Global Analysis of Subsea Well Intervention Systems

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Global Analysis of Subsea Well Intervention Systems

1 Purpose and Scope

1.1 Purpose

This recommended practice (RP) provides guidelines for global riser analysis (GRA) of subsea well workover/intervention systems and is intended to serve as a common reference for designers.

This recommended practice is not intended to replace existing API recommended practices (RP) and standards, but rather to supplement them by illustrating accepted analysis practices and principles. The end users may elect to adopt a portion of or all the presented guidelines for global riser analysis, subject to their well-specific riser designs and any operational-related design constraints.

It is necessary that users of this recommended practice be aware of regulations from a jurisdictional authority that may impose additional or different requirements than those presented in this document.

The analysis techniques described herein focus on the best practices in global riser analysis, while providing the user flexibility to use other techniques to meet the requirements for subsea intervention systems.

1.2 Scope

The scope of this RP is limited to the following systems:

— open-water intervention riser system (OWIRS);

— through-BOP intervention riser system (TBIRS);

— subsea pumping well intervention system (SPWIS);

— riserless subsea well intervention system (RSWIS).

This RP includes input, output, and analysis as follows:

— data to serve as inputs to global riser analysis;

— modeling techniques, assumptions, and verifications;

— load case matrix;

— operability, weak point, and fatigue analysis;

— analysis outputs and interpretations.

This RP complements the API 17G sub-series documents (e.g., API 17G1,17G5) as applicable for the system scopes listed above that identify the information required to conduct the analysis (inputs) and interpret the results of the analysis (outputs) to determine the system operating limits. Different global riser modeling techniques and assumptions are presented for consideration by the user. To increase user awareness, discussion of modeling techniques focuses on parameters that drive riser response, as well as typical areas of concern. The techniques proposed herein are considered best practices and serve as analysis guidance. Where possible, this document refers to existing industry standards and practices to avoid duplication while addressing the key issues facing workover/intervention GRA.

This RP outlines a detailed load case matrix for a GRA of a subsea well intervention system. The user may decide to modify the scope of work (or a subset of this matrix) deemed essential to meet project requirements