



**Location:** Offshore, Brunei  
**Customer:** National Oil Company  
**Well Type:** Gas  
**Casing Sizes:** 4-1/2" to 3-1/2"

**Products/Services:** 3-1/2" SIM Retrievable Bridge Plug, SIM Running Tool

**Case Study** Well Barrier & Isolation

# Isolation of failed inflow valve at high deviation

## The Challenge

With a failed downhole surface controlled formation isolation valve, a South East Asian customer recently installed retrievable bridge plugs to isolate a producing zone, to enable them to evaluate the performance of the reservoir. The challenge was compounded due to the high angle of well deviation and only having mechanical slickline available at the well site. The Peak SIM Plug was specifically selected by the customer for this challenge, given the low setting forces of the SIM Plug and their experiences of deploying them by mechanical slickline in their highly deviated wells.

The upper SIM Plug was installed with a downhole shut-in tool and set at 3,475m, and the lower SIM Plug was set at 3,535m to act as a barrier shutting off the zones below.

## Considerations

Three third-party formation isolation valves had previously failed and could not be used as a means of isolating the producing sands. The deeper deviated section of the well had also proved problematic in earlier well intervention operations, where the tubing crossover from 4-1/2" to 3-1/2" tubing was located.



**69 degrees**  
Max deviation

**3,535m**  
Depth at which SIM Plug could be set

◀ SIM Running Tool

## Peak's Solution

On preliminary runs into the well, there were problems passing through the tubing crossover and the tools showed evidence of debris in the well. Several brush and gauge cutter runs were then made to clear any debris from the low side and to allow easier passage of tools to the target depth.

For the final SIM Plug drift run, a Peak Jar Action Indicator Tool was incorporated above the SIM Running Tool to determine if sufficient jar action could be obtained downhole to set Peak's 3-1/2" SIM Plug at target depth.

The initial drift run proved that it was possible to reach target depth and the Jar Action Indicator Tool gave the operator an indication at surface of how effective the jar action was.

## Value to Customer

- This deployment highlighted the flexible nature of Peak SIM Plug and the fact it could be set at 69 degree deviation, given the correct toolstring configuration, which was critical for successful deployment
- Two 3-1/2" SIM Plugs were set, one just below the failed formation isolation valve and one just above. These two SIM Plugs allowed isolation of the producing sand. The upper SIM Plug was fitted with a downhole shut-in tool which allowed the sand to flow for a given period before the shut-in tool would close remotely, allowing a pressure build-up survey to be conducted
- The Customer was able to determine the flow characteristics of the sand and determine if it was worth future stimulation
- The use of the Jar Action Indicator Tool allowed the slickline operator to determine the performance of downward jarring at depth in this highly deviated well. This in turn allowed changes to be made to both the running toolstring and SIM Plug, to best meet the technical difficulties of setting a SIM Plug at 69 degrees on slickline.



▲ SIM Retrievable Bridge Plug

**Product Code(s):** SIM Running Tool - 350, SIM Retrievable Bridge Plug - 351

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