

## FASTER. SIMPLER. **BETTER.** <u>CHALLENGING THE STANDARD IN CASING RECOVERY</u>



Ardyne develops and supplies specialised technology and services to the global energy industry, focusing on reducing rig time spent on downhole casing recovery in exploration sidetracking, slot recovery, workover, and plug & abandonment operations. Technology advancement lies at the core of Ardyne, combined with decades of operational experience and responsive, client-focused delivery.

Original thinking, ideas and technologies Understanding of the original well engineering Original (challenger) solutions for P&A

### **ORIGINAL INSIGHT**

Understanding of the industry Understanding of the clients' challenges Wisdom concerning the next era of oil & gas

### WHAT WE DO. WHERE WE OPERATE.

#### CASING RECOVERY

Casing Recovery operations involve the cutting and recovery to surface of redundant casing in order to access the open hole to achieve a rock to rock barrier, or to provide a path for sidetracking.

Innovative technology from Ardyne can reduce costs during these operations and ensure that it becomes a viable option even for deepwater, open-hole and stuck casing.

# THE EXPERTISE.





#### EXPLORATION / DEVELOPMENT

Technical sidetracks, where the casing is recovered and a cement barrier set, prior to drilling a sidetrack with no restrictions or reduction in hole size

#### SLOT RECOVERY / RE-ENTRY

Sidetracking applications, where casing is recovered in open or cased hole, to replace problem sections of casing, or access new formation in brownfield

#### WELL ABANDONMENT

Casing removal for barrier placement





### ORIGINAL INSIGHT

There have been no major advancements in casing recovery / removal technologies over the last 30 years.

Ardyne was formed to address this gap by creating and commercializing innovative downhole technology for slot recovery and barrier placement throughout the well life cycle.

Now our technology is safely and efficiently reducing rig time, lowering costs and unlocking value from mature assets, resetting the standard for casing recovery worldwide.

Our technology is brought to market using a variety of commercial models to meet our customers needs - from full service solutions where we provide direct to operators, to fully supported rental or sale of technology to service providers.

2014

First UK

Project

Ardyne

Created

acquires Wellbore

2015

TRIDENT

First Run

2016

First

Australia

Project

Equinor

Frame

Agreement

2013



TIMELINE

Wellbore

Founded

First Norway

Project

2009

DHPT

First Run

### **KEY TOOLS** AND **TECHNOLOGIES**.

### 

TRIDENT is an integrated, multi-trip saving, casing cutting and pulling system. TRIDENT's functionality includes the ability to dress a cement plug or set a bridge plug, perform and verify multiple cuts, and retrieve either 9 5/8", 10 3/4" or 13 3/8" all in a single trip.

Single Trip Casing Recovery with Downhole Power. The TITAN System maximises recoverable casing in challenging circumstances by utilizing the pulling capacity of the DownHole Power Tool (DHPT) and adding repeatable casing cutting capability.

#### DOWNHOLE POWER TOOL (DHPT)

The DHPT's pulling forces are applied locally in the well and there is no loss of force due to drill string friction. This maximises the ability to pull stuck or packed off casing, and makes high force operations possible even in rigs with limited pulling capacity.

### TYPHOON<sup>®</sup> SPEAR

The TYPHOON Spear is a rotational inline spear used for recovering casing or tubing. Its simple operation enables it to be run in conjunction with a casing cutting or casing cleanout bottom hole assembly.

### **TECHNOLOGY IN ACTION**

### TRIDENT delivers 40% saving in deepwater West Africa

#### THE OPERATION

TRIDENT was deployed from a deepwater drill ship in West Africa for a slot recovery operation in 3,700ft of water. The client required a Bridge Plug to be set at 6,660ft, well fluid displaced, then 13 3/8" casing to be cut below the shoe at 6.614ft and recovered from 3,748ft to allow for an open-hole Sidetrack.

### TITAN System provides Downhole power and adaptability for single trip casing recovery

#### THE OPERATION

The TITAN System was deployed on a semi-submersible rig in the North Sea for casing recovery operation where the operator required a 400ft of 9 5/8" casing to be pulled from the openhole.

After the initial attempt to pull the casing failed TITAN was relocated, a cut was made and with 12 jacks and 460 tons applied downhole the cut section was recovered to surface.







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