



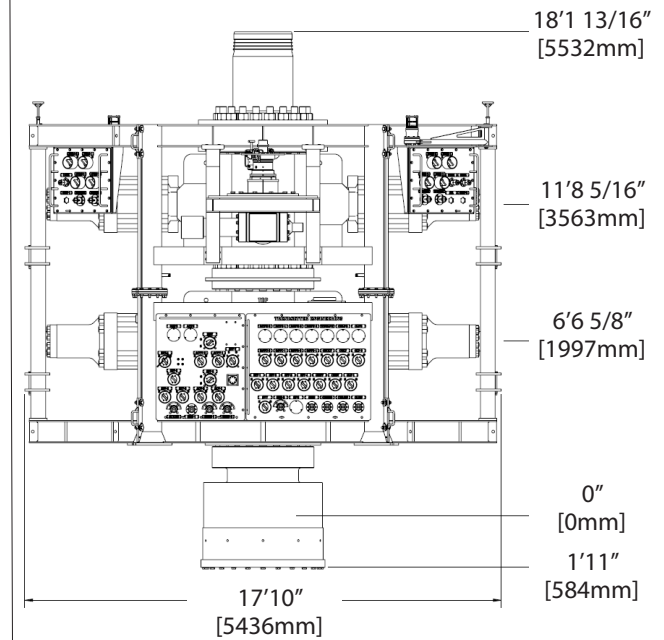
MUDLINE CLOSURE DEVICE (MCD)

MCD - Providing an Additional Level of Safety & Control

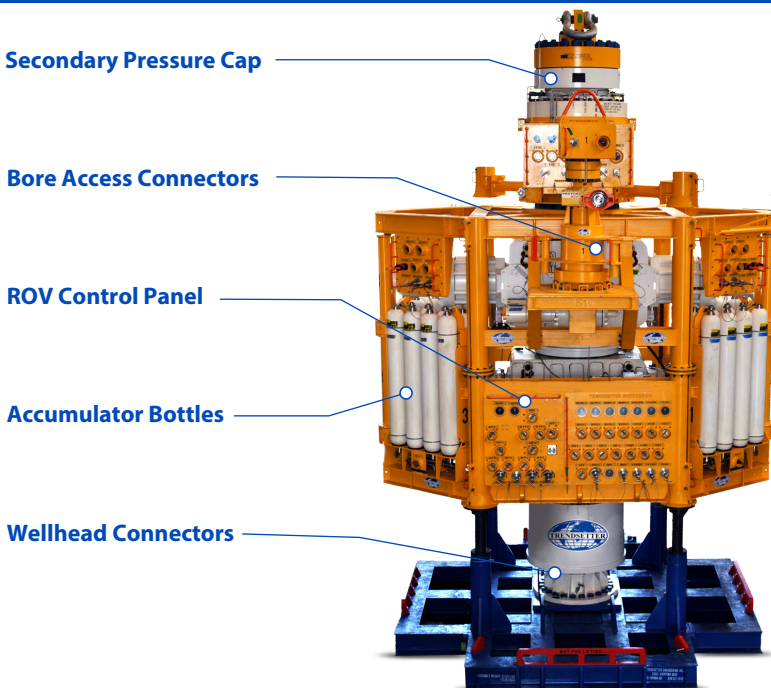
Trendsetter Engineering, Inc. has developed a Mudline Closure System which serves as an additional safety shut-in device while drilling in deep-water or harsh environments. The Mudline Closure System consists of a Mudline Closure Device (MCD), its associated control system and running/test tools.

The system is designed to augment the existing rigs BOP safety system and provides two additional sets of rams with an independent control system. The MCD is located below the rig BOP and above the wellhead, is capable of providing tubular shearing capability, complete well isolation, and if required the ability to pump into well bore or produce out of the system. The MCD provides an additional level of safety and the ability to secure the well and safely detach the rig and BOP system if the primary rig BOP had failed during a well control event.

The system is field-proven and is equipped with an acoustic/electro-hydraulic control system that operates independent of the rigs safety systems, BOP controls, and ROV back-up controls. Acoustic communications allow for the remote monitoring of the wellbore pressure and temperature near the wellhead if/when the well is isolated.



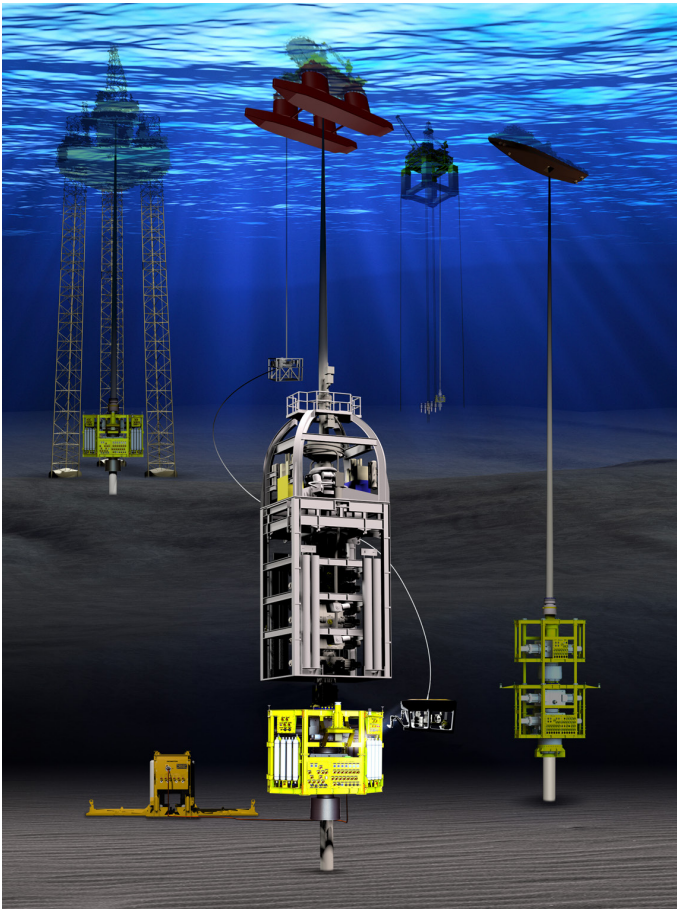
Mudline Closure Device (MCD)



KEY FEATURES

- ✓ Connects and seals to an 18-3/4" 10,000 psi or 15,000 psi wellhead housing
- ✓ Provides an 18-3/4" 10,000 psi or 15,000 psi upper mandrel connection to the subsea BOP or riser system
- ✓ Provides two individual BOP rams capable of shearing and sealing the wellbore
- ✓ Operates up to 15,000 psi wellbore pressure when actuated with acoustics or with the ROV back-up system
- ✓ Provides subsea mateable connections for contingency bore access below and between the BOP rams for well kill operations and/or contain and flow scenarios
- ✓ Provides a clean re-entry capability
- ✓ Includes 18 3/4" – 15,000 psi secondary pressure cap for long term well isolation
- ✓ Provides interfaces for wellhead fatigue monitoring/mitigation

With a MCD pre-installed, well control response is reduced to minutes instead of days or weeks.



SPECIFICATIONS

Design Life	10/25 yrs
Water Depth	15 to 1640 ft
Rated Working Pressure (Wellbore Equipment)	15,000 psi
Rated Working Pressure (Hydraulic Control System)	5,000 psi / 3000psi
Product Specification Level (Wellbore Equipment)	PSL 3
Operating Temperature Rating (Structures)	-20 °C to 40°C [-4 °F to 104°F]
Operating Temperature Rating (Equipment)	-10 °C to 40°C [14 °F to 104°F]
Operating Temperature Rating (Wellbore Equipment)	T-20 (-29 °C to 121°C [-20 °F to 250°F])
Code / Specification	DNV RP B401
Material Class	DD
Inlet/Outlet Connections	API 6A 3-1/16" 15,000 psi, BX-154
Flow Direction	Bi-directional Seal Prep
Outlets	TC2 Inboard Hubs w/ TEX-2 Gasket Seal Prep
ROV Interfaces	ROV Bucket, Hot Stab, and Grab Handles (17H)
Working Pressure	15,000 psi (1034 bar)
API Temperature Class	'U'
Primary Bore Size	18-3/4"
Lower Interface	27" H4 Wellhead Connector
Barrier Philosophy	Dual Functional Barrier



- Capable of long term well isolation.
- Available for use in all regions, including the Arctic.

◀ **Center:** Mudline Closure Device on shipping and test stand

Left and Right: Subsea Accumulator Modules with Mudmat and Hydraulic Mudmat Wings



USA
Visiting address:
10430 Rodgers Road
Houston, Texas 77070

tel+1 281-465-8858
www.trendsetterengineering.com

Manufactured by:
Trendsetter Engineering
Leader in Contemporary Subsea Solutions