# Subsea Equipment Qualification— Standardized Process for Documentation

API RECOMMENDED PRACTICE 17Q FIRST EDITION, JUNE 2010



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# **Upstream Segment**

API RECOMMENDED PRACTICE 17Q FIRST EDITION, JUNE 2010



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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.

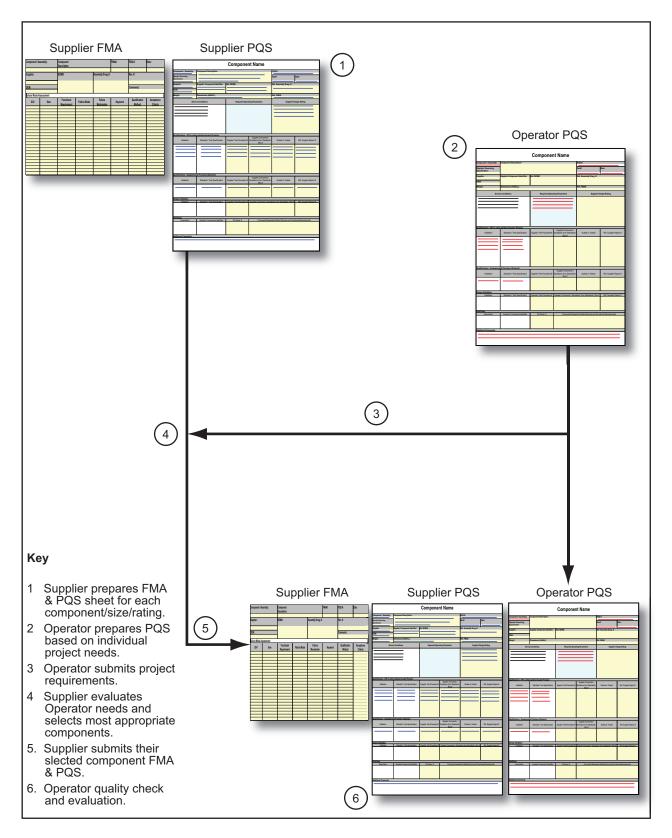


Figure 1—Application of FMA and PQS Documents

# Annex A (informative)

# **Subsea Component and Category Index**

Table A-1—Subsea Component and Category Index

Category		Component		Standard/Test Spec Reference			
I	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					
		1)	Tree	API 6A, API 17D			
Ш	Connect	ion Sy	rstems 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	s – 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		
٧	Control	s – Ele	ectrical			
		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 l	nsulation			
		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	Comple	tion E	quipment			
		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	Wellhea	d Sys	tems			
		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 De	scription:		FMA#:	PQS#:	Date:	
Supplier:		BOM#: As		Assembly Drw	Assembly Drwg. #:		Rev. #:	
OEM:					Comn		omments:	
Failure M	ode Assessmer	l nt						
ID#	ltem	Functional Requirement	Failure Mode	Failure Mechanism	Keyword	Qualification Method	Acceptance Criteria	
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		•		***************************************		•		
DATE:	•		***************************************	***************************************	***************************************		***************************************	
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# **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 / Assemble	Component Description:			DOC #.		
Component / Assembly:	Component Description:			PQS #:		
Operator Governing				Rev#:	Date:	
Specification:				INGVIII.	Date.	
Supplier:	Supplier Component Identifier:	Ref. BOM#:		Ref. Assembly Drwg. #:		
OEM:						
Weight:	Dimensions (HxWxL):		TRL Number:	Ref. FMA#:		
Service	Conditions	Required Op	erating Parameters	Supplier De	sign Rating	
O!:::: ADI	i-ti In-la-t Dti					
Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #	
			Startaaras / Ftot //			
Qualifications - Supplement			Supplier Comments /	1		
Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #	
Interfaces						
Description	Supplier Component Identifier	GA Drwg. #	Comments Regardi	ng Stated Service and Func	tional Requirements	
'		, and the second	•		·	
Additional Comments						

# Subsea Ball Valve

Component / Assembly:	Component Description:			PQS #:	
Subsea Ball Valve					
Operator Governing				Rev#:	Date:
Specification:					
Supplier:	Supplier Component Identifier:	Ref. BOM#:		Ref. Assembly Drwg. #:	
OEM:					
Weight:	Dimensions (HxWxL):		TRL Number:	Ref. FMA#:	
Service (	Conditions	Required Ope	rating Parameters	Supplier De	sign 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)					
Carray Service (1714)					
Qualifications - API or other	er 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 - Supplement	ntal Practices (Optional)	1		1	1
Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #
Interfaces					
	Supplier Component				
Description	Identifier	GA Drwg. #	Comments Regardir	ng Stated Service and Fund	tional Requirements
-					
Additional Comments					
Additional Comments					

# **Subsea Gate Valve**

Component / Assembly:	Component Description:			PQS #:		
Subsea Gate Valve						
Operator Governing				Rev#:	Date:	
Specification:						
Supplier:	Supplier Component Identifier:	Ref. BOM#:		Ref. Assembly Drwg. #:		
OEM:						
			l==			
Weight:	Dimensions (HxWxL):		TRL Number:	Ref. FMA#:		
Service	Conditions	Required Op	erating Parameters	Supplier D	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	er existing Industry Practice					
Qualifications Africi other			Supplier Comments /			
Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #	
Qualifications - Supplement	ntal Practices (Optional)					
	Standard / Test Specification	Supplier Test	Supplier Comments /			
Performance Verification	(inc. Rev. No.)	Procedure #	Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #	
Interfaces						
Description	Supplier Component Identifier	GA Drwg. #	Comments Regardin	g Stated Service and Fur	nctional Requirements	
Additional Comments						

## **Needle Valve**

Component / Assembly:	Component Description:		PQS #:			
Needle Valve						
Operator Governing				Rev#:	Date:	
Specification:						
Supplier:	Supplier Component Identifier:	Ref. BOM#:		Ref. Assembly Drwg. #:		
OEM:						
Weight:	Dimensions (HxWxL):		TRL Number:	Ref. FMA#:		
	,					
Service (	Conditions	Required Op	erating Parameters	Supplier D	esign Rating	
Water Depth / Water Depth	Rating					
Process Pressure						
Process Temperature						
Storage Temperature						
Water Temperature Range						
Material Trim						
Exposure Design Life						
Process Media						
1 100e33 Media						
Qualifications - API or oth	er existing Industry Practi	ce				
Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report#	
Qualifications - Suppleme	ntal Practices (Optional)					
	Standard / Test	0 5 7 (	Supplier Comments /			
Performance Verification	Specification (inc. Rev. No.)	Supplier Test Procedure #	Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #	
Interfaces						
	Supplier Component	CA Dava #	Commente Begardi	ing Stated Service and Eur	etional Dequirements	
Description	Identifier	GA Drwg. #	Comments Regardi	ing Stated Service and Fun	cuonal Requirements	
Additional Comments						
Additional Committents						

# **Check Valve**

Component / Assembly:	Component Description:			PQS #:		
Check Valve						
Operator Governing				Rev#:	Date:	
Specification:						
Supplier:	Supplier Component Identifier:	Ref. BOM#:		Ref. Assembly Drwg. #:		
	identiner:					
OEM:						
OEIVI:						
Woight	Dimensions (HxWxL):		TRL Number:	Ref. FMA#:		
Weight:	Difficusions (HXVVXL):		TRE Number:	Rei. FWA#:		
0	0	D		Committee 5	Nantana Battana	
	Conditions	Required Op	erating Parameters	Supplier L	Design Rating	
Water Depth / Water Depth Process Pressure	n Rating					
Process Temperature						
Storage Temperature						
Water Temperature Range Material Trim	<u> </u>					
Exposure						
Design Life						
Process Media Sandy Service (Y/N)						
Sandy Service (17/N)						
Qualifications - API or otl	her existing Industry Practic	e				
<u> </u>	Standard / Test Specification		Supplier Comments /			
Performance Verification	(inc. Rev. No.)	Procedure #	Deviations from	Scaled or Tested	Ref. Supplier Report #	
	,		Standards / Rev #			
Qualifications - Supplement	ental Practices (Optional)	I	Cumplier Comments /			
Performance Verification	Standard / Test Specification		Supplier Comments / Deviations from	Scaled or Tested	Ref. Supplier Report #	
	(inc. Rev. No.)	Procedure #	Standards / Rev #			
Interfaces						
Description	Supplier Component	GA Drwg. #	Comments Regard	ing Stated Service and Fu	nctional Requirements	
Describiton	Identifier	GA DIWG. #	Comments Regard	ing Glated Gervice and Ful	Totalia Nequilements	
Additional Comments						

# **Subsea Diverter Valve**

Component / Assembly:	Component Description:			PQS #:		
Subsea Diverter Valve						
Operator Governing				Rev#:	Date:	
Specification:						
Supplier:				Ref. Assembly Drwg. #:		
	Identifier:					
OEM:						
Weight:	Dimensions (HxWxL):		TRL Number:	Ref. FMA#:		
Service C	Conditions Required Ope		perating 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 oth	er existing Industry Practi	ce				
Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #	
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Qualifications - Suppleme	Standard / Test		Supplier Comments /			
Performance Verification	Specification (inc. Rev. No.)	Supplier Test Procedure #	Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #	
Interfaces						
Description	Supplier Component Identifier	GA Drwg. #	Comments Regardi	ng Stated Service and Fun	ctional Requirements	
Additional Comments						
Additional Comments						

#### Choke

Component / Assembly:	Component Description:		PQS #:			
Choke						
Operator Governing				Rev#:	Date:	
Specification:				1107///	Duto.	
Supplier:	Supplier Component Identifier:	Ref. BOM#:		Ref. Assembly Drwg. #:		
	i donumor.					
OEM:						
Weight:	Dimensions (HxWxL):		TRL Number:	Ref. FMA#:		
g	()					
Service (	Conditions	Required Ope	rating Parameters	Supplier Design Rating		
Water Depth / Water Depth	n Rating					
Process Pressure - Upstream	am					
Pressure drop						
Process Temperature - Up	stream					
Max, Min & Normal flow ra	tes					
Storage Temperature						
Water Temperature Range Material Trim	1					
Exposure						
Design Life						
Process Media						
Sandy Service (Y/N)						
Product Specification Leve	I					
1						
Qualifications - API or otl	her existing Industry Practi	ce				
	Standard / Test	Supplier Test	Supplier Comments /			
Performance Verification	Specification	Procedure #	Deviations from	Scaled or Tested	Ref. Supplier Report #	
	(inc. Rev. No.)	1 10000010 11	Standards / Rev #			
Qualifications - Supplement	ental Practices (Optional)		0			
Performance Verification	Standard / Test	Supplier Test	Supplier Comments / Deviations from	Scaled or Tested	Bof Cumplior Bonort #	
Performance verification	Specification (inc. Rev. No.)	Procedure #	Standards / Rev #	Scaled of Tested	Ref. Supplier Report #	
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Interfaces						
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Description	Identifier	GA Drwg. #	Comments Regard	ding Stated Service and Fu	nctional Requirements	
Additional Comments						
Auditional Comments						

## Tree

Component / Assembly:	Component Description:		PQS #:			
Tree						
Operator Governing			Rev#:	Date:		
Specification:						
Supplier:	Supplier Component	Ref. BOM#:		Ref. Assembly Drwg. #:		
	Identifier:					
0511						
OEM:						
Waight.	Dimensions (HxWxL):		TRL Number:	Ref. FMA#:		
Weight:	Dimensions (mxwxL):		TRL Number:	Rei. FIVIA#:		
	Conditions	Required Op	erating Parameters	Supplier D	esign Rating	
Water Depth / Water Depth	n Rating					
Process Pressure						
Process Temperature Material Trim						
Exposure						
Design Life						
Process Media						
Sandy Service (Y/N)						
Product Specification Leve	I					
Bending Moment Capacity Suitable for Dynamically Po	poitioned Drill Dig (V/N)					
Sultable for Dynamically Po	ositioned Drill Rig (Y/N)					
Qualifications - API or otl	her existing Industry Praction	e				
	Standard / Test	Supplier Test	Supplier Comments /		- 4 - 11 - 11	
Performance Verification	Specification	Procedure #	Deviations from	Scaled or Tested	Ref. Supplier Report #	
	(inc. Rev. No.)		Standards / Rev #			
Qualifications - Supplem	ental Practices (Optional)	1				
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Performance Verification	Specification (inc. Rev. No.)	Procedure #	Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #	
	(IIIC. IVEV. INO.)		Standards / INEV #			
Interfaces						
Description	Supplier Component	GA Drwg. #	Comments Regardi	ing Stated Service and Fun	ctional Requirements	
	Identifier	g	- · · · · · · · · · · · · · · · · · · ·	<b>J</b>		
Additional Comments						

## **Collet Connector**

Component / Assembly:	Component Description:			PQS #:		
Collet Connector						
Operator Governing				Rev#:	Date:	
Specification:						
Supplier:	Supplier Component Ref. BOM#:			Ref. Assembly Drwg. #:		
ОЕМ:						
Weight:	Dimensions (HxWxL):		TRL Number:	Ref. FMA#:		
Service (	Conditions Required Ope		rating Parameters	Supplier Design Rating		
Water Depth / Water Dept	h Rating					
Process Pressure Process Temperature Storage Temperature Water Temperature Range Material Trim						
Exposure						
Design Life						
Sandy Service (Y/N)						
O						
Performance Verification	her existing Industry Pract Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #	
Qualifications - Supplem	ental Practices (Optional)					
	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #	
Interfaces	Cupplier Component					
Description	Supplier Component Identifier	GA Drwg. #	Comments Regard	ding Stated Service and Fur	nctional Requirements	
Additional Comments						
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# **Clamp Connector**

Component / Assembly:	Component Description:			PQS #:		
Clamp Connector						
Operator Governing Specification:				Rev#:	Date:	
Specification:						
Supplier:	Supplier Component Identifier:	Ref. BOM#:		Ref. Assembly Drwg. #:		
OEM:						
Weight:	Dimensions (HxWxL):		TRL Number:	Ref. FMA#:		
Samilas	San ditions	Domisiand One	natina Paramatara	Committee D	anian Datina	
	Conditions	Required Ope	erating Parameters	Supplier D	esign Rating	
Water Depth / Water Depth Process Pressure	Rating					
Process Temperature						
Storage Temperature						
Water Temperature Range						
Material Trim Exposure						
Design Life						
Process Media						
Sandy Service (Y/N)						
Qualifications - API or oth	ner existing Industry Pract Standard / Test		Supplier Comments /	T		
Performance Verification	Specification (inc. Rev. No.)	Supplier Test Procedure #	Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #	
Qualifications - Suppleme	Standard / Test		Supplier Comments /	I		
Performance Verification	Specification (inc. Rev. No.)	Supplier Test Procedure #	Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #	
Interfaces						
Description	Supplier Component Identifier	GA Drwg. #	Comments Regard	ding Stated Service and Fur	ctional Requirements	
Additional Comments						

## **Pressure Cap**

Component / Assembly:	Component Description:			PQS#:		
Pressure Cap						
Operator Governing				Rev#:	Date:	
Specification:						
Supplier:	Supplier Component Identifier:	Ref. BOM#:		Ref. Assembly Drwg. #:		
OEM:						
Weight:	Dimensions (HxWxL):		TRL Number:	Ref. FMA#:		
	Conditions	Required Ope	erating Parameters	Supplier De	esign Rating	
Water Depth / Water Depth Process Pressure	n Rating					
Process Temperature						
Storage Temperature						
Water Temperature Range Material Trim	)					
Exposure						
Design Life Process Media						
Survival Reliability Rate						
•						
Qualifications - API or ot	her existing Industry Pract Standard / Test	ice	Supplier Comments /			
Performance Verification	Specification (inc. Rev. No.)	Supplier Test Procedure #	Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #	
Qualifications - Supplem	ental 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 Regard	ling Stated Service and Fund	ctional Requirements	
Additional Comments						

# **Flooding Cap**

Component / Assembly:	Component Description:		PQS #:		
Flooding Cap					
Operator Governing	1		Rev#:	Date:	
Specification:					
Supplier:	Supplier Component Identifier:	Ref. BOM#:		Ref. Assembly Drwg. #:	
OEM:					
Weight:	Dimensions (HxWxL):		TRL Number:	Ref. FMA#:	
		1			
	Conditions	Required Oper	rating Parameters	Supplier D	esign Rating
Water Depth / Water Dept	h Rating				
Process Pressure Process Temperature					
Storage Temperature					
Water Temperature Range Material Trim	Э				
Exposure Design Life					
Design Life					
Qualifications - API or of Performance Verification	ther existing Industry Practi Standard / Test Specification	Supplier Test Procedure #	Supplier Comments / Deviations from	Scaled or Tested	Ref. Supplier Report #
	(inc. Rev. No.)	1 1000daio ii	Standards / Rev #		
Qualifications - Supplem	nental Practices (Optional)				
	Standard / Test	Supplier Test	Supplier Comments /		
Performance Verification	Specification (inc. Rev. No.)	Procedure #	Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #
Interfaces	Cumiliar Component	1	I		
Description	Supplier Component Identifier	GA Drwg. #	Comments Regardi	ng Stated Service and Fun	ctional Requirements
Additional Comments					

#### **Hydraulic Coupler**

Component / Assembly:	Component Description:			PQS#:		
Hydraulic Coupler						
Operator Governing				Rev#:	Date:	
Specification:						
Supplier:	Supplier Component Identifier:	Ref. BOM#:		Ref. Assembly Drwg. #:		
OEM:						
Weight:	Dimensions (HxWxL):		TRL Number:	Ref. FMA#:		
	Conditions	Required Oper	rating Parameters	Supplier De	esign Rating	
Water Depth / Water Depth	n Rating					
Process Pressure Process Temperature						
Storage Temperature						
Water Temperature Range Material Trim	)					
Exposure						
Design Life Process Media						
FIOCESS MEGIA						
Ovelifications ADI or of	har aviating Industry Drast	ina				
Performance Verification	her existing Industry Pract Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #	
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Qualifications Supplem	antal Brastians (Ontional)					
Qualifications - Supplem	ental Practices (Optional) Standard / Test		Supplier Comments /			
Performance Verification	Specification (inc. Rev. No.)	Supplier Test Procedure #	Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #	
Interfaces						
Description	Supplier Component Identifier	GA Drwg. #	Comments Regardi	ng Stated Service and Fund	tional Requirements	
Additional Comments						
-						

#### Hydraulic Flying Lead (HFL)

Component / Assembly:	Component Description:		PQS#:		
Hydraulic Flying Lead (HFL)					
Operator Governing				Rev#:	Date:
Specification:					
Supplier:	Supplier Component Identifier:	Ref. BOM#:		Ref. Assembly Drwg. #:	
OEM:					
Weight:	Dimensions (HxWxL):		TRL Number:	Ref. FMA#:	
Service C		Required Ope	rating Parameters	Supplier I	Design Rating
Water Depth / Water Depth F	Rating				
Process Pressure Process Temperature					
Storage Temperature					
Water Temperature Range					
Material Trim					
Exposure					
Design Life					
Process Media					
Qualifications - API or other	er existing Industry Practic	e			
Qualifications Ai For other	Standard / Test		Supplier Comments /		1
Performance Verification	Specification (inc. Rev. No.)	Supplier Test Procedure #	Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #
Qualifications - Supplemer	ntal 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 #
Interfere					
Interfaces	Supplier Component	0.4.5	O	line Otata d Orandar and Fu	
Description	Identifier	GA Drwg. #	Comments Regard	ling Stated Service and Fu	nctional Requirements
Additional Comments					

#### Subsea Control Module (SCM)

Component / Assembly:	Component Description:			PQS #:	
Subsea Control Module					
(SCM) Operator Governing				Rev#:	Date:
Specification:				Nev#.	Date.
Supplier:	Supplier Component Identifier:	Ref. BOM#:		Ref. Assembly Drwg. #:	
	identifier.				
OEM:					
Weight:	Dimensions (HxWxL):		TRL Number:	Ref. FMA#:	
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Service (	Conditions	Required Ope	rating Parameters	Supplier D	Design Rating
Water Depth / Water Depth	n Rating				
Storage Temperature					
Water Temperature Range Exposure	<u> </u>				
Design Life					
Maximum Working Pressur	re				
Control Fluid Operating Cle	eanliness				
Qualifications - API or otl	her existing Industry Practi	ice			
Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #
Qualifications - Suppleme	ental 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 #
	(1110.1104.110.)		Standards / Nev #		
1.4.6					
Interfaces	Supplier Component				
Description	Identifier	GA Drwg. #	Comments Regard	ding Stated Service and Fu	nctional Requirements
Additional Comments					

#### **SCM Directional Control Valve - HP**

Component / Assembly:	Component Description:			PQS #:	
SCM Directional Control					
Valve - HP Operator Governing				Rev#:	Date:
Specification:				Nev#.	Date.
Supplier:	Supplier Component Identifier:	Ref. BOM#:		Ref. Assembly Drwg. #:	
OEM:					
Weight:	Dimensions (HxWxL):		TRL Number:	Ref. FMA#:	
	Conditions	Required Ope	rating Parameters	Supplier Do	esign Rating
Water Depth / Water Depti Storage Temperature	h Rating				
Water Temperature Range Exposure	)				
Design Life					
Maximum Working Pressu	re				
Qualifications - API or ot	her existing Industry Pract Standard / Test		Supplier Comments /		
Performance Verification	Specification (inc. Rev. No.)	Supplier Test Procedure #	Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #
Qualifications - Supplem	ental 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 #
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Interfaces					
Description	Supplier Component	GA Drwg. #	Comments Regar	rding Stated Service and Fu	nctional Requirements
223	Identifier			<u> </u>	
Additional Comments					
Additional Comments					

#### **SCM Directional Control Valve - LP Choke**

	Component Description:			PQS #:	
SCM Directional Control					
Valve - LP Choke Operator Governing				Rev#:	Date:
Specification:					
Supplier:	Supplier Component Identifier:	Ref. BOM#:		Ref. Assembly Drwg. #:	
OEM:					
Weight:	Dimensions (HxWxL):		TRL Number:	Ref. FMA#:	
	Conditions	Required Oper	rating Parameters	Supplier D	Design Rating
Water Depth / Water Dept Storage Temperature	h Rating				
Water Temperature Range Exposure	e				
Design Life					
Qualifications - API or o	ther existing Industry Pract	tice			
Performance Verification	Standard / Test	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #
Qualifications - Supplem	nental Practices (Optional) Standard / Test		Supplier Comments /		
Performance Verification	Specification (inc. Rev. No.)	Supplier Test Procedure #	Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #
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Interfaces	Supplier Component				
Description	Identifier	GA Drwg. #	Comments Regard	ding Stated Service and Fur	nctional Requirements
Additional Comments					

#### **SCM Directional Control Valve - LP**

Component / Assembly:	Component Description:			PQS #:	
SCM Directional Control					
Valve - LP					1=
Operator Governing Specification:				Rev#:	Date:
Supplier:	Supplier Component	Ref. BOM#:		Ref. Assembly Drwg. #:	
	Identifier:				
OEM:					
Weight:	Dimensions (HxWxL):		TRL Number:	Ref. FMA#:	
Service	Conditions	Required Ope	rating Parameters	Supplier D	Design Rating
Water Depth / Water Dept	h Rating				
Storage Temperature					
Water Temperature Range Exposure	9				
Design Life					
-					
Qualifications - API or of	ther existing Industry Prac Standard / Test		Supplier Comments /	T	T
Performance Verification	Specification (inc. Rev. No.)	Supplier Test Procedure #	Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #
Qualifications Sumplem	ental Brastians (Ontional)				
Qualifications - Suppleir	nental Practices (Optional) Standard / Test		Supplier Comments /	T	
Performance Verification	Specification (inc. Rev. No.)	Supplier Test Procedure #	Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #
Interfaces					
Description	Supplier Component	GA Drwg. #	Comments Regard	ding Stated Service and Fu	nctional Requirements
	Identifier				
Additional Comments					

#### **Shuttle Valve**

Component / Assembly:	: Component Description:			PQS #:		
Shuttle Valve						
Operator Governing				Rev#:	Date:	
Specification:						
Supplier:	Supplier Component Identifier:	Ref. BOM#:		Ref. Assembly Drwg. #:		
OEM:						
\A/-:	Dimensions (HxWxL):		TDI Namela and	Ref. FMA#:		
Weight:	Dimensions (HXWXL):		TRL Number:	Ket. FWA#:		
Service (	Conditions	Required Ope	erating Parameters	Supplier D	esign Rating	
Water Depth / Water Dept	h Rating					
Storage Temperature Water Temperature Range	`					
Exposure	<del>;</del>					
Design Life						
Qualifications - API or ot	her existing Industry Prac	tice				
Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #	
Qualifications - Supplem	ental 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	GA Drwg. #	Comments Pagar	ding Stated Service and Fur	ectional Paguirements	
Безоприон	Identifier	GA DIWG. #	Johnnents Regal	amy otated octylee and Ful	ionorial requirements	
Additional Comments						

#### **SCM Selector Valve - HP**

Component / Assembly:	Component Description:			PQS #:		
SCM Selector Valve - HP						
Operator Governing				Rev#:	Date:	
Specification:						
Supplier:	Supplier Component	Ref. BOM#:		Ref. Assembly Drwg. #:		
Сирриси	Identifier:	11011 20111111				
0511						
OEM:						
Weight:	Dimensions (HxWxL):		TRL Number:	Ref. FMA#:		
Service (	Conditions	Required Oper	ating Parameters	Supplier D	esign Rating	
Water Depth / Water Deptl	n Rating					
Storage Temperature						
Water Temperature Range	)					
Exposure Design Life						
Design Life						
Qualifications - API or ot	her existing Industry Prac	ctice				
	Standard / Test	Supplier Test	Supplier Comments /			
Performance Verification	Specification	Procedure #	Deviations from	Scaled or Tested	Ref. Supplier Report #	
	(inc. Rev. No.)	11000001011	Standards / Rev #			
Qualifications - Supplem	ental Practices (Optional)					
	Standard / Test	Supplier Test	Supplier Comments /			
Performance Verification	Specification	Procedure #	Deviations from	Scaled or Tested	Ref. Supplier Report #	
	(inc. Rev. No.)		Standards / Rev #			
Interfaces						
Description	Supplier Component	GA Drwg. #	Comments Regardi	ng Stated Service and Fun	ctional Requirements	
	Identifier				1	
Additional Comments						

#### **SCM Selector Valve - LP**

Component / Assembly:	Component Description:			PQS #:		
SCM Selector Valve - LP						
Operator Governing				Rev#:	Date:	
Specification:						
Supplier:	Supplier Component Identifier:	Ref. BOM#:		Ref. Assembly Drwg. #:		
OEM:						
Weight:	Dimensions (HxWxL):		TRL Number:	Ref. FMA#:		
Weight.	Difficitions (TIXVVL).		TIVE HUMBER.	Nei. I MAT.		
	Conditions	Required Ope	erating Parameters	Supplier D	Design Rating	
Water Depth / Water Dept	h Rating					
Storage Temperature Water Temperature Range	2					
Exposure	·					
Design Life						
Qualifications - API or of	ther existing Industry Prac Standard / Test	tice	Cumpliar Comments /		1	
Performance Verification	Specification	Supplier Test	Supplier Comments / Deviations from	Scaled or Tested	Ref. Supplier Report #	
	(inc. Rev. No.)	Procedure #	Standards / Rev #			
Qualifications - Supplem	ental Practices (Optional) Standard / Test		Cupplier Comments /			
Performance Verification	Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #	
Interfaces	Supplier Component	Т	Τ			
Description	Identifier	GA Drwg. #	Comments Regard	ding Stated Service and Fu	nctional Requirements	
Additional Comments						
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 One	erating Parameters	Supplier D	esign Rating	
Water Depth / Water Depth			<b>g</b>	3.00	gg	
Storage Temperature						
Water Temperature Range Exposure						
Design Life						
Qualifications - API or oth	ner existing Industry Praction	ce				
Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #	
Qualifications - Suppleme	ental 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 Rega	rding Stated Service and Fu	nctional Requirements	
Additional Comments						

#### **SCM Dump Valve**

Component / Assembly:	Component Description:			PQS #:		
SCM Dump Valve - LP						
Operator Governing				Rev#:	Date:	
Specification:						
Supplier:	Supplier Component	Ref. BOM#:		Ref. Assembly Drwg. #:		
	Identifier:					
0514						
OEM:						
	<b>5</b> 1 1 (11 11/1 1 )		I==:	<b>D</b> 4		
Weight:	Dimensions (HxWxL):		TRL Number:	Ref. FMA#:		
Service	Conditions	Required Ope	erating Parameters	Supplier D	Design Rating	
Water Depth / Water Depth	n Rating					
Storage Temperature						
Water Temperature Range Exposure						
Design Life						
2 00.g.: 20						
Qualifications - API or ot	her existing Industry Praction Standard / Test	ce	Supplier Comments /			
Performance Verification	Specification	Supplier Test	Deviations from	Scaled or Tested	Ref. Supplier Report #	
	(inc. Rev. No.)	Procedure #	Standards / Rev #			
Qualifications - Supplem	ental Practices (Optional)		0	I		
Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #	
Interfaces	1		1			
Description	Supplier Component Identifier	GA Drwg. #	Comments Regar	ding Stated Service and Fu	nctional Requirements	
	identinei					
Additional Comments						

#### **Accumulator**

Component / Assembly:	Component Description:			PQS #:		
Accumulator						
Operator Governing Specification:	R			Rev#:	Date:	
Supplier:	Supplier Component Identifier:	Ref. BOM#:		Ref. Assembly Drwg. #:		
OEM:						
Weight:	Dimensions (HxWxL):		TRL Number:	Ref. FMA#:		
Service (	     Conditions	Required Ope	rating Parameters	Supplier D	Pesign Rating	
Water Depth / Water Depth	Rating		•			
Storage Temperature	rramg					
Water Temperature Range						
Exposure Design Life						
Nitrogen Precharge Pressu	ire					
Qualifications - API or otl	her existing Industry Praction Standard / Test	ce T	Cumplier Commonts /			
Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #	
Qualifications - Supplement	ental Practices (Optional) Standard / Test	-	Supplier Comments /			
Performance Verification	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 Regar	ding Stated Service and Fu	nctional Requirements	
	identiner					
Additional Comments						

#### **Chemical Injection Metering Valve**

Component / Assembly:	Component Description:			PQS #:		
Chemical Injection						
Metering Valve						
Operator Governing				Rev#:	Date:	
Specification:						
Supplier:	Supplier Component Identifier:	Ref. BOM#:		Ref. Assembly Drwg. #:		
	identifier:					
OEM:						
Weight:	Dimensions (HxWxL):		TRL Number:	Ref. FMA#:		
	Conditions	Required Ope	rating Parameters	Supplier D	Design Rating	
Water Depth / Water Depth Process Pressure - Upstrea						
Pressure drop	AIII					
Process Temperature						
Storage Temperature						
Water Temperature and Ra	ange					
Material Trim						
Exposure Design Life						
Process Media						
Flow Rates						
Class of Service						
Chemical Viscosity Range						
Chemical Cleanliness						
Qualifications - API or oth	ner existing Industry Pract Standard / Test	tice	0		1	
Performance Verification	Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #	
Qualifications - Suppleme						
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 Regard	ding Stated Service and Fu	nctional 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. #:		
	identifier.					
OEM:						
Weight:	Dimensions (HxWxL):		TRL Number:	Ref. FMA#:		
	Conditions	Required Ope	erating Parameters	Supplier Do	esign Rating	
Process Temperature Water Temperature and Ra	ongo					
Exposure	ange					
Design Life						
Qualifications - API or of	her existing Industry Pract	ice				
Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #	
Qualifications - Supplem	ental Practices (Optional)				1	
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	GA Drwg. #	Comments Regar	rding Stated Service and Fur	nctional Requirements	
·	Identifier			-	·	
Additional Care						
Additional Comments						

#### **Electrical Flying Lead (EFL)**

Component / Assembly:	Component Description:			PQS #:	
Electrical Flying Lead					
(EFL) Operator Governing				Rev#:	Date:
Specification:					34.0
Supplier:	Supplier Component Identifier:	Ref. BOM#:		Ref. Assembly Drwg. #:	
	Tuo minori				
OEM:					
Weight:	Dimensions (HxWxL):		TRL Number:	Ref. FMA#:	
Service (	Conditions	Required Oper	ating Parameters	Supplier Do	esign Rating
Water Depth / Water Depth	Rating				
Storage Temperature Water Temperature and Ra	inge				
Exposure	inge -				
Design Life					
Qualifications - API or oth	er existing Industry Praction	ce			
Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #
Qualifications - Suppleme	ental 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 #
	(IIIC. Rev. No.)		Standards / Rev #		
Interfaces					
Description	Supplier Component Identifier	GA Drwg. #	Comments Regar	rding Stated Service and Fu	nctional Requirements
Additional Comments					

#### **Electrical Wet Mate Connector**

	Component Description:			PQS #:		
Electrical Wet Mate						
Connector				<b>5</b> "	<b>I</b>	
Operator Governing Specification:				Rev#:	Date:	
Specification.						
Supplier:	Supplier Component	Ref. BOM#:		Ref. Assembly Drwg. #:		
опринет.	Identifier:	Nei. Bollim.		Rei. Assembly Diwg. #.		
OEM:						
Weight:	Dimensions (HxWxL):		TRL Number:	Ref. FMA#:		
Service (	Conditions	Required Opera	ating Parameters	Supplier De	esign Rating	
Water Depth / Water Depth		поданов орон	9			
Storage Temperature	Raung					
Water Temperature and Ra	ange					
Exposure	, <u>J</u> .					
Design Life						
Ovelifications ADI or oth	an aviatina Industry Drasti					
Qualifications - API or otr	ner existing Industry Practi Standard / Test		Supplier Comments /			
Performance Verification	Specification (inc. Rev. No.)	Supplier Test Procedure #	Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #	
	, ,					
Qualifications - Suppleme	ental Practices (Optional)					
	Standard / Test	Supplier Test	Supplier Comments /			
Performance Verification	Specification (inc. Rev. No.)	Procedure #	Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #	
Interfaces						
Description	Supplier Component	GA Drwg. #	Comments Regar	ding Stated Service and Fur	nctional Requirements	
	Identifier	g			, , , , , ,	
Additional Comments						

#### **Flow Meter**

Supplier: Supplier Component Identifier: Ref. BOM#: Ref. BOM#: Ref. Assembly Drwg. #:  DEM: TRL Number: Ref. FMA#:  Service Conditions Required Operating Parameters Supplier Design Rating  Water Depth / Water Depth Rating Process Temperature  Process Temperature Water Temperature Water Temperature Water Temperature Use Temperature Water Temperature Use Temperature	Component / Assembly:	Component Description:			PQS#:		
Supplier: Supplier Component Identifier: Ref. BOM#: Ref. Assembly Drwg. #:  DEM: Ref. Weight: Dimensions (HxWxL): TRL Number: Ref. FMA#:  Service Conditions Required Operating Parameters Supplier Design Rating Process Imperature Supplier Design Rating Process Imperature and Range Exposure Design Life Maker Imperature and Range Exposure Design Life Maker Imperature and Range Exposure Process Imperature Supplier Design Rating Process Imperature Supplier Process	Flow Meter						
Supplier: Supplier Component Identifier:  Supplier Component Identifier:  Ref. BOM#:  Ref. BOM#:  Ref. Assembly Drwg, #:  Ref. FMA#:  Service Conditions  Required Operating Parameters  Supplier Design Rating  Process Temperature  Process Temperature  Process Temperature  Process Temperature  Processing Temperature  Ref. FMA#:  Supplier Design Rating  Parameters  Supplier Design Rating  Parameters  Supplier Design Rating  Parameters  Ref. FMA#:  Ref. FMA#:  Ref. FMA#:  Supplier Design Rating  Parameters  Supplier Comments / Deviations from Standards / Rev. #  Supplier Comments / Deviations from Standards / Rev. #  Parameters  Parameters  Supplier Comments / Deviations from Standards / Rev. #  Parameters  Parameters  Supplier Comments / Deviations from Standards / Rev. #  Parameters  Parameters  Supplier Comments / Deviations from Standards / Rev. #  Parameters  Parameters  Parameters  Supplier Comments / Deviations from Standards / Rev. #  Parameters  Parameters  Supplier Comments / Deviations from Standards / Rev. #  Parameters  Parameters  Supplier Comments / Deviations from Standards / Rev. #  Parameters  Parameters  Parameters  Supplier Comments / Deviations from Standards / Rev. #  Parameters  Parameters  Parameters  Supplier Comments / Deviations from Standards / Rev. #  Parameters  Parameters  Parameters  Parameters  Parameters  Param	Operator Governing				Rev#:	Date:	
Identifier:	Specification:						
Weight:    Dimensions (HxWxL):   TRL Number:   Ref. FMA#:	Supplier:		Ref. BOM#:		Ref. Assembly Drwg. #:		
Service Conditions Water Depth / Water Depth Rating Process Temperature Process Temperature Valer Temp	OEM:						
Water Depth / Water Depth Rating Process Temperature Process Temperature Very Comments of Comments (Very Standard / Test Specification (Inc. Rev. No.)  Qualifications - API or other existing Industry Practice Standard / Test Specification (Inc. Rev. No.)  Qualifications - Supplemental Practices (Optional) Standard / Test Specification (Inc. Rev. No.)  Qualifications - Supplemental Practices (Optional) Standard / Test Specification (Inc. Rev. No.)  Qualifications - Supplemental Practices (Optional) Standard / Test Specification (Inc. Rev. No.)  Qualifications - Supplemental Practices (Optional) Standard / Test Specification (Inc. Rev. No.)  Performance Verification Standard / Test Specification (Inc. Rev. No.)  Standard / Test Specification (Inc. Rev. No.)  Procedure # Supplier Comments / Deviations from Standards / Rev # Scaled or Tested Ref. Supplier Report # Standard / Test Specification (Inc. Rev. No.)  Tender of the Comments / Deviations from Standards / Rev # Scaled or Tested Ref. Supplier Report # Standards / Rev # Scaled or Tested Ref. Supplier Report # Deviations from Standards / Rev # Scaled or Tested Ref. Supplier Report # Comments / Deviations from Standards / Rev # Scaled or Tested Ref. Supplier Report # Comments / Deviations from Standards / Rev # Scaled or Tested Ref. Supplier Report # Comments / Deviations from Standards / Rev # Comme	Weight:	Dimensions (HxWxL):		TRL Number:	Ref. FMA#:		
Process Temperature Storage Temperature Storage Temperature Water Temperature and Range Exposure Design Life Maximum Pressure Rating Industry Practice Standard 7 Test Supplier Comments / Deviations from Standards / Rev #  Description  Qualifications - API or other existing Industry Practice  Standard 7 Test Specification (inc. Rev. No.)  Standard 7 Test Procedure #  Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Description  Qualifications - Supplemental Practices (Optional)  Standard 7 Test Specification (inc. Rev. No.)  Standard 7 Test Procedure #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Scaled or Tested Ref. Supplier Report #  Ref. Supplier Report #  Ref. Supplier Report #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Interfaces  Description  Supplier Component Identifier  GA Drwg. #  Comments Regarding Stated Service and Functional Requirements	Service (	Conditions	Required Ope	rating Parameters	Supplier De	esign Rating	
Process Temperature Water Temperature and Range Exposure Design Life Maximum Pressure Rating Insulation (Y/N) Flow Ratin Accuracy (+/-) Flow Range  Performance Verification (inc. Rev. No.)  Publifications - Supplemental Practices (Optional)  Performance Verification (inc. Rev. No.)  Publifications - Supplemental Practices (Optional)  Performance Verification (inc. Rev. No.)  Standard / Test Specification (inc. Rev. No.)  Standard / Rev. #  Procedure #  Supplier Test Procedure #  Supplier Test Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Ref. Supplier Report #  Standards / Rev #  Deviations from Standards / Rev #  Standards / Rev #  Procedure #  Procedure #  Description  Standard / Rev. #  Comments Regarding Stated Service and Functional Requirements  Comments Regarding Stated Service and Functional Requirements		Rating					
Storage Temperature Water Temperature and Range Exposure Design Life Maximum Pressure Rating Insulation (YN) Flow Rate Accuracy (+/-) Flow Range  Qualifications - API or other existing Industry Practice Standard / Test Specification (inc. Rev. No.)  Supplier Test Procedure #  Supplier Comments/ Deviations from Standards / Rev #  Scaled or Tested Ref. Supplier Report #  Standards / Rev #  Qualifications - Supplemental Practices (Optional)  Performance Verification Standard / Test Specification (inc. Rev. No.)  Standard / Test Specification (inc. Rev. No.)  Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Standards / Rev #  Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Standards / Rev #  Standards / Rev #  Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Comments Regarding Stated Service and Functional Requirements							
Water Temperature and Range Exposure Design Life Maker Accuracy (+*) Flow Range  Dualifications - API or other existing Industry Practice Performance Verification (inc. Rev. No.)  Dualifications - Supplemental Practices (Optional)  Dualifications - Supplemental Practices (Optional)  Performance Verification (inc. Rev. No.)  Standard / Test Specification (inc. Rev. No.)  Standard / Test Specification (inc. Rev. No.)  Standard / Test Supplier Test Procedure # Standards / Rev # Supplier Comments / Deviations from Standards / Rev #							
Design Life Maximum Pressure Rating Insulation (Y/N) Flow Rate Accuracy (+/-) Flow Range  Dualifications - API or other existing Industry Practice Standard / Test Specification (inc. Rev. No.)  Performance Verification  Standard / Test Specification (inc. Rev. No.)  Standard / Test Specification Standard / Test Specification Standard / Test Specification (inc. Rev. No.)  Standard / Test Supplier Test Deviations from Standards / Rev. #  Deviations from Standards / Rev. #  Supplier Comments / Deviations from Standards / Rev. #  Supplier Test Deviations from Standards / Rev. #  Supplier Comments / Deviations from Standards / Rev. #  Description  Supplier Comments / Specification (inc. Rev. No.)  Supplier Test Deviations from Standards / Rev. #  Supplier Report #  Comments Regarding Stated Service and Functional Requirements  Description  Supplier Component Identifier  GA Drwg. #  Comments Regarding Stated Service and Functional Requirements	Water Temperature and Ra	ange					
Maximum Pressure Rating Insulation (YN) Plow Rate Accuracy (+/-) Flow Range  Qualifications - API or other existing Industry Practice Performance Verification (inc. Rev. No.)  Qualifications - Specification (inc. Rev. No.)  Qualifications - Supplemental Practices (Optional)  Performance Verification Standard / Test Specification (inc. Rev. No.)  Qualifications - Supplemental Practices (Optional)  Standard / Test Procedure #  Supplier Test Procedure #  Supplier Test Deviations from Standards / Rev #  Supplier Test Deviations from Standards / Rev #  Scaled or Tested Ref. Supplier Report #  Ref. Supplier Report #  Standards / Rev #  Ref. Supplier Report #  Standards / Rev #  Comments / Deviations from Standards / Rev #  Scaled or Tested Ref. Supplier Report #  Ref. Supplier Report #  Comments / Deviations from Standards / Rev #  Comments Regarding Stated Service and Functional Requirements  Description  Supplier Component Identifier  GA Drwg. #  Comments Regarding Stated Service and Functional Requirements	Exposure						
Insulation (Y/N) Flow Rate Accuracy (+/-) Flow Range    Dualifications - API or other existing Industry Practice   Standard / Test   Supplier Test   Deviations from   Standards / Rev #							
Flow Range  Qualifications - API or other existing Industry Practice  Standard / Test Specification (inc. Rev. No.)  Qualifications - Supplemental Practices (Optional)  Standard / Test Procedure # Standards / Rev # Scaled or Tested Ref. Supplier Report # Ref. Supplier Report # Standards / Rev # Scaled or Tested Ref. Supplier Report # Ref. Supplier Report # Standards / Rev # Scaled or Tested Ref. Supplier Report # Standards / Rev # Scaled or Tested Ref. Supplier Report # Ref. Supplier R							
Qualifications - API or other existing Industry Practice  Standard / Test Specification (inc. Rev. No.)  Performance Verification (inc. Rev. No.)  Qualifications - Supplemental Practices (Optional)  Standard / Test Specification (inc. Rev. No.)  Supplier Comments / Deviations from Standards / Rev #  Qualifications - Supplemental Practices (Optional)  Standard / Test Specification (inc. Rev. No.)  (inc. Rev. No.)  Supplier Test Procedure #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Scaled or Tested Ref. Supplier Report #  Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Scaled or Tested Ref. Supplier Report #  Ref. Supplier Report #  Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Scaled or Tested Ref. Supplier Report #  Standards / Rev #  Scaled or Tested Ref. Supplier Report #  Standards / Rev #  Scaled or Tested Ref. Supplier Report #  Standards / Rev #  Scaled or Tested Ref. Supplier Report #  Scaled or Tested Ref. Supplier Report #  Scaled or Tested Ref. Supplier Report #  Standards / Rev #  Scaled or Tested Ref. Supplier Report #  Scaled or Tested Ref. Suppl	Flow Rate Accuracy (+/-)						
Performance Verification Specification (inc. Rev. No.)  Standard / Test Specification (inc. Rev. No.)  Specification (inc. Rev. No.)  Standards / Rev #  Supplier Test Procedure #  Supplier Test Standards / Rev #  Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #	Flow Range						
Performance Verification Specification (inc. Rev. No.)  Standard / Test Specification (inc. Rev. No.)  Specification (inc. Rev. No.)  Standards / Rev #  Supplier Test Procedure #  Supplier Test Standards / Rev #  Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #							
Performance Verification Specification (inc. Rev. No.)  Standard / Test Specification (inc. Rev. No.)  Specification (inc. Rev. No.)  Standards / Rev #  Supplier Test Procedure #  Supplier Test Standards / Rev #  Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #  Supplier Comments / Deviations from Standards / Rev #							
Performance Verification (inc. Rev. No.)    Performance Verification (inc. Rev. No.)   Procedure #   Deviations from Standards / Rev #	Qualifications - API or oth		ice				
Qualifications - Supplemental Practices (Optional)  Performance Verification Standard / Test Specification (inc. Rev. No.)  Standard / Test Procedure # Supplier Comments / Deviations from Standards / Rev # Scaled or Tested Ref. Supplier Report # Standards / Rev #	Performance Verification	Specification		Deviations from	Scaled or Tested	Ref. Supplier Report #	
Performance Verification Standard / Test Specification (inc. Rev. No.)  Standard / Test Specification (inc. Rev. No.)  Supplier Test Procedure # Supplier Comments / Deviations from Standards / Rev # Ref. Supplier Report # Ref. Supplier Ref.							
Performance Verification Standard / Test Specification (inc. Rev. No.)  Standard / Test Specification (inc. Rev. No.)  Supplier Test Procedure # Supplier Comments / Deviations from Standards / Rev # Ref. Supplier Report # Ref. Supplier Ref.							
Performance Verification Standard / Test Specification (inc. Rev. No.)  Standard / Test Specification (inc. Rev. No.)  Supplier Test Procedure # Supplier Comments / Deviations from Standards / Rev # Ref. Supplier Report # Ref. Supplier Ref.							
Performance Verification Standard / Test Specification (inc. Rev. No.)  Standard / Test Specification (inc. Rev. No.)  Supplier Test Procedure # Supplier Comments / Deviations from Standards / Rev # Ref. Supplier Report # Ref. Supplier Ref.							
Performance Verification Standard / Test Specification (inc. Rev. No.)  Standard / Test Specification (inc. Rev. No.)  Supplier Test Procedure # Supplier Comments / Deviations from Standards / Rev # Ref. Supplier Report # Ref. Supplier Ref.							
Performance Verification Standard / Test Specification (inc. Rev. No.)  Standard / Test Specification (inc. Rev. No.)  Supplier Test Procedure # Supplier Comments / Deviations from Standards / Rev # Ref. Supplier Report # Ref. Supplier Ref.							
Performance Verification Standard / Test Specification (inc. Rev. No.)  Standard / Test Specification (inc. Rev. No.)  Supplier Test Procedure # Supplier Comments / Deviations from Standards / Rev # Ref. Supplier Report # Ref. Supplier Ref.							
Performance Verification Standard / Test Specification (inc. Rev. No.)  Standard / Test Specification (inc. Rev. No.)  Supplier Test Procedure # Supplier Comments / Deviations from Standards / Rev # Ref. Supplier Report # Ref. Supplier Ref.							
Performance Verification Standard / Test Specification (inc. Rev. No.)  Standard / Test Specification (inc. Rev. No.)  Supplier Test Procedure # Supplier Comments / Deviations from Standards / Rev # Ref. Supplier Report # Ref. Supplier Ref.							
Performance Verification Standard / Test Specification (inc. Rev. No.)  Standard / Test Specification (inc. Rev. No.)  Supplier Test Procedure # Supplier Comments / Deviations from Standards / Rev # Ref. Supplier Report # Ref. Supplier Ref.	Qualifications - Suppleme	ental Practices (Ontional)					
Performance Verification (inc. Rev. No.)  Specification (inc. Rev. No.)  Procedure #  Deviations from Standards / Rev #  Standards / Rev #  Scaled or Tested Ref. Supplier Report #  Ref. Supplier Report #  Ref. Supplier Report #  Supplier Report #  Comments Regarding Stated Service and Functional Requirements  Comments Regarding Stated Service and Functional Requirements	<u> </u>		Cumplier Test	Supplier Comments /			
Description  Supplier Component Identifier  GA Drwg. # Comments Regarding Stated Service and Functional Requirements	Performance Verification			Deviations from		Ref. Supplier Report #	
Description  Supplier Component Identifier  GA Drwg. # Comments Regarding Stated Service and Functional Requirements							
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Description  Supplier Component Identifier  GA Drwg. # Comments Regarding Stated Service and Functional Requirements	Interfaces						
Identifier  GA DIWG. # Comments Regarding Stated Service and 1 directional Requirements		Supplier Component	CA Drug #	Commente Bogar	ding Stated Service and Eur	actional Paguiromenta	
Additional Comments	Description		GA DIWg. #	Confinents Regard	uling Stated Service and Fur	ictional Requirements	
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Additional Comments							
Additional Comments	A delition of Comments						
	Auditional Comments						

#### **Process Transmitter**

Component / Assembly:	: Component Description:			PQS #:		
Process Transmitter						
Operator Governing	İ			Rev#:	Date:	
Specification:						
Supplier:	Supplier Component Identifier:	Ref. BOM#:		Ref. Assembly Drwg. #:		
OEM:						
Weight:	Dimensions (HxWxL):		TRL Number:	Ref. FMA#:		
Service (	Conditions	Required Oper	ating Parameters	Supplier D	Design Rating	
Water Depth / Water Dept	h Rating					
Process Pressure	Trading					
Process Temperature						
Storage Temperature						
Water Temperature and R	ange					
Exposure						
Design Life						
Process Media						
Maximum Pressure Rating Temperature Rating	)					
Calibrated Pressure Rang						
Pressure Accuracies (+/-)	C					
Calibrated Temperature R	ange					
Temperature Accuracies (						
	ther existing Industry Prac	tice				
	Standard / Test	Supplier Test	Supplier Comments /			
Performance Verification	Specification	Procedure #	Deviations from	Scaled or Tested	Ref. Supplier Report #	
	(inc. Rev. No.)	110000010 #	Standards / Rev #			
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Qualifications - Supplem	nental Practices (Optional) Standard / Test	Τ	Supplier Comments /	T .		
Performance Verification	Specification (inc. Rev. No.)	Supplier Test Procedure #	Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #	
Interfaces			_			
Description	Supplier Component Identifier	GA Drwg. #	Comments Rega	rding Stated Service and Fu	inctional Requirements	
Additional Comments						

#### **Sand Detector**

Component / Assembly:	Component Description:		PQS #:			
Sand Detector						
Operator Governing				Rev#:	Date:	
Specification:						
Supplier:	Supplier Component Identifier:	Ref. BOM#:		Ref. Assembly Drwg. #:		
OEM:						
W	D: (11.14/.1)		TDI N	D / FMA#		
Weight:	Dimensions (HxWxL):		TRL Number:	Ref. FMA#:		
Sorvino (	Conditions	Poquired One	erating Parameters	Supplier D	esign Rating	
Water Depth / Water Depth		Required Ope	rating ratameters	Supplier Di	esign Rating	
Process Pressure	realing					
Process Temperature						
Storage Temperature						
Water Temperature and Ra Exposure	ınge					
Design Life Process Media						
Thermal Insulation (Y/N) Maximum Pressure Rating						
Metal Loss Resolution						
Sampling Rate						
Ovelifications ADI or oth	an aviatina Induator Duanti					
Qualifications - API or otr	ner existing Industry Praction Standard / Test		Supplier Comments /			
Performance Verification	Specification (inc. Rev. No.)	Supplier Test Procedure #	Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #	
Qualifications - Suppleme						
Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #	
Interfaces	1					
Description	Supplier Component Identifier	GA Drwg. #	Comments Regard	ding Stated Service and Fun	ctional Requirements	
Additional Comments						

#### **Pig Detector**

Component / Assembly:	Component Description:			PQS #:		
Pig Detector						
Operator Governing Specification:		Re		Rev#:	Date:	
Supplier:	Supplier Component Identifier:	Ref. BOM#:	Ref. BOM#:			
OEM:						
Weight:	Dimensions (HxWxL):		TRL Number:	Ref. FMA#:		
O-miles	04:4:	Daminat On		O	Analism Datin m	
	Conditions	Required Ope	erating Parameters	Supplier D	esign Rating	
Water Depth / Water Depth Process Pressure	n Rating					
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 of	her existing Industry Pract	ice				
Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #	
Qualifications - Supplem	ental Practices (Optional)	1		T	T	
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 Rega	rding Stated Service and Fu	nctional Requirements	
Additional Comments						
Additional Comments						

#### **SCM - Subsea Electronics Module (SEM)**

(inc. Rev. No.)  Standards / Rev #  Standards / Rev	Component / Assembly:	Component Description:			PQS #:	
Operator Governing Specification:  Supplier:  Supplier Component Identifier:  Weight:  DEM:  Service Conditions  Required Operating Parameters  Supplier Region / Service Parameters  Water Depth / Water Depth Rating Storage Temperature  Valuer Temperature Range Design Life  Performance Verification (inc. Rev. No.)  Cualifications - API or other existing industry Practice  Specification (inc. Rev. No.)  Cualifications - Supplemental Practices (Optional)  Cualifications - Supplemental Practices (Optional)  Performance Verification (inc. Rev. No.)  Cualifications - Supplemental Practices (Optional)  Cualifications - Supplemental Practices						
Supplier:   Supplier Component   Identifier:	Module (SEM)				D#-	D-1
Medit   Medi					Rev#:	Date:
Weight: Dimensions (HxWxL): TRL Number: Ref. FMA#:  Service Conditions Required Operating Parameters Supplier Design Rating  Water Depth (Water Depth Pating Storage Temperature Range Exposure Design Life  Performance Verification Supplier Pactices (Optional (Inc. Rev. No.))  Qualifications - API or other existing Industry Practice  Performance Verification (Inc. Rev. No.)  Qualifications - Supplemental Practices (Optional (Inc. Rev. No.))  Qualifications - Supplemental (Inc. Rev. No.)  Qualifications - Supplementa	Supplier:		Ref. BOM#:		Ref. Assembly Drwg. #:	
Weight:    Dismalations (HAWXL):   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  Cualifications - API or other existing Industry Practice  Performance Verification  Standard / Test Specification  (inc. Rev. No.)  Cualifications - Supplemental Practices (Optional)  Standard / Test Specification  Secolication  Supplier Test Procedure #  Supplier Test Procedure #  Supplier Test Procedure #  Supplier Test Supplier Test Supplier Test Supplier Test Specification  (inc. Rev. No.)  Supplier Test Specification  (inc. Rev. No.)  Supplier Test Supplier Te	OEM:					
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Water Depth / Water Depth Rating Storage Temperature Water Temperature Water Temperature Personance Verification  Gualifications - API or other existing industry Practice Standard / Test Specification (inc. Rev. No.)  Gualifications - Supplemental Practices (Optional)  Gualifications - Supplemental Pr						
Storage Temperature Range  Exposure  Design Life  Coulifications - API or other existing Industry Practice  Performance Verification  Standard / Test Specification (inc. Rev. No.)  Coulifications - Supplemental Practices (Optional)  Performance Verification  Standard / Test Specification (inc. Rev. No.)  Standard / Test Specification (inc. Rev. No.)  Standards / Rev. #  Coulifications - Supplemental Practices (Optional)  Performance Verification  Standard / Test Specification (inc. Rev. No.)  Coulifications - Supplemental Practices (Optional)  Standard / Test Specification (inc. Rev. No.)  Coulifications - Supplemental Practices (Optional)  Standard / Test Specification (inc. Rev. No.)  Coulifications - Supplemental Practices (Optional)  Standard / Test Specification (inc. Rev. No.)  Coulifications - Supplemental Practices (Optional)  Standard / Test Specification (inc. Rev. No.)  Coulifications - Supplemental Practices  Description  Standard / Rev. #  Comments Regarding Stated Service and Functional Requirement Identifier  Comments Regarding Stated Service and Functional Requirement Identifier	Service C	Conditions	Required Oper	ating Parameters	Supplier D	esign Rating
Water Temperature Range Exposure Design Life		Rating				
Description  Descr	Water Temperature Range					
Qualifications - API or other existing Industry Practice  Performance Verification (inc. Rev. No.)  Qualifications - Supplemental Practices (Optional)  Performance Verification (inc. Rev. No.)  Qualifications - Supplemental Practices (Optional)  Performance Verification (inc. Rev. No.)  Qualifications - Supplemental Practices (Optional)  Standard / Test Procedure # Supplier Test						
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Identifier  Identi		Supplier Component				
Additional Comments	Description		GA Drwg. #	Comments Rega	arding Stated Service and Fu	unctional Requirements
Additional Comments						
Additional Comments						
Additional Comments	Additional Comments					
	Additional Comments					

#### **SCM - Valve Electronics Module (VEM)**

Component / Assembly:	Component Description:			PQS #:		
SCM - Valve Electronics Module (VEM)						
Operator Governing				Rev#:	Date:	
Specification:						
Supplier:	Supplier Component Identifier:	Ref. BOM#:	Ref. BOM#:		:	
OEM:						
Weight:	Dimensions (HxWxL):		TRL Number:	Ref. FMA#:		
	Conditions	Required Ope	rating Parameters	Supplier I	Design Rating	
Water Depth / Water Depth	Rating					
Storage Temperature Water Temperature Range						
Exposure						
Design Life						
Overliff and any ARI and the						
Qualifications - API or oti	ner existing Industry Prac Standard / Test		Supplier Comments /			
Performance Verification	Specification (inc. Rev. No.)	Supplier Test Procedure #	Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #	
Qualifications - Supplement			Supplier Comments /	1		
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 Regard	ding Stated Service and F	unctional Requirements	
Additional Comments						
Additional Comments						

#### **Anti-Corrosion Coating**

Component / Assembly:	Component Description:			PQS #:		
Anti-Corrosion Coating						
Operator Governing				Rev#:	Date:	
Specification:						
Supplier:	Supplier Component Identifier:			Ref. Assembly Drwg. #:		
	identifier.					
OEM:						
Weight:	Dimensions (HxWxL):		TRL Number:	Ref. FMA#:		
Service (	Conditions	Required On	erating Parameters	Supplier I	Design Rating	
Process Temperature	Jonations	required Op-	crating randineters	Опррист 1	Jesign Rating	
Storage Temperature						
Water Temperature Range	1					
Design Life Storage Environment						
Stroage Expected Duration Cathodic Protection System	n m Compatibility					
Qualifications - API or ot	her existing Industry Prac	ctice	Owner lieu Ochara and a /	T		
Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #	
Qualifications - Supplem	ental 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 Regar	rding Stated Service and Fu	unctional Requirements	
Additional Comments						

#### **Wet Thermal Insulation**

Component / Assembly:	: Component Description:			PQS #:		
Wet Thermal Insulation						
Operator Governing				Rev#:	Date:	
Specification:						
Supplier:	Supplier Component Identifier:	Ref. BOM#:		Ref. Assembly Drwg. #:		
	-					
OEM:						
Weight:	Dimensions (HxWxL):		TRL Number:	Ref. FMA#:		
Service (	Conditions	Required Ope	rating Parameters	Supplier	Design Rating	
Water Depth / Water Depth	n Rating					
Storage Temperature						
Water Temperature Range	)					
Exposure						
Design Life Storage Environment						
Storage Duration						
	Design Temperature Rating	1				
Minimum Wet Operating /	Design Temperature Rating					
Minimum Adhesive Shear	Strength					
Qualifications - API or of	her existing Industry Pract	tice				
Qualifications - Al 1 of ot	Standard / Test		Supplier Comments /			
Performance Verification	Specification	Supplier Test	Deviations from	Scaled or Tested	Ref. Supplier Report #	
	(inc. Rev. No.)	Procedure #	Standards / Rev #			
Qualifications - Sunnlam	ental Practices (Optional)					
edalifications - oupplem	Standard / Test		Supplier Comments /			
Performance Verification	Specification	Supplier Test	Deviations from	Scaled or Tested	Ref. Supplier Report #	
	(inc. Rev. No.)	Procedure #	Standards / Rev #			
Interfaces						
	Supplier Component					
Description	Identifier	GA Drwg. #	Comments Rega	arding Stated Service and	Functional Requirements	
Additional Comments						
, taattional comments						

#### **Sacrificial Anode**

Component / Assembly:	Component Description:			PQS #:	
Sacrificial Anode					
Operator Governing				Rev#:	Date:
Specification:					
Supplier:	Supplier Component	Ref. BOM#:		Ref. Assembly Drwg. #:	
	Identifier:				
OEM:					
Weight:	Dimensions (HxWxL):		TRL Number:	Ref. FMA#:	
	Conditions	Required Opera	ting Parameters	Supplier D	esign Rating
Maximum Process Tempera Minimum Process Tempera	ature iture				
Maximum Seawater Tempe	erature				
Minimum Seawater Tempe Design Life	rature				
Design Life					
Qualifications - API or oth	er existing Industry Praction	L ce			
Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #
Qualifications - Suppleme					
Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #
Interfaces	Supplier Component	I			
Description	Identifier	GA Drwg. #	Comments Regard	ding Stated Service and Fu	nctional Requirements
Additional Comments			,		

#### Installation and Workover Control System (IWOCS) Assembly

Component / Assembly:	Component Description:		PQS #:		
Installation and Workover Control System (IWOCS)					
Operator Governing				Rev#:	Date:
Specification:					52.01
Supplier:	Supplier Component Identifier:	Ref. BOM#:		Ref. Assembly Drwg	#:
DEM:					
			1		
Weight:	Dimensions (HxWxL):		TRL Number:	Ref. FMA#:	
	Conditions	Required Ope	rating Parameters	Supplie	er Design Rating
Water Depth / Water Depth Process Temperature	Rating				
Storage Temperature					
Nater Temperature and Ra	inae				
Exposure					
Design Life					
Process Media					
Working Pressure					
<b>,</b>					
Qualifications - API or oth	ner existing Industry Pract	tice			
Qualifications - Al 1 of oti	Standard / Test		Supplier Comments /		
Performance Verification	Specification (inc. Rev. No.)	Supplier Test Procedure #	Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #
Qualifications - Suppleme	ental Practices (Optional) Standard / Test		Supplier Comments /	1	
Performance Verification	Specification (inc. Rev. No.)	Supplier Test Procedure #	Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #
Interfaces	Supplier Component	Τ	T		
Description	Identifier	GA Drwg. #	Comments Regar	rding Stated Service and	d Functional Requirements
Additional Comments					

#### **IWOCS Emergency Quick Disconnect (EQD) Assembly**

Component / Assembly:	Component Description:		PQS #:		
IWOCS Emergency Quick Disconnect (EQD)					
Operator Governing				Rev#:	Date:
Specification:					
Supplier:	Supplier Component Identifier:	Ref. BOM#:		Ref. Assembly Drwg. #	t:
	identifier:				
OEM:					
Weight:	Dimensions (HxWxL):		TRL Number:	Ref. FMA#:	
Service (	onditions	Required One	erating Parameters	Supplier	Design Rating
Water Depth / Water Depth		oquou ope		Саррио	
Process Temperature					
Storage Temperature Water Temperature and Ra	inge				
Exposure					
Design Life Working Pressure					
TVOTKING T TOOGGIO					
Qualifications - API or oth	er existing Industry Prac	tice			
Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #
Qualifications - Suppleme	ental Practices (Optional)				
Performance Verification	Standard / Test Specification	Supplier Test Procedure #	Supplier Comments / Deviations from	Scaled or Tested	Ref. Supplier Report #
	(inc. Rev. No.)	Procedure #	Standards / Rev #		
Interfaces	Cumios Component		1		
Description	Supplier Component Identifier	GA Drwg. #	Comments Regard	ling Stated Service and F	unctional Requirements
Additional Comments					

#### **IWOCS Umbilical and Surface Jumper(s)**

Component / Assembly:	Component Description:			PQS #:	
IWOCS Umbilical and Surface Jumper(s)					
Operator Governing				Rev#:	Date:
Specification:				NOV#.	Duto.
•					
Supplier:	Supplier Component Identifier:	Ref. BOM#:		Ref. Assembly Drwg. #:	
OEM:					
Weight:	Dimensions (HxWxL):		TRL Number:	Ref. FMA#:	
On wine of	Dan dielana	Di	-ti Dt	O	-i Detino
Water Depth / Water Depth	Conditions	Required Opera	ating Parameters	Supplier De	esign Rating
Process Temperature	i Natiliy				
Storage Temperature					
Water Temperature and Ra	ange				
Exposure					
Design Life					
Working Pressure					
Qualifications - API or oth	her existing Industry Pract	ice			
Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #
Qualifications - Supplement					
Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #
1					
Interfaces	Supplier Component	0/ 5	0	dia a Otata I O	- tion - I De
Description	Identifier	GA Drwg. #	Comments Regar	ding Stated Service and Fur	nctional Requirements
Additional Comments					

#### Wellhead Annulus Seal Assembly (Packoffs)

Component / Assembly:	Component Description:			PQS #:	
Wellhead Annulus Seal					
Assembly (Packoffs)				D #	To :
Operator Governing Specification:				Rev#:	Date:
Specification:					
Supplier:	Supplier Component Identifier:	Ref. BOM#:		Ref. Assembly Drwg.	<b>#</b> :
	identiner:				
DEM:					
Veight:	Dimensions (HxWxL):		TRL Number:	Ref. FMA#:	
0 : 4	100	D : 10		0 "	D 1 D 0
Process Pressure / Test Pr	Conditions	Required Ope	rating Parameters	Supplier	Design Rating
Process Pressure / Test Pr	essure				
Design Life / Stress Amplif	ication Factor				
Process Media					
External Pressure Rating (	Annulus)				
Seals - Bore Pressure					
Seals - Annulus Pressure					
Qualifications - API or ot	her existing Industry Prac	tice	0	Т	
Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #
Qualifications - Supplem	ental Practices (Optional)				
	Standard / Test	Supplier Test	Supplier Comments /		
Performance Verification	Specification (inc. Rev. No.)	Procedure #	Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #
Interfaces					
Description	Supplier Component Identifier	GA Drwg. #	Comments Regard	ding Stated Service and F	Functional Requirements
Additional Comments					

#### **Wellhead Casing Hanger**

Component / Assembly:	Component Description:			PQS #:	
Wellhead Casing Hanger					
				D "	la .
Operator Governing				Rev#:	Date:
Specification:					
Supplier:	Supplier Component	Ref. BOM#:		Ref. Assembly Drwg. #:	
	Identifier:				
OEM:					
Weight:	Dimensions (HxWxL):		TRL Number:	Ref. FMA#:	
Samina	Samulitiana	Demiliand One	notine Donometers	Complian D	Assista Batina
	Conditions	Required Ope	rating Parameters	Supplier D	esign Rating
Process Pressure / Test Pressure / Test Pressure / Process Temperature	essure				
Design Life / Stress Amplif	ication Factor				
Process Media	ication r actor				
External Pressure Rating (	Annulus)				
Load Capacity / Limits	, , , , , , , , , , , , , , , , , , , ,				
Tensile / Bending Capacity	r				
Qualifications - API or of	her existing Industry Pract	tico			
Qualifications - AFT of other	Standard / Test		Supplier Comments /	1	
Performance Verification	Specification (inc. Rev. No.)	Supplier Test Procedure #	Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #
Qualifications - Supplement					
Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #
Interfaces	Supplier Component	0.4.5	0	andian Otata d Osarias and E	matica at Demoissance
Description	Identifier	GA Drwg. #	Comments Rega	arding Stated Service and Fu	unctional Requirements
Additional Comments					

#### **HP Wellhead**

Component / Assembly:	Component Description:			PQS #:		
HP Wellhead						
Operator Governing				Rev#:	Date:	
Specification:						
Supplier:	Supplier Component Identifier:	Ref. BOM#:		Ref. Assembly Drwg. #:		
OEM:						
Weight:	Dimensions (HxWxL):	-	TRL Number:	Ref. FMA#:		
Service (	Conditions	Required Ope	rating Parameters	Supplier D	Design Rating	
Water Depth / Water Depth			<b>3</b>		9	
Process Pressure / Test Pr						
Process Temperature						
Design Life / Stress Amplifi	cation Factor					
Process Media						
Load Capacity / Limits						
Tensile / Bending Capacity						
Shear Loading						
Torsion						
Qualifications API or otl	her existing Industry Pract	tico				
Qualifications - Al 1 of oth	Standard / Test		Supplier Comments /			
Performance Verification	Specification (inc. Rev. No.)	Supplier Test Procedure #	Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #	
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	1					
	+					
	+					
Qualifications - Suppleme	ental Practices (Ontional)					
Qualifications cuppleme	Standard / Test		Supplier Comments /		1	
Performance Verification	Specification (inc. Rev. No.)	Supplier Test Procedure #	Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #	
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	+		+			
Interfaces						
	Supplier Component					
Description	Identifier	GA Drwg. #	Comments Rega	arding Stated Service and F	unctional Requirements	
	radritino					
Additional Comments						

#### LP Wellhead

Component / Assembly:	Component Description:		PQS #:			
LP Wellhead						
Operator Governing				Rev#:	Date:	
Specification:				Rev#:	Date:	
, opeomounem						
Supplier:	Supplier Component	Ref. BOM#:		Ref. Assembly Drwg. #:		
	Identifier:					
OEM:						
OLIVI.						
Weight:	Dimensions (HxWxL):		TRL Number:	Ref. FMA#:		
Service (	Conditions	Required Opera	ating Parameters	Supplier D	esign Rating	
Water Depth / Water Deptl	n Rating					
Process Pressure / Test P						
Process Temperature Design Life / Stress Amplif	ication Factor					
Process Media	ication Factor					
Load Capacity / Limits						
Tensile / Bending Capacity	1					
Shear Loading						
Torsion Differential Pressure (Y/N)						
Pressure Balanced (Y/N)						
1 1000010 Balanood (1714)						
Qualifications - API or ot	her existing Industry Pract	tice	Cumpling Comments /			
Performance Verification	Standard / Test Specification	Supplier Test	Supplier Comments / Deviations from	Scaled or Tested	Ref. Supplier Report #	
1 Chomianos vermoation	(inc. Rev. No.)	Procedure #	Standards / Rev #	Coalca of Testea	rtoi. Oupplier rtoport #	
<b>Qualifications - Supplem</b>	ental Practices (Optional)					
	Standard / Test	Supplier Test	Supplier Comments /			
Performance Verification	Specification (inc. Rev. No.)	Procedure #	Deviations from	Scaled or Tested	Ref. Supplier Report #	
	(Inc. Rev. No.)		Standards / Rev #			
Interfaces						
	Supplier Component					
Description	Identifier	GA Drwg. #	Comments Rega	rding Stated Service and Fu	unctional Requirements	
Additional Comments						
				<u> </u>		

#### **Wear Bushings / Bore Protector**

Component / Assembly:	Component Description:			PQS #:	
Wear Bushings / Bore					
Protector Operator Governing				Rev#:	Date:
Specification:				Rev#.	Date.
Supplier:	Supplier Component Identifier:	Ref. BOM#:		Ref. Assembly Drwg. #:	
	identiner.				
OEM:					
Weight:	Dimensions (HxWxL):		TRL Number:	Ref. FMA#:	
Service (	Conditions	Required Oper	rating Parameters	Supplier I	Design Rating
Process Pressure / Test P				2.44	
Process Temperature Ran					
Design Life / Stress Amplif	ication Factor				
Process Media					
Load Capacity / Limits					
Fluid Exposure					
Qualifications - API or of	her existing Industry Prac	tice			
Qualification 7th 1 of ot	Standard / Test		Supplier Comments /		
Performance Verification	Specification (inc. Rev. No.)	Supplier Test Procedure #	Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #
	(		Staridat do / 1107 ii		
Qualifications Supplem	ental Practices (Optional)				
Qualifications - Supplem	Standard / Test		Supplier Comments /		
Performance Verification	Specification (inc. Rev. No.)	Supplier Test Procedure #	Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #
I(f					
Interfaces	Supplier Component	1	T .		
Description	Supplier Component Identifier	GA Drwg. #	Comments Rega	rding Stated Service and F	unctional Requirements
Additional Comments					
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. #:	
	identifier:				
OEM:					
Weight:	Dimensions (HxWxL):		TRL Number:	Ref. FMA#:	
Service (	Conditions	Required Oper	rating Parameters	Supplier	Design Rating
Water Depth / Water Depth	n Rating				
Process Pressure / Test P Process Temperature	ressure				
Design Life / Stress Amplif	ication Factor				
Process Media					
External Pressure Rating ( Seals - Bore Pressure	Annulus)				
Seals - Annulus Pressure					
Qualifications - API or ot	her existing Industry Practice	ctice			
Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #
Qualifications - Supplem		)			
Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #
Interfaces	Owner line One control	T			
Description	Supplier Component Identifier	GA Drwg. #	Comments Rega	rding Stated Service and F	Functional Requirements
Additional Comments	l				

#### **Lockdown Bushing**

Component / Assembly:	Component Description:		Jan G	PQS #:	
Lockdown Bushing					
Operator Governing				Rev#:	Date:
Specification:					
Supplier:	Supplier Component Identifier:	Ref. BOM#:		Ref. Assembly Drwg. #:	
OEM:					
Weight:	Dimensions (HxWxL):		TRL Number:	Ref. FMA#:	
Service (	Conditions	Required Oper	ating Parameters	Supplier D	Design Rating
Process Pressure / Test Pr					
Design Life / Stress Amplifi Process Media	ication Factor				
Load Capacity / Limits External Pressure Rating (	Annulus)				
Differential Pressure (Y/N) Seals - Bore Pressure	· · · · · · · · · · · · · · · · · · ·				
Seals - Annulus Pressure					
Qualifications - API or ot	her existing Industry Pract Standard / Test		Supplier Comments /	1	
Performance Verification	Specification (inc. Rev. No.)	Supplier Test Procedure #	Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #
Qualifications - Supplement	ental Practices (Ontional)				
Performance Verification	Standard / Test Specification (inc. Rev. No.)	Supplier Test Procedure #	Supplier Comments / Deviations from Standards / Rev #	Scaled or Tested	Ref. Supplier Report #
	(IIIO. INEV. IVO.)		Otandards / IVeV #		
Interfaces					
Description	Supplier Component Identifier	GA Drwg. #	Comments Rega	rding Stated Service and F	unctional Requirements
Additional Comments					

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<sup>&</sup>lt;sup>1</sup> ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, Pennsylvania, 19428, www.astm.org.

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