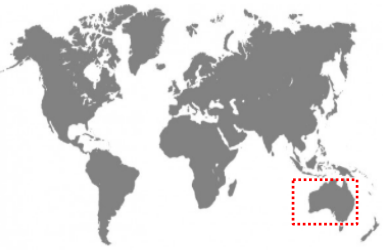
Case Study

Deep-Water Solution: Inflatable Bridge Plug Enables Operator to Set a Cement-Based Kickoff Point and Drill an Open-Hole Sidetrack in Australia.

Challenge:

A leading offshore operator required to plug an open-hole section to establish a kickoff point as part of a sidetrack drilling operation in a deep-water well in Western Australia. The original plan was to set a balanced cement plug on top of a high-viscosity pill across the 17-1/2" open-hole section. This approach failed to provide the stability needed for sidetrack drilling as no hard cement was found at setting depth during a subsequent run. The contingency plan was to callout an IPI Permanent Inflatable Bridge Plug (PIBP), which was available on standby in a nearby location as part of a concurrent decommissioning campaign managed by the same operator. The PIBP was selected to provide a false-bottom as a base for the cement plug in the open hole section, eliminating the risk of cement swapping with mud.



Region: Western Australia
Customer: Offshore Operator
Well Type: Development

The challenges and requirements associated with the job were as follows:

- Emergency call-out as the rig was on downtime.
- Unknow setting ID with high probability of irregular borehole geometry and wash-outs across the 17-1/2" open-hole section.
- Limited allowable pressure differential across the workstring and annulus due to well control requirements.
- String-weight fluctuations were expected due to conveyance from a deep-water rig equipped with a compensator.
- High risk of clogging flow path across the PIBP inflation valve due to the requirement to fill the workstring with high-density mud.
- Inflation volume control was critical to assess element expansion and estimate setting ID while preventing bursting the bridge plug.
- Ability to deflate and retrieve was required in the event borehole setting diameter exceeded 22 inches, or if no contact with the borehole was observed upon reaching maximum allowable expansion.

Solution:

IPI supplied a 5-1/2" PIBP chassis configured with a 7-3/4" OD inflation element for this application. Equipment and field personnel were mobilized from a neighboring P&A operation to the rig within hours from the original request. The increased modular adaptability of the PIBP product line allowed for the inflation valve shear-pin configuration to be adjusted on location in order to provide a tailored solution. In order to manage the risk of clogging the inflation valve and inflate with clean fluid, the first workstring joints were pre-filled with fresh water, followed by a viscous spacer column to isolate the inflation volume from the heavy mud located throughout the rest of the workstring.

The PIBP was successfully set at the required location allowing the cement to properly cure across the desired interval. The cement column built up sufficient mechanical stability across the kickoff point, allowing the operator to sidetrack from the well and carry on with the drilling program as planned.

5-1/2" X 7-3/4" Permanent Inflatable Bridge Plug

Created Value:

IPI's solution generated the operator substantial savings in operational expenditure as it allowed the deep-water rig to resume operations in a timely manner. After the job, the IPI field representative returned to the neighboring job site he was dispatched from to resume operations in the concurrent P&A campaign, and a replacement PIBP was mobilized from IPI's manufacturing facility without interrupting the client's decommissioning campaign.