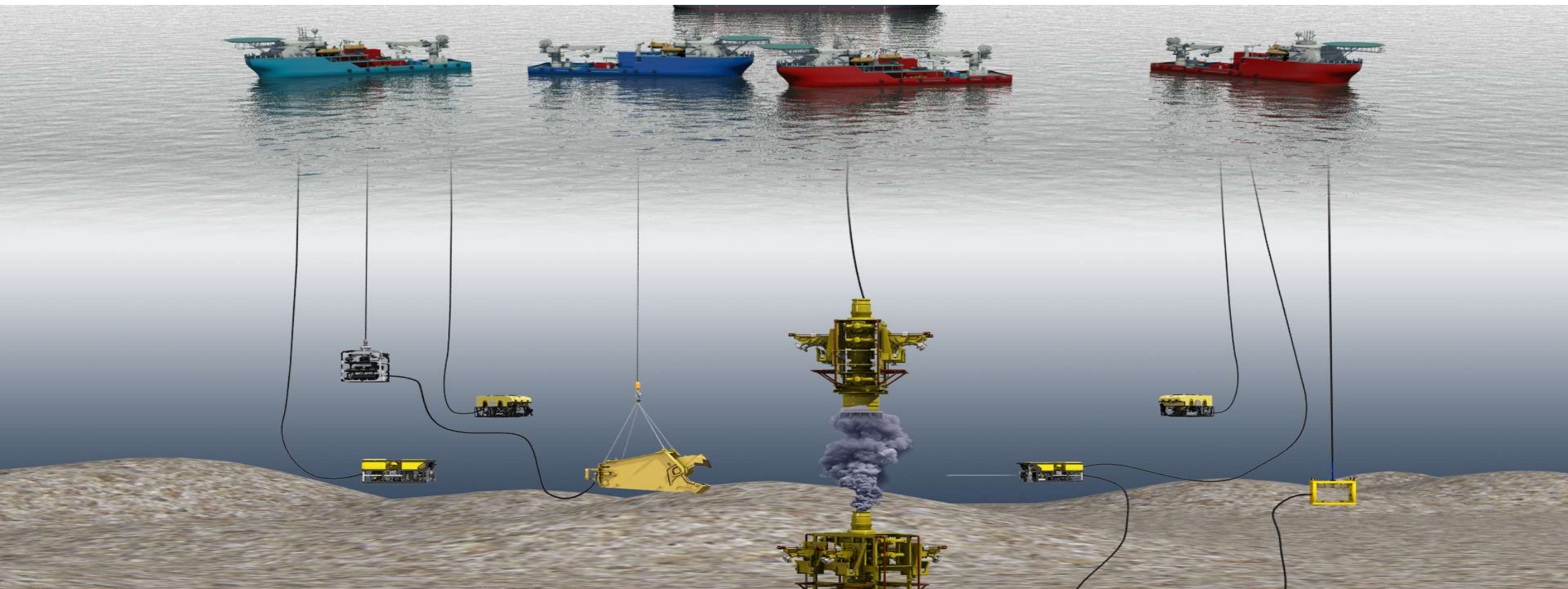
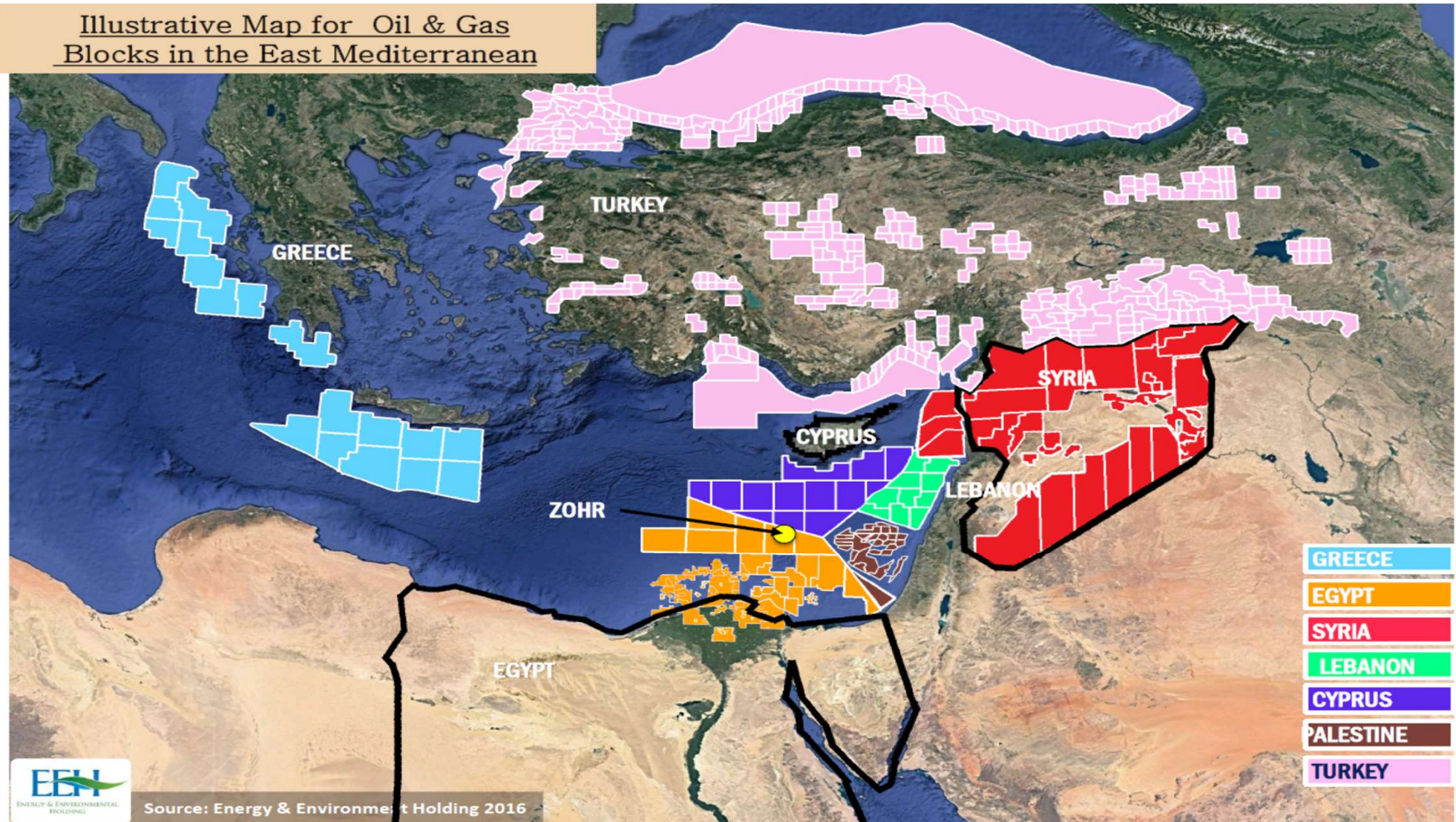




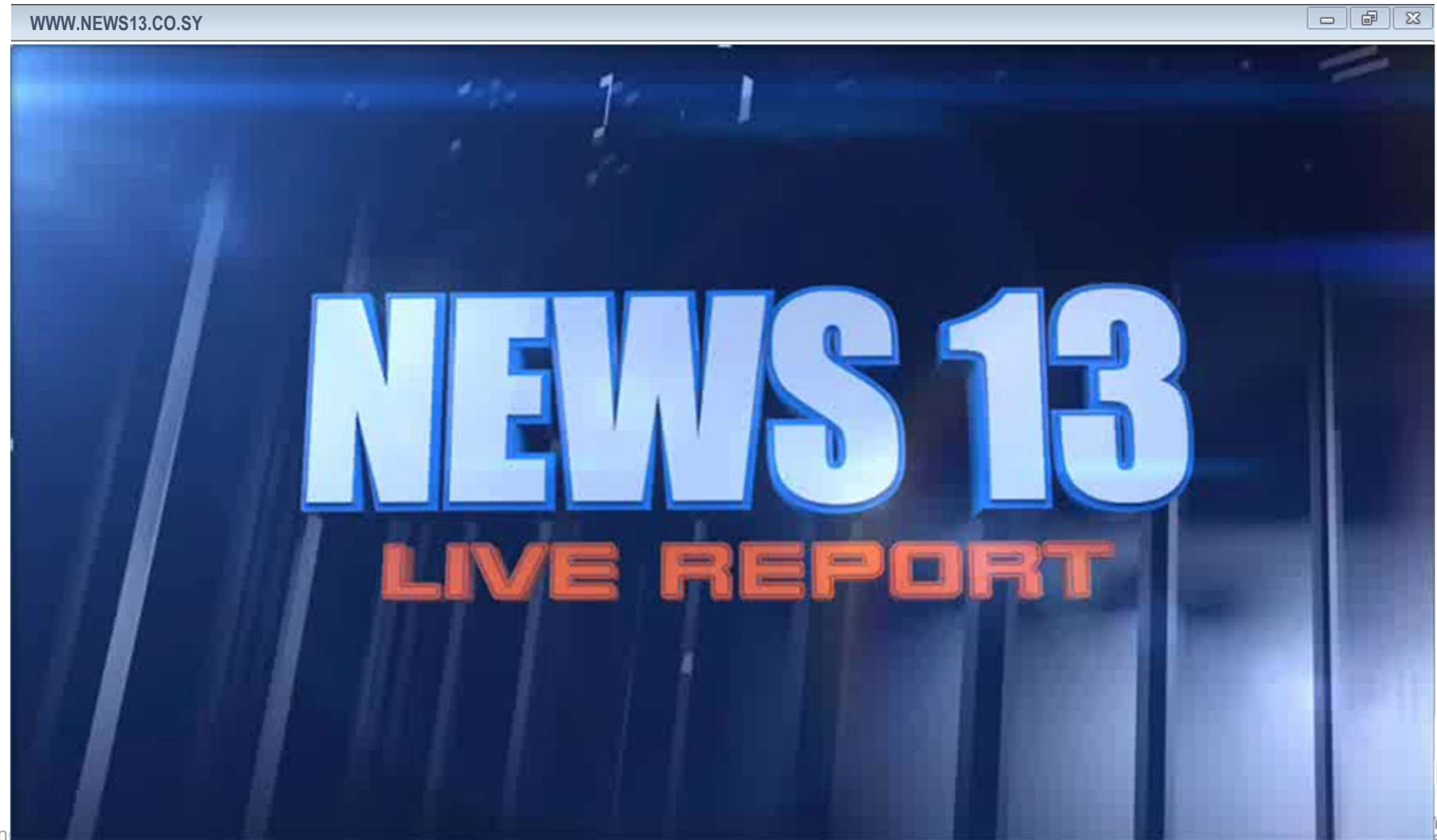
**SOURCE CONTROL FOR A SUBSEA WELL
CONTROL INCIDENT- ARE YOU PREPARED?**

MEDITERRANEAN REGION O&G INFRASTRUCTURE ???

Illustrative Map for Oil & Gas Blocks in the East Mediterranean

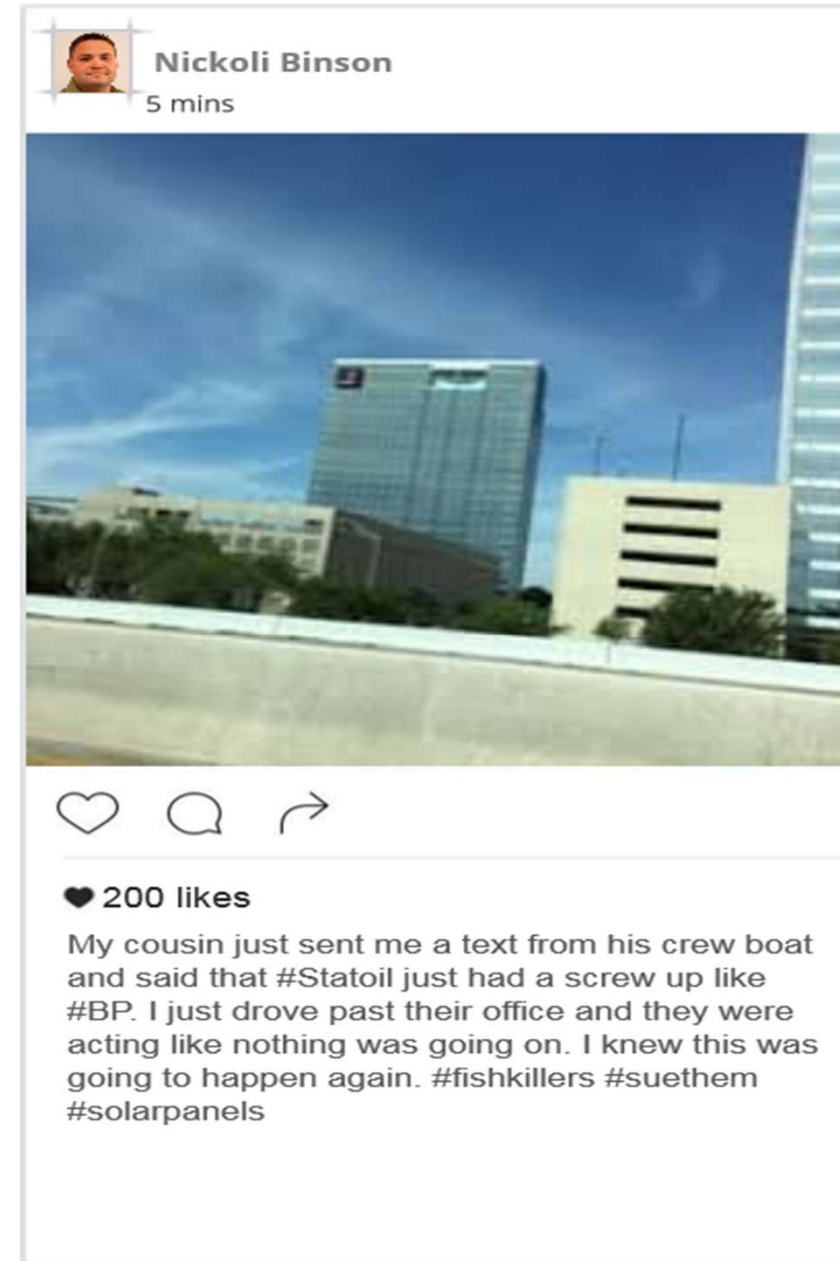


Are you Prepared for this?



Source Control Can't Prevent This

- But a highly prepared, trained, and organized team can mitigate what has already happened



Source Control – What is it?

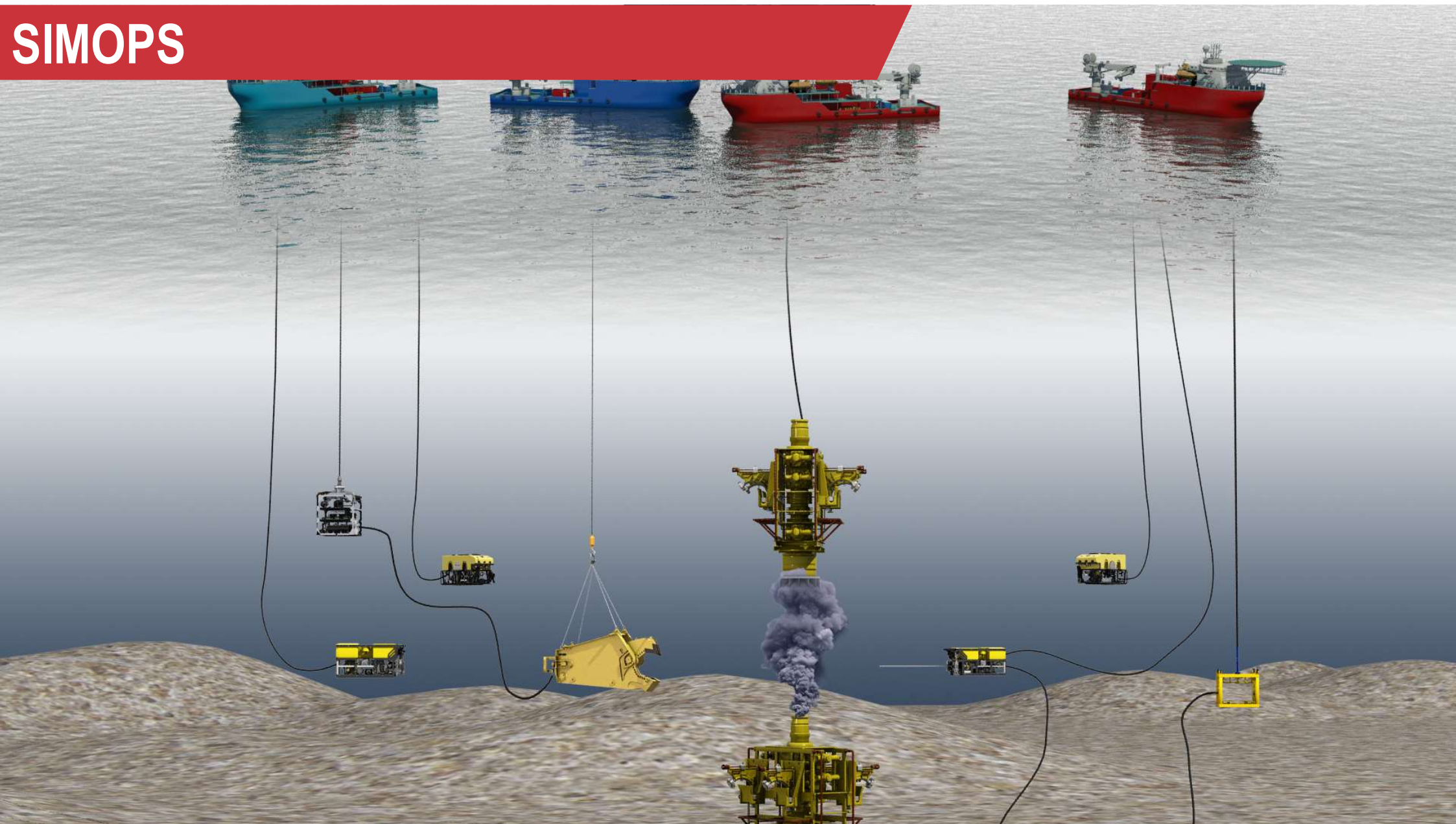
Source Control is a generic term for all activities related to the direct intervention of a wild well at source point (wellbore) in an effort to halt or control the release of hydrocarbons to the environment.

Activities for Subsea Source Control may include:

- Surface & Subsea SIMOPs
- ROV Survey & Assessment
- Secondary Function/Troubleshooting of 'failed' BOP
- Subsea Debris Removal (gain access to wellbore)
- Capping Stack Install/Operation
- Subsea Dispersant Application
- Relief Well Drilling/Intercept/Well Kill
- *Vessel & Rig Selection & Availability*



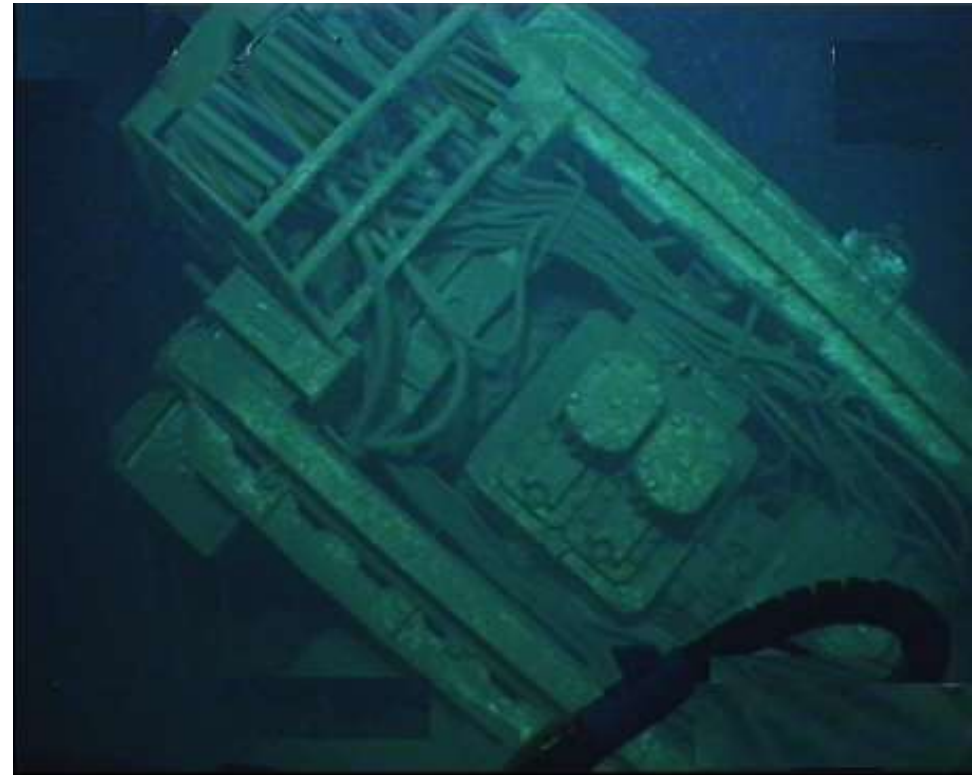
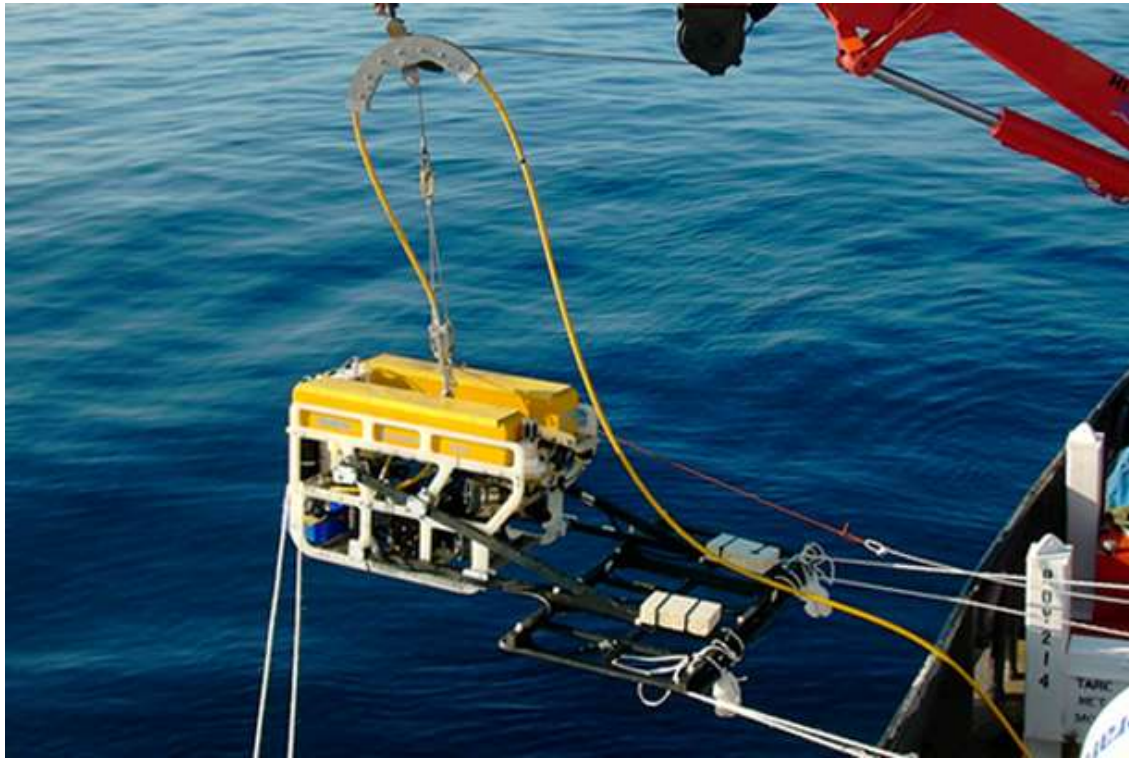
SIMOPS



DEBRIS CLEARING EQUIPMENT



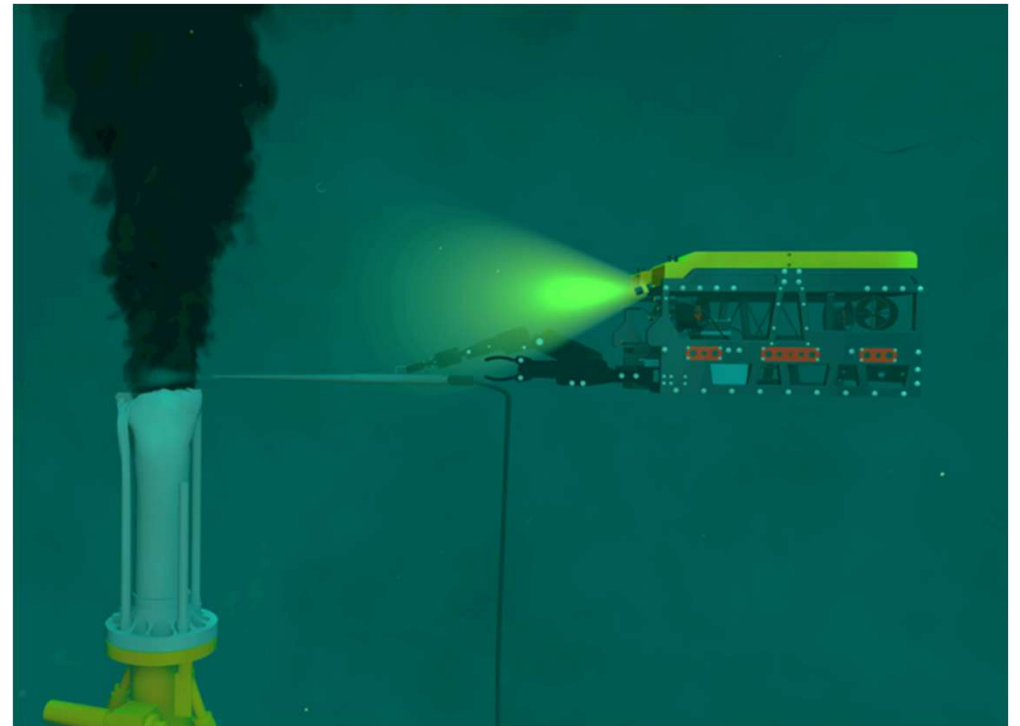
ROV SURVEY & ASSESSMENT



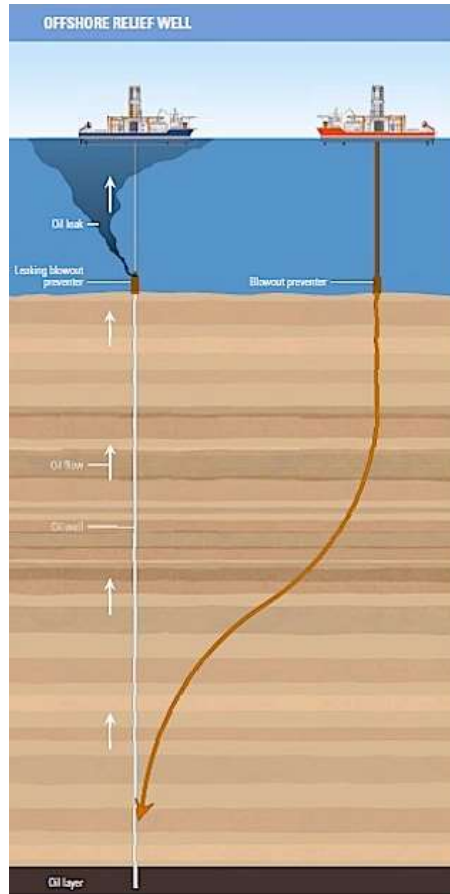
CAPPING & CONTAINMENT



SUBSEA DISPERSANT APPLICATION



Relief Well Drilling/Intercept/Well Kill

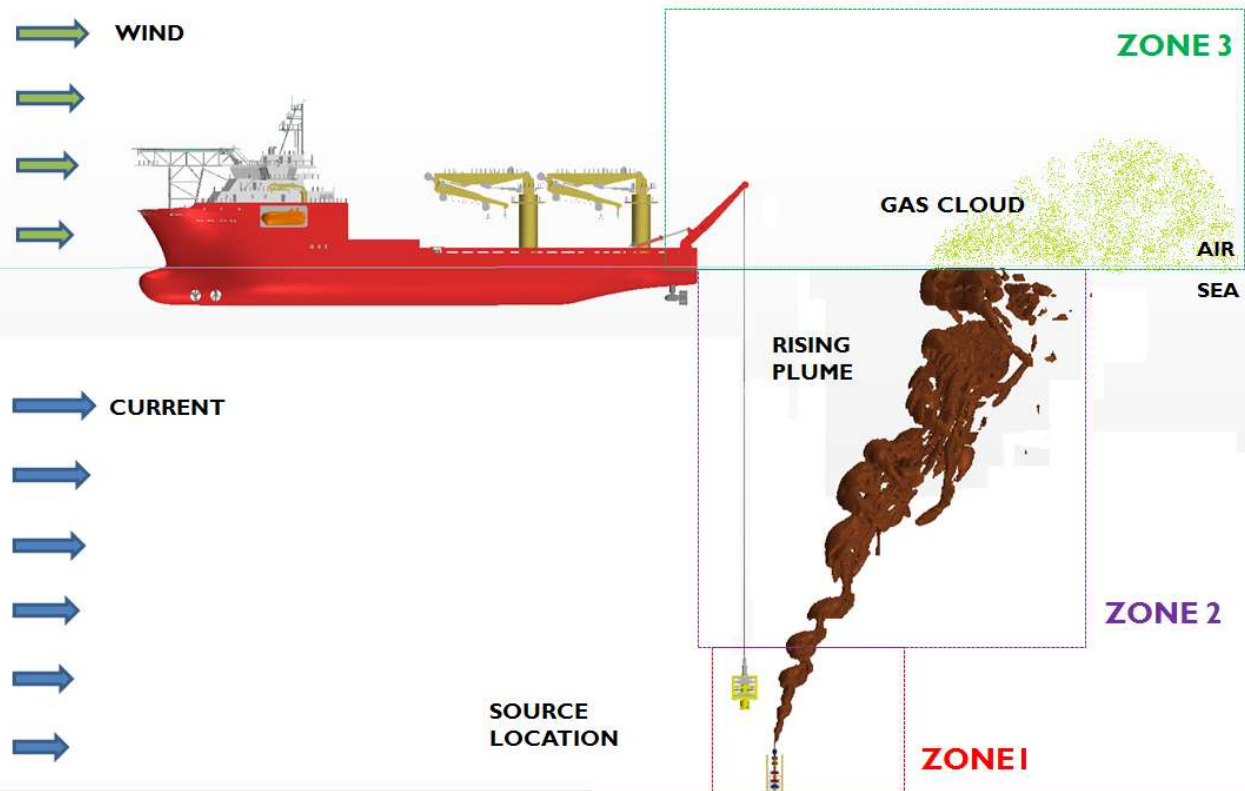


Relief Well Contingency Requirement

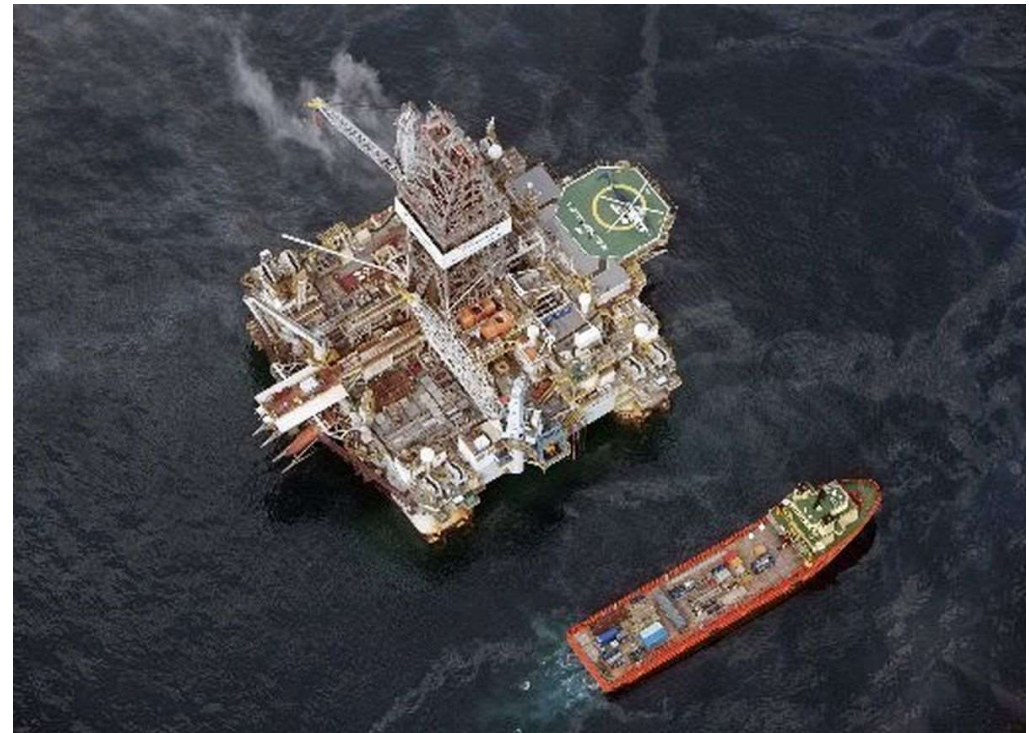
Relief Well Planning Requirements Checklist		Potential Blowout Hole Sections Compliant?		Tier Level Classification			Comments
		12-1/4"	8-1/2"	Tier Level*			
				1	2	3	
The Following are Mandatory "SHALL [WELLS]" Requirements (Deviation - Approval Required)							
1	Worst case discharge rates (WCD) simulated for each hole section	Yes	Yes	X			
	Worst case kill rates simulated for each hole section	Yes	Yes	X			
2	a Kill Rate <70bpm (subsea) & <100bpm (surface)		X	X			
	b Kill Rate >(70bpm SS or 100bpm S) & <140BPM (subsea or surface)	X			X		
	c Kill Rate >140 BPM (subsea or surface)	X				X	Kill Rate 144 bpm, Tier 3
3	By-pass > 900ft (300m) MD above Intersect Depth	No	Yes			X	Not Possible
4	Combined position uncertainty <45ft (15m) at by-pass depth	Yes	Yes	X			
5	> 90ft (30m) between ellipsoid edges	Yes	Yes	X			
6	Relief Well <60° Inclination	No	Yes			X	Possible but with higher DLS
7	Incident Angle <8° between the Relief Well and Target Well	No	Yes			X	Not Possible
The Following are Mandatory "shall" Requirements (Deviation - Approval Required)							
1	Suitable Primary & Secondary RW Surface Locations	Yes	Yes				
2	RW Surface Locations >2500ft SS or >1500ft S from blowout or each other	No	No				
	a Risk Assessment Required for RW Surface Locations if less than above	No	No				Risk Assessment to be Completed
3	Relief Well Directional Database Setup in Compass Software EDM R5000+	Yes	Yes				
4	Well trajectories + position uncertainty of RW and Target well	Yes	Yes				
5	Relief Well Construction Time Estimate	Yes	Yes				
The Following are non-mandatory "should" Requirements							
	Relief Well Surface Locations						
1	a Subsea wellhead > 2500 ft from blowout wellhead & each other	No	No				
	b Surface wellhead > 1500 ft from blowout wellhead & each other	n/a	n/a				
	Environmental Risk Assessment Required when:						
	a Subsea wellhead < 2500 ft from blowout wellhead & each other	No	No				
2	b Surface wellhead > 1500 ft from blowout wellhead & each other	n/a	n/a				
	c H2S or any other toxic contents in blowout gas	n/a	n/a				
	d The water depth is less than 2,400 ft	No	No				
3	Relief Well Equipment and Availability of Services via call-off Contract	No	No				Kill Equipment Study to be Completed
4	Overview of Suitable Rigs for Relief Well Drilling	Yes	Yes				
5	Worst Case Discharge Documentation Filed	Yes	Yes				
6	Hydraulic Kill Documentation Filed	Yes	Yes				

- ☐ Is surface/subsea blowout hydraulic simulations required?
- ☐ Is relief well kill hydraulic modeling required?
- ☐ Is relief well intersection plan required?
- ☐ Is casing design required for blowout or relief well loading?
- ☐ Is a kill assessment, logistics & equipment plan required?
- ☐ Is subsea gas & oil plume modeling required?
- ☐ Is gas dispersion modeling required?
- ☐ Is heat radiation and/or noise modeling required?
- ☐ Is a risk assessment plan required

VESSEL SELECTION



RIG SELECTION



A large, stylized flame graphic in a lighter shade of gray, positioned on the left side of the slide, extending from the top to the bottom.

Thank you.

Please visit wildwell.com