Geo-Pilot® System Delivers Early “First Oil” While Reducing Operational Costs

Location: Maari Field, New Zealand

OPERATOR’S CHALLENGE – An operator of the offshore Maari Field in New Zealand required an optimized drilling solution for precise wellbore placement that would bring production on stream quickly and cost-effectively.

HALLIBURTON’S SOLUTION – Sperry Drilling services deployed the Geo-Pilot® 9600 series and 7600 series rotary steerable systems and a suite of measurement/logging-while-drilling (M/LWD) sensors.

ECONOMIC VALUE CREATED – The performance and reliability of the Geo-Pilot system helped the operator bring “first oil” on stream early, only months after the project was initiated.

NEW FIELD DEVELOPMENT – The Maari field, New Zealand’s largest oil field, is located 80 km (50 miles) off the south coast of Taranaki in the sedimentary Taranaki Basin and has estimated recoverable reserves of around 50 million barrels of oil. Discovered just over 25 years ago, the field was not considered cost-effective at that time due to the depth of the water (102 meters) and distance from shore. However, with today’s technology, a New Zealand operator embarked on the field development with a plan of five oil producer and three water injector wells.

This field has a dome-shaped reservoir structure that requires precise steering for optimal wellbore placement in the reservoir. The operator wanted a solution that would avoid budget over runs and bring production on stream quickly to realize revenue at the earliest opportunity. The project required equipment that could be easily adapted to facilitate a variety of hole sizes, from the unusual 14-1/2” and 9-1/2” to the conventional 12-1/4” and 8-1/2”.

GEO-PILOT SYSTEMS OFFER FLEXIBLE CONFIGURATION – Sperry Drilling services deployed the Geo-Pilot 9600 series and 7600 series rotary steerable systems and a suite of M/LWD sensors. Using point-the-bit technology, the Geo-Pilot rotary steerable system precisely steers the wellbore while rotating the drillstring to increase ROP and reduce drilling days. The Geo-Pilot® service delivers real-time continuous at-bit steering control and formation evaluation to provide an accurate assessment of the wellbore position at all
times. When drilling commenced in December 2008, the Geo-Pilot 9600 system was used in the 14-1/2” and 12-1/4” intermediate hole sections and the Geo-Pilot 7600 system was used in the 9-1/2” production hole sections. Both sizes of Geo-Pilot systems demonstrated excellent performance and reliability on all hole sizes.

The first three wells completed were horizontal oil producers. The Geo-Pilot 9600 system delivered three 14-1/2” sections in a single run each time, drilling 3,280 m (10,761 ft) in 180 hours while the Geo-Pilot 7600 system delivered two 9-1/2” reservoir sections, including four open-hole sidetracks, totaling 3,809 m (12,497 ft) in 211 drilling hours.

Due to the operator’s requirement to drill either 14-1/2” or 12-1/4” intermediate hole sections, depending on the well type, the ability to execute a prompt tool reconfiguration and turnaround of the Geo-Pilot 9600 tools was a necessity. This was achieved by the flexible design of the Geo-Pilot system which allows for the 9600 series system to be configured for a range of hole sizes from 12 ¼” – 18 ¼”.

**EARLY “FIRST OIL”** – The performance and reliability of the Geo-Pilot system allowed Sperry to deliver the project ahead of time on the drilling curve, and helped the operator to bring “first oil” on stream early in February 2009. Being able to configure the Geo-Pilot 9600 series system to drill either 14-1/2” or 12-1/4” sections allowed one set of tools to be utilized for both hole sections, reducing operating costs and contributing to the operational efficiency of the project. The Geo-Pilot system takes directional control and steering to a new level, allowing precise wellbore placement through long reservoir sections while eliminating the ROP penalty normally associated with oriented drilling.

With one injector well and two horizontal oil producers (one of which is a multilateral well) left to drill, the operator is delighted with Sperry’s performance.