Remotely Operated Tools and Interfaces on Subsea Production Systems

API RECOMMENDED PRACTICE 17H
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Suggested revisions are invited and should be submitted to the Standards and Publications Department, API, 200 Massachusetts Avenue, NW, Suite 1100, Washington, DC 20001, standards@api.org.

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Introduction

This Recommended Practice provides general recommendations and overall guidance for the design and operation of remotely operated tools comprising ROT, ROV and AUV tooling, used on subsea production systems for the petroleum and natural gas industries worldwide.

The third edition of this document incorporates the content of API 17TR15 and the Autonomous Underwater Vehicle (AUV) Interfaces in a Subsea Production Environment Recommended Practice produced by DeepStar® Phase XI.

This RP provides guidance when designing for subsea operations to interact with (or near) subsea production systems. The framework and specifications set out will enable the user to design the appropriate interface for a specific application.

Technical Report 17TR15 clarified and defined the most commonly used hot stab types, as well as documented some obsolete sizes. The goal of the technical report was to increase standardization, and to maintain backward compatibility and interchangeability with existing installations and with previous publications (API 17H, API 53, and API 16D).

Specific recommendations are provided where a standard design or operating principles has been adopted and are accepted as standard industry practice. Requirements valid for certain geographic areas or environmental conditions, are included where applicable.

The functional recommendations for the tooling systems and interfaces on the subsea production system allow alternative solutions to suit the field specific requirements. The intention is to facilitate and complement the decision process rather than replace individual engineering judgment and to provide positive guidance for the selection of an optimum solution.

Remotely Operated Tools and Interfaces on Subsea Production Systems

1 Scope

API Recommended Practice 17H provides recommendations for development and design of remotely operated subsea tools and interfaces on subsea production systems to maximize the potential of standardizing equipment and design principles.

This document does not cover manned intervention, internal wellbore intervention, internal flowline inspection, tree running and tree running equipment. However, all the related subsea ROV/ROT/AUV interfaces are covered by this standard. It is applicable to the selection, design and operation of ROTs, ROVs and AUVs including ROV tooling, hereafter defined as “subsea intervention systems”.

This Recommended Practice (RP) provides functional requirements and guidelines for ROV/ROT/AUV interfaces in subsea production fields for the petroleum and natural gas industries. It is applicable to both the selection and use of ROV/ROT/AUV interfaces related to subsea production equipment and provides guidance on design as well as the operational requirements for maximizing the potential of standardized equipment and design principles. This RP identifies the issues to be considered when designing for ROV/ROT/AUV operations to interact with (or near) subsea production systems. The framework and specifications set out enables the user (whether they may be on the ROV/ROT/AUV side or production facility side) to design the appropriate interface for a specific application. These interfaces include subsea docking, recharging, data transfer, data harvesting, and mechanical intervention.

It is anticipated that in the future, resident ROVs/AUVs near the seabed can provide high value for oil and gas inspection, monitoring, and maintenance and repair activities. The benefits of employing ROVs/AUVs in such situations include reduced operating costs and improved safety. The guidelines established in this RP leads to efficient development and deployment of ROV/ROT/AUV systems, providing clarity for operators, contractors, and developers. Recommendations have been provided in a flexible manner to accommodate a wide variation of AUV styles and applications, while maintaining an appropriate level of interface commonality for specification.

This document defines four major categories of hot stabs and describes the geometry to maintain compatibility across all manufacturers. The categories were first introduced in Technical Report 17TR15 which described several common or previously used hydraulic hot stab and receptacle configurations. The approach is to ensure backward compatibility of the hot stabs described in API Recommended Practice 17H, 2nd Edition and to align API RP 17H with API S53 and API 16D.

This RP is not intended to replace sound engineering judgment as to when and where its provisions are to be used. Users need to be aware that additional or differing details may be required to meet a specific service or local legislation.

This document is not intended to deter the development of new technology. The intention is to facilitate and complement the decision processes, and the responsible engineer is encouraged to review standard interfaces and re-use intervention tooling in the interests of minimizing life-cycle costs and increasing the use of proven interfaces.

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 Specification 6A, *Specification for Wellhead and Tree Equipment*

API Specification 16D, *Control Systems for Drilling Well Control Equipment and Control Systems for Diverter Equipment*