Subsea Equipment Qualification—Standardized Process for Documentation

API RECOMMENDED PRACTICE 17Q
FIRST EDITION, JUNE 2010

AMERICAN PETROLEUM INSTITUTE

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Upstream Segment

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Introduction

This recommended practice stated herein applies specifically to the qualification of subsea components and is based on established industry standards or supplemental practices as discussed below. It can also be adapted by others in the industry to aid in standardizing and streamlining their qualification processes.

The component categories presented in this recommended practice are based on those listed in API Recommended Practice 17A. These component categories allow for component-specific forms, such as failure mode assessment (FMA) and product qualification sheet (PQS), which are described in this recommended practice to be used as a means of identifying any qualification gaps and documenting the qualification limits of the project subsea components, respectively.

The FMA approach is based on a simplified version of a *Failure Mode Effects and Criticality Analysis*, which is often used as a design tool within the industry. This tool applies specifically to components and equipment for offshore developments. The objective through use of the FMA is to systematically ensure the technology functions reliably within specified limits. The FMA is used to identify component-specific failure mechanisms and critical design features and to aid managing qualification gaps.

The purpose of this recommended practice is to provide a systematic, structured framework for subsea equipment qualification. General requirements, recommendations, and overall guidance provided in this recommended practice may assist various users in areas requiring consideration during qualification of subsea components and production systems for the petroleum and natural gas industry.

This recommended practice defines functional requirements to suit component qualification specifically for subsea developments and operations. This recommended practice is intended to perform the following functions:

— to facilitate and complement the decision-making process rather than to replace individual engineering judgment;

— to provide qualification guidance where industry requirements may not exist;

— to provide a mechanism to document and communicate component technical requirements and control potential component changes with equipment suppliers and their supply chain.

Subsea Equipment Qualification—Standardized Process for Documentation

1 Scope

This recommended practice (RP) provides guidance on relevant qualification methods that may be applied to facilitate subsea project execution. Qualification of subsea equipment is based on a breakdown of individual subsea components and categorization of those individual components based on classes of equipment and component functionality. A comprehensive component-level breakdown can cater to wide flexibility for field-specific configurations. The qualification process presented in this recommended practice is governed by component-level evaluation and referencing using two separate forms of documentation: failure mode assessments (FMAs) and product qualification sheets (PQSs). Detailed documentation resources related to the proactive qualification methodology presented in this recommended practice are provided in the annexes. These resources include an index of components and individual PQS documents. Documents relating to manufacturing inspection and Factory Acceptance Testing are outside the scope of this document.

2 Normative References

The following reference documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

API Recommended Practice 17A, *Recommended Practice for Design and Production of Subsea Production Systems*

API Recommended Practice 17N, *Recommended Practice for Subsea Production System Reliability and Technical Risk Management*

3 Terms, Definitions, Acronyms, and Abbreviations

For the purposes of this RP, the following terms, definitions, acronyms, and abbreviations apply.

3.1 Terms and Definitions

3.1.1
component
Any self-contained part of a larger entity.

3.1.2
component description
Brief narrative or explanation of the self-contained part of a larger entity [see **component** (3.1.1)].

3.1.3
component identifier
Part number or other discreet type of identification allocated by the supplier.

3.1.4
customer
The recipient of a product or service provided by a supplier.

3.1.5
dimensions
The overall physical component or assembly envelope dimensions (length x width x height).

3.1.6
equipment data
Technical, operational, and environmental parameters characterizing the design and use of equipment.

3.1.7
failure
The termination of the ability of an item to perform a required function.

NOTE After failure, the item has a fault. Failure is an event and is distinguished from a fault, which is a state.

3.1.8
failure mechanism
The physical, chemical, human, or other processes, which lead to a failure.

NOTE Most failure mechanisms involve more than one process and occur as a chain of events and processes.

3.1.9
failure mode
The effect by which a failure is observed on the failed item.

3.1.10
failure mode assessment #
Supplier or operator assigned number clearly documenting a specific component or assembly failure mode assessment.

3.1.11
fault
Abnormal condition or defect at the component or assembly level that can lead to a failure.

3.1.12
item
Any part, component, device, assembly, sub-system, functional unit, equipment, or system that can be individually considered.

3.1.13
operator
Company, corporation, enterprise or part thereof, possessing ownership of supplied equipment.

3.1.14
operator governing specification
Supplemental or overriding operator specification.

3.1.15
organization
A company, corporation, firm, enterprise, institution, or part thereof, whether incorporated or not, public or private, that has its own functions and administration.

3.1.16
original equipment manufacturer
An organization that manufactures components or parts, which are included in the finished product marketed or packaged by another.

NOTE In some cases, the supplier and original equipment manufacturer may be the same organization.

3.1.17
process media
Fluid conditions that can affect the component or assembly, such as hydrocarbon composition (e.g., hydrogen sulfide or chlorides) or specific chemicals being used.

3.1.18
product qualification sheet #
Supplier or operator assigned number clearly documenting a specific component or assembly qualification status.

3.1.19
qualification
The process of independently confirming by examination, testing or some other defining evidence, that equipment meets specified requirements for the intended use.

3.1.20
qualification testing
A testing procedure designed to check that an item meets the customer's specification.

3.1.21
revision #
Organization assigned number used to identify the most current product qualification sheet or failure mode assessment template.

3.1.22
service conditions
Prospective operating conditions to which a specific component, or assembly may be subjected such as water depth, pressure, temperature, process media, and design life.

3.1.23
specification (customer)
The document in which the functional, performance, and operating requirements of an item are defined together with the request for compliance.

3.1.24
specification (supplier)
The document in which the functional, performance, operating characteristics, and limits of an item are stated.

3.1.25
supplier
An organization that supplies equipment and interacts with the operator or engineering firm on the operator's behalf.

3.1.26
supplier bill of material
A unique number allocated by the supplier for a specific item.

3.1.27
system
Inter-working mechanical, electrical or hydraulic hardware, including all the control mechanisms associated with their operation, such as firmware and software.

3.1.28
validation
Process that substantiates whether technical data and engineering models are within the required range of accuracy, consistent with the intended application.

3.1.29
verification
Process that determines the extent to which a procedure, task, physical product, or model conforms to its specification.

3.1.30
weight
An item's gross weight in air.

3.2 Acronyms and Abbreviations

BOM	bill of materials
DRWG	drawing
EFL	electric flying lead
EQD	emergency quick disconnect
FMA	failure mode assessment
FMEA	failure mode and effects analysis
FMECA	failure modes, effects, and criticality analysis
GA	general assembly
HFL	hydraulic flying lead
HP	high pressure
IWOCS	installation and workover control system
LP	low pressure
MPFM	multi-phase flow meter
OEM	original equipment manufacturer
PQS	product qualification sheet
QA	quality assurance
RP	recommended practice
SCM	subsea control module
SEM	subsea electronic module
TRL	technology readiness level
UV	ultraviolet

4 Application

4.1 General

Through this RP, operators can identify and track—in terms of technical definition, qualification, and quality assurance (QA)—a set number of common components to be optimized in various system configurations across a number of projects. Qualification forms discussed in this recommended practice may be used for various levels of item qualification.

The approach and tools presented in this recommended practice can be applied in the following ways.

— Focus the evaluation at the component level within the system hierarchy.

— Reference supplier component identifiers to confirm technical definition.

— Systematically identify item failure modes and mechanisms and the acceptance criteria necessary for qualification of an item not specifically listed within this recommended practice revision.

— Enable a robust management of change process with respect to the qualification documentation.

4.2 Component Classification

Component-level classification in this recommended practice is consistent with the component categories listed in API 17A. FMA and PQS documents are based on the subsea-specific components as classified in Annex A. This practice is intended as a guide to improving subsea component qualification by specifying recommended tests as well as a documentation process. Operators and suppliers may need to reassess component qualification limits, as required, for different field configurations and operating conditions. This reassessment might include developing additional component PQSs not specifically listed within this RP revision or excluding components as dictated by the situation.

4.3 Failure Mode Assessment

The FMA templates allow operators to proactively identify failure modes and associated risks and to test components and equipment prior to project execution. The FMA template, provided in Annex B, also provides a systematic way for operators to identify additional qualification tests required to further qualify a component to ensure its longevity or manage component technology extensions or upgrades.

Operators and/or suppliers may use FMA templates to identify critical qualification tests and acceptance criteria that encompass testing of potential failure mechanisms. The FMA process allows for increased visibility of failure modes and acceptance criteria, which in turn allows for improved qualification testing as full life-cycle requirements are better understood. The information presented in the FMA templates can lead directly to the qualification testing presented in the PQS documentation as well as serve to incorporate equipment lessons learned or field experience. Again, operators and/or suppliers may need to reassess components based upon the qualification testing performed on that component relative to the components' intended service conditions.

4.4 Product Qualification Sheet

Application of the PQSs aligns operators and suppliers for offshore development projects, emphasizing uniform display of qualification information. Specifically, application of PQS documentation can:

— document service conditions, qualification testing for failure mechanisms, and the basis for acceptance;

— reference reports, standards, and other supporting information imperative to subsea component qualification;

— provide historical qualification information on a component-specific basis.

A fully completed PQS can be used as the final documentation of the item’s qualification acceptance. Annex C presents generic component datasheets for subsea. Based on industry needs, operators and/or suppliers may need to incorporate new datasheets for newly established components or technologies.

5 General Sections of Qualification Documents

This section presents the general content and information included in the different sections of the FMA and PQS forms.

5.1 Information Structure of Failure Mode Assessments

The information contained in the FMA templates possesses the same structure per component. The FMA structures information into the following categories:

— general component identifier information, including supplier, bill of materials (BOM), and assembly drawing references;

— failure mode identification number for line item referencing;

— description of item associated with component;

— summary of functional requirement for the item;

— description of failure mode;

— identification of failure mechanism;

— keyword descriptor of failure for referencing;

— summary of the qualification method to test for failure;

— acceptance criterion or criteria for failure mode, including applicable industry standard references.

The FMA for each component will list failure modes by line item reference numbers and component groups. The information in 6.1 of this RP discusses requirements for accessing and using information in an FMA template.

5.2 Information Structure of Product Qualification Sheets

5.2.1 General

The PQS aids in achieving qualification and reliability objectives by presenting standardized groups of information for each component as follows in this sub-section.

5.2.2 Component Identification

Component identification information includes the following:

— type of component or assembly and description;

— suppliers and sub-suppliers;

— part number or identifier and BOM numbers;

— drawing (DRWG) numbers;

— assembly procedure number;

— FMA or failure mode effect and criticality analysis (FMECA) reference number;

— TRL number (Reference API 17N).

5.2.3 Service Conditions and Operating Parameters

Information on end-users service conditions and specific operating parameters may include the following:

— water depth;

— operating pressures and temperatures;

— process media;

— design life.

Additional service conditions and specific operating parameters (operator) may be required. The component PQSs provided in Annex C, provide example conditions. Additional lines have been provided for other project service conditions and operating parameter references.

5.2.4 Qualification Testing Requirements—Existing and Supplemental Practices

The Qualification Practices sections provide the following information:

— performance verification requirements;

— applicable industry standards and codes;

— supplier test procedure and report number references;

— scaled or tested qualification practice implemented.

NOTE Additional recommended qualification tests, which are currently not specified by existing API documents, have been provided in the PQSs Qualification—Supplemental Practices section. Additional lines have been supplied within both the PQSs Qualification—Existing Industry Practices and Supplemental Practices sections for operator and/or supplier test requirements not captured within the current PQS templates. Any testing not specified by API is at the discretion of the supplier and may or may not be requirement of the operator.

Supplemental operator or supplier engineering requirements can be attached to specific PQSs or provided in this section as and where appropriate.

Information on design validation includes the following:

— applicable industry standards and codes;

— supplier procedure and final report references.

Design and development validation requirements do not supplement qualification activities but are intended to ensure that the component is capable of meeting specified service conditions for intended use. Design validation may include the following:

— prototype tests;

— functional and/or operational tests;

— field performance tests;

— existing industry standards and/or confirmation of compliance with regulatory requirements.

5.2.5 Interfaces

Information pertaining to supplemental interface testing, not already included in API, may include the following:

— applicable running tools, including component identifier;

— specific test equipment or simulators, including component identifier;

— comments regarding specific interface service or functional requirements.

5.2.6 Additional Comments

The PQS does not document prior component field history, which may be considered field proven by an operator or supplier. If field history is to be considered, relevant field history should be reviewed with the component supplier to confirm whether historical applications can be considered adequately field proven. Following assessment of field history, component criticality should be assessed to determine if existing field history is deemed adequate or if additional qualification is required. The following criteria may be used as guidance:

— project name;

— operator;

— similarity of the component to proposed design;

— component service location within the prior subsea system application;

— start-up year and approximate duration in service;

— service conditions.

6 Requirements

6.1 How to Use the Failure Mode Assessment Templates

To identify failure modes for each component, operators and/or suppliers may use the FMA templates or another FMEA/FMECA format that includes all the required information. A separate FMA may be available for each applicable subsea component. The FMA should present failure modes and mechanisms for each item associated with a component and reference each failure mode by specific part number or identifier. Those failure modes should be tested, accepted, and documented to ensure that the component can withstand the service conditions indicated.

Operators may use the information contained in each FMA template to identify any gaps in supplier's qualification methods for their respective components. Any additional qualification testing that the operator deems as required to complete the qualification of the component for its intended service should be agreed between the operator and supplier during the appropriate stage of a project or evaluation process.

Using the information contained in each FMA template, operators and suppliers can also qualify new components by agreeing to and performing the listed qualification testing to achieve the acceptance criteria associated with the respective qualification method. Should any part of the component fail to meet the acceptance criteria, operators and suppliers can use the information provided in the template to identify and document the specific failure mode of the component.

Operators and suppliers can use the qualification information in the PQSs (e.g. functional requirements and qualification methods) to communicate the requirements for qualification performance verification and assurance, acceptance testing, and quality control. The information presented in the FMA templates can directly transfer to the PQS documents to convey qualification requirements to suppliers.

Operators and suppliers may use established failure mode information based on previous industry experience. Operators and suppliers may add information to these templates, including new failure modes and acceptance criteria based on better-understood knowledge of component life cycles gained through development and industry experience (i.e. field-based and research-based reasoning).

6.2 How to Use the Product Qualification Sheets

Annex C of this RP contains templates for developing PQSs. For each component and for each size and rating of each component, it is recommended that the supplier or original equipment manufacturer (OEM) should maintain a standard PQS that uses a unique component identifier and states the design parameters, size, rating, testing records, and limits of qualification of the component, but does not include operator specific data. The yellow shaded and unshaded areas of template are intended for the supplier to complete.

The operator should also develop their own PQS documents for each component intended for deployment in a project that documents field-specific service conditions, parameters, and applicable standards or specifications. Depending on field-specific conditions and component-specific FMA acceptance criteria, requirements for qualifying a particular component may change. The blue shaded and unshaded areas of the templates are intended for the operator to complete.

To judge the suitability of a supplier's component for deployment in a given project, an operator can request a PQS from the supplier and compare the information from the supplier-prepared PQS to their actual service conditions as documented in the operator-prepared PQS.

The application of the FMA and PQS documents described above is also shown in Figure 1.

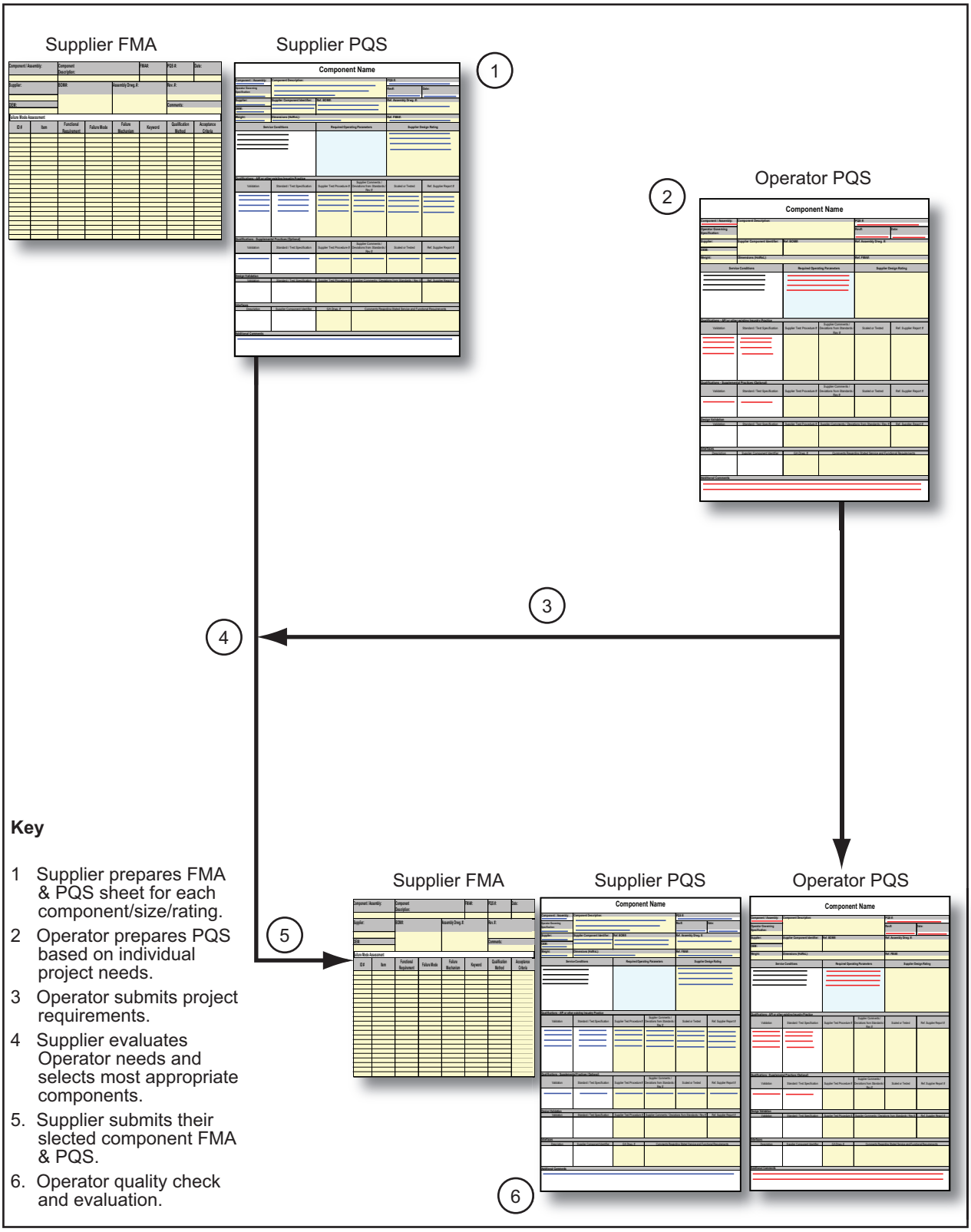

Figure 1—Application of FMA and PQS Documents

Annex A
(informative)

Subsea Component and Category Index

Table A-1—Subsea Component and Category Index

Category		Component	Standard/Test Spec Reference
I Valves and Chokes			
	1)	Subsea Ball Valve	API 6A, API 17D
	2)	Subsea Gate Valve	API 6A, API 17D
	3)	Needle Valve	API 6A, API 17D
	4)	Check Valve	API 6A, API 17D
	5)	Subsea Diverter Valve	API 6A, API 17D
	6)	Choke	API 6A, API 17D
II Trees			
	1)	Tree	API 6A, API 17D
III Connection Systems and Caps			
	1)	Collet Connector	API 6A, API 17D
	2)	Clamp Connector	API 6A, API 17D
	3)	Pressure Cap	API 6A, API 17D
	4)	Flooding Cap	API 6A, API 17D
IV Controls – Hydraulics/Chemical Injection			
	1)	Hydraulic Coupler	API 6A, API 17D, API 17E, API 17F
	2)	Hydraulic Flying Leads (HFL)	API 17D, API 17E, API 17F
	3)	Subsea Control Module (SCM)	API 6A, API 17D, API 17F
	4)	SCM Directional Control Valve—HP	API 17F
	5)	SCM Directional Control Valve—LP Choke	API 17F
	6)	SCM Directional Control Valve—LP	API 17F
	7)	Shuttle Valve	API 17F
	8)	SCM Selector Valve—HP	API 17F
	9)	SCM Selector Valve—LP	API 17F
	10)	SCM Solenoid Valve	API 17F
	11)	SCM Dump Valve	API 17F
	12)	Accumulator	API 17F
	13)	Chemical Injection Metering Valve	API 17F
	14)	Hydraulic Fluid	API 17D, API 17F Annex C, EPA-NPDES, OSPAR-OCNS

Table A-1—Subsea Component and Category Index (Continued)

Category		Component	Standard/Test Spec Reference
V Controls – Electrical			
	1)	Electric Flying Lead (EFL)	API 17F
	2)	Electrical Wet Mate Connector	API 17D, API 17F
	3)	Flow Meter	API 6A, API 17D, API 17F, API 17H, EN 61000-4-6
	4)	Process Transmitter	API 6A, API 17D, API 17F, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-7, EN 61000-4-16
	5)	Sand Detector	API 6A, API 17D, API 17F, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-7, EN 61000-4-16
	6)	Pig Detector	API 6A, API 17D, API 17F, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-7, EN 61000-4-16
	7)	SCM—Subsea Electronics Module (SEM)	API 17F, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-7, EN 61000-4-16
	8)	SCM—Valve Electronics Module (VEM)	API 17F, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-7, EN 61000-4-16
VI Coating and Insulation			
	1)	Anti-Corrosion Coating	API 17D, ASTM D 4541, ASTM G8, ASTM G14, ASTM G95, NACE RP0394-2002, NACE RP0105, NACE TM0174,
	2)	Wet Thermal Insulation	ASTM C518, ASTM D412, ASTM D570, ASTM D638, ASTM D695, ASTM D792, ASTM D2240, ASTM D2842, ASTM D4060, ASTM E269, ASTM E1356, ASTM G8, ASTM G42
	3)	Sacrificial Anode	NACE TM0190
VII Completion Equipment			
	1)	Installation and Workover Control System (IWOCS) Assembly	API 6A, API 17D, API 17E, API 17F, API 17G
	2)	IWOCS Emergency Quick Disconnect (EQD) Assembly	API 6A, API 17D, API 17E, API 17G
	3)	IWOCS Umbilical and Surface Jumper(s)	API 17D, API 17E, API 17F, API 17G
VIII Wellhead Systems			
	1)	Wellhead Annulus Seal Assembly (Packoffs)	
	2)	Wellhead Casing Hanger	
	3)	HP Wellhead	
	4)	LP Wellhead	
	5)	Wear Bushings/Bore Protector	
	6)	Wellhead Ring Gasket	
	7)	Lockdown Bushing	

Annex B
(informative)

FMA Template

The following FMA template is provided as guidance as of the date of this publication.

Component/Assembly:	Component Description:		FMA#:	PQS #:	Date:
Supplier:	BOM#:	Assembly Drwg. #:		Rev. #:	
OEM:				Comments:	

Failure Mode Assessment							
ID #	Item	Functional Requirement	Failure Mode	Failure Mechanism	Keyword	Qualification Method	Acceptance Criteria

Annex C
(informative)

PQS Templates

The following PQS documents are provided as guidance as of the date of this publication.

NOTE In the PQS sheets, the areas shaded yellow are designed to be completed by suppliers, the areas shaded blue are designed to be completed by operators, and the unshaded areas completed by either the supplier or operator on their own versions of the form.

Non Component Specific Template

Component / Assembly:	Component Description:		PQS #:	
Operator Governing Specification:			Rev#:	Date:
Supplier:	Supplier Component Identifier:	Ref. BOM#:	Ref. Assembly Drwg. #:	
OEM:				
Weight:	Dimensions (HxWxL):	TRL Number:	Ref. FMA#:	

Service Conditions	Required Operating Parameters	Supplier Design Rating

Qualifications - API or other existing Industry Practice

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Qualifications - Supplemental Practices (Optional)

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Interfaces

Description	Supplier Component Identifier	GA Drwg. #	Comments Regarding Stated Service and Functional Requirements

Additional Comments

Subsea Ball Valve

Component / Assembly:	Component Description:		PQS #:	
Subsea Ball Valve				
Operator Governing Specification:			Rev#:	Date:
Supplier:	Supplier Component Identifier:	Ref. BOM#:	Ref. Assembly Drwg. #:	
OEM:				
Weight:	Dimensions (HxWxL):	TRL Number:	Ref. FMA#:	

Service Conditions	Required Operating Parameters	Supplier Design Rating
Water Depth / Water Depth Rating		
Process Pressure		
Process Temperature		
Storage Temperature		
Water Temperature Range		
Material Trim		
Exposure		
Design Life		
Process Media		
Sandy Service (Y/N)		

Qualifications - API or other existing Industry Practice

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Qualifications - Supplemental Practices (Optional)

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Interfaces

Description	Supplier Component Identifier	GA Drwg. #	Comments Regarding Stated Service and Functional Requirements

Additional Comments

Subsea Gate Valve

Component / Assembly:	Component Description:		PQS #:	
Subsea Gate Valve				
Operator Governing Specification:			Rev#:	Date:

Supplier:	Supplier Component Identifier:	Ref. BOM#:	Ref. Assembly Drwg. #:
OEM:			

Weight:	Dimensions (HxWxL):	TRL Number:	Ref. FMA#:

Service Conditions	Required Operating Parameters	Supplier Design Rating
Water Depth / Water Depth Rating		
Process Pressure		
Process Temperature		
Storage Temperature		
Water Temperature Range		
Material Trim		
Exposure		
Design Life		
Process Media		
Sandy Service (Y/N)		
Product Specification Level		

Qualifications - API or other existing Industry Practice

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Qualifications - Supplemental Practices (Optional)

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Interfaces

Description	Supplier Component Identifier	GA Drwg. #	Comments Regarding Stated Service and Functional Requirements

Additional Comments

Needle Valve

Component / Assembly:	Component Description:		PQS #:	
Needle Valve				
Operator Governing Specification:			**Rev#:**	**Date:**
Supplier:	**Supplier Component Identifier:**	**Ref. BOM#:**	**Ref. Assembly Drwg. #:**	
OEM:				
Weight:	**Dimensions (HxWxL):**	**TRL Number:**	**Ref. FMA#:**	

Service Conditions	Required Operating Parameters	Supplier Design Rating
Water Depth / Water Depth Rating		
Process Pressure		
Process Temperature		
Storage Temperature		
Water Temperature Range		
Material Trim		
Exposure		
Design Life		
Process Media		

Qualifications - API or other existing Industry Practice

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Qualifications - Supplemental Practices (Optional)

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Interfaces

Description	Supplier Component Identifier	GA Drwg. #	Comments Regarding Stated Service and Functional Requirements

Additional Comments

Check Valve

Component / Assembly:	Component Description:		PQS #:	
Check Valve				
Operator Governing Specification:			Rev#:	Date:
Supplier:	Supplier Component Identifier:	Ref. BOM#:	Ref. Assembly Drwg. #:	
OEM:				
Weight:	Dimensions (HxWxL):	TRL Number:	Ref. FMA#:	

Service Conditions	Required Operating Parameters	Supplier Design Rating
Water Depth / Water Depth Rating		
Process Pressure		
Process Temperature		
Storage Temperature		
Water Temperature Range		
Material Trim		
Exposure		
Design Life		
Process Media		
Sandy Service (Y/N)		

Qualifications - API or other existing Industry Practice

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Qualifications - Supplemental Practices (Optional)

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Interfaces

Description	Supplier Component Identifier	GA Drwg. #	Comments Regarding Stated Service and Functional Requirements

Additional Comments

Subsea Diverter Valve

Component / Assembly:	Component Description:		PQS #:	
Subsea Diverter Valve				
Operator Governing Specification:			Rev#:	Date:
Supplier:	Supplier Component Identifier:	Ref. BOM#:	Ref. Assembly Drwg. #:	
OEM:				
Weight:	Dimensions (HxWxL):	TRL Number:	Ref. FMA#:	

Service Conditions	Required Operating Parameters	Supplier Design Rating
Water Depth / Water Depth Rating		
Process Pressure		
Process Temperature		
Storage Temperature		
Water Temperature Range		
Material Trim		
Exposure		
Design Life		
Process Media		
Sandy Service (Y/N)		
Product Specification Level		

Qualifications - API or other existing Industry Practice

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Qualifications - Supplemental Practices (Optional)

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Interfaces

Description	Supplier Component Identifier	GA Drwg. #	Comments Regarding Stated Service and Functional Requirements

Additional Comments

Choke

Component / Assembly:	Component Description:		PQS #:	
Choke				
Operator Governing Specification:			Rev#:	Date:
Supplier:	Supplier Component Identifier:	Ref. BOM#:	Ref. Assembly Drwg. #:	
OEM:				
Weight:	Dimensions (HxWxL):	TRL Number:	Ref. FMA#:	

Service Conditions	Required Operating Parameters	Supplier Design Rating
Water Depth / Water Depth Rating		
Process Pressure - Upstream		
Pressure drop		
Process Temperature - Upstream		
Max, Min & Normal flow rates		
Storage Temperature		
Water Temperature Range		
Material Trim		
Exposure		
Design Life		
Process Media		
Sandy Service (Y/N)		
Product Specification Level		

Qualifications - API or other existing Industry Practice

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Qualifications - Supplemental Practices (Optional)

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Interfaces

Description	Supplier Component Identifier	GA Drwg. #	Comments Regarding Stated Service and Functional Requirements

Additional Comments

Tree

Component / Assembly:	Component Description:		PQS #:	
Tree				
Operator Governing Specification:			Rev#:	Date:
Supplier:	Supplier Component Identifier:	Ref. BOM#:	Ref. Assembly Drwg. #:	
OEM:				
Weight:	Dimensions (HxWxL):	TRL Number:	Ref. FMA#:	

Service Conditions	Required Operating Parameters	Supplier Design Rating
Water Depth / Water Depth Rating		
Process Pressure		
Process Temperature		
Material Trim		
Exposure		
Design Life		
Process Media		
Sandy Service (Y/N)		
Product Specification Level		
Bending Moment Capacity		
Suitable for Dynamically Positioned Drill Rig (Y/N)		

Qualifications - API or other existing Industry Practice

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Qualifications - Supplemental Practices (Optional)

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Interfaces

Description	Supplier Component Identifier	GA Drwg. #	Comments Regarding Stated Service and Functional Requirements

Additional Comments

Collet Connector

Component / Assembly:	Component Description:		PQS #:	
Collet Connector				
Operator Governing Specification:			Rev#:	Date:
Supplier:	Supplier Component Identifier:	Ref. BOM#:	Ref. Assembly Drwg. #:	
OEM:				
Weight:	Dimensions (HxWxL):	TRL Number:	Ref. FMA#:	

Service Conditions	Required Operating Parameters	Supplier Design Rating
Water Depth / Water Depth Rating		
Process Pressure		
Process Temperature		
Storage Temperature		
Water Temperature Range		
Material Trim		
Exposure		
Design Life		
Sandy Service (Y/N)		

Qualifications - API or other existing Industry Practice

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Qualifications - Supplemental Practices (Optional)

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Interfaces

Description	Supplier Component Identifier	GA Drwg. #	Comments Regarding Stated Service and Functional Requirements

Additional Comments

Clamp Connector

Component / Assembly:	Component Description:		PQS #:	
Clamp Connector				
Operator Governing Specification:			**Rev#:**	**Date:**
Supplier:	**Supplier Component Identifier:**	**Ref. BOM#:**	**Ref. Assembly Drwg. #:**	
OEM:				
Weight:	**Dimensions (HxWxL):**	**TRL Number:**	**Ref. FMA#:**	

Service Conditions	Required Operating Parameters	Supplier Design Rating
Water Depth / Water Depth Rating		
Process Pressure		
Process Temperature		
Storage Temperature		
Water Temperature Range		
Material Trim		
Exposure		
Design Life		
Process Media		
Sandy Service (Y/N)		

Qualifications - API or other existing Industry Practice

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Qualifications - Supplemental Practices (Optional)

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Interfaces

Description	Supplier Component Identifier	GA Drwg. #	Comments Regarding Stated Service and Functional Requirements

Additional Comments

Pressure Cap

Component / Assembly:	Component Description:		PQS #:	
Pressure Cap				
Operator Governing Specification:			Rev#:	Date:
Supplier:	Supplier Component Identifier:	Ref. BOM#:	Ref. Assembly Drwg. #:	
OEM:				
Weight:	Dimensions (HxWxL):	TRL Number:	Ref. FMA#:	

Service Conditions	Required Operating Parameters	Supplier Design Rating
Water Depth / Water Depth Rating		
Process Pressure		
Process Temperature		
Storage Temperature		
Water Temperature Range		
Material Trim		
Exposure		
Design Life		
Process Media		
Survival Reliability Rate		

Qualifications - API or other existing Industry Practice

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Qualifications - Supplemental Practices (Optional)

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Interfaces

Description	Supplier Component Identifier	GA Drwg. #	Comments Regarding Stated Service and Functional Requirements

Additional Comments

Flooding Cap

Component / Assembly:	Component Description:		PQS #:	
Flooding Cap				
Operator Governing Specification:			Rev#:	Date:
Supplier:	Supplier Component Identifier:	Ref. BOM#:	Ref. Assembly Drwg. #:	
OEM:				
Weight:	Dimensions (HxWxL):	TRL Number:	Ref. FMA#:	

Service Conditions	Required Operating Parameters	Supplier Design Rating
Water Depth / Water Depth Rating		
Process Pressure		
Process Temperature		
Storage Temperature		
Water Temperature Range		
Material Trim		
Exposure		
Design Life		

Qualifications - API or other existing Industry Practice

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Qualifications - Supplemental Practices (Optional)

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Interfaces

Description	Supplier Component Identifier	GA Drwg. #	Comments Regarding Stated Service and Functional Requirements

Additional Comments

Hydraulic Coupler

Component / Assembly:	Component Description:		PQS #:	
Hydraulic Coupler				
Operator Governing Specification:			Rev#:	Date:
Supplier:	Supplier Component Identifier:	Ref. BOM#:	Ref. Assembly Drwg. #:	
OEM:				
Weight:	Dimensions (HxWxL):	TRL Number:	Ref. FMA#:	

Service Conditions	Required Operating Parameters	Supplier Design Rating
Water Depth / Water Depth Rating		
Process Pressure		
Process Temperature		
Storage Temperature		
Water Temperature Range		
Material Trim		
Exposure		
Design Life		
Process Media		

Qualifications - API or other existing Industry Practice

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Qualifications - Supplemental Practices (Optional)

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Interfaces

Description	Supplier Component Identifier	GA Drwg. #	Comments Regarding Stated Service and Functional Requirements

Additional Comments

Hydraulic Flying Lead (HFL)

Component / Assembly:	Component Description:		PQS #:	
Hydraulic Flying Lead (HFL)				
Operator Governing Specification:			Rev#:	Date:
Supplier:	Supplier Component Identifier:	Ref. BOM#:	Ref. Assembly Drwg. #:	
OEM:				
Weight:	Dimensions (HxWxL):	TRL Number:	Ref. FMA#:	

Service Conditions	Required Operating Parameters	Supplier Design Rating
Water Depth / Water Depth Rating		
Process Pressure		
Process Temperature		
Storage Temperature		
Water Temperature Range		
Material Trim		
Exposure		
Design Life		
Process Media		

Qualifications - API or other existing Industry Practice

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Qualifications - Supplemental Practices (Optional)

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Interfaces

Description	Supplier Component Identifier	GA Drwg. #	Comments Regarding Stated Service and Functional Requirements

Additional Comments

Subsea Control Module (SCM)

Component / Assembly:	Component Description:		PQS #:	
Subsea Control Module (SCM)				
Operator Governing Specification:			**Rev#:**	**Date:**
Supplier:	**Supplier Component Identifier:**	**Ref. BOM#:**	**Ref. Assembly Drwg. #:**	
OEM:				
Weight:	**Dimensions (HxWxL):**	**TRL Number:**	**Ref. FMA#:**	

Service Conditions	Required Operating Parameters	Supplier Design Rating
Water Depth / Water Depth Rating		
Storage Temperature		
Water Temperature Range		
Exposure		
Design Life		
Maximum Working Pressure		
Control Fluid Operating Cleanliness		

Qualifications - API or other existing Industry Practice

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Qualifications - Supplemental Practices (Optional)

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Interfaces

Description	Supplier Component Identifier	GA Drwg. #	Comments Regarding Stated Service and Functional Requirements

Additional Comments

SCM Directional Control Valve - HP

Component / Assembly:	Component Description:		PQS #:	
SCM Directional Control Valve - HP				
Operator Governing Specification:			**Rev#:**	**Date:**
Supplier:	**Supplier Component Identifier:**	**Ref. BOM#:**	**Ref. Assembly Drwg. #:**	
OEM:				
Weight:	**Dimensions (HxWxL):**	**TRL Number:**	**Ref. FMA#:**	

Service Conditions	Required Operating Parameters	Supplier Design Rating
Water Depth / Water Depth Rating		
Storage Temperature		
Water Temperature Range		
Exposure		
Design Life		
Maximum Working Pressure		

Qualifications - API or other existing Industry Practice

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Qualifications - Supplemental Practices (Optional)

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Interfaces

Description	Supplier Component Identifier	GA Drwg. #	Comments Regarding Stated Service and Functional Requirements

Additional Comments

SCM Directional Control Valve - LP Choke

Component / Assembly:	Component Description:		PQS #:	
SCM Directional Control Valve - LP Choke				
Operator Governing Specification:			**Rev#:**	**Date:**
Supplier:	**Supplier Component Identifier:**	**Ref. BOM#:**	**Ref. Assembly Drwg. #:**	
OEM:				
Weight:	**Dimensions (HxWxL):**	**TRL Number:**	**Ref. FMA#:**	

Service Conditions	Required Operating Parameters	Supplier Design Rating
Water Depth / Water Depth Rating		
Storage Temperature		
Water Temperature Range		
Exposure		
Design Life		

Qualifications - API or other existing Industry Practice

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Qualifications - Supplemental Practices (Optional)

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Interfaces

Description	Supplier Component Identifier	GA Drwg. #	Comments Regarding Stated Service and Functional Requirements

Additional Comments

SCM Directional Control Valve - LP

Component / Assembly:	Component Description:		PQS #:	
SCM Directional Control Valve - LP				
Operator Governing Specification:			**Rev#:**	**Date:**
Supplier:	**Supplier Component Identifier:**	**Ref. BOM#:**	**Ref. Assembly Drwg. #:**	
OEM:				
Weight:	**Dimensions (HxWxL):**	**TRL Number:**	**Ref. FMA#:**	

Service Conditions	Required Operating Parameters	Supplier Design Rating
Water Depth / Water Depth Rating		
Storage Temperature		
Water Temperature Range		
Exposure		
Design Life		

Qualifications - API or other existing Industry Practice

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Qualifications - Supplemental Practices (Optional)

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Interfaces

Description	Supplier Component Identifier	GA Drwg. #	Comments Regarding Stated Service and Functional Requirements

Additional Comments

Shuttle Valve

Component / Assembly:	Component Description:		PQS #:	
Shuttle Valve				
Operator Governing Specification:			Rev#:	Date:
Supplier:	Supplier Component Identifier:	Ref. BOM#:	Ref. Assembly Drwg. #:	
OEM:				
Weight:	Dimensions (HxWxL):	TRL Number:	Ref. FMA#:	

Service Conditions	Required Operating Parameters	Supplier Design Rating
Water Depth / Water Depth Rating		
Storage Temperature		
Water Temperature Range		
Exposure		
Design Life		

Qualifications - API or other existing Industry Practice

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Qualifications - Supplemental Practices (Optional)

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Interfaces

Description	Supplier Component Identifier	GA Drwg. #	Comments Regarding Stated Service and Functional Requirements

Additional Comments

SCM Selector Valve - HP

Component / Assembly:	Component Description:		PQS #:	
SCM Selector Valve - HP				
Operator Governing Specification:			**Rev#:**	**Date:**
Supplier:	**Supplier Component Identifier:**	**Ref. BOM#:**	**Ref. Assembly Drwg. #:**	
OEM:				
Weight:	**Dimensions (HxWxL):**	**TRL Number:**	**Ref. FMA#:**	

Service Conditions	Required Operating Parameters	Supplier Design Rating
Water Depth / Water Depth Rating		
Storage Temperature		
Water Temperature Range		
Exposure		
Design Life		

Qualifications - API or other existing Industry Practice

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Qualifications - Supplemental Practices (Optional)

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Interfaces

Description	Supplier Component Identifier	GA Drwg. #	Comments Regarding Stated Service and Functional Requirements

Additional Comments

SCM Selector Valve - LP

Component / Assembly:	Component Description:		PQS #:	
SCM Selector Valve - LP				
Operator Governing Specification:			Rev#:	Date:
Supplier:	Supplier Component Identifier:	Ref. BOM#:	Ref. Assembly Drwg. #:	
OEM:				
Weight:	Dimensions (HxWxL):	TRL Number:	Ref. FMA#:	

Service Conditions	Required Operating Parameters	Supplier Design Rating
Water Depth / Water Depth Rating		
Storage Temperature		
Water Temperature Range		
Exposure		
Design Life		

Qualifications - API or other existing Industry Practice

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Qualifications - Supplemental Practices (Optional)

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Interfaces

Description	Supplier Component Identifier	GA Drwg. #	Comments Regarding Stated Service and Functional Requirements

Additional Comments

SCM Solenoid Valve

Component / Assembly:	Component Description:		PQS #:	
SCM Solenoid Valve				
Operator Governing Specification:			Rev#:	Date:
Supplier:	Supplier Component Identifier:	Ref. BOM#:	Ref. Assembly Drwg. #:	
OEM:				
Weight:	Dimensions (HxWxL):	TRL Number:	Ref. FMA#:	

Service Conditions	Required Operating Parameters	Supplier Design Rating
Water Depth / Water Depth Rating		
Storage Temperature		
Water Temperature Range		
Exposure		
Design Life		

Qualifications - API or other existing Industry Practice

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Qualifications - Supplemental Practices (Optional)

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Interfaces

Description	Supplier Component Identifier	GA Drwg. #	Comments Regarding Stated Service and Functional Requirements

Additional Comments

SCM Dump Valve

Component / Assembly:	Component Description:		PQS #:	
SCM Dump Valve - LP				
Operator Governing Specification:			Rev#:	Date:
Supplier:	Supplier Component Identifier:	Ref. BOM#:	Ref. Assembly Drwg. #:	
OEM:				
Weight:	Dimensions (HxWxL):	TRL Number:	Ref. FMA#:	

Service Conditions	Required Operating Parameters	Supplier Design Rating
Water Depth / Water Depth Rating		
Storage Temperature		
Water Temperature Range		
Exposure		
Design Life		

Qualifications - API or other existing Industry Practice

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Qualifications - Supplemental Practices (Optional)

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Interfaces

Description	Supplier Component Identifier	GA Drwg. #	Comments Regarding Stated Service and Functional Requirements

Additional Comments

Accumulator

Component / Assembly:	Component Description:		PQS #:	
Accumulator				
Operator Governing Specification:			Rev#:	Date:
Supplier:	Supplier Component Identifier:	Ref. BOM#:	Ref. Assembly Drwg. #:	
OEM:				
Weight:	Dimensions (HxWxL):	TRL Number:	Ref. FMA#:	

Service Conditions	Required Operating Parameters	Supplier Design Rating
Water Depth / Water Depth Rating		
Storage Temperature		
Water Temperature Range		
Exposure		
Design Life		
Nitrogen Precharge Pressure		

Qualifications - API or other existing Industry Practice

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Qualifications - Supplemental Practices (Optional)

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Interfaces

Description	Supplier Component Identifier	GA Drwg. #	Comments Regarding Stated Service and Functional Requirements

Additional Comments

Chemical Injection Metering Valve

Component / Assembly:	Component Description:		PQS #:	
Chemical Injection Metering Valve				
Operator Governing Specification:			**Rev#:**	**Date:**
Supplier:	**Supplier Component Identifier:**	**Ref. BOM#:**	**Ref. Assembly Drwg. #:**	
OEM:				
Weight:	**Dimensions (HxWxL):**	**TRL Number:**	**Ref. FMA#:**	

Service Conditions	Required Operating Parameters	Supplier Design Rating
Water Depth / Water Depth Rating		
Process Pressure - Upstream		
Pressure drop		
Process Temperature		
Storage Temperature		
Water Temperature and Range		
Material Trim		
Exposure		
Design Life		
Process Media		
Flow Rates		
Class of Service		
Chemical Viscosity Range		
Chemical Cleanliness		

Qualifications - API or other existing Industry Practice

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Qualifications - Supplemental Practices (Optional)

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Interfaces

Description	Supplier Component Identifier	GA Drwg. #	Comments Regarding Stated Service and Functional Requirements

Additional Comments

Hydraulic Fluid

Component / Assembly:	Component Description:		PQS #:	
Hydraulic Fluid				
Operator Governing Specification:			**Rev#:**	**Date:**
Supplier:	**Supplier Component Identifier:**	**Ref. BOM#:**	**Ref. Assembly Drwg. #:**	
OEM:				
Weight:	**Dimensions (HxWxL):**	**TRL Number:**	**Ref. FMA#:**	

Service Conditions	Required Operating Parameters	Supplier Design Rating
Process Temperature		
Water Temperature and Range		
Exposure		
Design Life		

Qualifications - API or other existing Industry Practice

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Qualifications - Supplemental Practices (Optional)

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Interfaces

Description	Supplier Component Identifier	GA Drwg. #	Comments Regarding Stated Service and Functional Requirements

Additional Comments

Electrical Flying Lead (EFL)

Component / Assembly:	Component Description:		PQS #:	
Electrical Flying Lead (EFL)				
Operator Governing Specification:			**Rev#:**	**Date:**
Supplier:	**Supplier Component Identifier:**	**Ref. BOM#:**	**Ref. Assembly Drwg. #:**	
OEM:				
Weight:	**Dimensions (HxWxL):**	**TRL Number:**	**Ref. FMA#:**	

Service Conditions	Required Operating Parameters	Supplier Design Rating
Water Depth / Water Depth Rating		
Storage Temperature		
Water Temperature and Range		
Exposure		
Design Life		

Qualifications - API or other existing Industry Practice

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Qualifications - Supplemental Practices (Optional)

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Interfaces

Description	Supplier Component Identifier	GA Drwg. #	Comments Regarding Stated Service and Functional Requirements

Additional Comments

Electrical Wet Mate Connector

Component / Assembly:	Component Description:		PQS #:	
Electrical Wet Mate Connector				
Operator Governing Specification:			**Rev#:**	**Date:**
Supplier:	**Supplier Component Identifier:**	**Ref. BOM#:**	**Ref. Assembly Drwg. #:**	
OEM:				
Weight:	**Dimensions (HxWxL):**	**TRL Number:**	**Ref. FMA#:**	

Service Conditions	Required Operating Parameters	Supplier Design Rating
Water Depth / Water Depth Rating		
Storage Temperature		
Water Temperature and Range		
Exposure		
Design Life		

Qualifications - API or other existing Industry Practice

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Qualifications - Supplemental Practices (Optional)

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Interfaces

Description	Supplier Component Identifier	GA Drwg. #	Comments Regarding Stated Service and Functional Requirements

Additional Comments

Flow Meter

Component / Assembly:	Component Description:			PQS #:	
Flow Meter					
Operator Governing Specification:				Rev#:	Date:
Supplier:	Supplier Component Identifier:	Ref. BOM#:		Ref. Assembly Drwg. #:	
OEM:					
Weight:	Dimensions (HxWxL):		TRL Number:	Ref. FMA#:	

Service Conditions	Required Operating Parameters	Supplier Design Rating
Water Depth / Water Depth Rating		
Process Temperature		
Process Temperature		
Storage Temperature		
Water Temperature and Range		
Exposure		
Design Life		
Maximum Pressure Rating		
Insulation (Y/N)		
Flow Rate Accuracy (+/-)		
Flow Range		

Qualifications - API or other existing Industry Practice

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Qualifications - Supplemental Practices (Optional)

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Interfaces

Description	Supplier Component Identifier	GA Drwg. #	Comments Regarding Stated Service and Functional Requirements

Additional Comments

Process Transmitter

Component / Assembly:	Component Description:		PQS #:	
Process Transmitter				
Operator Governing Specification:			Rev#:	Date:
Supplier:	Supplier Component Identifier:	Ref. BOM#:	Ref. Assembly Drwg. #:	
OEM:				
Weight:	Dimensions (HxWxL):	TRL Number:	Ref. FMA#:	

Service Conditions	Required Operating Parameters	Supplier Design Rating
Water Depth / Water Depth Rating		
Process Pressure		
Process Temperature		
Storage Temperature		
Water Temperature and Range		
Exposure		
Design Life		
Process Media		
Maximum Pressure Rating		
Temperature Rating		
Calibrated Pressure Range		
Pressure Accuracies (+/-)		
Calibrated Temperature Range		
Temperature Accuracies (+/-)		

Qualifications - API or other existing Industry Practice

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Qualifications - Supplemental Practices (Optional)

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Interfaces

Description	Supplier Component Identifier	GA Drwg. #	Comments Regarding Stated Service and Functional Requirements

Additional Comments

Sand Detector

Component / Assembly:	Component Description:		PQS #:	
Sand Detector				
Operator Governing Specification:			Rev#:	Date:
Supplier:	Supplier Component Identifier:	Ref. BOM#:	Ref. Assembly Drwg. #:	
OEM:				
Weight:	Dimensions (HxWxL):	TRL Number:	Ref. FMA#:	

Service Conditions	Required Operating Parameters	Supplier Design Rating
Water Depth / Water Depth Rating		
Process Pressure		
Process Temperature		
Storage Temperature		
Water Temperature and Range		
Exposure		
Design Life		
Process Media		
Thermal Insulation (Y/N)		
Maximum Pressure Rating		
Metal Loss Resolution		
Sampling Rate		

Qualifications - API or other existing Industry Practice

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Qualifications - Supplemental Practices (Optional)

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Interfaces

Description	Supplier Component Identifier	GA Drwg. #	Comments Regarding Stated Service and Functional Requirements

Additional Comments

Pig Detector

Component / Assembly:	Component Description:		PQS #:	
Pig Detector				
Operator Governing Specification:			Rev#:	Date:
Supplier:	Supplier Component Identifier:	Ref. BOM#:	Ref. Assembly Drwg. #:	
OEM:				
Weight:	Dimensions (HxWxL):	TRL Number:	Ref. FMA#:	

Service Conditions	Required Operating Parameters	Supplier Design Rating
Water Depth / Water Depth Rating		
Process Pressure		
Process Temperature		
Storage Temperature		
Water Temperature Range		
Exposure		
Design Life		
Process Media		
Thermal Insulation (Y/N)		
Maximum Pressure Rating		
Repeatability		
Minimum Pig Velocity		
Maximum Pig Velocity		

Qualifications - API or other existing Industry Practice

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Qualifications - Supplemental Practices (Optional)

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Interfaces

Description	Supplier Component Identifier	GA Drwg. #	Comments Regarding Stated Service and Functional Requirements

Additional Comments

SCM - Subsea Electronics Module (SEM)

Component / Assembly:	Component Description:		PQS #:	
SCM - Subsea Electronics Module (SEM)				
Operator Governing Specification:			**Rev#:**	**Date:**
Supplier:	**Supplier Component Identifier:**	**Ref. BOM#:**	**Ref. Assembly Drwg. #:**	
OEM:				
Weight:	**Dimensions (HxWxL):**	**TRL Number:**	**Ref. FMA#:**	

Service Conditions	Required Operating Parameters	Supplier Design Rating
Water Depth / Water Depth Rating		
Storage Temperature		
Water Temperature Range		
Exposure		
Design Life		

Qualifications - API or other existing Industry Practice

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Qualifications - Supplemental Practices (Optional)

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Interfaces

Description	Supplier Component Identifier	GA Drwg. #	Comments Regarding Stated Service and Functional Requirements

Additional Comments

SCM - Valve Electronics Module (VEM)

Component / Assembly:	Component Description:			PQS #:	
SCM - Valve Electronics Module (VEM)					
Operator Governing Specification:				Rev#:	Date:
Supplier:	Supplier Component Identifier:	Ref. BOM#:		Ref. Assembly Drwg. #:	
OEM:					
Weight:	Dimensions (HxWxL):		TRL Number:	Ref. FMA#:	

Service Conditions	Required Operating Parameters	Supplier Design Rating
Water Depth / Water Depth Rating		
Storage Temperature		
Water Temperature Range		
Exposure		
Design Life		

Qualifications - API or other existing Industry Practice

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Qualifications - Supplemental Practices (Optional)

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Interfaces

Description	Supplier Component Identifier	GA Drwg. #	Comments Regarding Stated Service and Functional Requirements

Additional Comments

Anti-Corrosion Coating

Component / Assembly:	Component Description:		PQS #:	
Anti-Corrosion Coating				
Operator Governing Specification:			Rev#:	Date:
Supplier:	Supplier Component Identifier:	Ref. BOM#:	Ref. Assembly Drwg. #:	
OEM:				
Weight:	Dimensions (HxWxL):	TRL Number:	Ref. FMA#:	

Service Conditions	Required Operating Parameters	Supplier Design Rating
Process Temperature		
Storage Temperature		
Water Temperature Range		
Design Life		
Storage Environment		
Stroage Expected Duration		
Cathodic Protection System Compatibility		

Qualifications - API or other existing Industry Practice

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Qualifications - Supplemental Practices (Optional)

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Interfaces

Description	Supplier Component Identifier	GA Drwg. #	Comments Regarding Stated Service and Functional Requirements

Additional Comments

Wet Thermal Insulation

Component / Assembly:	Component Description:		PQS #:	
Wet Thermal Insulation				
Operator Governing Specification:			**Rev#:**	**Date:**
Supplier:	**Supplier Component Identifier:**	**Ref. BOM#:**	**Ref. Assembly Drwg. #:**	
OEM:				
Weight:	**Dimensions (HxWxL):**	**TRL Number:**	**Ref. FMA#:**	

Service Conditions	Required Operating Parameters	Supplier Design Rating
Water Depth / Water Depth Rating		
Storage Temperature		
Water Temperature Range		
Exposure		
Design Life		
Storage Environment		
Storage Duration		
Maximum Wet Operating / Design Temperature Rating		
Minimum Wet Operating / Design Temperature Rating		
Minimum Adhesive Shear Strength		

Qualifications - API or other existing Industry Practice

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Qualifications - Supplemental Practices (Optional)

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Interfaces

Description	Supplier Component Identifier	GA Drwg. #	Comments Regarding Stated Service and Functional Requirements

Additional Comments

Sacrificial Anode

Component / Assembly:	Component Description:		PQS #:	
Sacrificial Anode				
Operator Governing Specification:			Rev#:	Date:
Supplier:	Supplier Component Identifier:	Ref. BOM#:	Ref. Assembly Drwg. #:	
OEM:				
Weight:	Dimensions (HxWxL):	TRL Number:	Ref. FMA#:	

Service Conditions	Required Operating Parameters	Supplier Design Rating
Maximum Process Temperature		
Minimum Process Temperature		
Maximum Seawater Temperature		
Minimum Seawater Temperature		
Design Life		

Qualifications - API or other existing Industry Practice

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Qualifications - Supplemental Practices (Optional)

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Interfaces

Description	Supplier Component Identifier	GA Drwg. #	Comments Regarding Stated Service and Functional Requirements

Additional Comments

Installation and Workover Control System (IWOCS) Assembly

Component / Assembly:	Component Description:		PQS #:	
Installation and Workover Control System (IWOCS)				
Operator Governing Specification:			**Rev#:**	**Date:**
Supplier:	**Supplier Component Identifier:**	**Ref. BOM#:**	**Ref. Assembly Drwg. #:**	
OEM:				
Weight:	**Dimensions (HxWxL):**	**TRL Number:**	**Ref. FMA#:**	

Service Conditions	Required Operating Parameters	Supplier Design Rating
Water Depth / Water Depth Rating		
Process Temperature		
Storage Temperature		
Water Temperature and Range		
Exposure		
Design Life		
Process Media		
Working Pressure		

Qualifications - API or other existing Industry Practice

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Qualifications - Supplemental Practices (Optional)

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Interfaces

Description	Supplier Component Identifier	GA Drwg. #	Comments Regarding Stated Service and Functional Requirements

Additional Comments

IWOCS Emergency Quick Disconnect (EQD) Assembly

Component / Assembly:	Component Description:		PQS #:	
IWOCS Emergency Quick Disconnect (EQD)				
Operator Governing Specification:			Rev#:	Date:
Supplier:	Supplier Component Identifier:	Ref. BOM#:	Ref. Assembly Drwg. #:	
OEM:				
Weight:	Dimensions (HxWxL):	TRL Number:	Ref. FMA#:	

Service Conditions	Required Operating Parameters	Supplier Design Rating
Water Depth / Water Depth Rating		
Process Temperature		
Storage Temperature		
Water Temperature and Range		
Exposure		
Design Life		
Working Pressure		

Qualifications - API or other existing Industry Practice

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Qualifications - Supplemental Practices (Optional)

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Interfaces

Description	Supplier Component Identifier	GA Drwg. #	Comments Regarding Stated Service and Functional Requirements

Additional Comments

IWOCS Umbilical and Surface Jumper(s)

Component / Assembly:	Component Description:		PQS #:	
IWOCS Umbilical and Surface Jumper(s)				
Operator Governing Specification:			**Rev#:**	**Date:**
Supplier:	**Supplier Component Identifier:**	**Ref. BOM#:**	**Ref. Assembly Drwg. #:**	
OEM:				
Weight:	**Dimensions (HxWxL):**	**TRL Number:**	**Ref. FMA#:**	

Service Conditions	Required Operating Parameters	Supplier Design Rating
Water Depth / Water Depth Rating		
Process Temperature		
Storage Temperature		
Water Temperature and Range		
Exposure		
Design Life		
Working Pressure		

Qualifications - API or other existing Industry Practice

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Qualifications - Supplemental Practices (Optional)

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Interfaces

Description	Supplier Component Identifier	GA Drwg. #	Comments Regarding Stated Service and Functional Requirements

Additional Comments

Wellhead Annulus Seal Assembly (Packoffs)

Component / Assembly:	Component Description:		PQS #:	
Wellhead Annulus Seal Assembly (Packoffs)				
Operator Governing Specification:			**Rev#:**	**Date:**
Supplier:	**Supplier Component Identifier:**	**Ref. BOM#:**	**Ref. Assembly Drwg. #:**	
OEM:				
Weight:	**Dimensions (HxWxL):**	**TRL Number:**	**Ref. FMA#:**	

Service Conditions	Required Operating Parameters	Supplier Design Rating
Process Pressure / Test Pressure		
Process Temperature		
Design Life / Stress Amplification Factor		
Process Media		
External Pressure Rating (Annulus)		
Seals - Bore Pressure		
Seals - Annulus Pressure		

Qualifications - API or other existing Industry Practice

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Qualifications - Supplemental Practices (Optional)

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Interfaces

Description	Supplier Component Identifier	GA Drwg. #	Comments Regarding Stated Service and Functional Requirements

Additional Comments

Wellhead Casing Hanger

Component / Assembly:	Component Description:		PQS #:	
Wellhead Casing Hanger				
Operator Governing Specification:			Rev#:	Date:
Supplier:	Supplier Component Identifier:	Ref. BOM#:	Ref. Assembly Drwg. #:	
OEM:				
Weight:	Dimensions (HxWxL):	TRL Number:	Ref. FMA#:	

Service Conditions	Required Operating Parameters	Supplier Design Rating
Process Pressure / Test Pressure		
Process Temperature		
Design Life / Stress Amplification Factor		
Process Media		
External Pressure Rating (Annulus)		
Load Capacity / Limits		
Tensile / Bending Capacity		

Qualifications - API or other existing Industry Practice

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Qualifications - Supplemental Practices (Optional)

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Interfaces

Description	Supplier Component Identifier	GA Drwg. #	Comments Regarding Stated Service and Functional Requirements

Additional Comments

HP Wellhead

Component / Assembly:	Component Description:			PQS #:	
HP Wellhead					
Operator Governing Specification:				Rev#:	Date:
Supplier:	Supplier Component Identifier:	Ref. BOM#:		Ref. Assembly Drwg. #:	
OEM:					
Weight:	Dimensions (HxWxL):		TRL Number:	Ref. FMA#:	

Service Conditions	Required Operating Parameters	Supplier Design Rating
Water Depth / Water Depth Rating		
Process Pressure / Test Pressure		
Process Temperature		
Design Life / Stress Amplification Factor		
Process Media		
Load Capacity / Limits		
Tensile / Bending Capacity		
Shear Loading		
Torsion		

Qualifications - API or other existing Industry Practice

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Qualifications - Supplemental Practices (Optional)

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Interfaces

Description	Supplier Component Identifier	GA Drwg. #	Comments Regarding Stated Service and Functional Requirements

Additional Comments

LP Wellhead

Component / Assembly:	Component Description:		PQS #:	
LP Wellhead				
Operator Governing Specification:			**Rev#:**	**Date:**
Supplier:	**Supplier Component Identifier:**	**Ref. BOM#:**	**Ref. Assembly Drwg. #:**	
OEM:				
Weight:	**Dimensions (HxWxL):**	**TRL Number:**	**Ref. FMA#:**	

Service Conditions	Required Operating Parameters	Supplier Design Rating
Water Depth / Water Depth Rating		
Process Pressure / Test Pressure		
Process Temperature		
Design Life / Stress Amplification Factor		
Process Media		
Load Capacity / Limits		
Tensile / Bending Capacity		
Shear Loading		
Torsion		
Differential Pressure (Y/N)		
Pressure Balanced (Y/N)		

Qualifications - API or other existing Industry Practice

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Qualifications - Supplemental Practices (Optional)

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Interfaces

Description	Supplier Component Identifier	GA Drwg. #	Comments Regarding Stated Service and Functional Requirements

Additional Comments

Wear Bushings / Bore Protector

Component / Assembly:	Component Description:		PQS #:	
Wear Bushings / Bore Protector				
Operator Governing Specification:			**Rev#:**	**Date:**
Supplier:	**Supplier Component Identifier:**	**Ref. BOM#:**	**Ref. Assembly Drwg. #:**	
OEM:				
Weight:	**Dimensions (HxWxL):**	**TRL Number:**	**Ref. FMA#:**	

Service Conditions	Required Operating Parameters	Supplier Design Rating
Process Pressure / Test Pressure		
Process Temperature Range		
Design Life / Stress Amplification Factor		
Process Media		
Load Capacity / Limits		
Fluid Exposure		

Qualifications - API or other existing Industry Practice

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Qualifications - Supplemental Practices (Optional)

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Interfaces

Description	Supplier Component Identifier	GA Drwg. #	Comments Regarding Stated Service and Functional Requirements

Additional Comments

Wellhead Ring Gasket

Component / Assembly:	Component Description:		PQS #:	
Wellhead Ring Gasket				
Operator Governing Specification:			Rev#:	Date:
Supplier:	Supplier Component Identifier:	Ref. BOM#:	Ref. Assembly Drwg. #:	
OEM:				
Weight:	Dimensions (HxWxL):	TRL Number:	Ref. FMA#:	

Service Conditions	Required Operating Parameters	Supplier Design Rating
Water Depth / Water Depth Rating		
Process Pressure / Test Pressure		
Process Temperature		
Design Life / Stress Amplification Factor		
Process Media		
External Pressure Rating (Annulus)		
Seals - Bore Pressure		
Seals - Annulus Pressure		

Qualifications - API or other existing Industry Practice

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Qualifications - Supplemental Practices (Optional)

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Interfaces

Description	Supplier Component Identifier	GA Drwg. #	Comments Regarding Stated Service and Functional Requirements

Additional Comments

Lockdown Bushing

Component / Assembly:	Component Description:		PQS #:	
Lockdown Bushing				
Operator Governing Specification:			**Rev#:**	**Date:**
Supplier:	**Supplier Component Identifier:**	**Ref. BOM#:**	**Ref. Assembly Drwg. #:**	
OEM:				
Weight:	**Dimensions (HxWxL):**	**TRL Number:**	**Ref. FMA#:**	

Service Conditions	Required Operating Parameters	Supplier Design Rating
Process Pressure / Test Pressure		
Design Life / Stress Amplification Factor		
Process Media		
Load Capacity / Limits		
External Pressure Rating (Annulus)		
Differential Pressure (Y/N)		
Seals - Bore Pressure		
Seals - Annulus Pressure		

Qualifications - API or other existing Industry Practice

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Qualifications - Supplemental Practices (Optional)

Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #

Interfaces

Description	Supplier Component Identifier	GA Drwg. #	Comments Regarding Stated Service and Functional Requirements

Additional Comments

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