

# DEEPWATER GULF OF MEXICO OPEN HOLE CUT & PULL

94.5 hours saved - 8 extra BHA's avoided - 28,000 tripping feet avoided



## THE CHALLENGE

Following the successful deployment of the TRIDENT® system on this well (Case Study 2019USA025) to perform two cuts, circulate the annulus clean, and recover the free casing to surface, 334ft of casing extending into open hole still remained to be recovered. This remaining casing needed to be recovered in order to complete the slot recovery, and facilitate an open hole sidetrack.

The conventional approach would require multiple trips using a combination of pipe cutting and jarring BHAs, or pilot milling which would generate large amounts of unwanted swarf. These conventional methods would also consume significantly more rig time.

Operation carried out in conjunction with Wellbore Fishing & Rental Tools



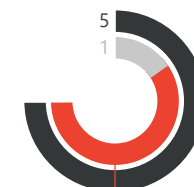
## THE SOLUTION

The TITAN system is a multifunctional BHA, allowing multiple casing cuts and extreme downhole pulls, with no load at the rig floor, all in a single trip. The system facilitates cutting the casing into smaller sections as required, and then re-engagement of the DownHole Power Tool to pull the casing free and recover to surface. Positioning the DownHole Power Tool downhole directly above the fish allows safe application of extreme pulls, without loading the workstring from surface.

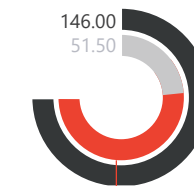
**RECOVERING THE UNRECOVERABLE FOR AN OPEN HOLE SIDETRACK, THE TITAN SYSTEM IS SETTING THE NEW STANDARD FOR CASING RECOVERY IN THE GULF OF MEXICO**

## THE RESULT

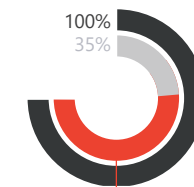
The total rig time saved was 94.5 hours, when benchmarked with prior wells due to the use of the TITAN hydraulic pulling capabilities (1.4M lbs) to remove the requirement for milling. When combined with the prior TRIDENT run, Ardyne saved the major international operator a total of 152.5 hrs. The subsequent open hole access provided below the 16" casing shoe enabled sidetracking operations to proceed as per plan.



**4**  
TRIPS SAVED



**94.50**  
HOURS SAVED



**65%**  
EFFICIENCY GAIN

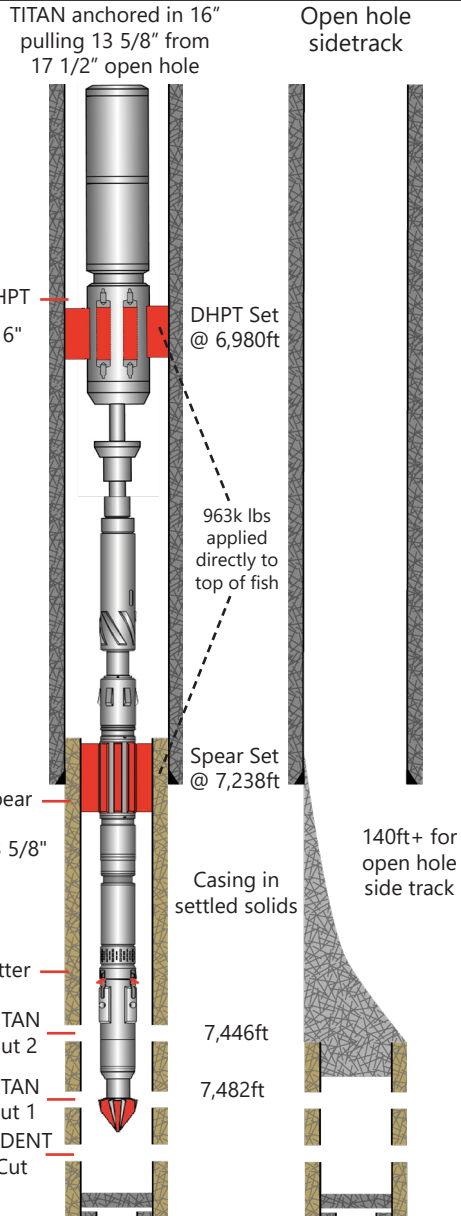
Industry Standard   
Ardyne Operation   
Customer Savings

# DOWNHOLE ADAPTABILITY IN ONE SOLUTION

Improving safety and reducing costs in the Gulf of Mexico



## TITAN Offshore



## GOM Standard Approach

	Rig Activity	Time
Run 1 34.50	P/U ITCO / jar assembly	3.00
	RIH to 7238ft	9.00
	Attempt to jar casing free	10.50
	POOH	9.00
	Rack-back ITCO / jar BHA	3.00
Run 2 20.00	P/U cutter	1.00
	RIH to 7482ft	9.00
	Cut casing @ 7482ft	1.00
	POOH, rack-back cutter	9.00
Run 3 34.50	P/U ITCO / jar assembly	3.00
	RIH to 7238ft	9.00
	Attempt to jar free	10.50
	POOH	9.00
	Rack-back ITCO / jar BHA	3.00
Run 4 21.00	P/U cutter	1.00
	RIH to 7446ft	9.00
	Cut casing @ 7446ft	1.00
	POOH, rack-back cutter	9.00
Run 5 36.00	P/U ITCO / jar assembly, RIH, jar free, POOH & rack-back	36.00
	Rack-back Cutter assembly	1.00
<b>TOTAL</b>		<b>146.00</b>

If unable to pull free on the fifth run, then a pilot mill would be required. Previous campaigns targeted milling @ 36ft/day, this would require an **additional 138 hours** in order to remove the casing for the open hole side track.

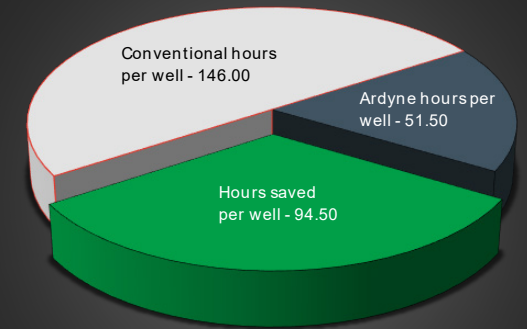
## Ardyne Real Time Hours

	Rig Activity	Time
Run 1 50.50	P/U TITAN System	6.00
	RIH TITAN System	9.00
	Engage & pull 7238-7572ft (hold max for 2 hours)	4.00
	Cut 13 5/8 casing @ 7482ft (including tripping)	2.00
	Pull up engage TYPHOON & pull 7238-7482ft	3.00
	Cut 13 5/8 casing @ 7446ft	2.00
	Pull up engage TYPHOON & pull free 13 5/8 7238-7446ft with DHPT	1.50
	POOH at reduced speed - due to formation	17.00
	Lay down TITAN System	7.00
	<b>TOTAL</b>	

## Single Trip Accomplished

- Two cuts made - in the same trip
- Ability to perform additional cuts if necessary
- Ability to jack on demand - beyond rig power
- Open hole sidetrack access delivered in single trip
- 4 trips saved = elimination of red zone activity

## TITAN Time Savings



Conventional Ardyne Hours Saved

## Ardyne Efficiency Gain

- Ability to make **multiple cuts in same trip**
- Ability to **jack on demand** when required
- Casing pulled **free with 963,592lbs** - 1.4Mlbs available with the DownHole Power Tool
- **Eliminates** rig system **wear & derrick inspections** by removing jarring from the workflow
- Power controlled on demand via hydraulics vs workstring tension - **prescriptive power**
- Max overpull applied **directly to stuck casing**
- Immediate indication **casing is free**
- Red Zone reduction - **28,000ft of tripping avoided** - Less BHA handling
- Pre assembled BHA's **minimizes surface make up time**
- **Remove friction & stretch** from drill pipe
- No swarf handling - **18,300lbs of swarf avoided**