

Quality Requirements for Water Mist Fire Protection

Public Review Draft

Revision history

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Acknowledgements

This IOGP Specification was prepared by a Joint Industry Project 33 Standardization of Equipment Specifications for Procurement organized by IOGP with support by the World Economic Forum (WEF).

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Foreword

This specification was prepared under Joint Industry Programme 33 (JIP33) "Standardization of Equipment Specifications for Procurement" organized by the International Oil & Gas Producers Association (IOGP) with the support from the World Economic Forum (WEF). Companies from the IOGP membership participated in developing this specification to leverage and improve industry level standardization for projects globally in the oil and gas sector. The work has developed a minimized set of supplementary requirements for procurement, with life cycle cost in mind, resulting in a common and jointly approved specification, building on recognized industry and/or international standards.

Recent trends in oil and gas projects have demonstrated substantial budget and schedule overruns. The Oil and Gas Community within the World Economic Forum (WEF) has implemented a Capital Project Complexity (CPC) initiative which seeks to drive a structural reduction in upstream project costs with a focus on industry-wide, non-competitive collaboration and standardization. The CPC vision is to standardize specifications for global procurement for equipment and packages, facilitating improved standardization of major projects across the globe. JIP33 provides the oil and gas sector with the opportunity to move from internally to externally focused standardization initiatives and provide step change benefits in the sector's capital projects performance.

This specification has been developed in consultation with a broad user and supplier base to realize benefits from standardization and achieve significant project and schedule cost reductions.

The JIP33 work groups performed their activities in accordance with IOGP's Competition Law Guidelines (November 2014).

Table of Contents

1	Scope	4
2	Normative references	4
3	Terms and definitions	4
	3.1 Conformity assessment.....	4
	3.2 Conformity assessment system (CAS)	4
	3.3 Conformity assessment - hold point.....	4
	3.4 Conformity assessment - witness point	5
	3.5 Conformity assessment - surveillance	5
	3.6 Conformity assessment - review	5
4	Symbols and abbreviations	5
5	Quality requirements	5
	5.1 Quality management system.....	5
	5.2 Conformance assessment	5
6	Traceability	6
7	Nonconformance	6
8	Evidence (records)	6

Introduction

The purpose of this quality requirements specification (QRS) is to define quality management requirements for the supply of water mist fire protection in accordance with NFPA 750:2019 Standard on Water Mist Fire Protection Systems for application in the petroleum and natural gas industries.

The QRS includes definition of a conformity assessment system (CAS) which specifies standardized customer interventions against quality management activities at four different levels. The applicable CAS level is specified by the customer in the equipment datasheet or purchase order.

This QRS shall be used in conjunction with the supplementary requirements specification (IOGP S-719), the information requirements specification (IOGP S-719L) and the equipment datasheet (IOGP S-719D) which together comprise the full set of specification documents. The introduction section in the supplementary requirements specification provides further information on the purpose of each of these documents and the order of precedence for their use.



**JIP33 Specification for Procurement Documents
Quality Requirements Specification**

1 Scope

To specify quality management requirements for the supply of Field Instruments as specified in IOGP S-719 and including:

- a) manufacturer quality management system requirements;
- b) purchaser conformity assessment (surveillance and inspection) activities;
- c) traceability requirements;
- d) evidence of conformance;
- e) factory acceptance.

2 Normative references

ISO 9001:2015	Quality management systems - Requirements
ISO 29001	Petroleum, petrochemical and natural gas industries - Sector-specific quality management systems - Requirements for product and service supply organizations
API Specification Q1	Specification for Quality Management System Requirements for Manufacturing Organizations for the Petroleum and Natural Gas Industry
NFPA 750	Standard on Water Mist Fire Protection Systems
IOGP S-719	Supplementary Specification to NFPA 750 Standard on Water Mist Fire Protection Systems

3 Terms and definitions

3.1 Conformity assessment

Demonstration that requirements relating to a product, process, system, person or body are fulfilled.

NOTE 1 Conformity assessment (or assessment) includes but is not limited to review, inspection, verification and validation activities.

NOTE 2 Assessment activities may be undertaken at a supplier/sub-supplier's premises, virtually by video link, desktop sharing, etc. or by review of information formally submitted for acceptance or for information.

3.2 Conformity assessment system (CAS)

Systems providing different levels of assessment of the supplier's control activities by the purchaser (second party) or independent body (third party) based on evaluation of the supplier's capability to conform to the product or service specification and obligatory requirements.

NOTE CAS A reflects the highest risk and associated extent of verification. CAS D is the lowest.

3.3 Conformity assessment - hold point

The point in the chain of activities beyond which an activity shall not proceed without the approval of the purchaser or purchaser's representative.

3.4 Conformity assessment - witness point

The point in the chain of activities that the supplier shall notify the purchaser or purchaser's representative before proceeding. The operation or process may proceed without witness if the purchaser does not attend after the agreed notice period.

3.5 Conformity assessment - surveillance

Observation, monitoring or review by the purchaser or purchaser's representative of an activity, operation, process, product or associated information.

3.6 Conformity assessment - review

Review of the supplier's information to verify conformance to requirements.

NOTE Information review requirements are managed on a surveillance basis and as such do not impose schedule constraints, unless specified as hold points in Annex A or as conditions specified in IOGP S-719L.

4 Symbols and abbreviations

CAS	Conformity assessment system
IRS	Information requirements specification
QRS	Quality requirements specification (this document)

5 Quality requirements

5.1 Quality management system

The supplier shall demonstrate that the quality management arrangements established for the supply of products and services conform to ISO 9001, ISO 29001, API Specification Q1 or an equivalent quality management system standard agreed with the purchaser.

5.2 Conformance assessment

5.2.1

Quality plans, and inspection and test plans developed as outputs to operational planning and control for the products and services shall define the specific controls to be implemented by the supplier and when applicable, their sub-suppliers, to ensure conformance with the specified requirements.

5.2.2

Controls shall address both internally and externally sourced processes products and services.

5.2.3

Quality plans, and inspection and test plans shall include provision for:

- product specification level (PSL) in accordance with the supplementary requirements to S-719 4.2.6, paragraph 3.
- the purchaser conformity assessment system (CAS) as specified in the data sheet. See Annex A.

5.2.4

Supplier performance in meeting the requirements will be routinely assessed during execution of the scope and where appropriate, corrective action requested and conformity assessment activities increased or decreased consistent with criticality and risk.

5.2.5

Quality management system of the manufacturer has been assessed by a third party against the requirement of Annex III module H of the Pressure Equipment Directive 2014/68/EU and schedule 4 module H of the pressure equipment regulation 1999.

NOTE 1 For industrial well proven solutions CAS level D is specified unless risk assessment indicates that a more stringent CAS level is required.

NOTE 2 Irrespective of conformity assessment requirements defined by the purchaser, the supplier remains responsible for operational planning, control and demonstration of the conformity of products and services with the requirements. See ISO 9001:2015, 8.1 and 8.2.

6 Traceability

6.1

Material certification and traceability shall be maintained in accordance with Annex B.

6.2

Material certification, traceability of material, production inspection and testing results shall be maintained in accordance with Annex B.

7 Nonconformance

Nonconformance with specified requirements identified by or to supplier prior to or during the delivery of the products and services shall be corrected such that the specified requirements are satisfied or the purchaser's acceptance of the nonconformance agreed in accordance with purchase order conditions. See ISO 9001:2015, 8.2.3, 8.2.4, 8.5.6 and 8.7.

8 Evidence (records)

Plans, procedures, methods and resultant records shall be provided in accordance with S-719L.

Annex A (normative)

Purchaser conformity assessment requirements

This annex defines four conformity assessment systems (CAS) or levels of purchaser assessment.

The supplier shall provide for the specified CAS when developing quality plans and inspection and test plans in accordance with Section 5.

	PURCHASER ASSESSMENT ACTIVITIES	CAS			
		A	B	C	D
1	Operational planning and control activities				
1.1	Quality Planning (ISO 9001, 8.1, and ISO 10005)	H	H	-	-
1.2	Inspection and testing planning (ISO 9001, 8.1 and ISO 10005)	H	H	W	W
1.3	Pre-assessment/inspection planning	H	H	W	W
2	Design and development activities				
2.1	Design Verification				
2.1.1	Type test qualification	H	W	W	W
2.1.2	Fire scenario engineered solutions only (IOGP S-719 Chapter 17)	H	H	H	H
2.1.3	Pressure Equipment Qualification	H	H	H	W
2.1.4	Hazardous area qualification (if applicable)	H	H	H	W
2.2	Manufacturing procedure qualification tests				
2.2.1	Procedure qualification for welding, including repair welding, of pressure-containing parts and attachment welding to pressure-containing parts to applicable parts of ISO 15609, applicable parts of ISO 15614-1 or ASME BPVC Section IX	H	H	W	-
2.2.2	Procedure qualification for welding, including repair welding, of structural welds, including mounting kit to ANSI/AWS D1.1 /D1.1M or applicable parts of ISO 15614.	H	H	W	-
2.2.3	All welders shall be qualified in accordance with applicable parts of ISO 9606 or ASME BPVC Section IX. All welding operators shall be certified in accordance with ISO 14732 or ASME Section IX.	H	H	W	-
2.2.4	Non-destructive testing process and personnel qualification to ISO 9712, EN 473 or ASNT SNT-TC-1A Level II	H	H	W	-
3	Control of external supply				
3.1	Control of externally provided processes, products and services (ISO 9001, 8.4)	R	R	-	-
3.2	Nominated sub-suppliers of primary system components as per the system listing.	H	W	-	-
4	Production and service provision				
4.1	Materials Verification				
4.1.1	Material traceability for primary pressure-containing components	R	S	S	-
4.2	Component Manufacture				
4.2.1	Mandatory tests (as applicable) Nozzles (IOGP S-719, 17.1.3.3)	W	W	S	-

4.2.2	Mandatory tests (as applicable) Flexible hoses (IOGP S-719, 17.1.3.3)	W	W	S	-
4.2.3	Mandatory tests (as applicable) Cylinders (IOGP S-719, 17.1.3.3)	W	W	S	-
4.2.4	Mandatory tests (as applicable) FFS/Enclosure (IOGP S-719, 17.1.3.3)	W	W	S	-
4.3	Sub-assembly Manufacture				
4.3.1	Mandatory tests (as applicable) Section valves (IOGP S-719, 17.1.3.3)	W	W	S	-
4.3.2	Mandatory tests (as applicable) Pumps/ manifolds/cylinder assembly (IOGP S-719, 17.1.3.3)	W	W	S	-
4.4	Water Mist system FAT (Factory acceptance test)				
4.4.1	Mechanical Assembly test (IOGP S-719, 17.1.3.3)	H	H	H	W
4.4.2	Electrical assembly test (installation, insulation and continuity) (IOGP S-719, 17.1.3.3)	H	H	H	W
4.4.3	Paint inspection	R	R	R	R
4.4.4	Discharge test (optional)	H	H	W	-
5	Release of product or service from suppliers/manufacturers works				
5.1	Documentation review; as per IRS (IOGP S-719L)	H	H	H	H
5.2	Material traceability	R	R	R	R
5.3	Preparation for Handling, packing, preservation and storage	H	H	R	R
5.4	Release equipment	H	H	H	R
6	Water Mist system commissioning & SAT (Site acceptance test)				
6.1	Pneumatic Test (IOGP S-719, 14.2.3)	R	R	R	R
6.2	Hydrostatic test (IOGP S-719, 14.2.2.2 and 14.2.2.3)	W	W	W	W
6.3	Electrical detection and actuation test (IOGP S-719, 14.2.4.2)	W	W	W	W
6.4	Mechanical equipment inspection and testing (IOGP S-719, 4.2.4.1)	W	W	W	W
6.5	Water supply (IOGP S-719 Chapter 14)	W	W	W	W
7	Release of water mist system for service				
7.1	Final documentation review as per IRS (IOGP S-719L)	H	H	H	H
7.2	Release equipment	H	H	H	H
	H is hold point, W is witness point, S is surveillance and R is review. Note: Definitions for these terms are provided in Section 3 of this document.				

Annex B

(normative)

Material traceability and certification requirements

Item		Certificate Type	Material Traceability level	Additional Requirements
Water Mist Fire Protection Systems	Primary pressurized components: cylinder, pressurized tanks, manifold, flexible hoses	2.1	Level II	
	Tubing & fittings and instruments	2.1	Level II	
	Fire fighting skid Enclosure	2.1	Level II	
	Nozzles, section control valves, pumps	2.2	Level II	

Explanatory notes:

Inspection Certificates shall be provided in accordance with ISO 10474 or EN 10204 as adopted below.

“2.1” Declaration of Compliance with the PO - A document in which the supplier declares that the products supplied are in compliance with the requirements of the PO, without inclusion of any test results.

“2.2” Test Report - A document in which the supplier declares that the products supplied are in compliance with the requirements of the PO, and in which test results are supplied based on non-specific inspection and testing.

“3.1” Inspection Certificate - A document with test results based on specific inspection and testing, issued by the supplier and validated by the supplier's authorised inspection representative independent of the manufacturing department.

“3.2” Inspection Certificate - A document prepared by both the supplier's authorised inspection representative, independent of the manufacturing department, and either the purchaser nominated representative or the inspector designated by the regulations in which they declare that the products supplied are in compliance with the requirements of the order and for which test results are supplied.

Additionally, the purchaser has specified that all material product testing associated with “3.2” Inspection Certificates shall be performed in the presence of either a purchaser nominated representative or the inspector designated by the regulations, and the resultant test report stamped as “Witnessed”. Failure to adhere to this requirement may lead to rejection of all material(s) being qualified for production.

Traceability

Level I - Full Traceability - Material is uniquely identified and its history tracked from manufacture through stockists (where applicable) to the supplier and to actual position on the equipment with specific location defined on a material placement record (the traceability to a specific location only applies to skids / packaged equipment, not to bulks).

Level II - Type Traceability – the supplier maintains a system to identify material throughout manufacture, with traceability to a material certificate.

Level III - Compliance Traceability – the supplier maintains a system of traceability that enables a declaration of compliance to be issued by the manufacturer.

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