RAPID-S53

Reliability and Performance Information Database

For:

API S53 Well Control Equipment

Guidance Document

Rev 2.1
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1.0 The Business Ethics Associated with use of the RAPID-S53 Database

1.1. Preamble

The purpose of this section is to outline, in some detail, the main business ethics that regulate participation in the BOP Reliability Joint Industry Project (the "JIP") and use of the RAPID-S53 Database. It should be understood by every user accessing the database that it is each individual user's responsibility to ensure that their behavior, as concerns the database, its output or associated by-products, including meetings, is governed by the rules outlined below and that they comply with the Fair-Use Principles detailed in Section 2.

1.2. Basic Requirement

Each JIP Participant shall uphold the highest standards of business ethics and shall require its directors, officers, employees, consultants, agents and contractors to conduct themselves in accordance with the principles of integrity, fairness and transparency.

1.3. Conflicts of Interest & Corrupt Practices

Each JIP Participant shall avoid any conflict of interest between its own interest and the interests of other JIP Participants in dealing with organizations or individuals doing, or seeking to do, business with the JIP.

No JIP Participant will, directly or indirectly, receive from or give, or offer to give, anything of material value to any other JIP Participant, contractor, official, or other person associated directly, or indirectly, with the execution of the JIP.

1.4. Antitrust Requirements

Each JIP Participant shall, while performing any task associated with the execution of the JIP, comply with all the relevant antitrust and anti-competition laws of the countries or territories in which they operate.

No JIP Participant will, directly or indirectly, obtain or attempt to obtain any data contained in the database to which that JIP Participant is not entitled.

No JIP Participant will, directly or indirectly, approach any other JIP Participant with a view to discussing, sharing, providing or requesting data from the database, raw data which is destined for the database, or any other information relating, directly or indirectly, to the execution of the JIP (including any technical or commercial conclusions any JIP Participant may draw from such data or information) except as may be necessary for performing tasks associated with the execution of the JIP or in respect of any contract or other project on which the JIP Participants, in question, are participating.

Any JIP Participant that believes that it may be able to access, or may have received from the database or another JIP Participant, data, or other information relating, directly or indirectly, to the execution of the JIP (including any technical or commercial conclusions any JIP Participant may draw from such data or information), to which it would not be entitled will refrain from viewing the information and will immediately report the incident to the IADC Project Manager. The IADC Project Manager will review the relevant information, advise the JIP Participant on how to proceed and the JIP Participant will immediately comply with any directions given by The IADC Project Manager, including the permanent deletion of the relevant information.

1.5. Compliance with the Law

Each JIP Participant shall comply, and shall require its contractors and subcontractors to comply, with all applicable laws and regulations of all government authorities, including any restrictions dealing with the exportation of technical data, and the direct products thereof, but excluding any laws or regulations or JIP directions for which compliance may cause, or result in, non-compliance with another conflicting law or regulation.

No JIP Participant will, directly or indirectly, while performing any task associated with the execution of the JIP, offer, pay, promise to pay, or authorize the giving of money, or anything of value, to an Official, or to any other person, while knowing, or being aware of a probability, that all, or a portion of, such money, or thing of value, will be offered, given or promised, directly or indirectly, to an Official for the purpose of influencing the act, decision or omission of such Official to obtain or retain business related the execution of the JIP, to direct business related to the execution of this JIP to any person, or to obtain improper advantage or benefit.

No JIP Participant is authorized to take any action on behalf of another JIP Participant that would result in an inadequate or inaccurate recording and reporting of work related to the execution of this JIP.

If any information comes to the attention of any JIP Participant that indicates any departure from compliance with the law the JIP Participant shall immediately notify the IADC Project Manager.

2.0 Fair-Use Principles

2.1. Preamble

The purpose of this section is to identify the key principles to which users of the database must agree to in order to protect the best interests of all parties involved and to keep all users focused on safety and product improvement and free of improper use for commercial considerations.

2.2. Mission Statement of the Joint Industry Project

The mission of the BOP Reliability Database Joint Industry Project (the "JIP") is to advance the safety and efficiency of global drilling operations by promoting improvements in the reliability and performance of Well Control Equipment and related products and services.

2.3. Rationale for, and Limitations on Use of, Database

The intent of the database is to collect a comprehensive body of data that can be used by individual companies to improve the reliability and efficient operation of Well Control Equipment. Despite the numerous benefits of this effort, it must be recognized that similar efforts have been unsuccessful in the past, often due to inattention to the commercial risks of certain parties and concerns over improper use of data.

To avoid these risks, the governing structure, principles and operations of the JIP are designed to further the Mission Statement and for no other purpose. In addition to observing the foregoing, meaningful collaboration and support from each of the JIP Participants is essential to enhance industry knowledge and drive innovation efforts in the area of BOP reliability and performance.

It is also recognized that individual database users, representing the JIP Participants, must adhere to certain confidentiality concerns as well as conduct all activities in compliance within the letter and spirit of all applicable antitrust and anti-competition laws. Consequently, it is understood that users of the database agree to not use this database, its output or associated by-products, including meetings, to draw joint technical or commercial conclusions (joint meaning more than one Operator, Drilling Contractor or OEM) from the data in violation of such applicable anti-trust and anti- competition laws.

It is also understood that certain data fields associated with each database record will be kept confidential from JIP Participants other than those JIP Participants associated with the data fields in question as a means of further mitigating the above risks.

3.0 Scope and Purpose of Guidance Document

3.1. Scope

This document provides guidance for use by well control equipment owners when reporting reliability-related equipment events.

Regarding the range of well control equipment covered by the database, compliance with the reporting requirements of API Standard 53 continues to be the principal driver for the database but the JIP can, from time to time, add items of equipment to the data collection process where the addition of such items of equipment is recommended by the JIP Technical Reference Group and approved by the JIP Oversight Committee.

The range of equipment covered currently by the database is as follows:

- Auxiliary Equipment (drillstring valves and gas separation equipment)
- BOP Stack
- BOP Controls (primary, secondary and emergency)
- Choke Manifold Equipment
- Diverter System
- Riser System

Consequently, the above list defines the Well Control Equipment (WCE) System from a RAPID-S53 perspective.

3.2. Purpose

The intent of this document is to provide the definitions and instructions required to facilitate the development and maintenance of a standardized industry reliability and performance database.

4.0 Definitions and Acronyms

4.1. Definitions

Cause:	Something that initiates, shapes or influences an outcome.
Cause Immediately Known:	When there is a high degree of certainty in the cause of an event, the event report described in Section 5 is completed describing the event and defining the root cause based on inspection and maintenance personnel experience and knowledge.
Corrective Action:	An action, which is taken to enable operations to continue and/or to correct the root cause of an event.
Effect:	An event or condition that is caused by another event or condition.
Evidence:	Information, data and/or items gathered which directly relate to, or have been, affected by an event.
Failure:	A situation where a component malfunctions and is, consequently, prevented from operating as designed. (A leaking O-ring is a failure even if the piston that it should seal can fully stroke)
'Five-Whys' Analysis:	A 'question-answer' process used to explore the relationships between Cause and Effect underlying a specific problem.
In Operation:	The BOP stack is determined to be "In Operation" after it has completed a successful pressure test of the wellhead connection to the well-bore per approved well plan.
Not in Operation:	The BOP stack changes from "In Operation" to "Not in Operation" when either the BOP is removed from the

	wellhead or the LMRP is removed from the lower stack. When running, or pulling (retrieving) the stack, the BOP stack is deemed to be "Not in Operation".
Reoccurring:	Occurring a significant number of times where significance is determined by the likelihood of occurrence under normal operating conditions.
Root Cause:	Is the cause (condition or action) that begins a cause/effect chain that ends in a component event. Correction of such a root cause would prevent reoccurrence of the event (under investigation) and similar occurrences. See Section 5.9 for more information.
Root Cause Failure Analysis:	A comprehensive systematic investigation process undertaken to identify the root causes of a component event.
SME Review:	An internal assessment of the possible and probable local root cause of the component event undertaken by a Subject Matter Expert (SME) with the intent of recommending intermediate actions or changes to reduce the probability of reoccurrence.
Stack Pull:	It is a "Stack Pull' when either the BOP is removed from the wellhead or the LMRP is removed from the lower stack to repair the component that is the subject of the event record. An event cannot be categorized as resulting in a "Stack Pull" until after the BOP Stack has been "In Operation", as defined above.
Subject Matter Expert:	Person or persons with an in-depth knowledge of a subject of interest. Such knowledge will have been gained through direct and practical dealings with subject matter of interest.

Reference should be made to APPENDIX 7 for further guidance, through the use of examples, on the terms “In Operation”, “Not in Operation” and “Stack Pull”.

4.2. Acronyms

API	American Petroleum Institute		LMRP	Lower Marine Riser Package
BOP	Blowout Preventer		NPT	Non-Productive Time
BWM	Between Wells Maintenance		OEM	Original Equipment Manufacturer
BSEE	Bureau of Safety and Environmental Enforcement		RCFA	Root Cause Failure Analysis
BTS	Bureau of Transportation Statistics		RWP	Rated Working Pressure
HSE	Health, Safety and Environment		SFI	Skipsteknisk Forskningsinstitutt
IADC	International Association of Drilling Contractors		SME	Subject Matter Expert
JIP	Joint Industry Project		QA/QC	Quality Assurance/Quality Control

5.0 Instructions for Equipment-Owner Reporters

5.1. Report Generation Criterion & Mandatory Prerequisites

A report shall be created for each event where any component of well control equipment has been deemed to have malfunctioned, whether that component is in use or not and whether there is NPT or not. This database was designed to track and trend events of this nature to allow JIP Participants to focus on problem areas.

The original policy was rigid in that, if all such events were not reported, there was a potential that valuable data would be lost. With the benefit of hindsight, it has been acknowledged that this approach was too rigid. In the beginning, for example, situations where a choke valve did not hold a test, even if a single open/close cycle was sufficient to correct this, were reported. While the cycling of a valve to try and achieve a successful test is not condoned, there are cases where a foreign body could prevent the full closure of a valve and clearing this with a single function cycle should not result in the equipment being categorized as having malfunctioned.

If no immediate physical corrective action is required to be applied directly to a component to make the component operate as designed, then there is no event to report.

However, events that come to light during maintenance and testing, as well as during operations, should continue to be reported on but replacement of a ram packer, for instance, because it is not expected to last the next well, is not a malfunction. This is simply maintenance.

Reports should be created, and submitted, as soon as possible after the event is discovered.

The following mandatory prerequisite steps are required to be taken to facilitate the creation of an event record:

1. Acquire and personalize access credentials
2. Verify that the appropriate rig is set up in the database
3. Verify that the rig has a fully completed version of the well control equipment (WCE) configuration set up in the database
4. Verify that there is a valid contract set up in the database for the rig
5. Verify that there is a valid well set up in the database for the defined contract

With all of the above in place the database is set up to auto-populate the non-technical fields associated with generating an incident report, thus, reducing the amount time spent by Equipment Owner users creating event records.

5.2. Access Credentials – Acquisition and Personalization

Only Master Users are authorized to set up new users for Equipment Owners and users requiring access to the database should send an internal e-mail to their nominated Mater User requesting access.

To access the database for the first time, users must log into the database using the credentials that are sent to them in the form of a system-generated e-mail.

Once in the database, users can utilize the "My Profile" (top right corner of landing page), "Change Your Password" and "Save Changes" tabs to personalize their log-on based on the use of a strong password that is easy for the individual user to remember.

5.3. Rig Set-up

In the event that the rig associated with the incident report is not set up in the database then the "Rigs/Add Rig" path must be used, by authorized users, to create a new rig.

If the rig already exists in the database the "Rigs/Actions/Edit Rig" path can be used, by authorized users, to amend the principal data associated with that rig.

Only the Equipment Owner Master Users and Super Users are authorized to add rigs and edit the principal data of existing rigs.

5.4. Well Control Equipment (WCE) Configuration Set-up

The WCE Configuration can be set up in two ways. The WCE Configuration can be set up by uploading the WCE Configuration Offline Input Form (COIF) or by adding the WCE Configuration data directly online.

If a user elects to use the COIF, the form must be downloaded from the database prior to use to ensure that the user is utilizing the correct revision of the COIF. To download the form, use the "Rigs" tab and the "Download WCE Configuration Form" tab at the top right-hand side of the screen. Once the COIF is completed it can be uploaded using the "Rigs/Actions/Upload WCE Configuration" path and this adds the WCE Configuration to the database.

The WCE Configuration can also be set up directly online. To complete the set-up directly online, use the "Rigs/Actions/Add WCE Configuration" path to add the WCE Configuration to the database by completing each of the five sections of the configuration set-up process.

The "Start Date" and "End Date" data, required in the "Period of validity" section of the WCE Configuration set up process, are used to provide information on equipment operating periods, for use in performance and reliability analytics.

If a WCE Configuration already exists, minor edits can be made to this existing WCE Configuration using the "Rigs/Actions/Edit WCE Configuration" path.

Only the Equipment-Owner Master Users, Super Users and Senior Reporters are authorized to add WCE Configurations and edit existing WCE Configurations.

5.5. Contract Set-up

Contracts are set up by using the "Rigs/Actions/Manage Contract/Add Contract" path and existing contracts can be edited using the "Rigs/Actions/Manage Contract/Actions/Edit" path.

Only the Equipment-Owner Master Users, Super Users and Senior Reporters are authorized to add contracts and edit existing contracts.

5.6. Well Set-up

Wells are set up using the "Rigs/Actions/Manage Well/Add Well" path. The data required is as follows:

- Lease No.
- Well No.
- API Well No.
- Number of Joints of Riser Run
- Riser Manufacturer
- Riser Model
- Start Date
- End Date
- Stack In Use

The riser data is used to create population data when charting riser events against the quantity of riser joints, in use, across the database. The "Number of Joints of Riser Run" should be set to zero in the case of Platform, Jack-up and Land rigs.

The "Start Date", "End Date" and "Stack in Use" data are used to provide information on component population, and associated operating periods, for use in performance and reliability analytics.

The above data will be used to set up a default well which will be utilized to populate all reports until the data is changed for subsequent wells. The well data can be edited using the "Rigs/Actions/Manage Well/Actions/Edit" path.

The Equipment-Owner Master Users, Super Users, Senior Reporters, Roaming Reporters and Reporters are authorized to add wells, edit existing wells and assign default wells.

5.7. Creation of a Draft Event Record

There are two options for creating a draft event record.

The first, and preferred, option is to submit the data directly on line by using the "Event Reports/Submit Event Report/Fill out report" path and by completing every field, in all four phases of the input process, that has not been auto-populated by data stemming from the completion of the mandatory perquisite work outlined above. Once the population of all the fields is completed and the completed input form is saved in the "Draft" state by utilizing the "Submit" option (only accessible in the last phase of the input process) the Master User and all of the Super User will be notified that there is a "Draft" record available for review.

The second option is based on the use of the Event Data Reporting Offline Input Form (ROIF). There is an example of the ROIF in APPENDIX 1. If the Equipment-Owner's reporting process is based on

the completion of the ROIF, before sending it to a Super User for uploading, it is essential that the database be accessed to download the form to ensure that the correct revision of the ROIF is being utilized. To download the ROIF, use the "Event Reports/Download Event Report" path. Once the downloaded Excel-spreadsheet version of the form is completed, and the resulting file saved, it can be forwarded to the appropriate Super User or Master User for uploading using the "Event Reports/Submit Event Report/Upload report" path. On completion of the upload the Super User can save the record in the "Draft" state and the Master User and all of the Super User will be notified that there is a "Draft" record available for review.

5.8. Clarification of Report Content & Data Input Instructions

The clarifications in this section are valid for both of the input options outlined in Section 5.7. It should be borne in mind that a fair amount of the non-technical fields associated with generating an incident report are auto-populated when submitting the data directly on line. Hence, the instructions in the rest of this section relate, in the main, to the use of the ROIF. All the data should be considered mandatory unless stated otherwise.

5.8.1. Well Identification

Lease No.: *Number as provided by operator.*

Well No.: *Number as provided by operator.*

API Well No.: *Number as provided by operator.*

Not every well has all of these values but the "Well No." should be considered mandatory for all operating rigs. In the event that "Lease No." and "API Well No." user should use "Not known" as input or these fields. If the rig is not on contract (Cold or Warm Stacked), then input should be "Not Applicable".

5.8.2. Rig Owner Information

Rig Owner / Drilling Contractor: *Use this dropdown box to select the company that owns the WCE (and hence the component) that is the subject of the report.*

Rig: *This dropdown box is filtered to show only the current rigs owned by the selected equipment owner. Use this dropdown box to select the name of the rig associated with the event.*

Operator: *This dropdown box is populated with a list of the current participating operators contained in the*

	database This includes both members and non-members of the JIP. Use this dropdown box to select the operator that the rig was contracted to at the time of the event. *In a case where the rig was Cold or Warm Stacked at the time of the event, this field should be ignored when using the ROIF and "Cold Stacked" or "Warm Stacked" must be selected when setting up the relevant rig "Contract" online.*
Owner's Primary Contact:	*Title of person who is familiar with the issue in case further information is required. This could be the person reporting, but that is a company decision.*
Email of Owner's Primary Contact:	*Email address for the Primary Contact of the Equipment Owner.*
Name of Person Reporting:	*This the name of person filling out the event report.*
OEM Rep. Onboard, if applicable:	*Name of the OEM representative that visited the rig and was involved in an assessment of the component associated with the event. This is a free-text field and, in cases where this is not applicable, this field can be ignored when using the ROIF and "Not Applicable" should be used when creating the report online.*

5.8.3. Other Information

Owner Specific Equipment ID Number:	*An SFI code, or similar, that the equipment owner uses to identify the specific equipment or component.*
System integrator's Incident Reference No:	*Reference number issued by the System Integrator, if involved. This is a free-text field and, in cases where this is not applicable, this field can be ignored when using the ROIF and "Not Applicable" should be used when creating the report online.*
Component sent on shore:	*Use this dropdown box to record whether or not the component in question is on the rig and, if it has left the rig, the reason for dispatching it from the rig. NO should be selected in this dropdown box if the component has*

	not left the rig. If the component has left the rig, the appropriate reason should be selected.

5.8.4. Equipment

Type of WCE System:	*Use this dropdown box to select the type of WCE System. Select SUBSEA if the system utilizes a BOP designed to be operated underwater; SURFACE OFFSHORE or LAND, as appropriate, for others.*
System Integrator:	*Use this dropdown box to select the name of the company that provided or assembled the impacted system. This is not necessarily the original equipment manufacturer. The options available to the reporter are Cameron, HMH, NOV or the Equipment Owner.*
Subunit:	*Use this dropdown box to select the appropriate WCE System subunit category.* *This is the first of three dropdown boxes that determine the contents of each subsequent box in a logical manner until the correct component is identified.*
Item:	*Use this dropdown box to select the appropriate item category. The items listed in the dropdown box are contingent upon the selected Subunit.*
Component:	*Use this dropdown box to select the appropriate component category. The components listed in the dropdown box are contingent upon the selected item. This is the lowest maintainable item and where the reporter can identify the component that is the subject of the event report.*
Component Manufacturer:	*Use this dropdown box to select the original equipment manufacturer of the component that is the subject of the event report.* *The list is pretty comprehensive but if a particular OEM is missing from the list contact the IADC JIP Project Manager to have the missing OEM added to the list.*

Observed Failure:	*Use this dropdown box to select and capture the means by which the component malfunction was identified.*
Model:	*Reference should be made to APPENDIX 5 for a library of equipment Makes and Models stored in the database.* *Use this dropdown box to select the model of the component, in question, if the component is listed in APPENDIX 5. Otherwise, use this field (this is a free-text field if the model is not listed in APPENDIX 5) to identify the model of the component.* *Please ensure that if the component, in question, is part of an integrated item that the model of the component is provided and not the model of the item or subunit. For example, the model of the control pod should not be input as the model for a pressure regulator if it the pressure regulator that is the subject of the event report.*
OEM Part Number:	*Use this field to identify the part number as established by the OEM. This is a free-text field.*
OEM Serial Number:	*Use this field to enter the unique, identifying serial number utilized by the OEM. This is a free-text field.*
Size:	*Use the two available dropdown boxes to select the whole and fractional size for the component.* *If the component, in question, is not defined by a "Size" (e.g. Software), the two fields should be left blank in the ROIF and 0 should be selected in both boxes when using the online input dropdown boxes.*
Pressure Rating:	*Use the two available dropdown boxes to firstly select the standardized pressure that the component is rated for, and to secondly indicate whether this pressure rating is a "Well Bore" or "Operating Circuit" pressure.* *If the component, in question, is not defined by a "Pressure Rating" (e.g. Software), the two fields should be left blank in the ROIF and 0 and "Operating Circuit" should be selected when using the online input dropdown boxes.*

5.8.5. Component History

Date Affected Component was installed:	*Use this field to record the date that the component was installed into the system on the rig.* *This could be the date that the equipment was delivered, or it could be after major inspection/ maintenance work (e.g. five-yearly).*
Maintenance Deferred on Component:	*Use this dropdown box to record whether planned maintenance was overdue at the time the event occurred.*
If YES, what maintenance was deferred:	*Use this dropdown box to select what category of maintenance that was deferred (BWM/EOW, Annual, 5-Year, etc.).* *If planned maintenance was not overdue then this field should be left blank when utilizing the ROIF and the online input dropdown box can be ignored.*
Date of Last Maintenance:	*Use this field to record the date of the last planned maintenance actually completed.*
Description of Last Maintenance:	*Use this dropdown box to select the type of maintenance that was actually performed in connection with the last planned maintenance.*
Amount of Usage at the Time of Failure:	*Use the first free-text field to input a whole number and use the dropdown box to select the units (Hours or Cycles) to associate with the number. If the "Usage Amount" is not known then leave the free-text field blank and select "Unknown" as the units.* *If the reporter has access to automatic cycle counters, or the discipline to actually count cycles exists, then record cycle counts for valves, cylinders and pistons. Record hours for pumps, and all other components, where cycle counts are not available.*

5.8.6. Site Specific Information

IADC Code Description:	*Use this dropdown box to select the IADC code and associated description of the rig operation that reflects the ongoing operation at the time the event occurred or was discovered.*

	Note that these have recently been updated, by IADC, to include specific options for Running/retrieving riser equipment and for testing surface equipment.
Location (Region):	*Use this dropdown box to select the appropriate continent associated with the rig operations at the time the event occurred or was discovered.*
Location (Country):	*Use this dropdown box to select the appropriate country associated with the selected region of operations.*
Water depth:	*Use the free-text field to input the actual water depth at the operating location and the dropdown box to select the units (Feet or Meters) to associate with the value provided.*
Drilling Fluid Type:	*Use this dropdown box to select from the list of commonly used drilling fluids.*
BOP Control Fluid:	*Use this dropdown box to select from the list of commonly used BOP control fluids.*
Concentration:	*Use this dropdown box to select the percentage of control fluid concentrate in the BOP control fluid mixture.*
Glycol:	*Use this dropdown box to select the percentage of glycol in the BOP control fluid mixture.*
Was the last laboratory sample acceptable?:	*Use this dropdown to record the answer to the question opposite regarding the BOP control fluid.* *N.B. This specifically refers to the last laboratory sample (as opposed to a rig test).*
Date of last sample:	*Use this field to record the date of the last laboratory analysis.*

5.8.7. Event Data

Event Date:	*Use this field to record the date of the event.*
Event Date is:	*Use this dropdown box to select whether the "Event Date" is associated with the occurrence of the malfunction or whether it is the date the malfunction was detected.*
When did the event occur?:	*Use this dropdown box to record whether the event occurred while the WCE System was in the operating mode ("BOP # 1 or 2 In Operation") or in the maintenance mode ("BOP # 1 or 2 Not in Operation").* *If you only have one BOP then select the appropriate status for BOP#1.*
Description of Event:	*This is free-text field where reporters are required to provide sufficient, but concise, information on the event in order that other database user can understand what malfunctioned, what were the symptoms of the malfunction, what was being functioned at the time of the malfunction and why was it being functioned. All related details that are deemed pertinent should be included. Any information that does not add to the understanding of the event should be excluded. The use of information that can identify any of the entities involved in the event must be avoided.*
Hours of NPT –	*This field is to be used to record the total number of hours between the detection of the malfunction and getting back to the point in the operation at which the malfunction occurred. In the situation where the event resulted in a "BOP Stack Pull", the "Hours of NPT" would include BOP recovery and reinstallation, etc.* *This is typically IADC Code 8 time. If the rig contract includes maintenance, or similar, time allowances, these should be ignored, in this context, and the actual total of NPT hour recorded.*
Hours of Repair time:	*This field should only include the actual time taken to repair and test the component that is the subject of the event record.*

Did the event cause a BOP Stack pull?:	*Use this dropdown box to record whether or not the component malfunction was a direct factor in the decision to retrieve the subsea BOP stack for repairs.*
Detection Method:	*Use this dropdown box to select how the malfunction was discovered.* *There must be consistency between the selected operating state ("BOP # 1 or 2 In Operation" or "BOP # 1 or 2 Not in Operation") and the option selected for the "Detection Method" field. It is inconsistent to select for the "When did the event occur?" field "BOP # 1 or 2 Not in Operation" and to record "Function Testing in Operation" in the "Detection Method" field. Similarly, "BOP # 1 or 2 In Operation" and "Function Testing Surface" do not belong together even if the component at the center of the event belongs to an item of surface equipment.*
Immediate Corrective Action:	*Use this dropdown box to record the immediate action taken on the rig to address the issue with the malfunctioning component and to place the WCE System back into an operational state.*
Root Cause:	*Use this dropdown box to select the correct root cause option for the event.* *The selection of any option other than "RCFA required" or "Assessment Pending" will result in the report being closed on approval by the appropriate Equipment-Owner Super User.* *The selection of 'Assessment Pending' will open a free-text box to be utilized to justify the selection. This will probably be something to the effect that the BOP stack is still subsea and an MOC and risk analysis has determined that it is safe to continue operations with the particular malfunction unresolved.* *Selecting 'RCFA required' or 'Assessment Pending' will initiate a process whereby the appropriate stakeholders will be reminded by system-generated e-mails that the definition of the actual root cause is outstanding. The initial reminder will be generated 99 days from the event date and subsequent reminders will be generated every 30 days thereafter.*

Quantity:	*Use this field to record the quantity of identical components that malfunctioned at the same time.* *It should be noted that a quantity greater than 1 shall only be used if the components are identical in every way. For example, if two SPM valves malfunctioned at the same time but were installed at different times or if there are differences of any kind between the two valves, the components are not considered to be identical for the purpose of event reporting and, consequently, the quantity should be set to 1 and individual event reports must be created for each of the valves.*

5.9. Root Cause Definitions, Clarifications and Examples

The **Root Cause** is the fundamental reason for the occurrence of a problematical event.

"ASSESSMENT PENDING" **"RCFA REQUIRED"**

These options are available for selection in cases where the investigation and analysis processes have not begun or are incomplete and, as a consequence, the root cause is unknown at the time the event record is being created.

"Assessment Pending" should be selected if, for instance, the BOP stack is still subsea. The understanding is that the failure will be investigated when the BOP stack becomes accessible and the root cause will be evaluated at that time and the event record updated to reflect the most current understanding of the root cause.

On the other hand, "RCFA Required" **must** be selected if there was; a loss of a well barrier, if there was an unplanned stack/LMRP recovery, or if there was a reoccurring event. It should be noted that the outcomes of the investigations associated with any of the other levels of analysis can result in the requirement for an RCFA.

Selection of either of the above root cause options will trigger a 99-day reminder which will be issued to Super Users. The intent of this is to provide Super Users with adequate notice to ensure that the 120-day USCS requirements are met. Both Equipment-Owner and Operator Super Users will receive a copy of this reminder.

Also, reports where the root cause is either "Assessment Pending" or "RCFA Required" will remain in the "Approved (Open)" state until the investigation and analysis process is complete and the report edited to reflect the agreed true root cause.

It is important to understand that the selection of either of the above options does not, and will not, automatically initiate the investigation and analysis processes. The Equipment

Owner must address this outside of the database and, in the event that an RCFA is required, this must involve the OEM or a suitably competent third-party.

It is also important to remember that an RCFA is typically carried out at facilities set up for such investigative work and when shipping the applicable component to the relevant facilities the Equipment Owner's support resources need to be notified.

The remaining options should only be selected in situations where the investigation and analysis processes, irrespective of the level of analysis required, are deemed to be complete and the root cause established.

"DESIGN ISSUE" **"QA/QC MANUFACTURING"**

These options are manufacturer related. However, the older and more used the equipment gets, the less likely it will be that the root cause will fall into either of these categories.

A "Design Issue" is related to inadequate design or configuration. This can only be confidently identified after an RCFA has been completed or if the design issue has been previously identified by RCFA or notification from the manufacturer and, for whatever reason, the modification/upgrade has not yet been implemented.

"QA/QC Manufacturing" is a failure that is entirely related to the manufacturing and/or repair processes of the OEM. 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. Another example would be the failed bench-test of a newly received valve.

"DOCUMENTATION ERROR" **"MAINTENANCE ERROR"** **"PROCEDURAL ERROR"**

These three options are much less ambiguous.

The selection of the "Documentation Error" option should signify that the event occurred as a result of a mistake or oversight in the documentation used by the individuals responsible for operating and maintaining the equipment. In other words, the installation, operations and maintenance documentation was followed but there was an inherent error in the documentation supplied. The documentation can be in the form of drawings, manuals, procedures, work instructions and work orders and can originate from either the OEM, System Integrator or the Equipment Owner. Examples would include drawings that contained mistakes, working to outdated revisions of manuals and working to maintenance procedures that ae out of date due to the fact that they do not reflect lessons learned from the use of component in operation.

The selection of the option "Maintenance Error" signifies that a mistake, misuse or oversight occurred during maintenance. An example could be that a choke line flange leaked after the maintenance had been completed. Investigation showed that the flange studs had been torqued to 380Nm instead of the 380ft-lb stated in the procedure. This was a maintenance error.

Selection of the "Procedural Error" option signifies that there was a mistake, misuse or oversight during operation. This could be that the BOP ram leaked because test pressure was applied after

closing pressure was vented, but without the ram having first been mechanically locked. This was a procedural error.

"WEAR AND TEAR"

The "Wear and Tear" option has a tendency to be misunderstood and is, as a result, selected too frequently.

"Wear and Tear" is an expected condition of a component that has reached a point where it is unable to perform its intended function as the result of attaining, or passing, the usage level that formed the basis of design for the component in question.

Consequently, in a situation, where a component has reached, or passed, its design usage level, "Wear and Tear" is not the real root cause of failure and if "Wear and Tear" features repeatedly in the failure of a component in operation, then such a trend would tend to indicate that there was an error in the maintenance documentation (plan, procedures and/or work instruction) and that a review of that documentation is required.

The "Wear and Tear" option should only be selected if the root cause of the failure does not fit one of the other root cause options and where a component has irrefutably failed before reaching its intended maintenance interval or cycle count.

5.10. Use of the "Save" Function and the Submission of Event Records

The creation of a draft event record requires the completion of a four-stage input process. The database allows for the situation where a draft record needs to be saved and stored while it is in the process of being created and prior to the input being fully completed. This is known as the "In Progress" state and the "In Progress" state is initiated immediately on commencement of record creation and the record remains in this state until all four stages of the record creation process are fully completed and the record is ready for submittal and review as a completed "Draft" event record.

The saving of an "In Progress" record is achieved in two ways. All data fed into the database during the record creation process is automatically saved (the auto-save function is set as a system default) as it is entered. The user can also suspend record creation at any time using the "Save" tab at the bottom of each screen associated with each stage of record creation. This results in the saving of the data entered, up to that point, and allows the user to close a partially complete event record safely in the "In Progress" state.

Once all four stages of the data input process are fully completed, utilization of the "Submit" button will load a "Draft" version of the report into the database and alert the Master User and Super Users that a "Draft" report has been created. The appropriate Super User will then check the quality of the data contained in the "Draft" report, correct any errors and approve it thereby adding it to the "Approved" reports in the database.

Each time an “Approved” record is generated, modified or experiences a change in “State” (“Open” to “Closed”, for example), the Equipment-Owner Master User and Super Users and the Super Users of the appropriate OEM and the Operator receive system-generated notification e-mails.

6.0 Database Features

6.1. General

Initial access to the database is gained by using the credentials that are sent to users in the form of a system-generated e-mail.

Once in the database, the "My Profile" (top right corner of landing page), "Change Your Password" and "Save Changes" tabs can be used to personalize a user's log-on based on the use of a strong password that is easy for the user to remember.

The database consists of the modules outlined in the rest of this section and the amount of functionality available to any user within a particular module is dependent on access rights assigned to the user's role. Reference should be made to Appendix 6 to obtain details of the Access Rights for the various user roles covered by the database.

6.2. Event Reports Module

The primary function of this module is to provide Equipment-Owner users with access to the area of the database where event records can be created and processed. The secondary function of the module is to furnish users with a listing of all of the event records associated with the organization to which a user belongs and to do so in manner that enables the user to filter the records by their processing state and event date. It also enables the user to utilize the filtering process to access individual record with a view to invoking certain actions such as editing, duplicating, viewing and exporting records of interest, depending on the user's access rights. The processing states of a record are outlined in the following subsections.

6.2.1. All

With this filter tab highlighted, the user will be provided with a list of all the organization-specific event records associated with the user's rig, rigs, and company that have been created with event dates that fall within the period selected on the last filter tab.

6.2.2. In Progress

This selection will provide the user with a list of all the organization-specific event records that have been opened and saved, but not yet completed and submitted, with event dates that fall within the period selected on the last filter tab. Records in this state are only accessible by Equipment-Owner users and, thus, this tab is only available to Equipment Owners.

6.2.3. Draft

This selection will provide the user with a list of all the organization-specific event records that have been completed and submitted, with event dates that fall within the period selected on the last filter tab, and that are waiting approval by either the Equipment-Owner Master User or one of the

Equipment-Owner Super Users. Records in this state are only accessible by Equipment-Owner users and, thus, this tab is only available to Equipment Owners.

6.2.4. Approved (Open)

This selection will provide the user with a list of all the organization-specific event records that have been approved, with event dates that fall within the period selected on the last filter tab, and with either 'Assessment Pending' or 'RCFA Required' selected as the root cause.

6.2.5. Approved (Closed)

This selection will provide the user with a list of all the organization-specific event records that have been approved and closed and that have event dates that fall within the period selected on the last filter tab.

6.2.6. Reject

This selection will provide the user with a list of all the organization-specific event records that have been rejected and archived in the database, for whatever reason, during the period selected on the last tab. Records in this state are only accessible by Equipment-Owner users and, thus, this tab is only available to Equipment Owners.

6.2.7. Days

This tab can be used to select the time period associated with the event dates of the organization-specific records of interest. The options are 30days, 60 days, 90 days or ALL.

6.3. Database Reporting Module

This module provides users with a simple rolling overview of the breakdown of the approved event records contained in the database.

The user has the ability to view the approved event record data for events that occurred during the current month by subunit and with the emphasis being placed on the impact of the current month's events on productivity. In addition, the number of event records for the current month are compared with the numbers from previous months, benchmarked by relating the number of events to the number of working rigs available to produce records. This comparison is available for the last 12 and last 60 months.

User can also utilize the available filters to view the approved event records broken down by subunit, by item and by component. Event record distributions can be produced for both the last 12 months and the last 60 months. In addition, the subunit distribution charts can either be based on the raw number of records, associated with each item reported on, or on the record count, associated with each item reported on, as a percentage of the total number of records logged against the subunit of interest.

6.4. Advanced Filter Reporting Module

This module provides the user with access to all of the approved records in the database.

The filters allow the user to select specific data fields as a means of preparing a customized data extract for export from the database in the form of an Excel file. The Excel file is downloaded by utilizing the "Export" tab. The main filters allow the user to focus their data search on Equipment Owner, Rig and Operator but there is also the ability to increase the number of filters applied by selecting additional filters from the list available under the "More Filters" tab.

In the event that the user is interested in extracting all of the approved event records in the database, filters should not be applied and the Excel file containing all the approved event records in the database can be downloaded by utilizing the "Export" tab. This allows the user to search through the data, create customized sets of analytics, and produce ad-hoc reports on areas of specific interest.

It should be borne in mind that the database complies with the JIP Antitrust Requirements and Fair-Use Principles and, as a result, certain data fields will be anonymized. However, the technical data associated with all the approved event records in the database will be available for review and analysis.

It is the responsibility of the user to ensure that all data extracted from the database is used in accordance with the requirements of Section 2.3 of this document.

6.5. Rigs Module

This module gives Equipment-Owner users the ability to manage their fleet of rigs, the well control equipment (WCE) Configurations associated with each rig in their fleet and the contracts and wells that define how the rigs, and their WCE Systems, are utilized – an important element in the assessment of the performance and reliability of WCE components.

Depending on the role of the user and the associated user access rights, the landing page for this module provides the user with an overview of the rigs in the user's fleet that are set up in the database. It also provides Equipment-Owner Master Users and Super Users with the ability to add a rig using the "Add Rig" tab and the ability to download the WCE Configuration Offline Input Form (COIF) Excel file using the "Download WCE Configuration Form" tab.

The right-hand column of the table on the module landing page ("Actions" tab) has eight options that can be used to undertake the tasks outlined in the following subsections.

6.5.1. Edit Rig

This allows an authorized user to edit the basic rig information relating to a rig already added to the database. It also allows the user to define whether the rig uses a single or dual stack configuration.

6.5.2. Edit WCE Configuration

Here you can change the details of the WCE Configuration on the rig. It is not a complete IADC well control equipment list as the database only covers the well control equipment defined in Section 3.1.

6.5.3. Add WCE Configuration

This is used to add a new configuration for an existing rig. In the event that the rig of interest already has a valid WCE Configuration, this option should only be used in those cases where you are making a significant change to the existing WCE Configuration. As an example, the type of change that would fall into this category is one where an existing annular is being replaced by an annular of a different make but with the same technical capabilities as the original annular. Another example of a significant change to a WCE Configuration would be a situation where there is an addition or reduction in the number pipe rams in the stack. An empty WCE Configuration is created in the event that "Add Configuration" is selected accidentally.

6.5.4. Upload WCE Configuration

This is used to upload a WCE Configuration that has been collated offline using the downloadable COIF Excel file. Once the COIF is completed, stored on the user's computer and available for upload, the user need only select this option and identify the file that needs to be uploaded to have the WCE Configuration assigned to the relevant rig.

6.5.5. Asset Disposal

This should only be used in the event that a rig is no longer a part of an Equipment Owner's fleet and, as a result, the asset has either been disposed of either through a sale or by scrapping. Once a rig is disposed of it will no longer be possible to create event records for that rig but the historical event records will be available for review and analysis. In the event that an asset is sold to another JIP Participant, the event records will ultimately be transferred to the new Equipment Owner.

6.5.6. Show WCE Configurations

This allows users to view all of the completed WCE Configurations that have been submitted for a rig. WCE Configurations associated with approved event records cannot be deleted because of their association with component utilization. However, Equipment-Owner Master Users are able to delete WCE Configurations that have never been applied to an event record or that have been submitted accidentally.

6.5.7. Manage Well

This allows users to add new, and edit existing, well data.

Not every well will have Lease, Well and API Well numbers assigned to it but wells will normally have at least one of these numbers and every effort should be made to define at least one of these well attributes. Those attributes that cannot be defined should be characterized as "Not known".

For rigs where the "Type of WCE System" is designated as "Subsea", there is a requirement to provide details of the "Number of Joints of Riser Run" on the well. This data is used for collating data on riser utilization and for charting riser events against the quantity of riser joints in operation at any one time across the entire fleet of rigs set up in the database. For rigs where the "Type of WCE System" is designated as either "Surface Offshore" or "Land" the "Number of Joints of Riser Run" should be set to zero.

This well data will be used to auto-populate all event reports where the event date coincides with the period that the rig is working on that well and it is important that a well is set up to cover the event date associated with a particular event either prior to creating, or during the creation of, the record for that event.

6.5.8. Manage Contract

This allows users to link the rig with the Operator contracting the rig. This information is used to auto-populate the event record with not only the name of the "Operator" but also the "Region" of the World that the rig is operating in and the "Country" that has jurisdiction over the well being drilled.

New contract data can be input using the "Add Contract" tab and the data associated with an existing contract can be edited by selecting the "Edit" option under the "Actions" tab.

6.6. Participants Module

This module provides users with a list of organizations that are contained in the database and are available for use in the creation of event records. It also provides users with the ability to control their organization's access to the database in terms of the number of users, type of users, rig assignments and the allocation of system credentials.

"Participants" fall into the following three categories:

1. Equipment Owners (in the main, Drilling Contractors),
2. Operators and
3. System Integrators.

It should be noted that the difference between a database "Participant" and a JIP Participant is that only JIP Participants have user-access to the database. A list of the user roles available to JIP Participants, and their associated access rights, is provide in APPENDIX 6.

6.6.1. Participants

The database participants (Drilling Contractors, Operators and OEMs that are System Integrators) list is accessed by using the "Participants" tab. Users should contact the IADC JIP Project Manager should there be a need to add an organization to the database as a database "Participant".

6.6.2. Manage Users

Master Users and Super Users can access a current list of their organizations users by using the "Users" tab. Only the Equipment-Owner Master Users and the Super Users of the Operators and System Integrators can set up, edit or disable users. The authorized Master Users and Super Users need to ensure that access is granted in accordance with the JIP Antitrust Requirements and Fair-Use Principles.

6.7. Monthly Report

This module provides users with access to copies of the published JIP Monthly Reports. The reports are listed by year and month and each report provides a high-level analysis of database activity for the month in question. Users have the ability to view and download reports of interest.

The Information Bulletin section of JIP Monthly Report provides an ideal vehicle for the dissemination of anonymized information to the other organizations participating in the JIP and members are encouraged to submit summaries of their own experiences and practices to the JIP Project Manager for inclusion in the JIP Monthly report.

7.0 Event Record Approval Process

The process for ensuring compliance with API Standard 53 and mandatory, country-specific regulatory requirements is outlined in the flow diagram found in APPENDIX 2.

The following sections provide details of the review and approval options available to Equipment-Owner Master Users and Super Users as part of the process associated with converting an event record from the "Draft" state into the "Approved" state.

7.1. Submittal

Equipment-Owner Master Users and Super Users are notified immediately one of their team (Master User, Super Users, Reporters, Roaming Reporters or Senior Reporters) submits a "Draft" report to the database. This is done by a system-generated e-mail and signifies the start of the review and approval process.

7.2. Review

The user, assigned to approve the event record, should review the draft record, using the "View" option under the "Actions" tab, to ensure that the data is accurate, consistent with field definitions as outlined in Section 5.8 and logical.

Special attention should be paid to the section of the report that covers the "Event Data" with emphasis being placed on the free-text field "Description of event" to make sure that the information provides a full description of the event, is totally anonymized and is based on the use of vocabulary consistent with technical report writing.

A critical aspect of the review of the draft record is associated with ensuring concurrence between the reported event data and the selected root cause.

At this point the user can chose to "Approve" the draft record if it is deemed to be satisfactory (refer to Section 7.4), "Return" the draft report to the individual that created the draft record for editing, complete with a note providing details of what is required to be edited, or "Reject" the draft record entirely in the event that the draft record is found to be redundant, for whatever reason. Rejected draft records are never deleted from the database but are archived.

7.3. Editing

In the event that the user, tasked with approving a "Draft" event record, choses to "Edit" the "Draft" event record rather than "Return" it to the individual that created the draft record, the user should select the "Edit" option under the "Actions" tab and proceed to navigate through the various sections of the draft record, editing the fields requiring editing within each section, saving the changes made in each section prior to moving to the succeeding section and ultimately submitting a new draft record using the "Submit" tab provided in the last section of the process.

7.4. Approval

As stated under Section 7.2, the "Event Report View" (select the "View" option under the "Actions" tab) is the most effective way of reviewing a draft event record for completeness and accuracy and for changing an event record status from draft to approved. The "Event Report View" also provides the user with the ability to edit the "Description of event" and the "Root cause" fields. Consequently, providing the user is satisfied with the data contained elsewhere in the event record, the user has the ability, with the draft event record open in the "Event Report View" mode, to edit the "Description of event" and the "Root cause" fields without opening up the entire "Draft" event record for editing prior to approving the record.

Once the "Draft" event record has achieved the desired data quality standard, and with the record open in the "Event Report View" mode (select the "View" option under the "Actions" tab), the user, tasked with approving the event record, can approve the event record and move it to either the "Approved (Open)" state or the "Approved (Closed)" state.

The "Approved (Open)" status will be automatically assigned to the event record if the value selected for the "Root cause" field is either "Assessment Pending" or "RCFA Required". The "Approved (Closed) status will be automatically assigned to all event records where the "Root cause" is one of the available, permitted root cause values other than "Assessment Pending" or "RCFA Required".

8.0 Analysis

8.1. Basics

Effective investigation is essential to identify the root causes of an event. The accurate identification of root causes facilitates learning, continuous improvement and leads, ultimately, to the reduction of potential component malfunctions. The drive to reduce the number of potential component malfunctions increases the inherent reliability and safety of the equipment using the component.

The initial scope of any investigation must be based on the factual information (e.g. hose rupture, valve leaking in closed position) relating to the event. Diligent and effective analysis is the only way to lead investigators to one of the root causes listed in Section 5.9.

It should be noted that if the component event being logged is part of a wider event then the appropriate investigative procedure may need to be followed in addition to the creation of an event report for the component at the center of the event being logged.

8.2. Overview

There are three levels of analysis to be applied with regard to events recorded in the RAPID-S53 database:

- Cause Immediately Known.
- SME Review.
- Root Cause Failure Analysis.

It should be noted that if an investigation at one level fails to determine the root cause of an event, then the analysis can be promoted to the next level up, as appropriate.

As shown in the Reporting Process flowchart (APPENDIX 2), in an event where the root cause is immediately known, the relevant notifications are issued immediately a component failure report is submitted to the database and is moved to an "Approved (Closed)" state.

If the event results in a loss of a well barrier, if it results in the retrieval of the LMRP or BOP stack, or if it is identified as part of a series of reoccurring events, then an RCFA is always required.

Other events require an SME Review to be conducted by a subject matter expert, and reported.

It should be noted that there will be occasions where events that have previously been categorized as "Cause Immediately Known" or "SME Review" become "RCFA required" because such events have been identified as occurring a significant number of times and, as a result, the events become classed as "Reoccurring". The previously event records do not need to be reclassified, but they may be referred to in the RCFA.

8.3. Cause Immediately Known

8.3.1. Approach

An O-ring damaged during installation can, for example, normally be categorized as 'Cause Immediately Known'. It is important to report such events because if an event of this type were to escalate to a reoccurring event then it may warrant a change to the design or to the installation and/or maintenance procedures.

8.3.2. Resources

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

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

8.3.3. Closure

When the root cause of the event is immediately known, the investigation is considered closed when:

- A report is created in the database, with sufficient justification provided in the "Description of event" field to support the root-cause selected from the dropdown box.
- The selection and the report are approved by an authorized Equipment-Owner user.

8.4. SME Review

8.4.1. Approach

An SME Review is conducted when the cause of the event is questionable and the event has not triggered an RCFA (no loss of well barrier, no unplanned BOP pull, not part of a series of reoccurring events).

If a ram failed to hold pressure during pre-deployment testing and upon opening the doors/bonnets it was clearly seen that the packers were well worn, then an SME Review could check the records to see if the number of functions met the expectations. Then after the rams have been successfully tested with new packers to confirm that there was no other issue, and assuming the number of functions met expectations, the failure can be attributed to 'Wear and Tear'. If, however, the rams fail to test and the function cycles were less than expected, the causal agent is something other than 'Wear and Tear'.

8.4.2. Resources

Two, or more, SMEs.

8.4.3. Closure

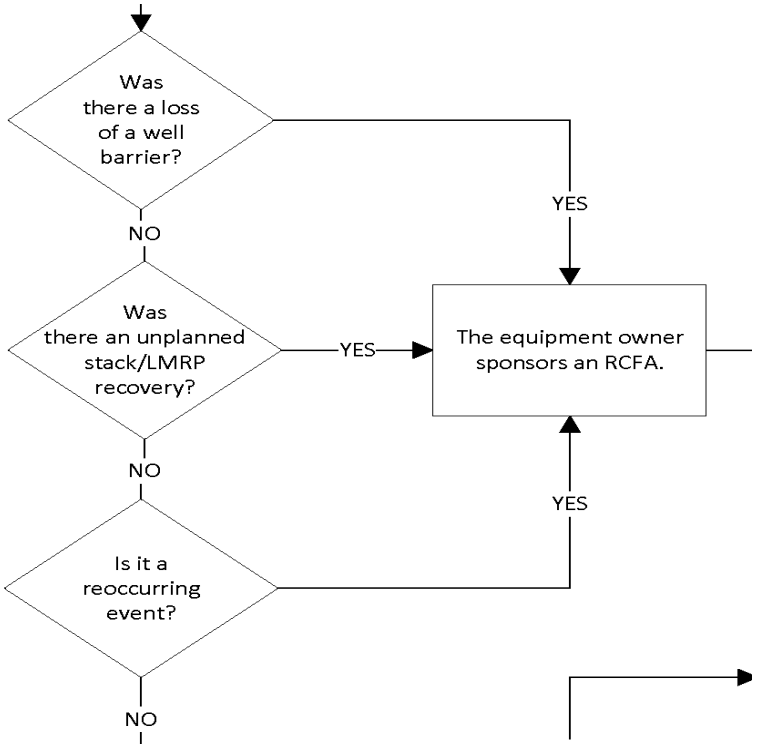
An SME Review Report (See APPENDIX 4), identified by the unique number used when the event record was initially created, must be produced. This report should arrive at a logical conclusion based on a sound evaluation of the physical causes of what, how and why the event occurred. The incident can be considered closed when the authorized Equipment-Owner user updates the event record in the database (by augmenting the information in the "Description of event" field, as necessary), selects the appropriate "Root cause" from the dropdown box, and approves the event record "Approved (Closed)", thus moving the record from the "Approved (Open)" state to the "Approved (Closed)" state.

8.5. RCFA

8.5.1. Approach

This investigation is more detailed and as such takes more resources and time.

The performance of a RCFA is mandatory if the event results in any one of the three conditions shown in the figure below being met.



This analysis should output root causes that can be turned into action items to prevent reoccurrence; for example, OEM product bulletins, Equipment-Owner maintenance system changes, etc.

8.5.2. Physical Evidence

Well Control Equipment components are frequently field repairable and, in many cases, there may not be a replacement assembly readily available. In such an instance, ensuring full and detailed record capture of physical evidence is critical, even if the situation necessitates the evidence being in the form of photographs, dimensions, sketches and written reports, to allow repairs to be effected and to ultimately get the rig back to work.

8.5.3. Resources

Typically, at least one SME plus the OEM or a suitably qualified third-party are utilized.

8.5.4. Closure

An RCFA report (See APPENDIX 4), identified by the unique number used when the event record was initially created, must be produced. This report should arrive at a logical conclusion based on a sound evaluation of the physical and any human causes of what, how and why the event occurred. This document is for internal use within the affected company.

The incident can be considered closed when the authorized Equipment-Owner user updates the event record in the database (by augmenting the information in the "Description of event" field, as necessary), selects the appropriate "Root cause" from the dropdown box, and approves the event record "Approved (Closed)", thus moving the record from the "Approved (Open)" state to the "Approved (Closed)" state.

9.0 Capture and Share Lessons Learnt

When these reports have been finalized and the event records approved, it is necessary for the learnings from the event to be shared internally within the equipment owner's organization and with the appropriate stakeholders as dictated by both API Standard 53 and the regulations.

A lesson is only learned when the data is properly shared.

The Information Bulletin section of JIP Monthly Report provides an ideal vehicle for the dissemination of anonymized information to the other organizations participating in the JIP and members are encouraged to submit summaries of their own experiences and practices to the JIP Project Manager for inclusion in the JIP Monthly report.

APPENDIX 1. EVENT DATA REPORTING OFFLINE INPUT FORM (ROIF)

Event Data Reporting Offline Input form

RAPID-S53 Offline Input Form	WELL IDENTIFICATION	Rev 2.4
Lease No.:	*Well No.:*	*API Well No.:*

RIG OWNER INFORMATION

Rig Owner / Drilling Contractor:		Rig:		Operator:	
Owner's Primary Contact:			Owner's Primary Contact's Email:		
Name of Person Reporting:					
Name of OEM Representative Onboard, if applicable:					

Other Information

Owner's Specific Equipment ID Number:			
OEM Incident Reference Number:		Equipment sent on shore for:	

EQUIPMENT DATA

BOP Use:			
Equipment Integrator:			
Subunit:			
Item:			
Component:		Component Quantity:	
Component Manufacturer:		OEM Part Number:	
Observed Failure:		*OEM Serial Number:*	
Model:	Input Custom Model Name =>		<==input value here
Size:	and	Pressure Rating:	

EQUIPMENT HISTORY

Date Affected Component Installed:			
Maintenance Deferred on Equipment:		-If YES, what maintenance was deferred:	
Date of Last Maintenance:		Description of completed last maintenance ↓:	
Amount of Usage at the Time of Failure:	Hours	Cleaned and Inspected	

SITE SPECIFIC INFORMATION

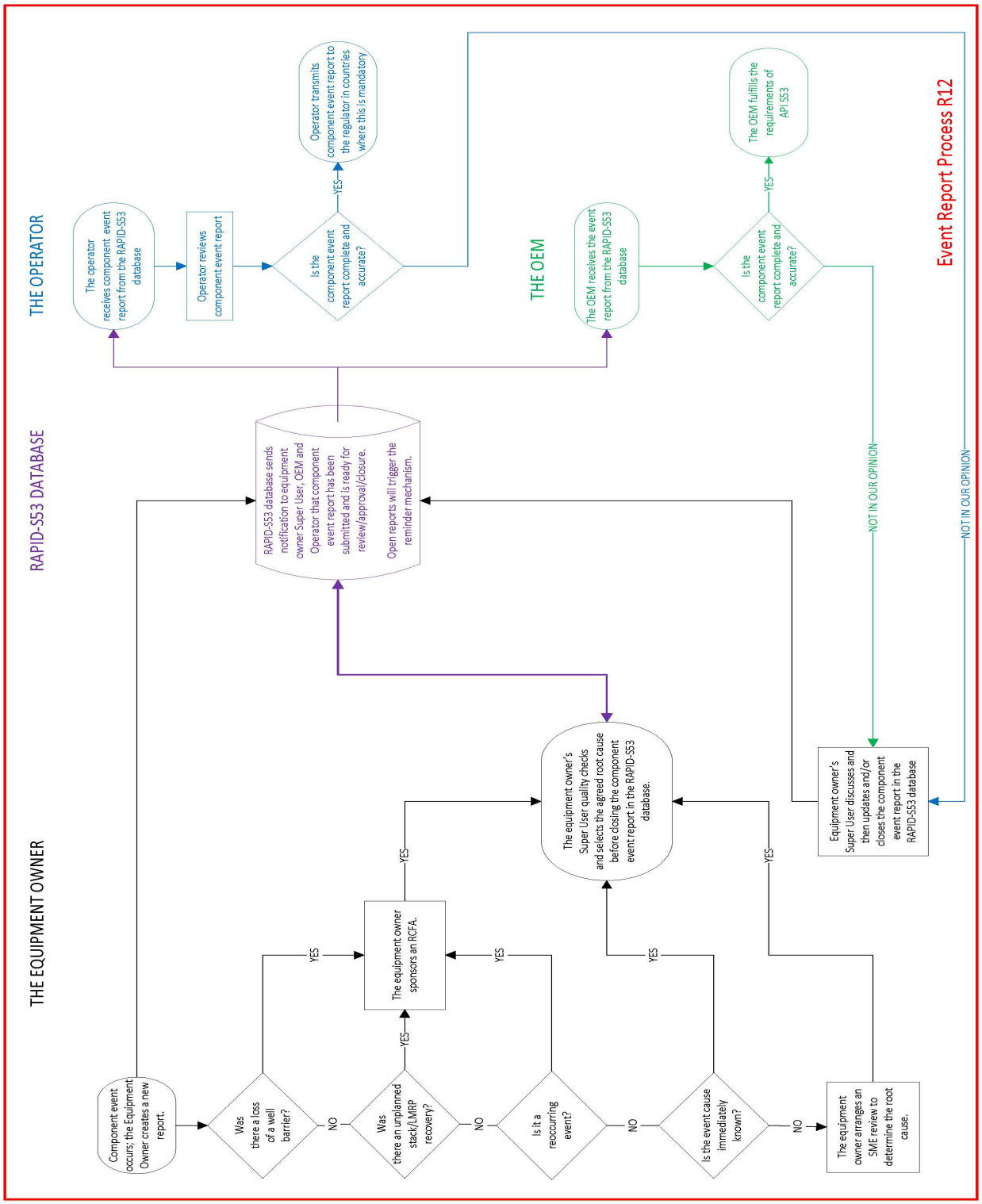
IADC Code - Description:			
Location (Region):		Location (Country):	
Water Depth:			
Drilling Fluid Type:			
BOP Control Fluid :			
Concentration:		Glycol:	
Was the last laboratory sample acceptable?:		Date of last sample:	

EVENT DATA

Event Date:		Event Date is:	
When did the event occur?:			
Description of Event:			
Hours of NPT:		Hours of Repair time:	
Did the event cause a BOP Stack pull?		Detection Method:	
Immediate Corrective Action:		Root Cause:	
Reason :			

Page 1 of 1

APPENDIX 2. REPORTING PROCESS



APPENDIX 3. FIVE-WHY'S ANALYSIS METHODOLOGY

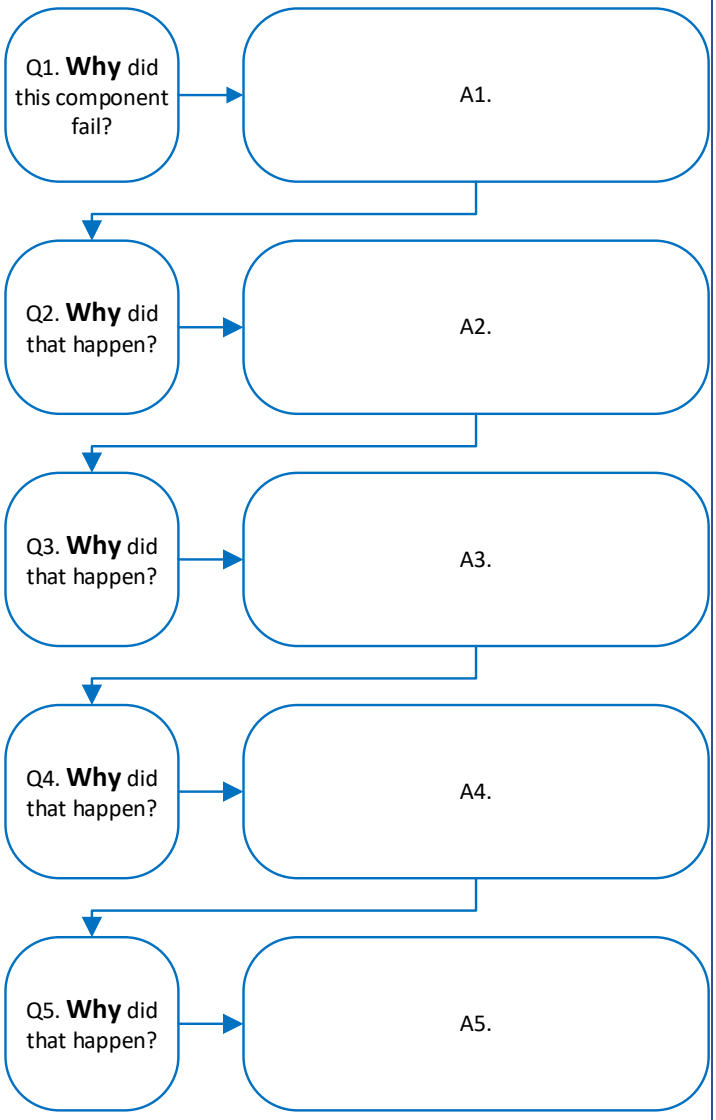
Five-Whys Analysis is a simple iterative technique that can be used with either the SME Review or with an RCFA to understand the cause-and-effect relationships underlying a particular problem. The primary goal of the technique is to determine the (root) cause of an event or problem by repeating the question "Why?"

Each question forms the basis of the next question. The "5" in the name derives from an empirical observation on the number of iterations typically required to resolve the problem.

The method provides no fixed rules about what lines of questions to explore, or how long to continue the search for additional root causes. The following outlines a typical 5 Whys Analysis process:

Identify and define the component involved in the event and then:

- Define the event
- Brainstorm and list the possible causes
- Select the most likely cause (must be able to explain why it was selected)
- Apply the "5 Why" principle (on the selected "most likely" cause)
- Repeat asking "why" until the "root cause" is identified
- Suggest possible solution
- Implement and validate the solution



APPENDIX 4. SME REVIEW OR AN RCFA REPORT

While being company specific in design, the final reports must include:

The initial report unique identification number
Details of the component involved in the event (Part Number, Serial Number, Description,)
Date of the event
Details of the event
Date that the investigation commenced
Date that the investigation was completed and the report published
Investigation team member details
Root cause(s) of the event
Findings (including any photographs or drawings, third party reports or other supporting information.
Recommendations

APPENDIX 5. LIBRARY OF MAKES AND MODELS STORED IN DATABASE

ANNULAR BOP

ANNULAR	CAMERON	HMH	NOV
MODEL	D	GL	Standard (BigBoy)
MODEL	DL	GX	SL
MODEL	T-84	GX Compact	NXT
MODEL	T-90	MSP	7012 (Old T3)

RAM BOP

RAM BODY	CAMERON	HMH	NOV
MODEL	EVO	Compact	6012
MODEL	T-81	Conventional	NXT
	T-82	Quik-Lok	SL
MODEL	TL		SLX
MODEL	U		
MODEL	UII		

RAM Bonnet / Door

BONNET/DOOR	CAMERON	HMH	NOV
MODEL	EVO, Super Shear, 4,000psi, N/A	Compact, 14-1/4", Low Torque, 3,000psi, MPL	6012, 14" x 10" Booster, 3,000psi, Poslock
MODEL	EVO, Tandem Booster, 5,000psi, EVO Lock	Compact, 14-1/4", Pressure Differential, 3,000psi, MPL	NXT, 14" Booster, 3,000psi, Poslock
MODEL	EVO, 3,000psi, EVO Lock	Compact 15-1/2", Low Torque, 3,000psi, MPL	NXT 22", CVX, 5,000psi, Poslock
MODEL	T, 3,000psi MOP, ST Lock	Compact, 15-1/2" Pressure Differential, 3,000psi, MPL	NXT, 22" LFS, 5,000psi, Poslock
MODEL	T, 3,000psi MOP, Wedgelock	Compact, 19" Low Torque, 3,000psi, MPL	NXT, 22" x 14", 3,000psi, Ultralock IIB ILF
MODEL	TL, Super Shear, 3,000psi, N/A	Compact, 19" Pressure Differential, 3,000psi, MPL	NXT, 3,000psi, Manual
MODEL	TL, Super Shear, 4,000psi, N/A	Compact, 22" Pressure Differential, 3,000psi, MPL	NXT, 3,000psi, Poslock
MODEL	TL, Super Shear, 5,000psi, N/A	Compact, 22" Pressure Differential, 4,000psi, MPL	NXT, 3,000psi, Ultralock IIB
MODEL	TL, Tandem Booster, 3,000psi, ST Lock	Compact, 22" Pressure Differential, 5,000psi, MPL	NXT, 3,000psi, Ultralock IIB ILF
MODEL	TL, Tandem Booster, 4,000psi, Ramlock	Compact, 22" Pressure Differential, 5,000psi, N/A	NXT, Booster, 4,500psi, Poslock
MODEL	TL, Tandem Booster, 4,000psi, ST Lock	Conventional, 14-1/4" Low Torque, 3,000psi, MPL	SL, 3,000psi, Poslock
MODEL	TL, 3,000psi, Ramlock	Conventional, 15-1/2" Low Torque, 3,000psi, MPL	SL, 3,000psi, Ultralock IIB
MODEL	TL, 3,000psi, ST Lock	Conventional, 15-1/2" Pressure Differential, 3,000psi, MPL	SL, Booster, 5,000psi, Poslock
MODEL	TL, 5,000psi, Ramlock	Conventional, 19" Low Torque, 3,000psi, MPL	SL, Old T3, 3,000psi, Manual
MODEL	TL, 5,000psi, ST Lock	Conventional, 19" Pressure Differential, 3,000psi, MPL	SLX, 16" Booster, 3,000psi, Poslock
MODEL	U, Large Bore with Tandem Booster, 3,000psi Wedgelock	Conventional, 22" Low Torque, 3,000psi MPL	SLX, 18" Booster, 3,000psi, Poslock
MODEL	U, Large Bore, 3,000psi MOP, Wedgelock	Conventional, 22", Pressure Differential, 3,000psi, MPL	SLX, 3,000psi, Manual
MODEL	U, Tandem Booster, 3,000psi, Manual	Quik-Lok, 14-1/4" Low Torque, 3,000psi, MPL	SLX, 3,000psi, Poslock
MODEL	UII, Tandem Booster, 3,000psi, Wedgelock	Quik-Lok, 14x14" Dual Cylinder Shear Boost, 3,000psi, MPL	SLX, 3,000psi, Ultralock IIB
MODEL	UII, without cylinder, 3,000psi, Wedgelock		SLX, Booster, 5,000psi, Poslock
MODEL	UII, 3,000psi MOP, Wedgelock		
MODEL	U, 3,000psi MOP, Wedgelock		
MODEL	U, 3,000psi, Manual		

BOP Mounted Choke and Kill Valves

BOP C/K VALVES	CAMERON	NOV	SRI	WOM
MODEL	AF – Fail Open	DB – Fail Open	Fail Open	Magnum – Fail Open
MODEL	AF – Fail Close	DB – Fail Close	Fail Close	Magnum – Fail Close
MODEL	DF – Fail Open	HB – Fail Open		SL
MODEL	DF – Fail Close	HB – Fail Close		SLX
MODEL	FCS – Fail Open	HPT – Fail Open		
	FCS – Fail Close	HPT – Fail Close		
	MCS – Fail Open			
	MCS – Fail Close			

Choke and Kill Stabs

CONNECTORS	CAMERON	HMH	NOV	
MODEL	Mini-Collet	Stab 1	Ext/Ret Locking	
MODEL		Stab 2	Ext/Ret Non-Locking	
MODEL		Stab 3	Fixed Locking	
MODEL			Fixed Non-Locking	
MODEL				

Choke and Kill Flex Loop/Hose

CONNECTORS	CONTITECH	COPPERSTATE	OILSTATE	TECHNIP
MODEL	HNBR	16C Compliant	Flex Loop	Rilsan
MODEL	NBR	Stainless Lined		Coflon
MODEL	NBR/CR	Standard		
MODEL	PA			
MODEL	Taurocool			
MODEL	Tauroflon			

Connectors

CONNECTORS	CAMERON	DRIL-QUIP	HMH	NOV
MODEL	DWHC	DX-10	H4 DWHD	CHX
MODEL	EVO-Con	DX-15	H4 DxE	
MODEL	HC	DX-DW	H4 E	
MODEL	HCH4	DQ-DX	H4 ExF	
MODEL	Model 70	DQ-VX	H4 ExF HAR	
MODEL			H4 SHD	

Riser Mandrel

CONNECTORS	CAMERON	DRIL-QUIP	HMH	NOV
MODEL	DWHC	DX	H4	H4
MODEL	H4	H4		
MODEL	HC			

Flex Joint

CONNECTORS	CAMERON	HMH	OIL STATES	
MODEL	Flex King 6.0	Annuflex	Subsea LP	
MODEL			Subsea 2.0	
MODEL			Subsea 2.5	
MODEL			Subsea 3.0	
MODEL			Subsea 3.5	
MODEL			Subsea 4.0	
MODEL			Subsea 5.0	
MODEL			Subsea 6.0	

Conduit Flex Loop/Hose

CONNECTORS	CONTITECH	COPPERSTATE	OILSTATE	TECHNIP
MODEL	HNBR	16C Compliant	Flex Loop	Rilsan
MODEL	NBR	Stainless Lined		Coflon
MODEL	NBR/CR	Standard		
MODEL	PA			
MODEL	Taurocool			
MODEL	Tauroflon			

Riser

RISER	AFGLOBAL	CAMERON	HMH	MHWIRTH	NOV
MODEL	UDW Hybrid	RCK	HMF-D	CLIP	DT-1
MODEL		RF	HMF-E	QTR-4000LS	DT-2
MODEL		LoadKing 2.0	HMF-F	QTR-3500	DT-E
MODEL		LoadKing 2.5	HMF-G		DT-F
MODEL		LoadKing 3.0	HMF-H		DT-G
MODEL		LoadKing 3.5	HMF-J		FT-GB
		LoadKing 4.0	MR-10		FT-H
		LoadKing 4.5	MR-6C		FT-HB-DG
		RD 21	MR-6E		FT-I
			MR-6HSE		UDW
					FT-DGD

Diverter Housing

CONNECTORS	CAMERON	DRIL-QUIP	HMH	NOV
MODEL	49-1/2”	49-1/2”	49-1/2”	49-1/2”
MODEL	60”	60”	60”	60”
MODEL	75”	75”	75”	75”

Diverter Assembly

CONNECTORS	CAMERON	DRIL-QUIP	HMH	NOV
MODEL	CF-A	CSO	CSO	CSO
MODEL	CF-B		KFDJ	
MODEL			KFDS	

Choke Manifold Valves

VALVES	CAMERON	NOV	QOT	WOM
MODEL	FC	B	QFC	Magnum
MODEL	FLS	F-C		
MODEL		T-B		
		HPY		
		E-Mk2		

Auto Chokes

AUTO CHOKE	CAMERON	EXPRO	NOV	QOT	MASTERFLO	SWACO
MODEL	Hydraulic	SCB2	MS	QC	P25	Super Choke
MODEL			CSO (Varco)			
MODEL			CSO 3-15 x 3-10			
			MPX-40D			
			HxE G3			

Manual Chokes

MANUAL CHOKE	CAMERON	EXPRO	NOV	QOT	MASTERFLO	
MODEL	Manual	SCB2	B-H2	QH2	P25	
MODEL			E-S			
MODEL			CSO 3-15 x 3-10			
			HxE G3			

BOP Control Pods

PODS	AXON	CAMERON	HMH	KOOMEY	NOV	OCEANEERING
MODEL	Type 80	Hyd 48 Line	Hyd-P56B	Hyd 46 line	Hyd 42 Line	Hyd 68 Line
MODEL		Hyd Modular	MUX Gen 1		Hyd 60 Line	MUX 98 Line
MODEL		MUX Mk-I	MUX Gen 2		Hyd 64 Line	MUX 132 Line
		MUX Mk-II	MUX Gen 3		Hyd 80 Line	
		MUX Mk-III	Sea Onyx		MUX 80 Line	
		MUX Mk-IV			MUX 9X Line	
					MUX 112 Line	
					MUX RCX	

APPENDIX 6. USER ACCESS RIGHTS MATRICES

User Access Rights Matrix for Equipment Owners

Sections/Features	EO Super User	EO Reporter	EO Roaming Reporter	EO Senior Reporter	EO Executive User	EO Master User
No. of rigs assignable		ONE	MANY	MANY		
Event Reports Listing / Viewing	YES	YES	YES	YES	YES	YES
Add / Edit / Submit Event Report	YES	YES	YES	YES	NO	YES
Approve Event Report	YES	NO	NO	NO	NO	YES
Edit Event Reports in "In Progress" state	YES	YES	YES	YES	NO	YES
Edit Event Report in "Draft", "Approved Open" or "Approved Closed" state	YES	NO	NO	NO	NO	YES
Delete Event Reports in "In-Progress" State	YES	YES	YES	YES	NO	YES
View Database Report	YES	NO	NO	NO	YES	YES
Rigs Listing	YES	NO	YES	YES	YES	YES
Add / Edit Rig	YES	NO	NO	NO	NO	YES
Add / Edit WCE Configuration for rigs	YES	NO	NO	YES	NO	YES
Delete WCE Configuration for rigs	NO	NO	NO	NO	NO	YES
View WCE Configuration of rigs	YES	YES	YES	YES	YES	YES
Well Listing/Viewing for rigs	YES	YES	YES	YES	YES	YES
Add / Edit Well for rigs	YES	YES	YES	YES	NO	YES
Contracts Listing for rigs	YES	NO	NO	YES	YES	YES
Add/Edit Contracts for rigs	YES	NO	NO	YES	NO	YES
Participants Listing/Viewing	YES	NO	NO	NO	YES	YES
Users Listing/Viewing	YES	NO	NO	NO	YES	YES
Add / Edit / Disable / Enable Users	NO	NO	NO	NO	NO	YES
View Advanced Filter Reporting	YES	NO	NO	NO	YES	YES
Monthly Report Section	YES	YES	YES	YES	YES	YES

User Access Rights Matrix for Operators and System Integrators

Sections/Features	Operator Super User	Operator Executive User	SI Super User	SI Executive User
View Advanced Filter Reporting	YES	YES	YES	YES
Contribute to Contracts	NO	NO	NO	NO
Contracts Listing	YES	YES	NO	NO
Contribute to Event Report	NO	NO	NO	NO
Failure Report Listing / Viewing	YES	YES	YES	YES
Participants Listing / Viewing	YES	YES	YES	YES
Report Section	YES	YES	YES	YES
Contribute to Rigs	NO	NO	NO	NO
Rigs Listing	YES	YES	YES	YES
Add / Edit / Disable / Enable Users	YES	NO	YES	NO
Users Listing/Viewing	YES	YES	YES	YES
Contribute to WCE Configuration	NO	NO	NO	NO
WCE Configuration Viewing	YES	YES	YES	YES
Contribute to Well information	NO	NO	NO	NO
Well Listing/Viewing	YES	YES	NO	NO
Monthly Report Section	YES	YES	YES	YES

APPENDIX 7. FURTHER GUIDANCE ON TERMS "IN OPERATION" & "NOT IN OPERATION"

The following paragraphs contain examples which should help provide further guidance on the terms "In Operation" and "Not in Operation".

The subsea BOP stack is tested on deck and then run down to the wellhead and the connector is latched. The pre-initial subsea testing work is carried out and the test assembly is run into the stack. The first rams in the sequence undergo a 250-350psi test for five minutes and then to the approved well pressure for five minutes. Upon acceptance of these test results the BOP stack, from a RAPID-S53 event reporting perspective, is now "In Operation".

While drilling the well there is a malfunction of the manifold regulator in the blue pod which cannot be mitigated. Appropriate barriers are installed to make the well safe, the riser is displaced to sea water and the stack is unlatched to recover it to surface for repairs. This is a "Stack Pull" and the stack is now "Not in Operation". The regulator is repaired on surface and the required testing is complete. The subsea BOP stack is then run down to the wellhead and the connector is latched. The pre-initial subsea testing work is carried out and the test assembly is run into the stack. The first rams in the sequence undergo a 250-350psi test for five minutes and then to the approved well pressure for five minutes. Upon acceptance of these test results the BOP stack, from a RAPID-S53 event reporting perspective, is now "In Operation".

The weather has turned bad and it is necessary to unlatch the LMRP to ride out the storm. The pipe is pulled and the shear rams are closed. The LMRP connector is unlatched and the rig moves away from the well. This is a "Stack Pull" and the stack is "Not in Operation". The storm has passed. The rig returns to location, the ROV inspects the riser mandrel and the LMRP is landed and latched to the lower stack. The necessary tests are successfully completed and the BOP stack is then back "In Operation".

The drilling program is complete. The regulatory barriers are in place; the riser has been displaced. The wellhead connector is unlatched and the stack lifted off the wellhead. The BOP stack is now "Not in Operation".