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Case History: Expanding the Boundaries of a Hydraulic Workover Unit into New Economic Levels

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Abstract

A 600K Hydraulic Workover (HWO) Unit has proven that it has the capability to safely access and deliver offshore gas reserves. This paper identifies the business environment, challenges, learnings, results and the key success factors of a three (3) well project that delivered a total of 250 million standard cubic feet per day (mmsfcd) using a 600K HWO unit. The primary result of the project demonstrated the capability of the HWO unit in handling challenges previously thought better suited for conventional larger rigs. HWO units have proven to be particularly effective in bpTT's offshore operations, however their application had been limited to tubing changeouts, workovers, oil recompletions and short oil sidetracks. This project expanded the capability of the 600K HWO unit to perform high rate uphole gas recompletions. The project consisted of three uphole gas recompletions in 9-5/8 inch casing. Each recompletion was executed at approximately \$0.50/barrel of oil equivalent (boe) which made the project extremely attractive and made gas reserves economically viable. Completing the same work with a larger Jackup unit would have cost \$3 -4/boe clearly showcasing the economic advantage of the HWO unit. Another major advantage was the ability to move the HWO unit in unfavourable weather conditions when compared to a Jack Up rig. Weather conditions can result in significant and costly delays during the December – April period for jack up units.

Introduction

HWO operations are performed with the same equipment as Snubbing operations, however the wells are under control with a full column of hydrostatic fluid. Essentially the HWO unit operated as a small platform modular unit. Hydraulic Work Over units have proven to be particularly effective in offshore applications however their application has been limited, in most instances to a well servicing scope. Our case history of high rate gas recompletions in this paper demonstrates the full scope of the workover capability of a HWO unit.

Background

bp Trinidad and Tobago (bpTT) is one of the major companies in the Trinidad & Tobago energy sector. It is involved in exploration for, and the production of oil and gas and the overall development of the country's rapidly growing energy sector. BPTT's offshore infrastructure includes eight producing platforms processing approximately 2.0 billion cubic feet of gas per day, (2007).

BpTT manages astutely its vast offshore assets to meet its deliverability targets in the increasingly demanding gas market, supporting corporate reputation as a dependable business leader. Towards that end BpTT had contracted two Jack Up drilling rigs for the drilling and completion of its exploration and development wells. Unfortunately they were often hampered by seasonal weather fluctuations which impacted on project timelines. Additionally, as the reservoirs matured, new drilling presented a greater degree of complexity and risk. Because of these conditions we believed that a pilot project utilizing a "rig" which will deliver high rate gas through cased hole recompletions and thereby meeting short-term market demands would provide immediate value.