

Case study: Thailand

Perseus pump-through cutter reduced Thailand P&A rig time by 10%

A major customer in Thailand had contracted Baker Hughes to deploy the Thailand Wellbore Intervention team in over 800 plug-setting and casing cuts on this shallow-well plug and abandonment (P&A) campaign. Slot recovery and P&A operations are a necessary cost to operators at the end of a well's life. Regional regulations vary but most require the setting of at least one barrier and removing the casing at a certain depth below the mudline or surface, often resulting in numerous downhole trips and an increase in associated costs in rig time costs and health, safety and environmental (HSE) handling risks.

Baker Hughes has found a more efficient way of completing this required P&A work.

The **Perseus™ pump-through cutter** is hydraulically operated and designed to cut a single string of casing on command. Ideal for P&A or slot recovery operations, the knives are dressed with **METAL MUNCHER™ Advanced Milling Technology (AMT) carbide** that provides the industry's most durable, effective cutting and swarf control tungsten-carbide to cut or mill even the toughest steels.

The Perseus tool is designed to remain dormant and maintain pressure integrity while a plug is set

either mechanically or hydraulically, after which the cutting sequence is initiated. Alternatively, the cutter can be run above a mill or bit to dress a cement plug, confirm well isolation, and then activated to cut the casing. A positive pressure indication at surface signals a successful cutout, providing assurance a cut has been completed, eliminating the guesswork associated with conventional technology.

The cutter can also make multiple cuts during the same run, making it ideal to be run with a spear for cutting and pulling casing in one trip.

The Baker Hughes team installed the Perseus tool twice by itself to make and verify casing cuts as part of a field trial before they combined the cutter with other tools. The initial pair of field trials proved effective. Satisfied with the Perseus tool's cutting capabilities, the team ran the Perseus cutter in combination with both a cement retainer and cement retainer and hydraulic setting tool in eight additional wells to set a cement retainer, pump cement, and cut the casing string in a single trip.

All 10 runs were successful, with the last eight eliminating the need to make dedicated runs to set cement retainers and pump cement.

Challenges

- Reduce overall costs associated with plug and abandonment applications

Results

- Saved customer one trip during P&A operations by combining plug setting and cementing with the casing cutting run
- Decreased HSE handling exposure by reducing the need for an additional trip
- With rig rates approximately \$10,000 USD/hour, each trip eliminated, saved an estimated \$7,500 USD even at these shallow working depths