Wellbore Integrity
SOLUTIONS

RED BARON

WELL ABANDONMENT

Comprehensive Plug and Abandonment Systems

Abandon Your Well.
Abandon Uncertainty.

Efficient Systems for Plug and Abandonment (P&A)

Wellbore Integrity Solutions comprehensive plug and abandonment systems bring certainty and rig-time savings to your P&A operations.

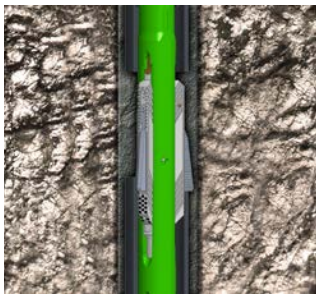
Wellbore Integrity Solutions designs P&A systems that deliver the most effective, trip-saving technology in the industry. We focus on creating reliable technology that will enable our customers to complete P&A processes in a single trip, increase certainty, and reduce NPT.

Our systems cover the milling and underreaming, casing cutting and pulling, and wellhead retrieval processes. From achieving rock-to-rock zonal isolation to latching onto the wellhead for recovery, our P&A systems support time and money savings across the board.

Through our third party technology relationships we also offer mechanical perforation, cleaning and conditioning technologies that add to our portfolio of P&A solutions.

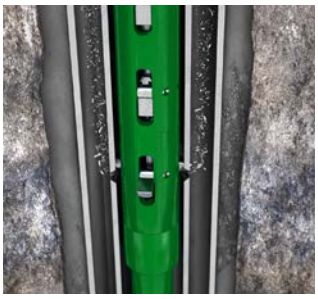
SINGLE TRIP TO MILL AND UNDERREAM

Combining a bridge plug assembly, an underreamer, and a section mill in a single-trip solution, the ProMILL* trip-saving milling, and under-reaming system achieves rock-to-rock zonal isolation and prepares the foundation for an abandonment cement barrier.



EFFICIENCY IN DUAL CASING SECTION MILLING APPLICATIONS

The ProMILL Duo* system offers an efficient method for Dual Casing Section Milling applications. With an innovate system platform, the ProMILL Duo provides an extended reach section mill and active stabilizer that will drift through a smaller casing size and mill a larger casing.



SINGLE TRIP TO CUT AND RETRIEVE CASING

The ProCISE* casing cutting, and recovery system performs multiple casing cuts and engages casing for removal—all in one operation.

SINGLE TRIP TO RECOVER THE WELLHEAD AND SURFACE CASING

The ProLATCH* wellhead retrieval system enables cutting and latching onto the surface casing and removal of the surface casing and wellhead, all in a single trip.

Single Trip to Mill and Underream

Save rig time, improve ROP, and ensure plug integrity for confident P&A decisions.

ProMILL

Trip-saving milling and underreaming system

Effective foundation for an abandonment cement barrier

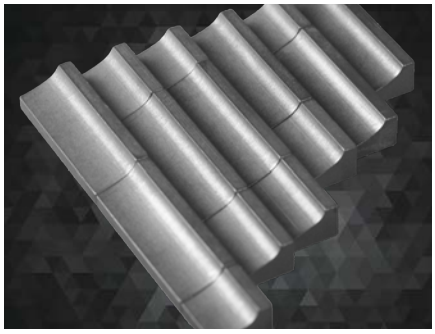
The industry unique ProMILL system enables consistent savings during P&A operations by delivering in a single run what has typically taken 4 trips to accomplish.

The ProMILL system combines a bridge plug assembly, a section mill, and a high ratio underreamer to prepare the foundation for an abandonment cement barrier in a single run. During the run, it eradicates all leak paths from the abandonment barrier while achieving rock-to-rock zonal isolation.

All ProMILL system cutter arms are dressed with WavEdge* ridged milling elements that, along with the multiblade design, provides high ROP and maximizes footage. This unique milling element, designed with a concave pattern and narrow leading edge, has improved durability, stabilization, and results in superior hole cleaning and swarf quality.

The high-ratio underreamer features ball-drop activation, which ensures that the reamer remains inert during the entire milling operation. The section is underreamed and the operator achieves the target access, completing the operation.

The system incorporates a bridge plug running kit that enables a mechanical plug to be set without prematurely activating the section mill or underreamer.



The section mill is dressed with the WavEdge element. The WavEdge offers improved durability, delivers higher ROP and provides more efficient wellbore cleaning.

ProMILL Duo

Dual casing section milling system

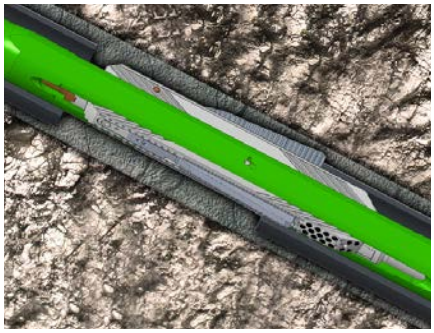
Effective solution for dual casing abandonment cement barriers

The ProMILL Duo provides an innovative, cost-saving solution for well abandonment applications, where the integrity of the abandonment zone requires the creation of a milled section in two casing sizes. Significant rig time savings are realized when using the ProMILL Duo in comparison to conventional solutions that require a long, inner string casing to be milled.

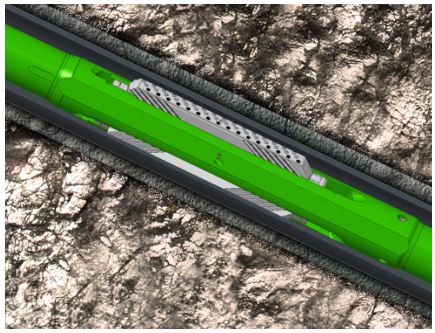
The high expansion ratio of the ProMILL Duo Section Mill allows it to drift through the inner casing in the retracted state and upon actuation, open up to a larger diameter to mill the outer casing and the coupling.

The ProMILL Duo expansion mechanism is based on a proven spline-based actuation platform with a long history of durability and performance. Similarly, the cutting structure on the arms is dressed with WavEdge* ridged milling elements that have demonstrated performance in the ProMILL system. The system also includes an active stabilization module that optimizes the dynamic behavior and reduces the vibration of the BHA during operation.

The enlargement of the borehole, to enable a rock to rock barrier is accomplished by using the ProMILL Underreamer (PMUR). The PMUR provides a market leading expansion ratio and is designed specifically for well abandonment applications. It incorporates a robust cutter arm mechanism and the latest cutter technology to optimize performance.



The system includes both an extended reach section mill and a hydraulic stabilizer to provide an efficient milling system in dual casing abandonment applications.



The design allows the system to drift through a smaller casing ID restriction and upon activation, provides a high expansion ratio to section mill the outer casing.

Dual Casing Milling System Solution

Providing a more cost-effective method compared to conventional techniques.

ProCISE

Casing cutting and recovery system

Efficient casing engagement, cutting, and recovery

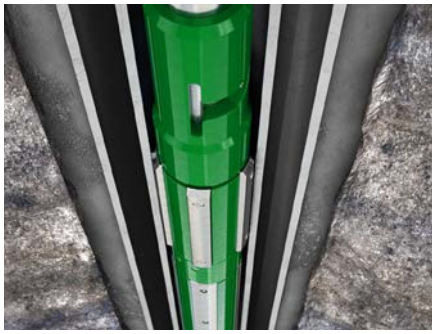
Another member of the highly efficient Wellbore Integrity Solutions plug and abandonment family, the ProCISE system alleviates costs accumulated from multiple casing cutting and recovery runs. In one operation, the system severs casing, provides efficient circulation, and engages casing for removal.

The multicycle pipe cutter has three sets of blades that can perform multiple casing cuts during a single run, avoiding extra rig time in applications where multiple casing cuts may be required.

Once the cut is successfully confirmed, the ProCISE system engages the in-line casing spear and latches onto the end of the casing segment to be removed. This procedure enables hanging the recovered casing in the rotary table, leaving the casing to be handled more safely and efficiently as it is removed from the wellbore.

In addition, the system has a hydraulic pack-off, making it possible to circulate the annulus free from any settled solids or barite sag. Other system components include a Hydra-Stroke* bumper sub, a conventional bumper sub, and a mud motor.

The multicycle pipe cutter offers contingency cutting capacity by enabling multiple cuts to be performed, saving valuable rig time and reducing HSE exposure to rig crew with less handling at the surface.



When the in-line casing spear is engaged, an overpull check is performed. Once a secure latch is established, the casing can be cut in tension to enable a faster cut.

Single Trip to Cut and Retrieve Casing

Deliver cost savings—especially in challenging deepwater environments.

Single Trip to Recover the Surface Casing and Wellhead

Achieve reliable and stable wellhead retrieval operations.

ProLATCH

Wellhead retrieval system

Simpler and more reliable wellhead recovery

The ProLATCH wellhead retrieval system simplifies mechanical abandonment operations. When a subsea well has been successfully isolated and the wellhead and guide base must be removed for site restoration, the ProLATCH system recovers the surface casing and the wellhead in a single trip.

The system is ideal for offshore operations because it eliminates the need for weight transfer to a marine swivel, compression cut BHA. This minimizes the risk of fatigue failure by reducing rotating, bending, and bowing in the workstring.

When the wellhead spear is engaged, it is possible to apply an overpull to assist with tension cutting operations. By having an engagement point immediately above the cutter assembly, the system prevents undesirable BHA movements which could result in a failure to achieve the cut. After the casing strings are severed with a high-performance hydraulic pipe cutter, the wellhead spear remains engaged to recover the surface casing and the wellhead.

The casing is severed mechanically, and the wellhead spear remains engaged for a simultaneous retrieval of the casing section and wellhead.

Robust, hydraulic pipe cutters cut the casing string internally, creating a reliable cut.

Wellbore Integrity Solutions

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Specifications are current at the time of printing.

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