



WellCONTAINED™ Subsea Containment Solutions

Components of WellCONTAINED™ Subsea Solutions

- In-house Response Personnel
- Source Control Emergency Response Plans (SCERP)
- Capping Stack Installation Plans - Drillpipe
- Capping Stack Installation Plans - Work Wire
- Capping Stack Shut-in plans
- Logistics Plans
- Debris Removal Plans
- Dispersant Application Plans
- Capping Stack Interface Checks
- Sea Fastening Plans
- Shallow Water Capping Plans
- Relief Well Plans
- Blowout / Dynamic Kill Analysis
- Broaching Simulation and Analysis
- Bullheading Analysis
- Dynamic Temperature Modeling
- Well Control (Kick) Modeling
- Atmospheric Dispersion and Radiant Heat Analysis
- Subsea Plume Analysis
- Response Drills
- Training

Prevention and Response

Drawing from more than 40 years of experience, the WellCONTAINED Subsea Containment group provides the industry with unique, comprehensive solutions to offshore, deepwater well control events.

Prevention and response serve as cornerstones to the WellCONTAINED set of solutions, providing operators with a full-service response in a right-sized package.



15K STACK



ABERDEEN

SINGAPORE

15K STACK

The WellCONTAINED Subsea Capping Stack

WellCONTAINED delivers an adaptable-response equipment package built for a variety of subsea scenarios. Based on extensive experience in subsea well control, the kit's design criteria provides for a depth rating to 12,500 fsw, 15,000 psi shut-in pressure, and dual mechanical barriers, complete with ROV-controlled functionality.

The capping stack's modular design facilitates rapid global deployment on a readily available Boeing 747 cargo aircraft. The system is verified by third parties and staged for deployment at our Aberdeen and Singapore locations.



A **6-stage disaster response timeline** provides a roadmap to containment for all subsea and deepwater events.



1

Initial Response

- a. Evacuate and account for all personnel; attend to medical needs.
- b. Activate and put into action emergency response plans.
- c. Make all necessary intercompany and regulatory notifications.
- d. Mobilize assets and personnel to manage and assess the situation.
- e. Set up Spill Response and Source Control Teams.

2

Survey and Planning

- a. Personnel and equipment arrive; site survey and incident assessment conducted.
- b. Formalize response plan and additional resource needs.
- c. Call out additional equipment and personnel as required by the response plan.

3

Mobilization of Resources

- a. Surface spill response teams begin operations.
- b. Dispersant application on surface and at source (subsea).
- c. Additional personnel and equipment arrive.
- d. Assemble, test, and load response equipment onto vessels for transit to location.

4

Interim Response

- a. Continue dispersant application.
- b. Attempt direct subsea intervention operations on drilling BOPs.
- c. Conduct subsea debris clearance
- d. Prepare for capping stack installation
- e. Monitor well for any changes in flow/conditions.

5

Cap and Contain

- a. Capping stack transit to location.
- b. Install capping stack on well.
- c. Shut in well and monitor well data to determine if further action is required.

6

Relief Well Operations

- a. Relief well rig arrives on location and spuds relief well.
- b. Relief well drilling.
- c. Final kill and plugging of wells.

Note: All time frames occur after incident and are dependent on the complexity of the event.

Global Response Equipment Lineup

	Aberdeen	Singapore
Date in Service	May 2012	September 2014
Status	Ready	Ready
Manufacturer	Wild Well / Cameron	Trendsetter
Pressure Rating	15,000 psi	15,000 psi
Water Depth Rating	12,500 ft	12,500 ft
Bore Restriction	No - 18 3/4-in. unobstructed bore	No - 18 3/4-in. unobstructed bore
Main Bore	3ea, 18 3/4-in. Cameron type TL BOPs with Blind Shear Rams	2ea, 18 3/4-in. Cameron type TL BOPs with Blind Shear Rams
Diverter Below	Yes	Yes
Outlets	4ea, 3 1/16-in. Outlets	4ea, 5 1/8-in. Outlets
Chokes	2ea, 3 1/16 in.	2ea, 5 1/8 in.
Connectors	2ea Cameron HC and 1ea Cameron H4	1ea Cameron HC, 1ea Cameron H4, 1ea DrilQuip DX-15 H4
Weight	105 MT	110 MT
Airfreight / # of planes	Yes / 3ea 747	Yes / 3ea 747
Chemical Injection Capability	Yes	Yes
Controls	ROV Hydraulic and Torque Tool	ROV Hydraulic and Torque Tool
Running Methods	Work Wire and Drillpipe	Work Wire and Drillpipe
In-house Planning, Engineering, and Deployment Services	Yes	Yes

