

# Deep Water Pipeline Repair

## Deploying a grouted clamp and fabric formwork to repair a damaged pipeline



An 18" gas pipeline operated by Williams in the Gulf of Mexico had been damaged by a cable-laying vessel dragging its anchor along the seabed during bad weather. The 750m deep pipeline was forced to run at a reduced pressure for safety reasons until remedial work could take place.

The solution was a two stage fix using a grouted repair clamp around the section of damaged pipeline and a grout bag to support the additional load.

The seabed under the damaged section of the pipeline had been dredged to allow access to install the 138" repair clamp. An ROV lowered the grout hose from the surface and attached it to the clamp's connector. FoundOcean used its high shear colloidal batch mixer to mix the grout, which produces cement slurries of high density and consistency. The grout was then pumped down to fill the clamp's annulus.

Because the pipeline was now carrying the added load of the grout and clamp, a fabric formwork was used to provide additional support. A deployment frame designed for transporting, installing and filling grout bags was used to place the grout bag under the pipeline. The ROV then connected the grout hose to the connector on the frame and grout was pumped into the bag.



FoundOcean grout bag deployment sled

### PROJECT FACTS

Industry	Oil & Gas
Region	Gulf of Mexico
Services	Pipeline Repair
Project year	2011
Operator	Williams
Contractor	Saipem America
Water depth	750 m
Cement type	ASTM TYPE I/II
Total cement	24 t
Mixer type	12V
Grout specification	50 MPa
Mixing rate	Up to 12m <sup>3</sup> /hr

### TYPICAL 12V DECK PLAN

