

SWIS SUBSEA INCIDENT RESPONSE TOOLKIT

Oil Spill Response Limited (OSRL) can provide members global access to an integrated intervention system comprising of four capping stacks and two subsea incident response toolkits.

The Subsea Incident Response Toolkit: Key Facts

- The two hardware toolkits for the subsea application of dispersant at a flowing subsea BOP include:
 - Tools for site surveys prior to commencement of work, e.g 2D and 3D sonar
 - Debris clearing equipment with cutting, grappling and dragging tools to gain access to the blowout preventer (BOP) where necessary
 - Flying leads, distribution manifold and dispersant wands to inject dispersant at multiple locations
 - High pressure and high volume accumulators for closing the existing BOP
- Designed for subsea use to a maximum of 3000m water depth
- Transportable by sea and/or air.
- Stored in two strategic locations globally – Brazil and Norway
- Available for use in a variety of international metocean conditions
- Manufactured by Oceaneering

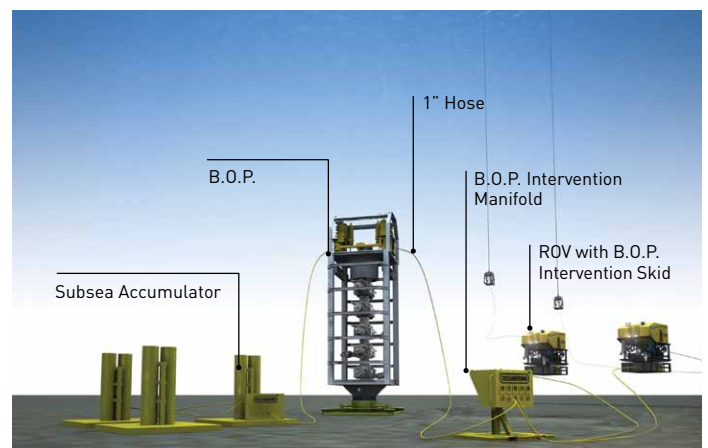
Blow Out Preventer Emergency Intervention

In the unlikely event that the rig fails to close off the BOP, emergency BOP intervention is required.

Component list of BOP intervention tools for each subsea dispersant toolbox

No. Component (and description per set)

2	ROV Mounted Intervention Charging Skids
1	High Pressure, High Volume Accumulator Skids for BOP Intervention
1	BOP Intervention Manifold



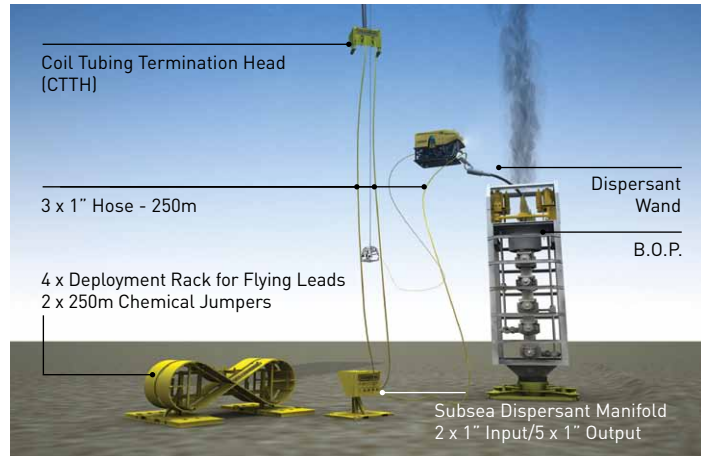
Subsea Dispersant System

This system allows for the subsea application of oil dispersant at the wellhead.

This will create safer surface working conditions for response personnel and enhance the degradation of oil.

Component list of subsea dispersant system equipment for each subsea dispersant toolbox

No.	Component (and description per set)
1	30" Dispersant Wand (Hook type wand to direct dispersant in a set direction. Can be handled by the ROV manipulator)
2	40" Dispersant Wand (Hook type wand to direct dispersant in a set direction. Can be handled by the ROV manipulator)
1	50" Dispersant Wand (Hook type wand to direct dispersant in a set direction. Can be handled by the ROV manipulator)
2	Dispersant Wand Spear (Spear type wands to direct dispersant in set direction)
8	1" Chemical Jumper (250 m) (Two 1" lines to transfer dispersant from the CTTH to the subsea manifold)
4	Deployment Rack (Transportation and storage of 250m chemical jumpers)
4	1" Unions for Flying Leads (Allows connection of two 250m jumpers in to one 500m line)
1	Coil Tubing Termination Head (CTTH) (Interfacing with two flexible lines through high flow hot stabs)
1	Manifold (Two 1" high flow receptacles to connect jumpers from the CTTH. Five 1" high flow receptacles to connect jumpers for dispersant application)

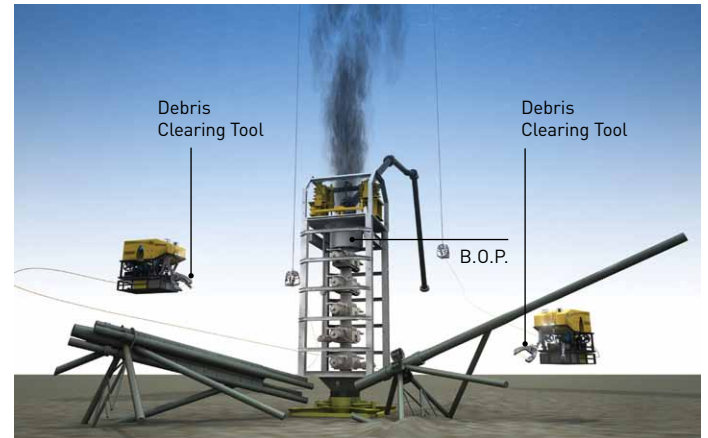


Debris Clearance

Each subsea toolbox consists of various tools for removing debris to allow access for dispersant applications and work on Blow Out Preventers etc. This also includes tools for site surveys prior to commencement of work, e.g. 2D and 3D sonar.

Component list of debris clearance equipment for each subsea dispersant toolbox

No.	Component (and description per set)
3	Remote Control Unit (Remote control of pressure and flow on two independent lines controlled from surface)
3	Stanley IW16 Impact Wrench (Produces 3400Nm of Impact torque)
2	Hydraulic Stud Removal Tool (W. 35/8" and 45/8" Cassettes)
3	Flying Lead Orientation Tool (FLOT) (Allows for real-time positioning of Torque Tool)
3	Torque Tool Class 4 (Operates rotary valves from class 1-4)
2	6" Dredge Pump (For disposal of sediments and gravel up to 135mm)
3	Manipulator Inspection camera (Used for inspection in confined spaces)
2	2D Multibeam Imaging Sensor (To search and navigate in low and zero visibility water)
2	3D Multibeam Imaging Sensor (Produces 3D point clouds from a stationary location)
4	Linear Valve Override Tool (LVOT) (Employs ROV hydraulics to move a piston to actuate a gate valve stem on subsea manifolds)
2	Multi Purpose Cleaning Tool
1	Hydraulic Pressure Unit (Max 3000psi 5gpm - Used for performing pre-deployment tooling tests)
1	Pipe Grapppler Tool (Up to 24" pipes)
1	Rock Grapppler (For removing lighter objects)
3	22" Chop Saw (4" to 8" cutting range)
2	60" Chop Saw (18" to 24" cutting range)
3	Super Grinder (14" grinding disc for cutting solid bolts and pipes up to 17")
3	Stanley Grinder (7" grinding discs)
2	Diamond Wire Cutter (For cutting bolts, pipes etc up to 450mm)
2	Hydraulic Cutter (Versatile cutter)
4	ROV Knife (For cutting ropes etc.)



Storage

The majority of equipment will be pre-packed and stored in five 20ft and two 10ft air-freightable containers. The subsea BOP accumulator and the deployment rack for flying leads will be air-freighted separately.

One of the 10ft containers is climate controlled for storage of sensitive tools such as the RCU, sonar and camera.

Tools are categorised and stored in steel and hard plastic boxes allocated to a specific stage of the operation including three months of spares.



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