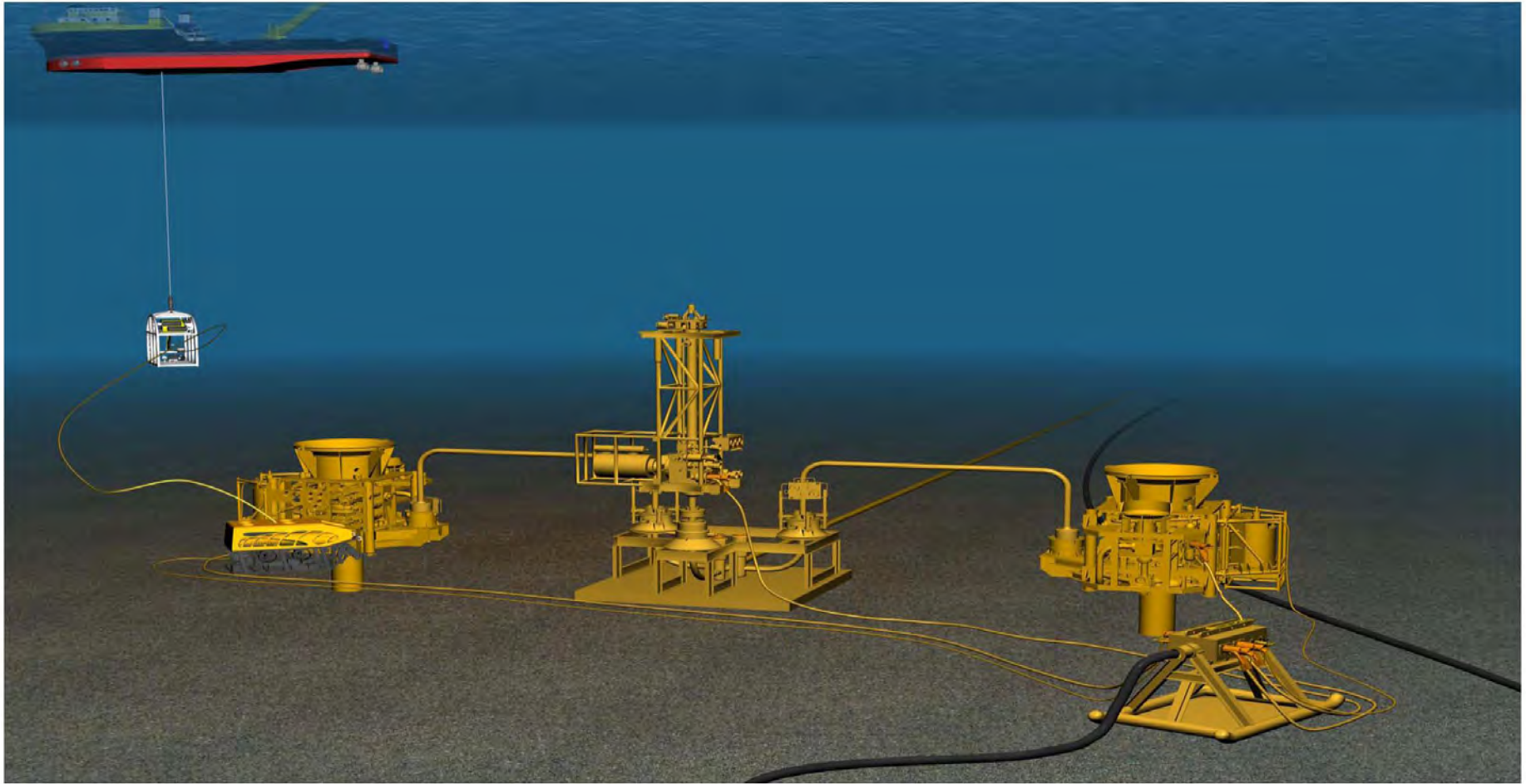


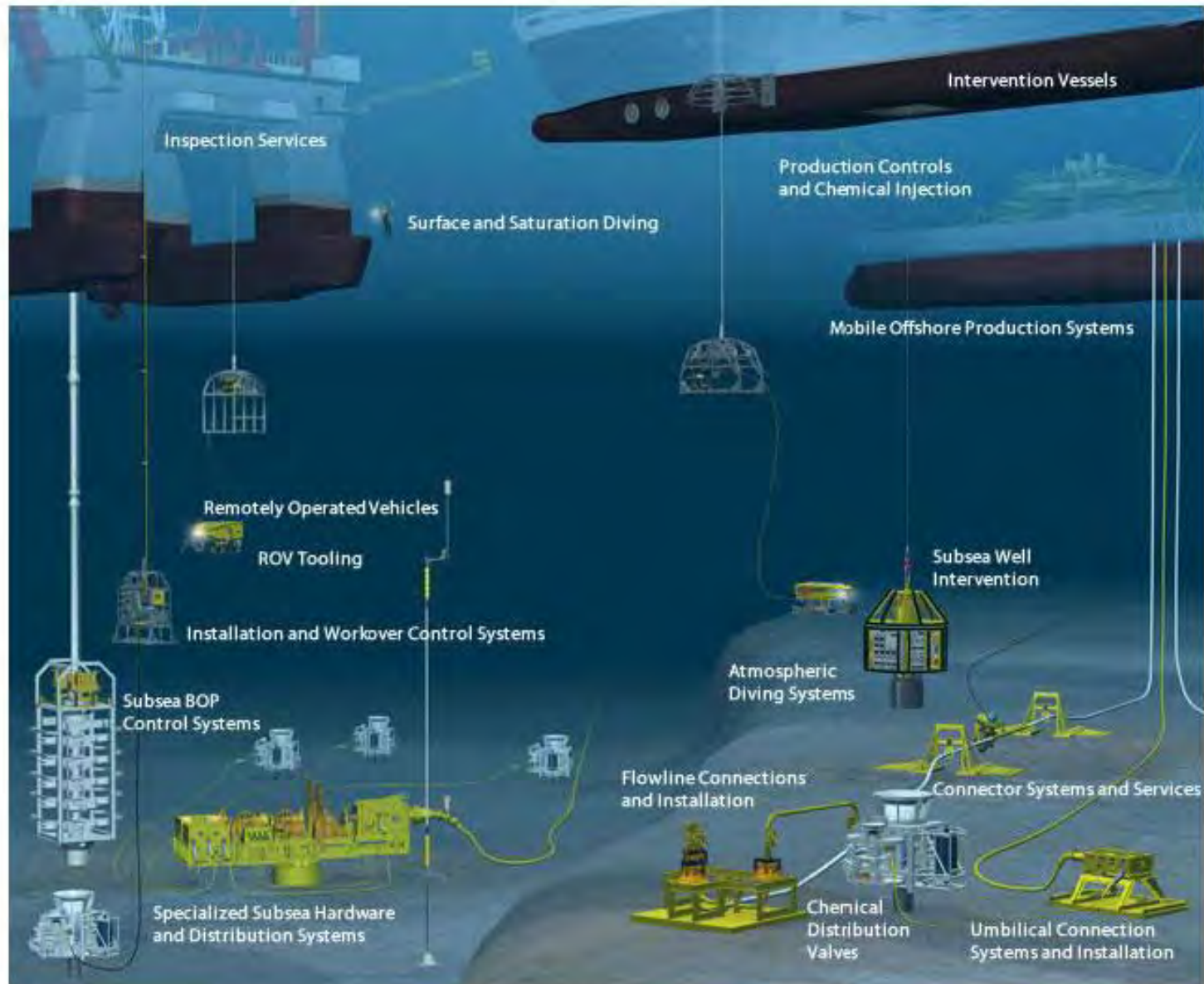
# This is What We Do



- Installation of the final hookup hardware to complete the oil field development
- Installation of pipelines and umbilicals
- Requires precise control of components in water depths of up to 10,000 feet deep
- Performed by High Tech Vessels and Robotics

**Without these components, the oilfield can not flow their product to shore based refineries!**

# Representative Offshore Construction Site





# Pipeline Installation (Pipelay)



# Pipeline Tie-in Installation

Connection of a pipeline to another facility

Done with spool pieces or jumpers

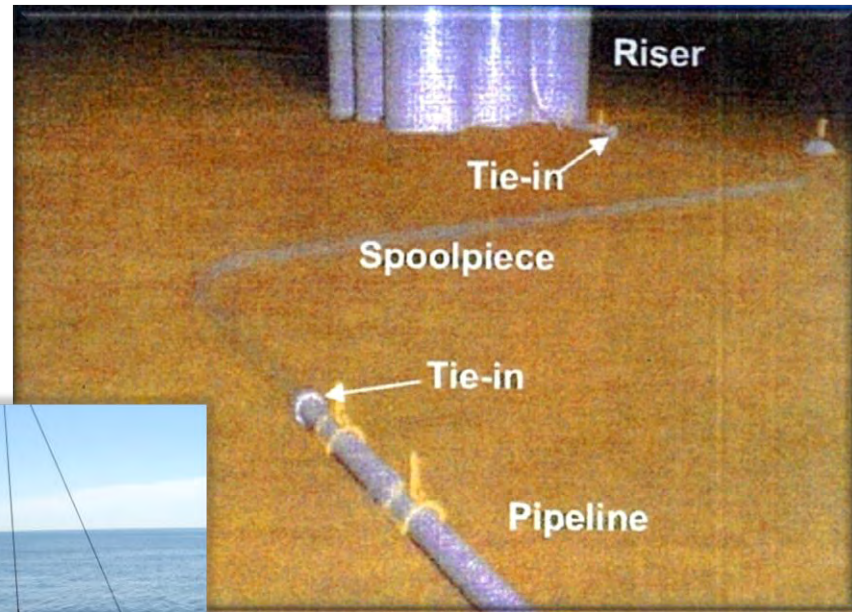
Facilities include:

Risers

Subsea Assemblies

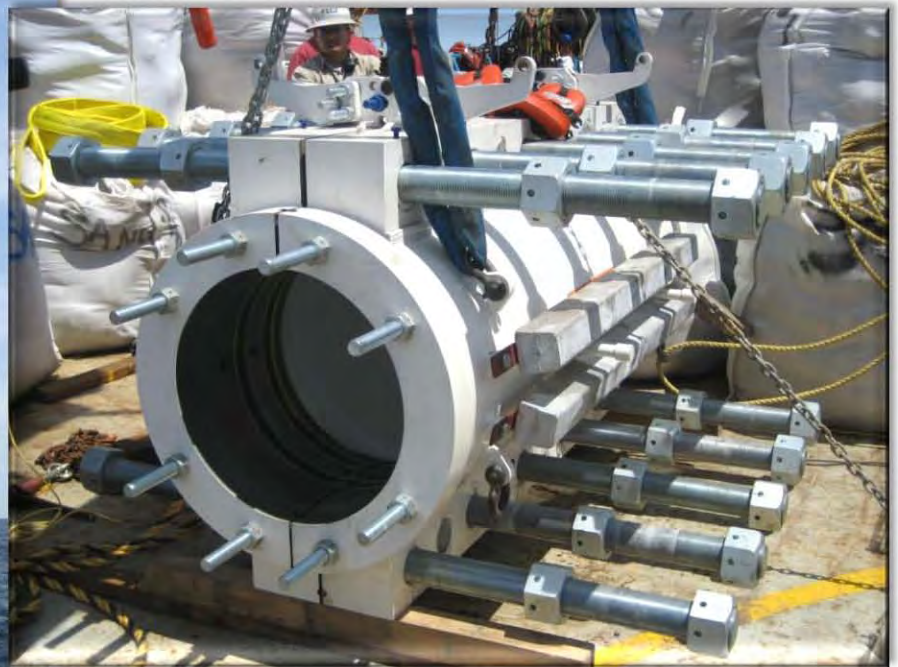
Subsea Trees

PLEM's or PLET's





# Pipeline Repair Clamp Installation



# Installation of Concrete Mattresses





# Installation of Pipeline End Termination (PLET)



# What's Being Installed? Big , Heavy, Sophisticated Stuff



**Control Pod**



**Jumpers**



**BOP's**



**Production Manifolds**



**PLET**



**Pipeline Connectors**



**Concrete Mattress**



**Pipeline Valves**



**Platform Repair Parts**



**Control Manifolds**



# How Does This “Stuff” Get Installed?

.... by Specialized Installation Vessels



**You see they are**

**Typically Much Larger 300 Feet +**

**Fitted with Heliport since they go far at sea**

**Fitted with Large cranes 100 Ton+**

**Cranes are heave compensated**

- Corrects for ship movement

- So precise placements can be done-

- A frames do not accommodate precise placement

**What you don't see**

**The diesel electric power plant**

- Allows for distributed components like thrusters

- These vessels typically use Azi Pod thrusters

- Fully slew able thrusters for precise position

**The high level of dynamic positioning**

**Accommodation of 80+ personnel**

**Both Vessels look Similar**

But.....

above is **Foreign Flag Installation Vessel**  
(not many are US flag )

and

right is **US Flag Platform Support Vessel**  
(all are US flag)

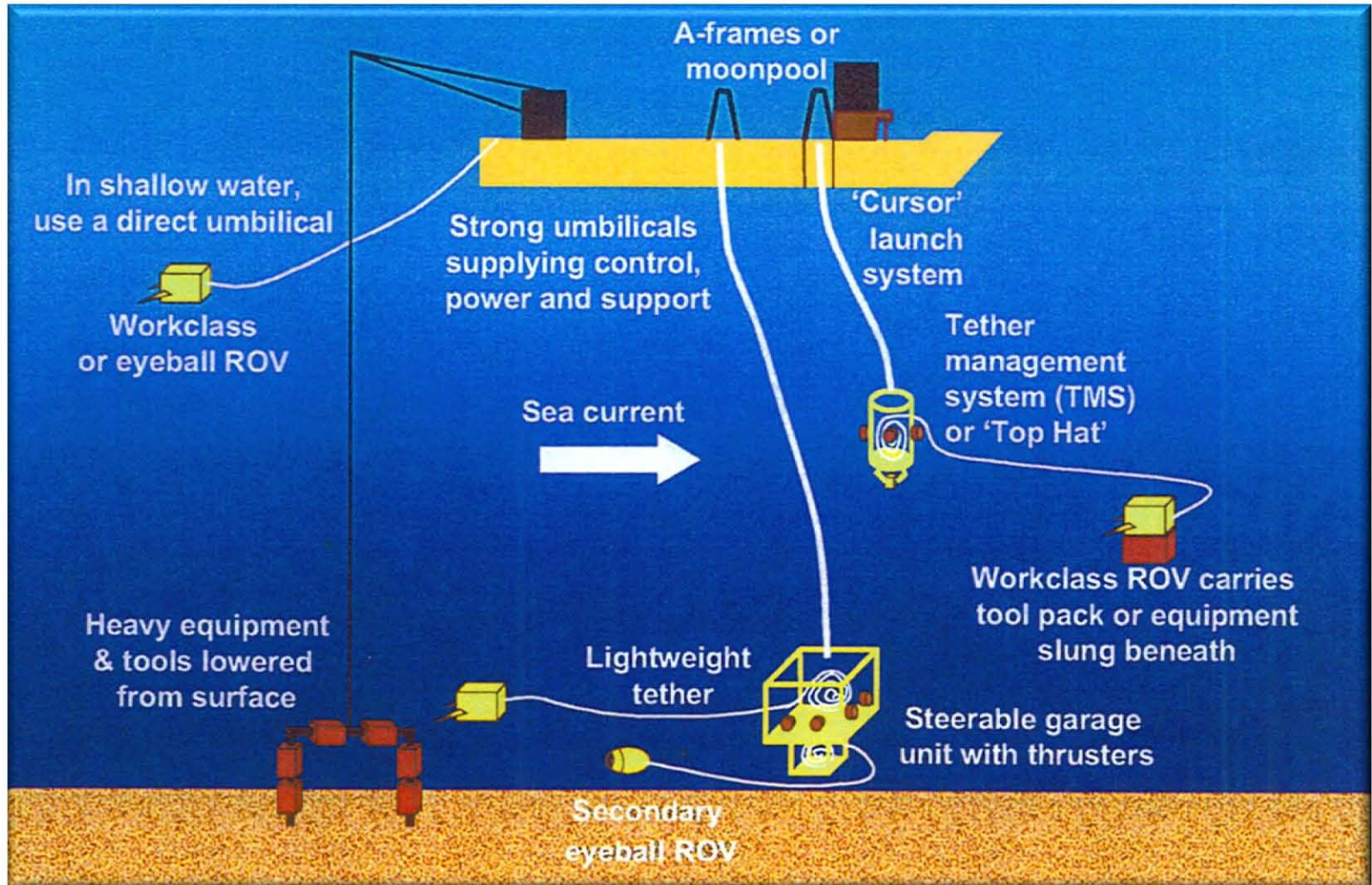


# Different Types of Installation Vessels



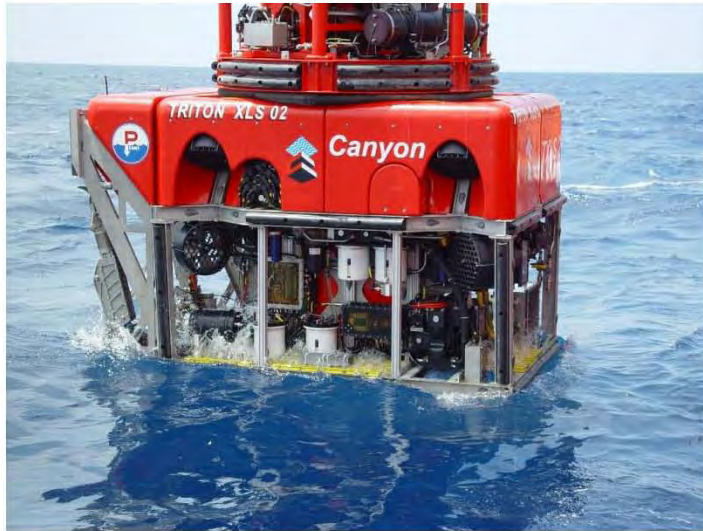


# Installation Tools - ROVs



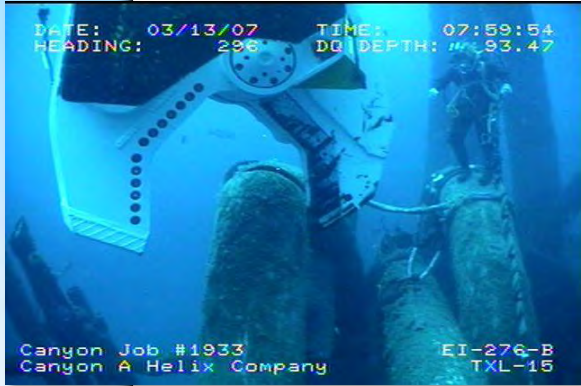
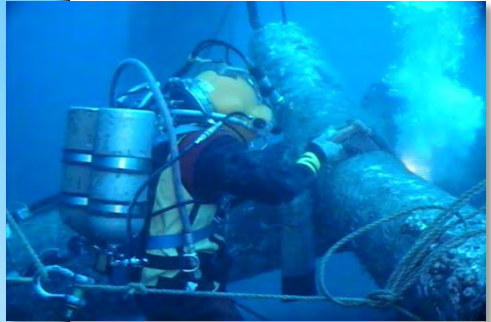
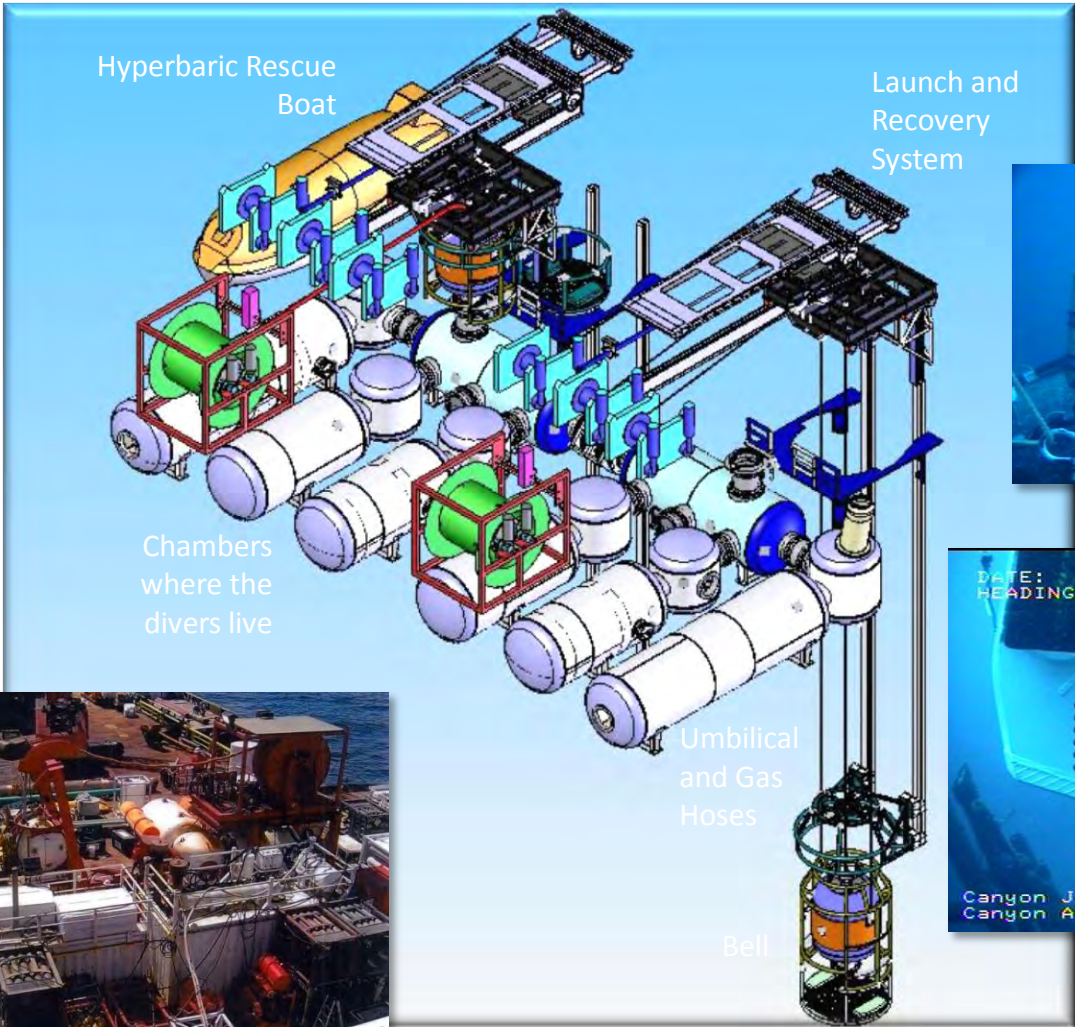


# ROVs





# Installation Tools - Saturation Diving



# When Working Offshore, Safety is Priority One

