Dynamic Risers for Floating Production Systems

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

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Introduction

Since the first edition of API RP 2RD, *Recommended Practice for Design of Risers for Floating Production Systems (FPSs) and Tensioned-Leg Platforms (TLPs)*, was issued in June 1998, hydrocarbon exploration and production in deep water environments have increased significantly. As a consequence, the need was identified to update that code of practice to address the issues and lessons learned from that experience. The title of the document has been changed to eliminate reference to any one type of floating hull. A broad scope of marine dynamic risers is covered, including various steel catenary risers and top tensioned risers.

Dynamic Risers for Floating Production Systems

1 Scope

This standard addresses riser systems that are part of a floating production system (FPS). Guidelines for design, construction, installation, operation and maintenance of floating production systems (FPSs) are in API 2FPS. A riser is a subsystem in a floating production system.

The provisions of this standard do not apply to the riser systems of mobile offshore drilling units (MODUs).

There is significant interaction among the subsystems in a floating production system. Hull motions affect risers and mooring, and conversely, risers and mooring affect hull motions. Global behavior of the system provides input to assessment of subsystems. Assessment of a subsystem provides feedback (loads) for assessment of the hull and other subsystems.

Determination of the boundaries of a riser system and management of the interactions with other subsystems is the responsibility of the operator.

A riser system is an assembly of components, including pipe and connectors. A riser system can include a riser tensioning system, buoyancy modules, etc. Pipe components can be steel, titanium, or unbonded flexible pipe. Design considerations for unbonded flexible pipe are included primarily by reference to API 17B and API 17J. Design considerations for titanium alloy pipe are included primarily by reference to DNV-RP-F201. Steel and titanium pipe are referred to as rigid pipe and unbonded flexible pipe is referred to as flexible pipe.

All or part of several existing codes, standards, specifications, and recommended practices are included by reference.

Design loads and conditions are described in Section 4. Structural design criteria for rigid pipe are in Section 5. Structural capacity formulae for steel pipe are also in Section 5. Additional requirements for components, including pipe, are in Section 6. Material requirements are in Section 7. Fabrication and installation requirements are in Section 8. Integrity Management is addressed in Section 9.

2 Normative References

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

API Spec 5CT, *Specification for Casing and Tubing*

API RP 5C5, *Recommended Practice on Procedures for Testing Casing and Tubing Connections*

API Spec 5L, *Specification for Line Pipe*

API RP 5L1, *Recommended Practice for Railroad Transportation of Line Pipe*

API RP 5LW, *Recommended Practice for Transportation of Line Pipe on Barges and Marine Vessels*

API RP 17B, *Recommended Practice for Flexible Pipe*

API Spec 17J, *Specification for Unbonded Flexible Pipe*

API Spec 17K, *Specification for Bonded Flexible Pipe*