



**SPE 116133**

## **Managing Operational Challenges in the Installation of an Intelligent Well Completion in a Deepwater Environment**

Arashi Ajayi, SPE, WellDynamics Inc.; Shawn Pace, SPE, and Bryan Petrich, Chevron; and Adeyemi Adejuwon, SPE, Cardinal Agbonaye, SPE, and Courage Erumwunse, SPE, WellDynamics Inc.

Copyright 2008, Society of Petroleum Engineers

This paper was prepared for presentation at the 2008 SPE Annual Technical Conference and Exhibition held in Denver, Colorado, USA, 21–24 September 2008.

This paper was selected for presentation by an SPE program committee following review of information contained in an abstract submitted by the author(s). Contents of the paper have not been reviewed by the Society of Petroleum Engineers and are subject to correction by the author(s). The material does not necessarily reflect any position of the Society of Petroleum Engineers, its officers, or members. Electronic reproduction, distribution, or storage of any part of this paper without the written consent of the Society of Petroleum Engineers is prohibited. Permission to reproduce in print is restricted to an abstract of not more than 300 words; illustrations may not be copied. The abstract must contain conspicuous acknowledgment of SPE copyright.

### **Abstract**

Intelligent well completion has various applications in the subsea deepwater environment. The benefits from such applications can only be derived when the system is successfully deployed. A successful deployment requires effective interface management of different components of the completion process. Such management include communication, planning and logistics related issues

Deepwater environment poses its own development challenges. These include high development cost, constrains of existing technologies and issues relating to application of new ones. Implementation of intelligent well completion in this environment may result in additional challenges. Therefore, adequate attention must be placed on managing these challenges in order to achieve desired success. This involves identification and management of key operational success factors. These factors, can be classified under three major categories namely, people, process and product.

This paper offers an insight into how the challenges can be managed to achieve a successful project based on the experience obtained from the deployment of 2 zone intelligent well completion systems. The authors focus on major components of the key success factors and provide feasible solutions to managing the challenges. The information provided in the paper could be used to enhance the planning of the deployment of an intelligent well completion program. It can also be used to identify critical success factors for the deployment of intelligent well system.

### **Introduction**

The search for further hydrocarbon reserves has lead towards the increasing exploration activities in difficult terrains such as deepwater and ultra-deepwater environment. Development activities in these environments are expensive and most often standard drilling and technology are usually pushed to the limit. This has resulted in the need to develop and apply new technologies and invest in improving existing ones. Such technologies include but not limited to intelligent well completions which will help monetize the candidate fields by improving project economics.

Intelligent well completion is now becoming a major component of most offshore field development activities. The attraction could be due to the significant improvement in the robustness and reliability of the systems, wider understanding of the workings of the components and demonstrated economic values of the technology<sup>1-5</sup>. The reliability improvement could be associated with an increased number of worldwide installations. The lessons learnt from these installations have resulted in better integration and design of the system components.

The reliability of the technology has been addressed by several authors. Knowledge sharing on the use of the technology has contributed a lot in its understanding. Such knowledge sharing opportunities have occurred in both formal and informal forum. In addition, several authors have also documented their experience in their use of the technology.

Intelligent well completion has various applications in the subsea deepwater environment. In an offshore environment among other benefits, an intelligent well enables an operator to reduce intervention, remotely monitor and control downhole fluid flow, optimize well production and reservoir management processes in order to maximize asset value. These benefits can only be attained when the system is successfully deployed and implemented in line with a sound operating philosophy. From an operational perspective, a successful deployment requires effective management of the key success factors of the technology implementation. These success factors can be classified under three major categories namely people, process and product. The inability to identify and manage the challenges posed by these factors could lead to jeopardizing the potential benefits of the technology.