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An Industry-First 7 5/8 in. Drill Pipe Like Tubular Facilitates Offshore Completions and Interventions by Saving Time and Reducing Cost

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Abstract

Tubulars with gas-tight, rotary-shouldered connections are used as the conduit between the surface vessel (rig) and subsea wellheads in deepwater operations. Requiring no specialized tools and using standard rig equipment, they provide a fast, safe, and cost effective way to run completion landing strings and intervention pipe. Tubulars for these operations must provide a large internal drift diameter to allow for clearance of the wellhead crown plug and installation of completion components. These strings have been limited to 6 5/8 in. pipe allowing for a maximum drift diameter of 5-1/2 in., which is insufficient to run and retrieve the wellhead crown plugs of many large ID subsea trees. Trees with larger crown plugs require operators to use casing tubulars increasing deployment time, requiring casing running crews, incurring higher repair costs and time, thereby increasing overall costs.

A completion landing string (CLS) was developed using a 7-5/8 in. pipe and a built-for-purpose, large drift, gas-tight, pressure-rated, rotary-shouldered connection (7-5/8 CLS). This new connection technology optimized the outside diameter and make-up torque to be compatible with the iron roughnecks and pipe handling equipment of the current Gulf of Mexico rigs.

Product development and performance validation is detailed with a special emphasis on the enabling connection technology. The paper expands on manufacturing challenges and design choices made to assure ease of rig operations, including modifications to slips and elevators. Finite element analysis (FEA) and physical testing to validate performance are described. Steps taken before the initial deployment to assure compatibility with the rig equipment are explained. Finally, the paper will show data from the offshore field trials and initial deployments. Lessons learned are shared.

This industry-first, purpose-built, gas-tight completion and intervention tubular provides 6-1/8 in. internal drift diameter and can be safely deployed using conventional pipe make-up and handling equipment reducing overall cost.

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