**Wellbore Integrity**
SOLUTIONS

# Integrated Well Abandonment System Eliminates Trips, Saves More Than 3 Rig Days, North Sea

## Single-trip P&A BHA mills windows in 9 5/8-in casing and underreams to 13½ in

### CHALLENGE

Mill a window in 9 5/8-in casing and underream open hole to enable rock-to-rock barrier placement in a single trip P&A operation.

### SOLUTION

Use ProMILL* trip-saving milling and underreaming system to eliminate dedicated trip to surface.

### RESULTS

- Milled and reamed 85-ft window at MD of 9,000 ft with single assembly.
- Repeated operation on three wells.
- Saved more than 24 hours per well.
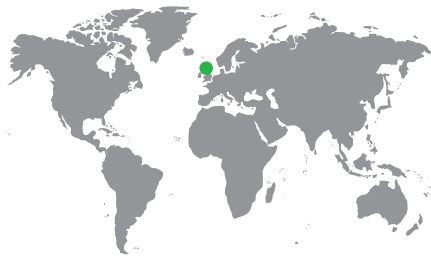
### Reduce dedicated BHAs for each run

In a P&A campaign in the UK Continental Shelf, an operator planned to create permanent rock-to-rock barriers by placing cement across the impermeable shale formations. If the operator found poor cement behind the casing, then it would performing milling and underreaming to allow setting a cement-rock barrier. In offset wells, the milling and underreaming operations required dedicated BHAs, resulting in a 24-hour trip.

### Combine multiple runs into a single trip system

To save rig time, Wellbore Integrity Solutions recommended running the ProMILL system, which combines an underreamer and a section mill in one efficient tool. The operation began by cutting and milling the casing windows with the section mill. Then, an activation ball was dropped and pressure was applied to shear the retaining pins. This action activated the underreamer by allowing an internal piston to move down, forcing the underreamer arms outward. The open hole is then underreamed to virgin formation during the same trip.

### Eliminated a trip and saved 24 hours per well

The ProMILL system enabled milling and underreaming 85-ft windows at 9,000-ft MD in three wells in one trip each. The efficient system allowed reducing openhole exposure time, manual handling, and personnel exposure on the drill floor. By eliminating the extra trips, the operator saved at least 24 hours of rig time per well.



WELL COMMANDER† ball-activated drilling valve

Shock tool

ProMILL system

Taper mill
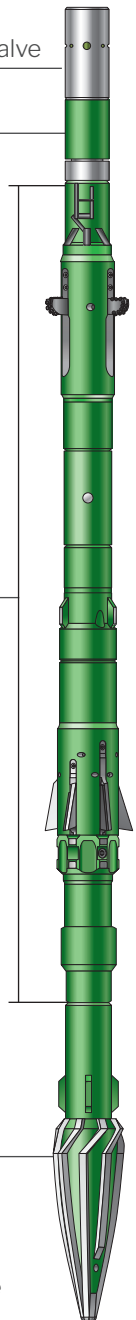
*The ProMILL system milled and underreamed a window during a single trip per well, saving more than 24 hours each. To attain a rock-to-rock barrier through conventional methods would require the operator to make dedicated milling and underreaming runs.*

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