


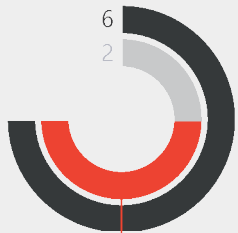


TRIDENT® DELIVERS 34.5% SAVING IN DEEPWATER NIGERIA

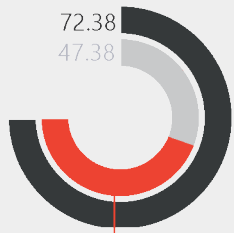
Saving hours from the operation, improving safety and reducing costs in 5,250ft water depth



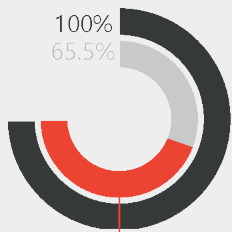
Industry Standard 
 Ardyne Operation 
 Customer Savings 



4
TRIPS SAVED



25
HOURS SAVED



34.5%
EFFICIENCY GAIN

TRIDENT SYSTEM

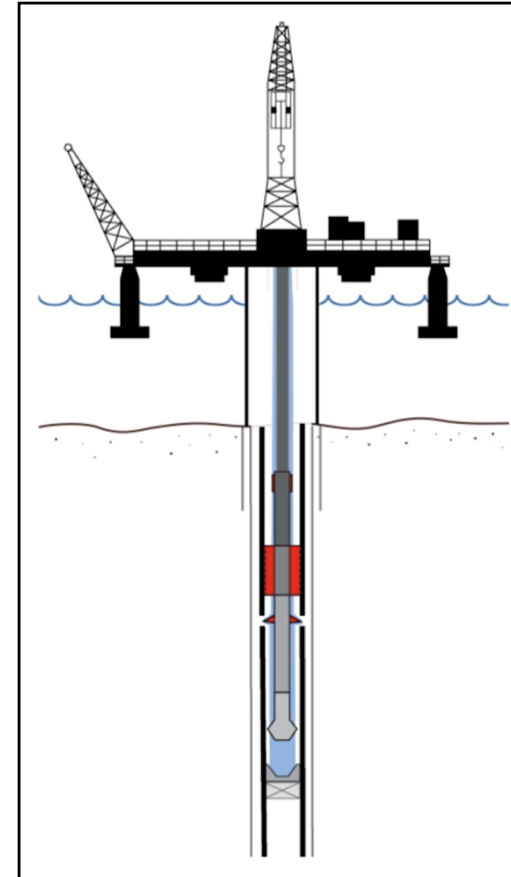
The TRIDENT System is a single-trip cut and pull rotational spear which incorporates several innovative trip-saving features, including an integral tension set packer, a hydraulically activated spear and a cutting mode which eliminates the accumulation of swarf at surface. In a single trip, the TRIDENT System can run and set a bridge plug or dress a cement plug; cut casing; circulate annular gas; and recover casing to surface.

THE OPERATION

To facilitate an open hole side track from the 12 1/4" Hole Section and to remove a section of 10 3/4" casing which had a leak between 9,307' – 9,009'.

The 10 3/4" casing was removed from the intermediate 14" casing string. To achieve this a series of bridge and cement plugs were placed in the well to act as barriers and to isolate different zones, a cut and pull operation was performed at a depth of 9,300ft inside the 10 3/4" casing, 150ft below the 14" casing shoe at a depth of 9,150ft.

Once completed, the TRIDENT system was ran in hole (RIH), to achieve a series of cuts on the 10 3/4" casing. The final cut on the long string recovery was achieved at 9,146', this long string of 3,896' of 10 3/4" casing was then recovered to surface. Once this was completed the operation was handed over to another service company specialising in Fishing Applications to recover the final piece of casing from 9307' – 9146'.



Ardyne Contacts:
 Norway - [Frode Sunde](#)
 UK/EU & Africa - [Stephen Wylie](#)
 North America - [Jake Wright](#)
 South America - [Tim O'Rourke](#)
 Asia Pacific - [Ed Kerr](#)
 ROW - [Lars Kristiansen](#)

CLICK TO PLAY

THE SOLUTION

The TRIDENT System was deployed to cut and pull the 10 3/4" casing, either from bottom, if the casing weight allowed and to see if free to move, or from the hanger to allow a higher overpull limit to be used.

THE VALUE TRIDENT CREATES

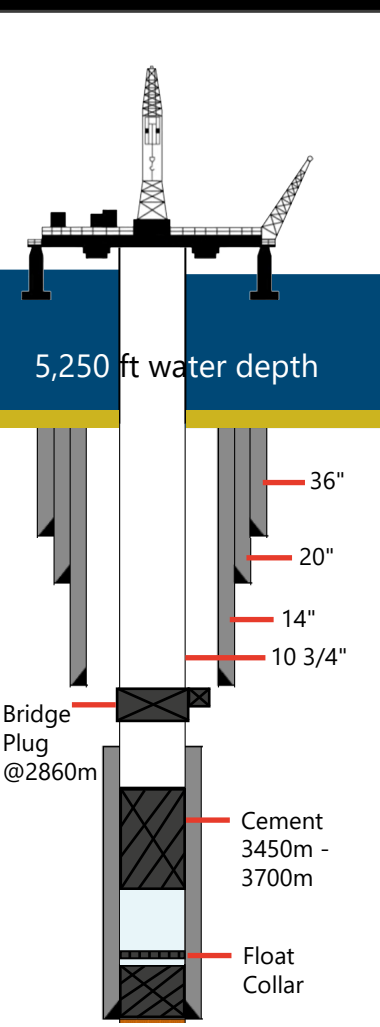
Proven time saving - the TRIDENT one trip system



Ardyne Efficiency Gain

- Efficiency gain of **34.5%**
- Deepwater rig time saving of **25 hours**
- **4 trips saved**

Casing Schematic



Conventional Approach

	Rig Activity	Time
Trip 1 13.49	P/U Cutter BHA and surface Test	0.75
	RIH with Pipe Cutter BHA	5.91
	Cut Casing @ 9304'	0.50
	POOH and L/D Cutter BHA	6.33
Trip 2 7.75	P/U ITCO Spear BHA	1.00
	RIH with ITCO BHA to hanger at 5219'	2.00
	Pull casing with ITCO BHA - NoGo	1.00
	Attempt circulation - NoGo	1.00
	Release ITCO Spear and POOH	2.25
	Rack Back ITCO Spear BHA	0.50
Trip 3 12.82	P/U Cutter BHA and surface Test	0.50
	RIH with Pipe Cutter BHA	5.91
	Cut Casing @ 9297'	0.50
	POOH and L/D Cutter BHA	5.91
Trip 4 10.75	P/U ITCO Spear BHA	0.25
	RIH with ITCO BHA to hanger at 5219'	2.00
	Pull casing with ITCO BHA - NoGo	1.00
	Attempt circulation - No Go	1.00
	Release ITCO Spear and POOH	6.25
	Rack Back ITCO Spear BHA	0.25
Trip 5 13.07	P/U Cutter BHA and surface Test	0.75
	RIH with Pipe Cutter BHA	5.91
	Cut Casing @ 9146'	0.50
	POOH and L/D Cutter BHA	5.91
Trip 6 14.50	P/U ITCO Spear BHA	0.25
	RIH with ITCO BHA to hanger at 5219'	2.00
	Pull casing with ITCO Spear	0.50
	Start Circulation	4.75
	POOH with casing	6.50
	Casing Hanger at surface, L/D ITCO Spear	0.50
TOTAL		72.38

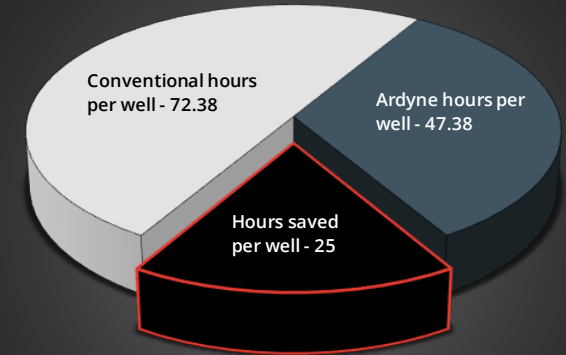
TRIDENT Approach

	Rig Activity	Time
Trip 1 26.81	P/U Trident BHA & Surface Test	1.25
	RIH Trident BHA	5.91
	Cut Casing @ 9304'	0.50
	Activate Packer & attempt to Circulate.	0.83
	Release anchor & Packer	0.50
	POOH to Hanger at 5219' & pull on casing. 94T over casing weight. No-Go	4.33
	RIH to cut casing at 9297'	3.83
	Cut Casing @ 9297'	1.16
	Activate Packer & attempt to Circulate. NoGo @ 700psi	1.25
	Release anchor & Packer	0.50
	POOH to Hanger at 5219' & pull on casing. 279T over casing weight. NoGo	2.50
	Release anchor & Packer	0.50
	POOH with TRIDENT BHA	3.00
Change Knives		0.75
Trip 2 20.57	Surface Test TRIDENT	0.50
	RIH Trident BHA	5.40
	Cut Casing @ 9146'	0.25
	Activate Packer & attempt to Circulate. No-Go @ 700psi	0.66
	Release anchor and Packer	0.50
	POOH to Hanger at 5219' & pull on casing. 35T over casing weight. Then Circulate	2.85
	POOH with 10 3/4" Casing	3.41
Casing Hanger at Surface	6.50	
Disengage TRIDENT Anchor & L/D TRIDENT	0.50	
TOTAL		47.38

Well Objective Summary

Operating in 5250ft water depth
 Set a series of Bridge and Cement plugs in the 10 3/4" casing below the leak
 Displace well fluid to 1.18SG Brine
 Cut and Pull 10 3/4" Casing

TRIDENT Time Savings



■ Conventional ■ Ardyne ■ Hours Saved

Efficiency gain of 34.5% by using Ardyne's TRIDENT System

TRIDENT Casing Recovery System - 80+ Runs

