). The JIP developed and manages RAPID-S53, the Reliability and Performance Information Database for Well Control Equipment covered under API Standard 53.

Primary Contact Email: Enter the email address for the Primary Contact.





Primary Contact Phone Number: Enter the ten-digit phone number for the Primary Contact.

API Well Number: Enter the API Well Number as provided by the operator. If the rig is not under contract, then enter N/A (not applicable). If the API Well Number is not in the US OCS, enter “Not US OCS.”

Location (Region): Verify the auto-populated value or select the continent where the rig is operating from the dropdown list.

Location (Country): Verify the auto-populated value or select the country/area where the rig is operating from the dropdown list, which is dependent on the selected region.

Figure 13. Section 2 of the Form: General Information

SECTION 2 - GENERAL INFORMATION	
*Operator:	<input type="text" value="-Select one-"/>
Primary Contact: 	<input type="text"/>
Primary Contact Email:	<input type="text"/>
Primary Contact Phone Number:	<input type="text"/>
API Well Number: 	<input type="text"/>
Location (Region): 	<input type="text" value="-Select one-"/>
Location (Country): 	<input type="text"/>

3.3. SECTION 3: RIG INFORMATION

Rig Name: Select the rig name from the dropdown list. If the rig name is not present in the dropdown list, please select *Other* from the dropdown list and then type the name in the *Other, specify Rig Name* field.

Drilling Contractor: Verify that the appropriate name of the drilling contractor has been automatically populated. If the auto-populated name is incorrect, select the correct drilling contractor from the dropdown list. If the name is not present in the dropdown list, please select *Other* from the dropdown list and then type the name in the *Other, specify Drilling Contractor* field.

System Integrator: Verify that the appropriate entity has been automatically populated for the system integrator, the entity who assembled the BOPs into a BOP stack. If the auto-populated name is incorrect, select the correct system integrator from the dropdown list. If it is not present in the dropdown list, please select *Other* from the dropdown list and then type the correct name in the *Other, specify System Integrator* field.

Well Control System Type: Select the type of BOP system from the dropdown list. This refers to the type of BOP system, not the location of the BOP stack at the time of the failure. The options are as follows:

- **Subsea** – Type of BOP stack used when the wellhead is at or near the seafloor.
- **Surface Offshore** – Type of BOP stack used when the wellhead is on the rig above the water.
- **Intervention** – Well control equipment used for workover or intervention operations after a well has been drilled and completed.

Water Depth: Verify the auto-populated value or enter the correct water depth of the well, in feet. This field will only be available for subsea WCE systems.

Figure 14. Section 3 of the Form: Rig Information

SECTION 3 - RIG INFORMATION	
*Rig Name:	-Select one-
Drilling Contractor: ⓘ	-Select one-
System Integrator: ⓘ	-Select one-
Well Control System Type: ⓘ	-Select one-

3.4. SECTION 4: EVENT DESCRIPTION

Event Date: Enter the date the failure was discovered. Note: In the online form, the entered date can be cleared by clicking the “X” to the right of the input box (shown in Figure 16).

Event Description (what happened?): Describe the failure including sufficient information on what failed, what was being controlled or operated at the time of failure, and why it was being functioned. Also explain how related circuits or systems were affected and any other pertinent details. The description should include the following (API S53, annex B):

- As much information as possible on the operating conditions that existed at the time of the malfunction or failure.
- As accurate a description as possible of the malfunction or failure.
- Any operating history of the blowout prevention equipment leading up to the malfunction or failure (e.g., field repair, modifications made to the blowout prevention equipment, etc.).
- Any information that may link the failure with the last maintenance carried out.

Failed Component’s BOP System Status: From the dropdown list, select the status of the failed component’s associated BOP and its control system at the time of the failure:

- **In Operation** – the component is on a system that was in operation at the time of failure.
- **Not in Operation** – the component is on a system that was not in operation at the time of failure.

Refer to the [glossary](#) for definitions of “in operation” and “not in operation” for subsea and surface systems. The following examples are offered to help illustrate the options:

1. A leak from the yellow pod annular regulator on BOP #2, discovered during between well maintenance while BOP #1 was in operation, should be reported as not in operation.

2. A leaking ram block seal was found on BOP #1 while undergoing testing on the deck. Even if BOP#2 had been in operation at the time of the event, the failed component's BOP system status should be not in operation, as the failure occurred on BOP #1.
3. A diverter regulator leak while BOP #1 is in operation should be reported as in operation since the diverter is always associated with the BOP stack on the well.

Where was the associated BOP in its cycle? The following choices are available in the dropdown menu if you selected Failed Component's BOP System Status = In Operation:

- **Operations** – failure discovered while in operation and not during testing.
- **7-14-21 Day Testing** – failure discovered during routine, periodic regulatory testing while In Operation.
- **BOP Involved in Operational Testing** – failure discovered during other operational testing where the BOP equipment was involved.

The following choices are available in the dropdown menu if Well Control System Type = Subsea and Failed Component's BOP System Status = Not in Operation at the time of failure:

- **Deployment or Deployment Testing** – failure discovered after the BOP stack deployment commenced.
- **Initial Latch-up Testing** – failure discovered after landing on the wellhead and before going into operation.
- **Retrieving LMRP/BOP/Riser** – failure discovered after unlatching and before the LMRP/BOP reached the surface.
- **Well Hopping or Well Hop Testing** – failure discovered after unlatching when the BOP was planned to be moved from one well to another without being retrieved to surface.
- **Surface Maintenance, Inspection, Repair or Testing** – failure discovered while the BOP was on deck.

Only one option is available for Surface Offshore BOP System failures that occur while the BOP is not in operation, and the value *Surface Maintenance, Inspection, Repair, or Testing* will auto populate in that case.

What was the work phase of the associated BOP system when the failure was found? The options are dependent upon the answer to the previous question and are as follows, with each group of options categorized by Well Control System Type / Failed Component's BOP System Status / Where Was the Associated BOP in Its Cycle.

1. Surface Offshore System / Not in Operation / Surface Maintenance, Inspection, Repair, or Testing
 - A. **Latching Stack** – Connecting an assembled BOP stack on to the wellhead.
 - B. **Nippling up Stack** – Assembling BOP stack components on to the wellhead.
 - C. **Initial Testing** – Carrying out S53 Tables C1 and C4 testing regimes. Testing begins when the first pressure is applied.
 - D. **Nippling Down Stack** – Disconnecting and/or removing BOP stack components.
 - E. **Disconnecting Stack** – Lifting and/or removing an assembled BOP stack from the wellhead.
 - F. **Maintaining Stack** – Carrying out maintenance, repairs, inspection, and related testing activities while the stack is not in operation.
2. Surface Offshore System / In Operation / Operations

- A. **Drilling well** – Constructing a well; spudding, drilling, running casing, cementing, fishing, completion activities, displacing, plugging, etc. This phase begins when all initial testing has been completed. The phase ends when the BOP is unlatched, and it is paused for Testing BOP Stack (Well Control System, WCS) or Securing Well.
 - B. **Securing Well** – Begins when the steps to install barrier(s) in the well begin and ends when nipping down the BOP stack begins or Maintenance begins (in the case where the BOP stack is repaired without removing it from the well).
- 3. Surface Offshore System / In Operation / 7-14-21 Day Testing: **Testing BOP Stack (Well Control System, WCS)** – Carrying out S53 Tables C2, C3 and / or C5 testing regimes. This phase begins when pressure is applied for the first pressure test, or a function is initiated for the first function test. It ends when all testing has been completed.
- 4. Surface Offshore System / In Operation / BOP Involved in Operational Testing: **Operational Testing** – testing well components for operational reasons as opposed to regulatory BOP testing (e.g., formation integrity test)
- 5. Subsea System / Not in Operation / Well Hopping or Well Hop Testing
 - A. **Disconnecting Stack / LMRP from Well** – This phase begins with unlatching the wellhead connector, includes lifting clear of the wellhead.
 - B. **Hopping Stack from Well to Subsequent Well** – Moving from one well to another well without returning the BOP to surface, including the time that the BOP is being moved from one well to another as well as any testing during that time and the testing required after being placed on the subsequent well before returning to In Operation status.
- 6. Subsea System / Not in Operation / Deployment or Deployment Testing
 - A. **Running Stack / LMRP** – From lifting the BOP stack off the beams until landing on the subsea wellhead.
 - B. **Latching Stack / LMRP** – From landing the BOP stack on the wellhead (or the LMRP on the riser adaptor) until the connector is latched and has been overpulled.
 - C. **Latching Stack to Subsequent Well** – From landing the BOP stack on a subsequent wellhead without returning the BOP to surface. This phase ends when the connector is latched and has been overpulled.
- 7. Subsea System / Not in Operation / Initial Latch-up Testing
 - A. **Initial Subsea Testing** – Carrying out S53 Tables C8 and C12 testing regimes. The phase begins when pressure is applied for the first pressure test, or a function is initiated for the first function test. It ends when all testing has been completed.
 - B. **Initial Subsea Testing on Subsequent Well** – Carrying out the testing required by API S53, 5th Edition, Section 6.4.12. This phase begins when pressure is applied for the first pressure test, or a function is initiated for the first function test on a subsequent well. It ends when all well hop testing has been completed.
- 8. Subsea System / Not in Operation / Surface Maintenance, Inspection, Repair, or Testing
 - A. **Nippling Up Stack / LMRP** – This phase begins when assembling the BOP stack in the setback area and includes associated testing.
 - B. **Transporting Stack / LMRP from Set-back Area** – Moving the tested BOP stack, or just the LMRP, from the storage / test area to the running position in the moonpool.
 - C. **Setting Back Stack / LMRP on Deck** – This phase starts after the riser is disconnected and ends when the BOP and/or LMRP are positioned in the storage/test area.
 - D. **Nippling Down Stack / LMRP** – disassembling the BOP usually in the setback area.
 - E. **Maintaining Stack / LMRP on Deck** – Carrying out Maintenance, Repair, Inspection, and/or related Testing.

- F. **Maintaining Offline Riser and TJ Components** – carrying out maintenance, repair, inspection or testing of components not associated with a specific BOP, including the telescopic joint (TJ).
- 9. Subsea System / Not in Operation / Retrieving LMRP/BOP/Riser
 - A. **Disconnecting Stack / LMRP** – This phase begins with unlatching the wellhead connector, includes lifting clear of the wellhead, (or the LMRP connector from the riser mandrel) and ends when the rig reaches the safe handling zone (SHZ).
 - B. **Retrieving Stack / LMRP** – This phase begins when starting to recover the stack (from the SHZ) and ends when the stack is landed on the beams and the riser is disconnected.
- 10. Subsea System / In Operation / Operations
 - A. **Drilling Well** – Constructing a well; spudding, drilling, running casing, cementing, fishing, completion activities, displacing, plugging, etc. The BOP stack goes in operation and starts this phase when the initial testing is completed. The phase normally ends when the BOP or LMRP is unlatched or Securing the Well begins, and it is paused while Testing BOP Stack (WCS).
 - B. **Drilling Subsequent Well** – Constructing a subsequent well; spudding, drilling, running casing, cementing, fishing, completion activities, displacing, plugging, etc. The BOP stack goes in operation and starts this phase when the initial testing is completed. The phase normally ends when the BOP or LMRP is unlatched or Securing the Well begins, and it is paused while Testing BOP Stack (WCS).
 - C. **Securing Well** – Begins when the steps to install barrier(s) in the well begin and ends when the BOP stack is disconnected.
 - D. **Securing Subsequent Well** – Begins when the steps to install barrier(s) in a subsequent well begin and ends when the BOP stack is disconnected.
- 11. Subsea System / In Operation / 7-14-21 Day Testing
 - A. **Testing BOP Stack (WCS)** – Carrying out C9 and C13 testing regimes. This phase begins when pressure is applied for the first pressure test, or a function is initiated for the first function test. It ends when all testing has been completed.
 - B. **Testing BOP Stack (WCS) on Subsequent Well** – Carrying out C9 and C13 testing regimes on a subsequent well. This phase begins when pressure is applied for the first pressure test, or a function is initiated for the first function test. It ends when all testing has been completed.
- 12. Subsea System / In Operation / BOP Involved in Operational Testing
 - A. **Operational Testing** – testing well components for operational reasons as opposed to regulatory BOP testing (e.g., formation integrity test).
 - B. **Subsequent Well Operational Testing** – testing subsequent well components for operational reasons as opposed to regulatory BOP testing (e.g., formation integrity test).

Detection Method: From the dropdown menu, select how the failure was initially detected (select the first method that applies as indicated in the decision tree in Figure 15):

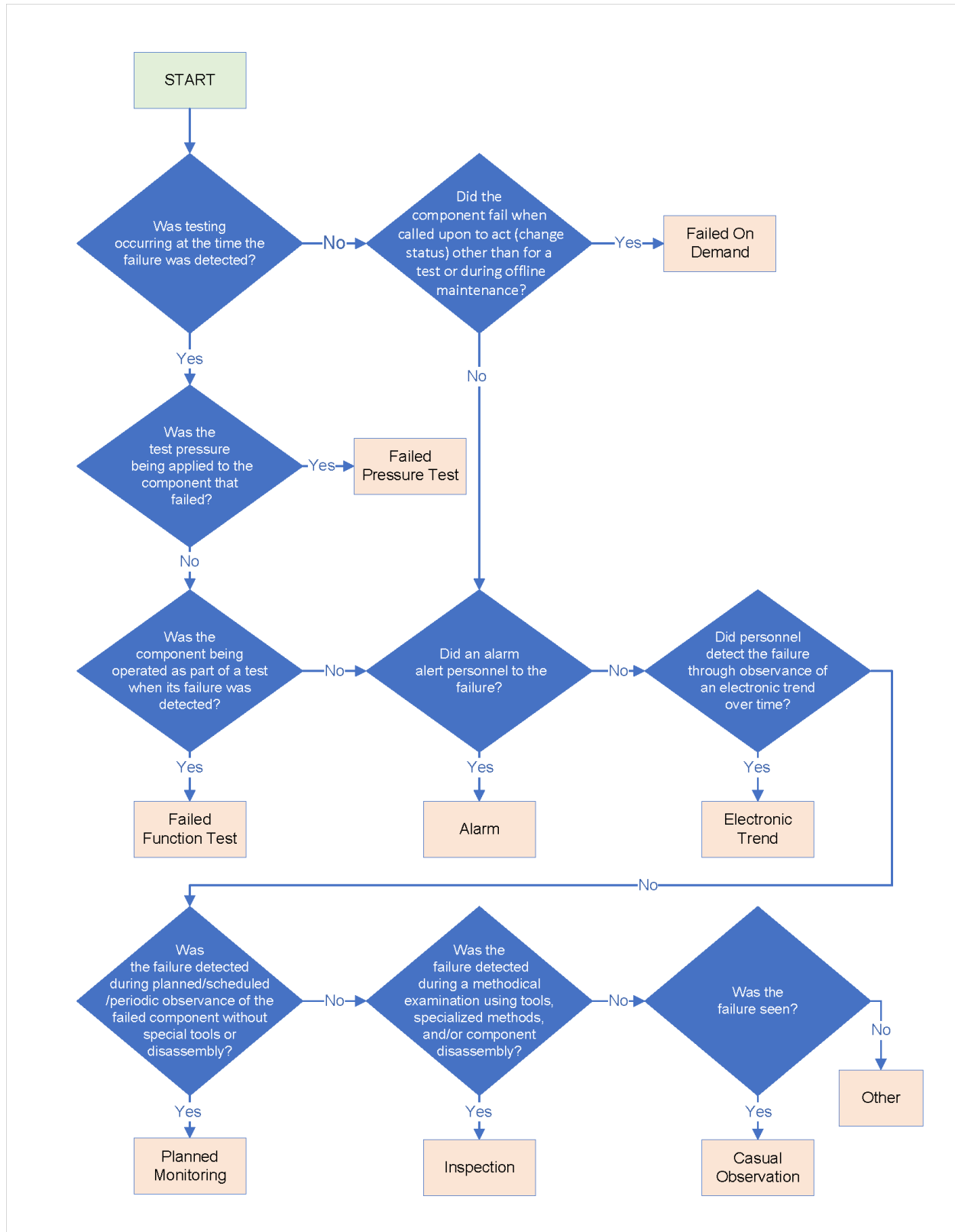
- **Failed on Demand** – The component fails to operate as designed when called upon to function, other than for a test or offline maintenance. “Called upon to function” means manually or automatically triggered or commanded to take action (for example, change its status from off to on, open to close, one position to another, or change from one operating pressure to another).
- **Failed Pressure Test** – Detected by applying test pressure to the component to test that component for leakage. During an on-deck test where the control system is pressurized

to check for leaks (commonly called a "soak test" or endurance test), the test pressure is the control pressure.

- **Failed Function Test** – Detected by any means while operating a component (or a group of components including the failed component) as a test to confirm that it does what it is expected to do. Note: "a test" includes the line-ups necessary for the test. (Tricky Example: A control fluid leak associated with pressure testing a BOP preventer would be classified as a failed function test of the control component that failed).
- **Alarm** – Visual or audible alert that calls attention.
- **Electronic Trend** – Analysis of a display of automatically generated operating variable(s) over time.
- **Planned Monitoring** – Scheduled/periodic observance of equipment and/or local indicators, including, for example, equipment surveillance rounds or planned ROV surveillance of the failed component. This includes observance of equipment during initial installation/commissioning.
- **Inspection** – Discovered by methodical examination using tools, specialized methods, and/or disassembly.
- **Casual Observation** – Unplanned observance of equipment and/or local indicators.

If the method of detection is not in the dropdown list, please select *Other* from the dropdown list and then type the method in the *Other, specify Detection Method* field.

Figure 15. Decision Tree for Detection Method



How was the failure initially addressed? Select the action from the dropdown list that was taken to correct the issue in order to continue planned work. If the failed component was accessible, then any one of the options below may be applicable. If the failure was corrected while the component remained subsea, then **Cycled** and **Isolated** are the most logical options.

- **Cleaned/Lubricated/Adjusted** – work performed to service the component (including greasing or tightening) or fine tune operational settings (e.g., control system settings)
- **Cycled** – the component was stroked, meaning it was operated from one extreme position to the other, and then back again.
- **Isolated** – the component was not used until the failure could be appropriately addressed.
- **Repaired** – the component was repaired, or part of the component was replaced.
- **Replaced** – the entire component was replaced with the same type.

If the failure was addressed in a manner not on the dropdown list, please select *Other* from the dropdown list and then type the method in the *Other, specify How Failure Was Addressed* field.

Hours of NPT: Enter the number of hours of non-productive time, including time required for BOP recovery and reinstallation, etc., plus all time in-between to address the failure.

Hours of Repair time: Enter the number of hours, including only the time to repair (or otherwise address the failure) and test the failed component.

Figure 16. Section 4 of the Form: Event Description

SECTION 4 - EVENT DESCRIPTION	
*Event Date: ⓘ	<input type="text"/> X
*Event Description (what happened?): ⓘ	<div style="border: 1px solid #ccc; height: 60px;"></div>
Failed Component's BOP System Status: ⓘ	-Select one- ▼
Where was the associated BOP in its cycle? ⓘ	-Select one- ▼
What was the work phase of the associated BOP system when the failure was found?	-Select one- ▼
Detection Method:	-Select one- ▼
How was the failure initially addressed? ⓘ	-Select one- ▼
Hours of NPT:	<input type="text"/>
Hours of Repair Time:	<input type="text"/>

3.5. SECTION 5: EQUIPMENT DETAILS AND HISTORY

Note: the equipment structure follows the typical BOP equipment descriptions in the separate SafeOCS publication, *Supplement: Well Control Equipment Subunit Boundaries*.⁶

Subunit: Select the subunit that contains the component that failed from the dropdown list. The selection of a subunit will determine the list of items and components available. If the subunit is not on the dropdown list, then please select *Other* and then type the subunit into the *Other, specify Subunit* field.

Item: Select the item that contains the component that failed from the dropdown list. The available selections are dependent on the subunit selected in the previous field. If the item is not on the dropdown list, then please select *Other* and then type the item into the *Other, specify Item* field.

Component: Select the failed component from the dropdown list. The available selections are dependent on the item selected in the previous field. If the component is not on the dropdown list, please select *Other* and then type the component into the *Other, specify Component* field.

Note: The remote-controlled valves have been generically combined into two groups based on the pilot type. For example, all solenoid valves, which were previously designated as solenoid valve (hydraulic) and solenoid valve (electric), are now called electrically piloted directional control valves. Similarly, hydraulically piloted valves including DRG valves, SPM valves, and the hydraulically piloted slide (shear seal) valves are now listed as hydraulically piloted directional control valves.⁷

Initial Observed Failure: Select from the dropdown list the initial observation that indicated that there has been a failure. This field refers to the condition seen prior to disassembly (unless the failure was detected during a planned inspection). Enter information about what was found after disassembly in the “Disassembly and Inspection Observations” field in section 7 of the form. The available selections are dependent on the component selected. If the observed failure is not in the dropdown list, please select *Other* from the dropdown list and then type the initial observed failure in the *Other, specify Initial Observed Failure* field.

What type of fluid leaked? Select the type of fluid that leaked from the dropdown list. This question is not applicable and will be grayed out if the component cannot leak wellbore fluids or if the observed failure was not a leak. The options are as follows:

- **Wellbore fluid** – fluid of any type that could be in the wellbore, including but not limited to drilling mud, completion fluid, test fluid, seawater, or well fluids.
- **Control fluid** – fluid used in the control system including hydraulic fluid, air, or instrument gas.

If the type of fluid that leaked is not in the dropdown list, please select *Other* from the dropdown list and enter the type of fluid in the *Other, specify the type of fluid that leaked* field.

⁶ United States Department of Transportation, Bureau of Transportation Statistics. *Supplement: Well Control Equipment Subunit Boundaries*. Washington, DC: 2024. <https://doi.org/10.21949/a932-1708>.

⁷ United States Department of Transportation, Bureau of Transportation Statistics. *Supplement: Estimated Well Control Equipment System Component Counts*. Washington, DC: 2024. <https://doi.org/10.21949/wrfz-nr33>.

Number of Identically Failed Components: Each failure should be reported on a separate failure notification form (enter a value of 1); however, you may enter a number greater than one in the rare instance where an identical failure occurred on the same day. The only difference between the failures in that case should be the serial number of the component, and all serial numbers (separated by a comma) should be included in the serial number field.

Component OEM: Select the original equipment manufacturer of the failed component from the dropdown list. This is the design owner or manufacturer of the traceable assembled equipment, single equipment unit, or component part owning the original product definition. If the component OEM is not in the dropdown list, please select *Other* from the dropdown list and then type the component OEM name in the *Other, specify Component OEM* field.

Component Model: Enter the manufacturer's model name of the failed component. If there is no model name, enter N/A.

Rig Specific Equipment ID Number: Enter the rig's specific identification number for the failed component, if any.

OEM Part Number: Enter the OEM's published part number for the failed component.

OEM Serial Number: Enter the failed component's serial number (if existing and known).

Size and Pressure Rating: Select the component size and pressure rating from each of the two dropdown lists. These are two separate fields with dropdown boxes you will use to select the size (inches), and pressure rating (psi), for the component. If the size or pressure rating is not on the dropdown list, please select *Other* from the dropdown list and then type the size and/or pressure rating in the *Other, specify Size and/or Pressure Rating* field.

Date Component Installed, Inspected, or Repaired: Enter or select the date that the component was installed into the system prior to this failure. This could be the date that the equipment was originally installed, or it could be the date of the most recent internal inspection and repair or rebuild procedure. If a used component (perhaps from the other BOP stack) is installed, then select the date of the most recent internal inspection and repair or rebuild procedure for that the used component (and not just the date that it was installed on this BOP stack).

Months to failure: Auto-populated based on the calculation from the number of months between the *Event Date* and the *Date Component was Installed, Inspected, or Repaired*.

Installation, Repair, or Inspection Activity: Select from the dropdown list the activity that was completed on the date that the component was last installed, rebuilt, or inspected and deemed fit for continued service prior to this failure. Testing alone does not qualify as an activity. The options and definitions are as follows:

- **Installed New Component** – the component was brand new when installed and has not been rebuilt since.
- **Installed OEM Factory Rebuilt Component** – the component was a factory rebuilt unit when installed and has not been rebuilt since.
- **Inspected Internally** – the component was disassembled and internally inspected, and no parts were changed.
- **Rebuilt with Repair Kit** – the component was rebuilt with a full repair kit.

- **Rebuilt with Seal Kit** – the component was rebuilt using a full unexpired seal kit.

If the component was verified in some other way, please select *Other* from the dropdown list, and then type the activity in the *Other, Specify Activity* field.

Amount of Usage at the Time of Failure: Enter the number (if known) and select from the dropdown box the appropriate unit of measure that describes how much the component had been used from the date the component was installed, inspected, or repaired up until the time of failure. Usage is different than the time to failure and may not be recorded for all components. If the usage is not recorded, skip this question. The options and definitions are as follows:

- **Closures** – The number of times a preventer was functioned to the closed position.
- **Days** – Calendar days that the riser was installed.
- **Functions** – The number of times a valve or connector was operated.
- **Hours** – Pump runtime in hours.

If the usage units are not in the dropdown list, please select *Other* from the dropdown list and then type the units in the *Other, Specify Units* field.

What Maintenance Was Deferred, If Any? If any planned maintenance was overdue at the time of failure, select from the dropdown box the maintenance that was deferred. The options and definitions are as follows:

- **Not Applicable** – the component does not have planned maintenance.
- **None** – none of the planned maintenance was deferred.
- **BWM/EOW** – between well maintenance or end of well maintenance was deferred.
- **Quarterly** – the quarterly preventive maintenance was deferred.
- **Annual** – the annual preventive maintenance was deferred.
- **Five-Yearly** – the 5-year preventive maintenance was deferred.
- **Condition Based Maintenance** – the planned condition-based maintenance was deferred.

If the deferred maintenance is not present in the dropdown list, please select *Other* from the dropdown list and then type the maintenance that was deferred in the *Other, Specify Maintenance Deferred* field.

Date of Last Maintenance Since Installation, Repair, or Inspection Activity Above: Enter the date (mm/dd/yyyy) of the last planned maintenance actually completed. This date must be after the date entered above as the “Date Component was Installed, Inspected, or Repaired.” If no maintenance has been completed since the “Date Component Installed, Inspected, or Repaired,” enter the same date as the “Date Component Installed, Inspected, or Repaired.”

Description of Last Maintenance: Select from the dropdown box the maintenance that was last completed on the component. The options and definitions are as follows:

- **None** – no maintenance has been performed since the date entered in the *Date Component Installed, Inspected, or Repaired* field
- **Adjustment** – an operating or maintenance adjustment was made to the component, such as calibration, tightening, etc.

- **Cleaned** – the component was cleaned internally or externally to ensure proper operation
- **Greased/lubricated** – the component was lubricated per a planned schedule or based on conditions
- **Unknown**

If the last maintenance is not in the dropdown list, please select *Other* from the dropdown list and then type the last maintenance in the *Other, Specify Last Maintenance* field.

Figure 17. Section 5 of the Form: Equipment Details and History

SECTION 5 - EQUIPMENT DETAILS AND HISTORY	
Subunit:	-Select one- ▼
Item:	-Select one- ▼
Component:	-Select one- ▼
Initial Observed Failure: ⓘ	-Select one- ▼
Number of Identically Failed Components:	1
Component OEM:	-Select one- ▼
Component Model:	
Rig's Specific Equipment ID Number:	
OEM Part Number:	
OEM Serial Number:	
Size (inches):	-Select one- ▼
Pressure Rating (psi):	-Select one- ▼
Date component installed, inspected, or repaired: ⓘ	<input type="text"/> X
Installation, Repair, or Inspection Activity: ⓘ	-Select one- ▼
Amount of Usage at the Time of Failure (Value): ⓘ	
Amount of Usage at the Time of Failure (Unit): ⓘ	-Select one- ▼
What Maintenance Was Deferred, If Any?	-Select one- ▼
Date of Last Maintenance Since Installation, Repair, or Inspection Activity Above:	<input type="text"/> X
Description of Last Maintenance:	-Select one- ▼

3.6. SECTION 6: FLUIDS INFORMATION

Drilling Fluid Type: Select from the dropdown box the type of fluid that was in the wellbore at the time of the failure. The options are as follows:

- Brine
- Completion Fluid
- Oil Based Mud
- Seawater
- Synthetic Based Mud

- Water Based Mud

If the drilling fluid is not in the dropdown list, please select *Other* from the dropdown list and then type the drilling fluid in the *Other, Specify Drilling Fluid* field.

BOP Control Fluid: Select from the dropdown box the BOP control fluid in used at the time of the failure. The list is too long to list here. If the control fluid is not in the dropdown list, please select *Other* from the dropdown list and then type the control fluid name including the manufacturer in the *Other, Specify Control Fluid* field.

BOP Fluid Concentration (%): Enter the percentage of control fluid concentrate in the BOP control fluid mixture as a number.

Glycol Concentration (%): Select the percentage of glycol in the BOP control fluid mixture from the dropdown list.

Date of Last Laboratory Sample Analysis: Select the date (mm/dd/yyyy) of the last laboratory analysis (not a rig test).

Was the last laboratory sample acceptable? Select *Yes* or *No* to record the results of the last laboratory sample (as opposed to a rig test). This field will be grayed out unless and until a date is provided in the “Date of Last Laboratory Sample Analysis” field.

Figure 18. Section 6 of the Form: Fluids Information

SECTION 6 - FLUIDS INFORMATION	
Drilling Fluid Type:	-Select one- ▼
BOP Control Fluid:	-Select one- ▼
BOP Fluid Concentration (%): ⓘ	<input type="text"/> %
Glycol Concentration (%): ⓘ	-Select one- ▼
Date of Last Laboratory Sample Analysis:	<input type="text"/> X

3.7. SECTION 7: EVENT OUTCOMES

Repeat failure on same rig? Select *Yes* if the failure being reported is the same observed failure of the same or like components (not necessarily the same model or size) from the same rig within 12 months. If unknown, select *No*.

Note: A message will appear indicating that an RCFA is required if the event is considered a repeat failure on the same rig.

Accelerated or Early Life Failure? Select *Yes* if the failure being reported was an accelerated failure based on the time to failure and the type of component involved. If the component failed in less than five years it is considered an accelerated failure in any of the following cases:

- A ram block seal or an annular preventer packing element unexpectedly failed within one month or in less than 10 closures.

- Component life (months to failure) was <3 months to failure and the component was not being used as a “sacrificial” component where the life expectancy was purposely reduced for some other operational reason.
- Component life was <1 year and the component was a(an) electronic (power supply, circuit board, solenoid, display), cable, instrumentation, elastomeric seal, or hose failure.
- Component life was <2 years and the component was a metallic material (bolting, spring, shaft, etc.) that was expected to last through the next 5-yearly maintenance.
- Component life was <5 years and the component was a metallic material that was expected to last the life of the asset (e.g., BOP ram body, flex loop, valve body, valve bonnet, piston, etc.).

This question is not applicable and will be grayed out if the time to failure was greater than 5 years.

Note: A message will appear indicating that an RCFA is required if the event is marked as an accelerated failure.

Did the Event Cause a Barrier Loss in Operation? Select Yes for any loss of a barrier (even if there is another barrier available) occurring while in operation. The failure of a barrier control component is only a barrier loss if there is no redundant control for that barrier. This question is not applicable and will be grayed out if the BOP was not in operation.

Note: A message will appear indicating that an RCFA is required if the event caused a barrier loss while in operation.

Did the Event Cause a BOP Stack Pull? Select Yes if the event caused an unplanned stack pull. The definition of an unplanned stack pull is as follows:

When a BOP stack or related BOP control component fails in operation and is addressed/repaired before being tested and returning to in operation status.

This question is not applicable and will be grayed out if the BOP was not in operation.

Note: A message will appear indicating that an RCFA is required if the event caused a stack pull.

Was the BOP Stack Retrieved (when Not in Operation)? Select Yes if the event caused the BOP stack to be retrieved from subsea to the rig before going in operation (i.e., during deployment, initial latch up testing, or well-hop activities). This question will be grayed out if the BOP was in operation.

Environmental Release? Select Yes if the event involved a release of any fluid other than water to the environment, regardless of whether it was reported elsewhere.

Component Status: Select from the dropdown list the status or disposition of the component at the time of submission of the notification. The options are as follows:

- **Disposal** – The component has already been disposed of and is not available for further analysis.
- **In Situ** – The component remains in place, and it was either repaired or the failure was addressed in some other way.

- **OEM-Analysis** – The component was sent or will be sent to the OEM for root cause failure analysis.
- **OEM-Repair** – The component was sent to the OEM for repair and no further analysis is expected.
- **Storage** – The component has been returned to storage.
- **Third Party Analysis** – The component has been or will be sent to a third party for root cause failure analysis.
- **Third Party Repair** – The component has been or will be sent to a third party for repair and no further analysis is expected.

If the correct disposition is not in the dropdown list, please select *Other* from the dropdown list and then type the component status in the *Other, Specify Component Status* field.

Figure 19. Section 7 of the Form: Event Outcomes

SECTION 7 - EVENT OUTCOMES	
Repeat Failure on Same Rig? ⓘ	<input type="checkbox"/> Yes <input type="checkbox"/> No
Accelerated or Early Life Failure? ⓘ	<input type="checkbox"/> Yes <input type="checkbox"/> No
Did the Event Cause a Barrier Loss in Operation? ⓘ	<input type="checkbox"/> Yes <input type="checkbox"/> No
Did the Event Cause a Subsea BOP Stack Pull? ⓘ	<input type="checkbox"/> Yes <input type="checkbox"/> No
Environmental Release? ⓘ	<input type="checkbox"/> Yes <input type="checkbox"/> No
Component Status: ⓘ	<div>-Select one-</div>

3.8. SECTION 8: INVESTIGATION AND FAILURE ANALYSIS (I&FA)

In the I&FA section of the form, certain fields will be grayed out or not shown (not required) based on the I&FA status entered, and messages will appear based on prior selections. Any investigation documentation, including the root cause failure analysis (RCFA) report if an RCFA was conducted, should be provided to SafeOCS. These can be uploaded as attachments in the “Update and Add Files” interface of the SafeOCS Data Portal.

Note that there are four conditions that always require an RCFA, even if the cause is immediately known:

- Unplanned stack pull due to a component failure
- Barrier failure discovered when in operation
- Repeat failure on the same rig
- Accelerated failure

I&FA Status: Select from the dropdown list. If the investigation and failure analysis is not complete, then select one of these two options:

- **Not Started** – the investigation has not started, the component has not been disassembled or inspected, and the root cause is not known.
- **In Progress** – the investigation is in progress. An initial root cause may be suspected, and some disassembly or inspection findings may be known. These details should be entered; however, once the investigation is complete, an updated report should be submitted using the “Update & Add Files” function.

If the investigation and failure analysis is complete, then select **Complete**.

Root Cause: Select the root cause from the dropdown list. The choices and definitions are as follows:

- **Design Issue:** Inadequate equipment design or configuration. This is typically identified after an RCFA has been completed, or if the design issue has been previously identified by an RCFA or manufacturer's notification.
- **Documentation Error:** Failure related to written procedures, specifications, drawings, reporting, etc. This is a mistake or oversight in the documentation used by equipment operatives. The installation, operations, and maintenance documents were followed but there were inherent errors in the documentation supplied. The documentation can be in the form of drawings, manuals, policy/procedures, work instructions and work orders (e.g., a deficiency in the rig owner's scope or scheduling of maintenance tasks). Example: A control valve was delivered with documentation stating that the rated working pressure (RWP) was 5,000 psi. The valve leaked and the subsequent investigation showed that the valve was really only rated for 3,000 psi. This was a documentation error because of the stated RWP.
- **Maintenance Error:** Mistake, misuse, or oversight during maintenance. For example, a choke line flange leaked after the maintenance had been completed. Investigation showed that the flange studs had been torqued to 380 Nm instead of the 380-ft-lb stated in the procedure. This was a maintenance error. Failures related to maintenance induced failure should become evident within one year of such maintenance activity.
- **Procedural Error:** Mistake, misuse, or oversight during operations; or not following an operating procedure. For example, the BOP ram leaked because test pressure was applied after closing pressure was vented, but without the ram having first been mechanically locked.
- **Manufacturing Issue:** Failure related to manufacturing. For example, a new annular piston was purchased from the OEM, but we were unable to install it. Investigation showed that it had been machined incorrectly.
- **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. Note: Wear and tear should not be chosen if the failure meets the definition of an accelerated failure.

If the root cause is yet to be determined, either because the component is not yet available for analysis or because the investigation is ongoing, select **Assessment Pending**. If the root cause is not on the dropdown list, please select *Other* from the dropdown list and then type the root cause in the *Other, specify Root Cause* field.

Disassembly and Inspection Observations: Explain what conditions were found during disassembly and inspection of the component to identify the cause of failure. How did the affected parts differ from their pre-failure condition?

Failed Part Name: Select the part of the failed component that is responsible for the component's observed failure from the dropdown list. In cases where more than one part name describes the part (e.g., o-ring and seal), choose the most specific. The available selections are dependent on the component selected. If the part is not in the dropdown list, please select *Other* and then type the failed part name in the *Other, specify Failed Part Name* field.

Were Systemic Causes Identified? Select Yes if a systemic cause is identified, meaning that a prior failure on the same rig appears to have been caused by the same underlying management

system as this failure, and the prior failure was within the last 12 months. Example: Two instances in which engineering bulletins were overlooked or not addressed resulted in two different equipment failures six months apart. If none are known to you, select *No*.

OEM Alert or Bulletin? Select from the dropdown list. These are the available choices:

- **None** – there are no known bulletins or alerts related to this failure.
- **Existing Alert or Bulletin applies** – a bulletin or alert from the past is mentioned as being causal to this failure or related to the proposed preventative actions.
- **New Alert or Bulletin resulted from this event** – the investigation of this failure, or perhaps a group of similar failures like this one, contributed to an alert or bulletin being issued to explain the cause and or preventative action for this failure.

OEM Alert or Bulletin Name and Number (if applicable): Enter the name of the related alert or bulletin if one was related to or created to address this failure.

If the status of the investigation is in progress, the I&FA fields below “Failed Part Name” are hidden. In this case, the failure notification can be submitted; however, once the investigation is complete, an updated report should be submitted.

The remaining fields appear in section 8 of the form when the I&FA status is marked complete.

I&FA Start Date: Enter the date that the investigation started.

Summary of Analysis Findings: Explain the findings of the investigation in terms of the cause and effect that lead to the root cause selection. Describe the root cause in more detail than just the category (design issue, manufacturing issue, maintenance error, etc.). For example, what was the specific issue or error and how do you know?

Lessons and/or Recommendations: Explain what lessons were learned, and what recommendations were made. State to who these apply. A lesson is only really learned when the data is shared to all applicable parties.

I&FA Report Completed Date: Enter the date that the investigation and failure analysis report was completed.

Preventative Actions: A preventive action applied to a failure should have a definite conclusion, i.e., a finite change or action taken to prevent the failure from re-occurring. For example, a change to a procedure is a preventive action, but “continue to monitor” is not.

Up to 10 separate preventative actions may be entered in the Excel form. To expand the additional nine rows for preventative actions, click the “+” in the left-hand margin. For each preventative action, select the Responsible Party, enter the Preventative Action Detail, and note if the Preventative Action has been completed by checking Yes or No. In the online form, additional preventive actions can be added by clicking the blue button “Add Another Preventive Action.” To remove a preventive action that was mistakenly entered or a row that was added by mistake, simply leave the row blank as blank rows will not be saved when the report is submitted.

Responsible Party: Select the party responsible for completing the action from the dropdown list, which includes OEM, rig owner/drilling contractor, BSEE, and other. If the responsible party

is not in the dropdown list, please select Other from the dropdown list and then include the appropriate entity name in the Action Detail.

Preventative Action Detail: Explain the preventative action taken or planned to prevent reoccurrence.

Preventative Action Complete? Select Yes if the preventative action has already been completed at the time of this failure notification submission.

Investigation Responsible Party: Select the party responsible for completing both the investigation and report from the dropdown list. If the responsible party is not in the dropdown list, please select Other from the dropdown list and then type the responsible party in the Other, specify Investigation Responsible Party field.

Who was involved in the I&FA? Select the most appropriate choice to identify the parties directly involved in the I&FA from the dropdown list.

- **Individual** – a single person determined the root cause, usually on the rig.
- **2 or more SMEs** – the person on the rig consulted a second SME to determine the root cause, usually informally and the second SME may be on or off the rig.
- **Multiple (without OEM or 3rd Party)** – a group of multiple (3 or more) people from different companies or with different expertise (or disciplines) convened to determine the root cause without involving a third party or the OEM.
- **Multiple (including OEM or 3rd Party)** – a group of multiple people (3 or more) from different companies including the OEM or a third party or with different expertise or disciplines (including the OEM or a third party) convened to determine the root cause.

If those involved in the I&FA are not in the dropdown list, please select Other from the dropdown list and then type who was involved in the Other, specify Who was Involved field.

Date of Occurrence (if different): If the failure occurred prior to the Event Date (discovered or detected date), then enter the date that the failure occurred here. Otherwise, leave the field blank.

I&FA Report Title as Submitted to SafeOCS: Enter the complete title of the report submitted to SafeOCS.

I&FA Report Number: Enter the identification number of the report submitted to SafeOCS.

Structured Method of Analysis: Select the method of analysis that was used for the investigation and failure analysis. If multiple were used, select the most complex method that was used. The dropdown options are as follows:

- 5 Why
- Apollo
- Causal Learning
- Cause Effect Diagram
- Fishbone
- TapRoot
- Other Structured Method
- No Structured Method Used

If the structured method is not listed in the dropdown, please select *Other Structured Method* from the dropdown list and then type the method in the *Other, specify Structured Method* field.

Additional I&FA Notes: Enter any additional information that is important to share.

Figure 20. Section 8 of the Form: I&FA (when Status is Complete)

SECTION 8 - INVESTIGATION AND FAILURE ANALYSIS (I&FA)

I&FA Status: ⓘ

Root Cause: ⓘ

Disassembly and Inspection Observations: ⓘ

Failed Part Name:

Were Systemic Causes Identified? ⓘ

OEM Alert or Bulletin?

OEM Document Name/Number, If Any:

Summary of Analysis Findings:

Lessons and/or Recommendations:

Complete

In addition to submitting any separate Investigation Report(s) that exist, please complete the I&FA fields below.

-Select one-

-Select one-

☐ Yes ☐ No

-Select one-

Preventive Actions ⓘ

SEQ	RESPONSIBLE PARTY ⓘ	ACTION DETAIL ⓘ	COMPLETE STATUS ⓘ
1	-Select one-		<input type="checkbox"/> Yes <input type="checkbox"/> No

Add Another Preventive Action

Blank rows will not be saved when the report is submitted.

Investigation Responsible Party: ⓘ

Who was Involved in the I&FA:

Date of Occurrence (If Different): ⓘ

I&FA Start Date: ⓘ

I&FA Report Completed Date: ⓘ

I&FA Report Title as Submitted to SafeOCS:

I&FA Report Number: ⓘ

Structured Method of Analysis:

Additional I&FA Notes: ⓘ

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Appendix A. WCE Failure Notification Form

Figure 21. Offline Excel Form

WCE Failure Notification			
Complete each section of the form. Depending on answers selected, other form questions may (1) open up and require your input or (2) grey out and become unactionable, as intended. Heed important information or directions that may appear in cells with an orange background.			
SECTION 1 - REFERENCE INFORMATION			
SafeOCS Reference Number:		RAPID 553 JIP Incident Number:	
SECTION 2 - GENERAL INFORMATION		SECTION 3 - RIG INFORMATION	
Operator: <i>If Other, Specify Operator:</i>		Rig Name: <i>If Other, Specify Rig Name:</i>	
Primary Contact:		Drilling Contractor: <i>If Other, Specify Drilling Contractor:</i>	
Primary Contact Email:		System Integrator: <i>If Other, Specify System Integrator:</i>	
Primary Contact Phone Number:		Well Control System Type:	
API Well Number:		<i>Water Depth (feet):</i>	
Location (Region):			
Location (Country):			
SECTION 4 - EVENT DESCRIPTION			
Event Date:			
Event Description (what happened?):			
Failed Component's BOP System Status:			
Where Was the Associated BOP in Its Cycle?			
Work Phase of the Associated BOP System:			
Detection Method:			
How Was the Failure Initially Addressed?			
Hours of NPT & Hours of Repair Time:			
SECTION 5 - EQUIPMENT DETAILS AND HISTORY			
Subunit:		<i>If Other, Specify Subunit:</i>	
Item:		<i>If Other, Specify Item:</i>	
Component:		<i>If Other, Specify Component:</i>	
Initial Observed Failure:		<i>If Other, Specify Initial Observed Failure:</i>	
<i>What type of fluid leaked?</i>		<i>If Other, Specify What type of fluid leaked:</i>	
Number of Identically Failed Components:		<i>If Other, Specify Component OEM:</i>	
Component OEM:			
Component Model:			
Rig's Specific Equipment ID Number:			
OEM Part Number:			
OEM Serial Number:			
Size (inches) & Pressure Rating (psi):		<i>If Other, Specify Size and/or Pressure Rating:</i>	
Date Component Installed, Inspected, or Repaired:		<i>? Months to Failure</i>	
Installation, Repair, or Inspection Activity:		<i>If Other, Specify Activity:</i>	
Amount of Usage at the Time of Failure & Units:		<i>If Other, Specify Units:</i>	
What Maintenance Was Deferred, If Any?		<i>If Other, Specify Maintenance Deferred:</i>	
Date of Last Maintenance Since Installation, Repair, or Inspection Activity Above:			
Description of Last Maintenance:		<i>If Other, Specify Last Maintenance:</i>	
SECTION 6 - FLUIDS INFORMATION			
Drilling Fluid Type:		<i>If Other, Specify Drilling Fluid Type:</i>	
BOP Control Fluid:		<i>If Other, Specify BOP Control Fluid:</i>	
BOP Fluid & Glycol Concentrations (%):			
Date of Last Laboratory Sample Analysis:		<i>Was the Laboratory Sample Acceptable?</i>	
SECTION 7 - EVENT OUTCOMES			
Repeat Failure on Same Rig?		Accelerated or Early Life Failure?	
Did the Event Cause a Barrier Loss in Operation?		Did it cause an Unplanned Surface BOP Stack Outage?	
<i>Was the BOP Stack Retrieved (when not in operation)?</i>			
Environmental Release?		<i>If Other, Specify Component Status:</i>	
Component Status:			
SECTION 8 - INVESTIGATION AND FAILURE ANALYSIS (I&FA)			
I&FA Status:		In addition to submitting any separate Investigation Report(s) that exist, please complete the I&FA fields below.	
Root Cause:		<i>If Other, Specify Root Cause:</i>	
Disassembly and Inspection Observations:			
Failed Part Name:		<i>If Other, Specify Failed Part Name:</i>	
Were Systemic Causes Identified?		OEM Document Name/Number, If Any:	
OEM Alert or Bulletin?			
I&FA Start Date:			
Summary of Analysis Findings:			
Lessons and/or Recommendations:			
I&FA Report Completed Date:			
PREVENTATIVE ACTION	RESPONSIBLE PARTY	ACTION DETAIL	COMPLETED STATUS
Preventative Action 1:	Select from list		Select from list
<i>Click "+" to Enter More Than 1 Preventative Action</i>			
Investigation Responsible Party:	Select from list	<i>If Other, Specify Responsible Party:</i>	
Who Was Involved in the I&FA:	Select from list	<i>If Other, Specify Who Was Involved:</i>	
Date of Occurrence (If Different):			
I&FA Report Title as Submitted to SafeOCS:			
I&FA Report Number:			
Structured Method of Analysis:	Select from list	<i>If Other, Specify Structured Method:</i>	
Additional I&FA Notes:			
Critical fields are incomplete (Operator, Rigname, Event Date, and Description).			

Note: This form is posted to the SafeOCS website, at <https://www.safeocs.gov/publications.htm> under Guides and Forms.

Figure 22. Online Form, Sections 1–4

SECTION 1 - REFERENCE INFORMATION	
RAPIDS53 JIP Incident Number:	<input type="text"/>
SECTION 2 - GENERAL INFORMATION	
*Operator:	<input type="text" value="-Select one-"/>
Primary Contact: ⓘ	<input type="text"/>
Primary Contact Email:	<input type="text"/>
Primary Contact Phone Number:	<input type="text"/>
API Well Number: ⓘ	<input type="text"/>
Location (Region): ⓘ	<input type="text" value="-Select one-"/>
Location (Country): ⓘ	<input type="text"/>
SECTION 3 - RIG INFORMATION	
*Rig Name:	<input type="text" value="-Select one-"/>
Drilling Contractor: ⓘ	<input type="text" value="-Select one-"/>
System Integrator: ⓘ	<input type="text" value="-Select one-"/>
Well Control System Type: ⓘ	<input type="text" value="-Select one-"/>
SECTION 4 - EVENT DESCRIPTION	
*Event Date: ⓘ	<input type="text"/> X
*Event Description (what happened?): ⓘ	<div><div></div></div>
Failed Component's BOP System Status: ⓘ	<input type="text" value="-Select one-"/>
Where was the associated BOP in its cycle? ⓘ	<input type="text" value="-Select one-"/>
What was the work phase of the associated BOP system when the failure was found?	<input type="text" value="-Select one-"/>
Detection Method:	<input type="text" value="-Select one-"/>
How was the failure initially addressed? ⓘ	<input type="text" value="-Select one-"/>
Hours of NPT:	<input type="text"/>
Hours of Repair Time:	<input type="text"/>

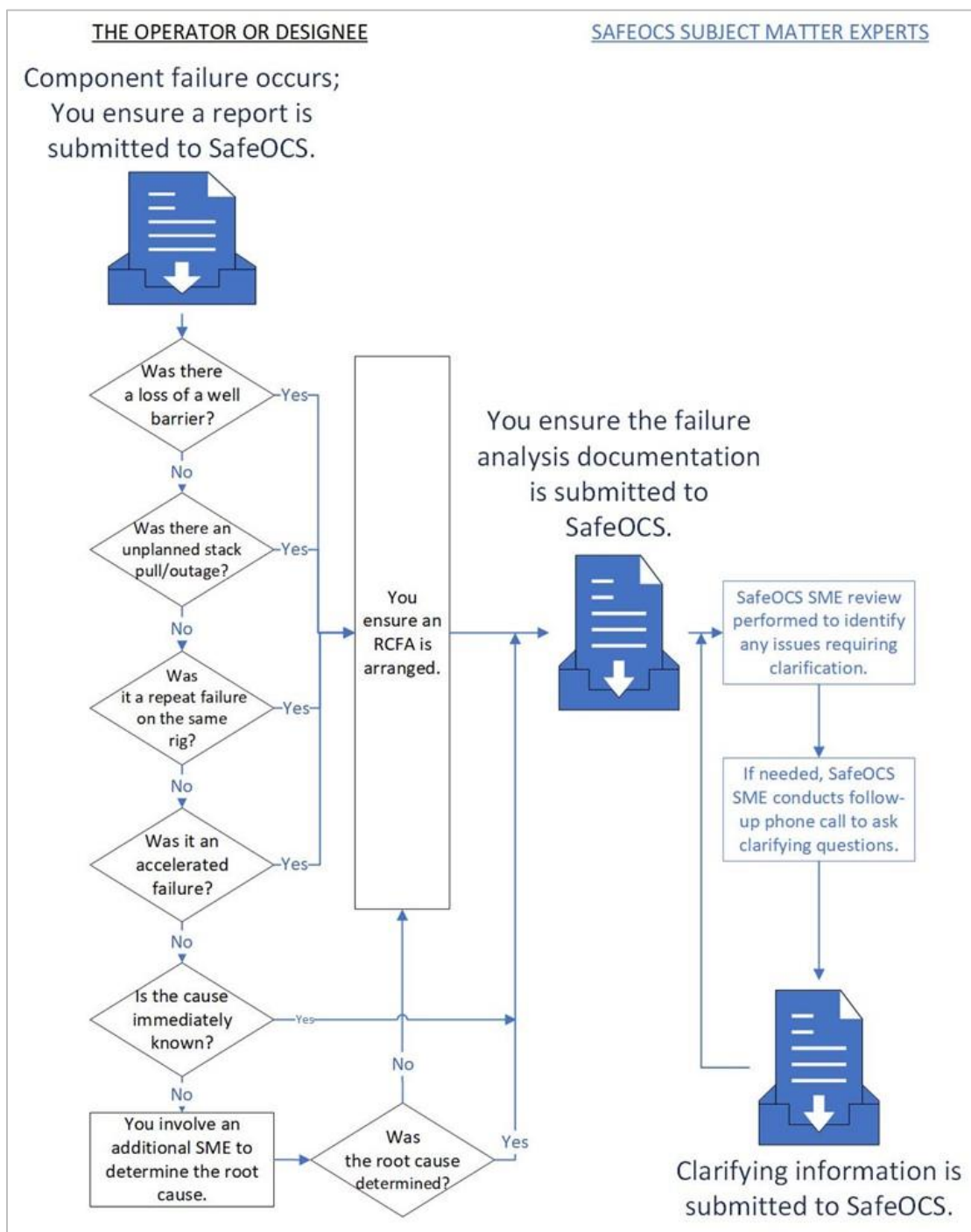
Figure 23. Online Form, Sections 5–8

SECTION 5 - EQUIPMENT DETAILS AND HISTORY	
Subunit:	<input type="text" value="-Select one-"/>
Item:	<input type="text" value="-Select one-"/>
Component:	<input type="text" value="-Select one-"/>
Initial Observed Failure: ⓘ	<input type="text" value="-Select one-"/>
Number of Identically Failed Components:	<input type="text" value="1"/>
Component OEM:	<input type="text" value="-Select one-"/>
Component Model:	<input type="text"/>
Rig's Specific Equipment ID Number:	<input type="text"/>
OEM Part Number:	<input type="text"/>
OEM Serial Number:	<input type="text"/>
Size (Inches):	<input type="text" value="-Select one-"/>
Pressure Rating (psi):	<input type="text" value="-Select one-"/>
Date component installed, inspected, or repaired: ⓘ	<input type="text"/> X
Installation, Repair, or Inspection Activity: ⓘ	<input type="text" value="-Select one-"/>
Amount of Usage at the Time of Failure (Value): ⓘ	<input type="text"/>
Amount of Usage at the Time of Failure (Unit): ⓘ	<input type="text" value="-Select one-"/>
What Maintenance Was Deferred, if Any?	<input type="text" value="-Select one-"/>
Date of Last Maintenance Since Installation, Repair, or Inspection Activity Above:	<input type="text"/> X
Description of Last Maintenance:	<input type="text" value="-Select one-"/>
SECTION 6 - FLUIDS INFORMATION	
Drilling Fluid Type:	<input type="text" value="-Select one-"/>
BOP Control Fluid:	<input type="text" value="-Select one-"/>
BOP Fluid Concentration (%): ⓘ	<input type="text"/> %
Glycol Concentration (%): ⓘ	<input type="text" value="-Select one-"/>
Date of Last Laboratory Sample Analysis:	<input type="text"/> X
SECTION 7 - EVENT OUTCOMES	
Repeat Failure on Same Rig? ⓘ	<input type="checkbox"/> Yes <input type="checkbox"/> No
Accelerated or Early Life Failure? ⓘ	<input type="checkbox"/> Yes <input type="checkbox"/> No
Did the Event Cause a Barrier Loss in Operation? ⓘ	<input type="checkbox"/> Yes <input type="checkbox"/> No
Did the Event Cause a Subsea BOP Stack Pull? ⓘ	<input type="checkbox"/> Yes <input type="checkbox"/> No
Environmental Release? ⓘ	<input type="checkbox"/> Yes <input type="checkbox"/> No
Component Status: ⓘ	<input type="text" value="-Select one-"/>
SECTION 8 - INVESTIGATION AND FAILURE ANALYSIS (I&FA)	
I&FA Status: ⓘ	<input type="text" value="-Select one-"/>
Root Cause: ⓘ	<input type="text" value="-Select one-"/>
SUBMIT	

Appendix B. Failure Reporting Process

Note: Clarifying information discussed on the right-hand blue portion of this diagram is generally viewed as verbal information during a telephone call. Such a request for clarifying information does not affect the status of the equipment being placed back into service.

Figure 24. Failure Reporting Process



Glossary

Accelerated Failure: A failure that occurs before the component has reached its expected life. Specific criteria established based on the equipment type are described in section 3.7.

Barrier: A term used to describe a physical or mechanical device that is used to prevent the uncontrolled release of hydrocarbons from a well.

BOP Stack Pull: When a BOP stack or related BOP control component fails in operation and is addressed/repared before being tested and returning to in operation status. Refer to regulatory requirements for well conditioning and mechanical barrier placement.

Cause Immediately Known: When the rig SME has a high degree of certainty in the failure cause.

Immediate Corrective Action: An action which is taken to correct a failure and resume planned activities.

Failure: A failure is any condition that prevents the equipment from meeting the functional specification, per 30 CFR 250.703(c)(1). Functional specification means the component's intended function(s).

Hours of NPT: Field to record number of hours that is inclusive of BOP recovery and reinstallation etc., plus all time in-between when the failure occurred.

Hours of Repair time: Number field that includes only the time to repair and test the failed component.

In Operation (Subsea): A BOP stack is in-operation after it has completed the successful pressure tests of the wellhead connection to the wellbore per the approved well plan.

In Operation (Surface): A surface BOP stack is in-operation after it has completed the successful pressure tests of the wellhead connection to the wellbore per the approved well plan.

Intended Function: Intended functions include (but are not limited to) these actions: close, communicate, connect, contain, control, deliver pressure, disconnect, extend, fasten, indicate accurately, latch, lock, measure, open, relieve, retract, rotate, sequence operations, shear, start, stop, stroke, transmit.

Not in Operation (Subsea): The BOP stack is not in operation from when it is unlatched from one well until it has successfully completed the initial latch up testing on the next well.

Not in Operation (Surface): The BOP stack is not in operation when it is removed from one well until it has successfully completed the initial latch up testing on the next well.

Initial Observed Failure: The physical condition that indicated that there has been a failure.

Original Equipment Manufacturer (OEM): The company that designed and manufactured the component and who owns the original product definition. The company that designs and

supplies the system to the rig owner can also be the OEM. The system design may include numerous sub-supplier OEM components.

Preventative Action: An action taken to address the cause(s) of a failure in order to prevent reoccurrence.

Preventive Maintenance: Maintenance carried out at predetermined intervals, or according to prescribed criteria, intended to reduce the probability of failure or the degradation of the component.

Proactive Replacement: Replacing (or rebuilding) a component that still meets its functional specifications. This may be because the likelihood of failure warrants it (e.g., based on time, cycles experienced, measurements of remaining life, or failures of similar equipment).

Rated Working Pressure (RWP): The maximum pressure that equipment is designed to contain or control.

Repeat Failure on Same Rig: A repeat failure may be identified as a similar failure of a like component from the same rig within the previous 12 months.

Reoccurring Event: A failure that occurs repeatedly, either on the same rig or across multiple rigs. Reoccurring failures are more likely to be identified by aggregate analysis by an OEM, operator, drilling contractor, or SafeOCS.

Root Cause: The cause of a problem which, if adequately addressed, will prevent a reoccurrence of that problem.

Root Cause Failure Analysis (RCFA): The process of investigating the failure of a component and using the information to determine the reason(s) for the failure and considering actions to prevent it from reoccurring.

Systemic Failure: A failure from the same rig that appears to be caused by the same underlying management system as a previous failure within 12 months. (Example: two cases where the rig owner failed to address engineering bulletins that lead to failures of at least two components of any type).

Work Phase: The activity being undertaken for the component's related WCE system at the time of the failure being discovered. Work phases refer to the operational states of WCE systems.

List of Abbreviations, Acronyms, and Initialisms

API	American Petroleum Institute
BOP	blowout preventer
BSEE	Bureau of Safety and Environmental Enforcement
BTS	Bureau of Transportation Statistics
BWM	between wells maintenance
EOW	end of well maintenance
I&FA	investigation and failure analysis
IADC	International Association of Drilling Contractors
IOGP	International Association of Oil & Gas Producers
JIP	joint industry project
LMRP	lower marine riser package
NPT	non-productive time
OCS	Outer Continental Shelf
OEM	original equipment manufacturer
RAPID-S53	Reliability and Performance Information Database for WCE covered under API Standard 53
RCFA	root cause failure analysis
RWP	rated working pressure
S53	Standard 53
SHZ	safe handling zone
SPM	subplate mounted
TJ	telescopic joint
WCE	well control equipment
WCS	well control system