Avoidance of Blockages in Subsea Production Control and Chemical Injection Systems

API TECHNICAL REPORT 17TR5
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AMERICAN PETROLEUM INSTITUTE

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Upstream Segment

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Foreword

This document was generated, by means of the BASICS Joint Industry Project (JIP) in response to the continuing problem of blockages occurring in control and chemical injection fluid (CIF) conduits incorporated in subsea production systems (SPSs). The JIP committee comprised a representative cross section of experienced industry personnel from engineering, manufacturing and operational organizations.

While there are universally accepted standards for the design of a SPS and its sub-systems, none of these standards specifically address the subject of blockages and the measures necessary to minimize the risk of such occurrences. The intent of the BASICS JIP is to produce a recommended practice document for global industry use to address the issue using a holistic system approach.

This document is intended to be used as a reference guide by designers and operators of SPSs and also by control and production chemical fluid (PCF) manufacturers. It is also intended to be used as a reference document to enable audits to be undertaken to ensure that blockages avoidance has been properly considered as part of SPS design and operations reviews.

Additionally, the document has been designed to be educational such that persons new to the industry, or, less experienced persons within the industry, can understand the extent and complexity of SPSs and more readily assimilate the blockage avoidance content contained herein.

Suggested revisions are invited and should be submitted to the Standards Department, API, 1220 L Street, NW, Washington, DC 20005, standards@api.org.

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1 Scope

This document addresses the avoidance of blockages in subsea production control and chemical injection systems (CISs). It includes requirements and gives recommendations for the design and operation of subsea production systems (SPSs) with the aim of preventing blockages in control and production chemical fluid (PCF) conduits and associated connectors/fittings.

In the context of design, this covers not only installed subsea hardware (trees, manifolds, etc.), the connecting linkages (jumper arrangements, umbilical systems, etc.), but the fluids to be conveyed, initially from the fluid manufacturers' facilities through to bunkering at the host facility and, ultimately, injection or usage at remote subsea locations.

The guidelines set out the framework within which more detailed specifications and procedures should be developed to address the particular features of specific projects and specific installations in respect of design through to production operations and, ultimately, decommissioning. They also indicate what needs to be taken into account and approaches that can be considered, or may be taken, in order that blockages do not occur during the installation, commissioning and operations of a SPS.

It should be noted, however, that the inclusion of a particular approach identified in the document does not imply it is the only approach. Other approaches may be more suitable; this depends on the nature of the SPS and knowledge and experience of the system and fluid designers.

While the aim of this document is to prevent blockages in a SPS, it also addresses the issues of topside equipment which provides the control and chemical injection (CI) services necessary for the operation and performance of a SPS**. The correct design of a SPS and the fluids to be utilized, and operation of the SPS including topside fluid bunkering, are critically important in avoiding blockages.**

2 Normative References

The following referenced 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/ISO 13628-1, *Design and Operation Of Subsea Production Systems—General Requirements And Recommendations*

API Specification 17D/ISO 13628-4, *Design and Operation of Subsea Production Systems—Subsea Wellhead And Tree Equipment*

API Specification 17E/ISO 13628-5, *Specification for Subsea Umbilicals*

API Specification 17F/ISO 13628-6, *Specification for Subsea Production Control Systems*

API Recommended Practice 17G/ISO 13628-7, *Recommended Practice for Completion/Workover Riser Systems*

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

API Technical Report 17TR6, *Attributes of Production Chemicals in Subsea Production Systems*