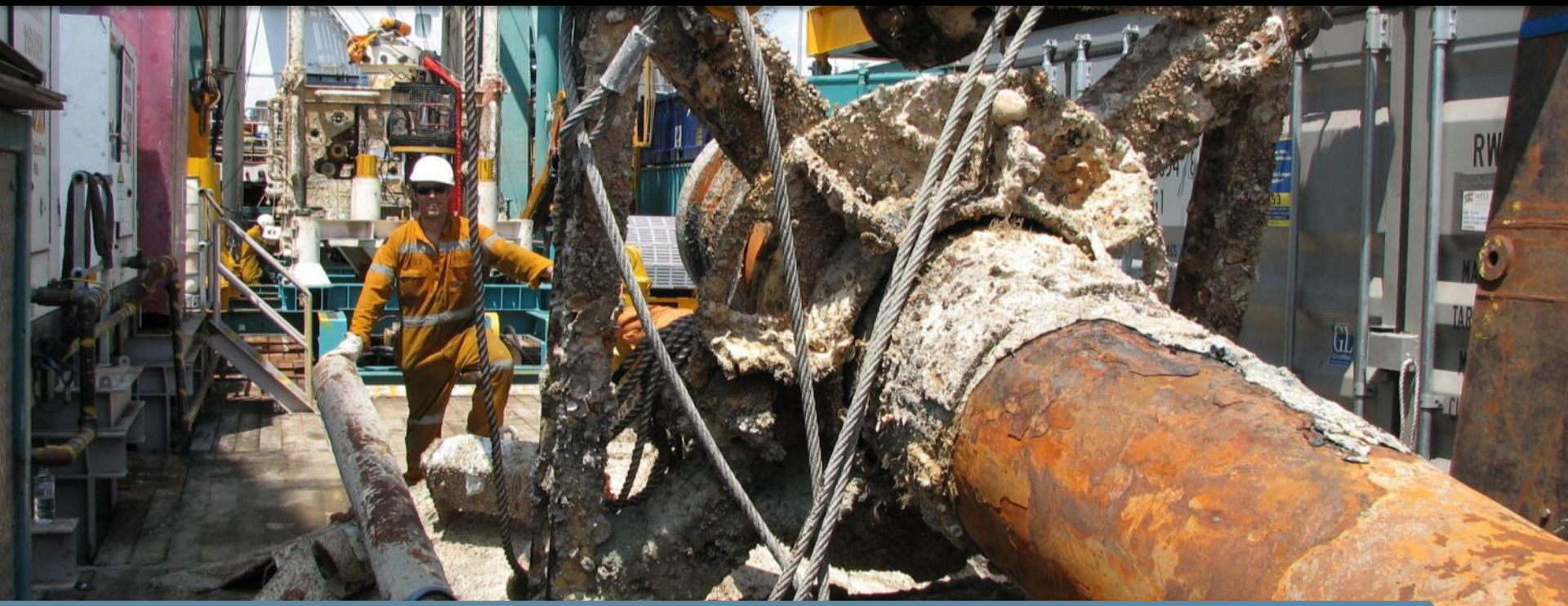
Owen Kratz, Helix ESG Chairman and CEO



Well Intervention Overview

What is well intervention?

- Well intervention is the ability to safely enter a well with well control for the purpose of doing a number of tasks other than drilling.

- Well intervention historically was done with drill rigs, with an 18-3/4” BOP and 21” marine riser as the only means of well access with well control.

- In the 80’s, technology was developed that afforded for re-entry into wells with alternatives to the drilling well control systems and rigs for delivery of non-drilling services.

- As technology is developed, water depth increases, well head design evolves and well construction changes, intervention also evolves and demand grows.

Intervention Today

		Vessel				
			Monohull		Semi	
		Smaller				Larger
		Intervention System				
		SIL	SIL/IRS	IRS	IRS	18 3/4 BOP
Well			<7"	>7"	>7"	21" IRS
Intervention		Smaller				
		Cat A	Cat A+	Cat A++	Cat B	Cat C
		Wireline	Wireline	Wireline	Wireline	Drilling
			<7" riser	<7" riser	<7" riser	
			Coiled tubing	Coiled tubing	Coiled tubing	
					Pull tubing	
			Wireline		**Coiled Tubing**	
		E-line reservoir/annulus			Cement plug placement-reservoir/	
		Well perforating-tubing/casing			intermediate/shallow	
		DHSV repair			Fishing	
		SSSV/sleeve insets/storm chokes			Gas lift valves	
		Fishing			Sand screen repair	
		Guage cutting			Tubing/seal failure-mechanical	
Well		P/T/F gauges			plugs/patches (well integrity)	
Services		Gas lift valves			Zone isolation/re-perforating	
		Sand screen repair			Scale squeeze/hydrates soak	
		Tubing/seal failure-mechanical			Scale mill-out	
		plugs/patches (well integrity)			Well stimulation	
		Downhole video/camera surveillance				
		Perforating				
		E-line plug setting/removal/sand removal				
		Pressure/temp flow monitoring				
		Downhole seismic calliper survey				
		Well logging				

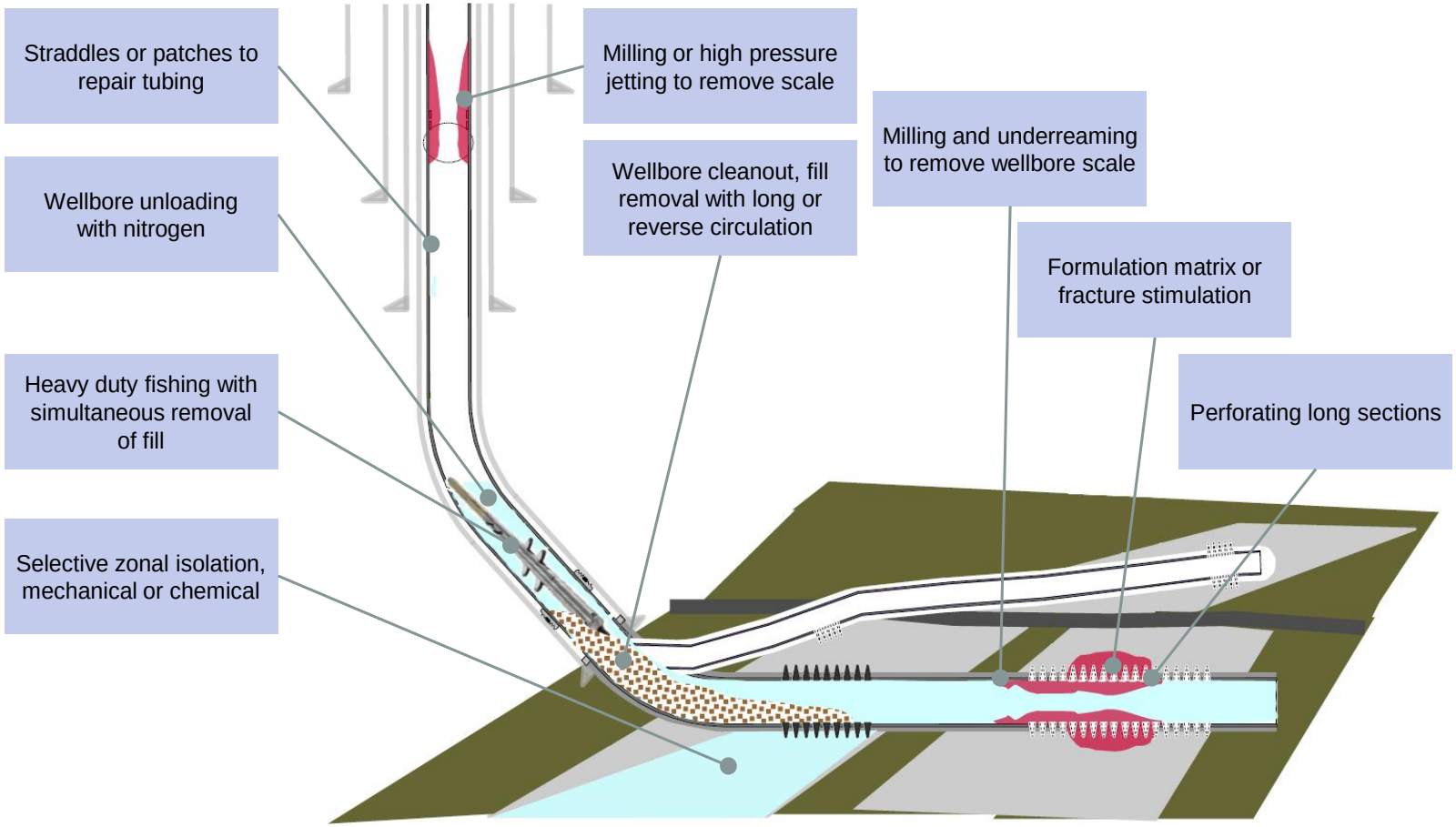
Related Operations with Intervention Assets

- Xmas tree recovery/installation
- Xmas tree/wellhead maintenance
- Choke change-out
- Light construction
- Saturation diving (inspection, repair & maintenance)
- ROV support services

Future Applications of Some Intervention Assets:

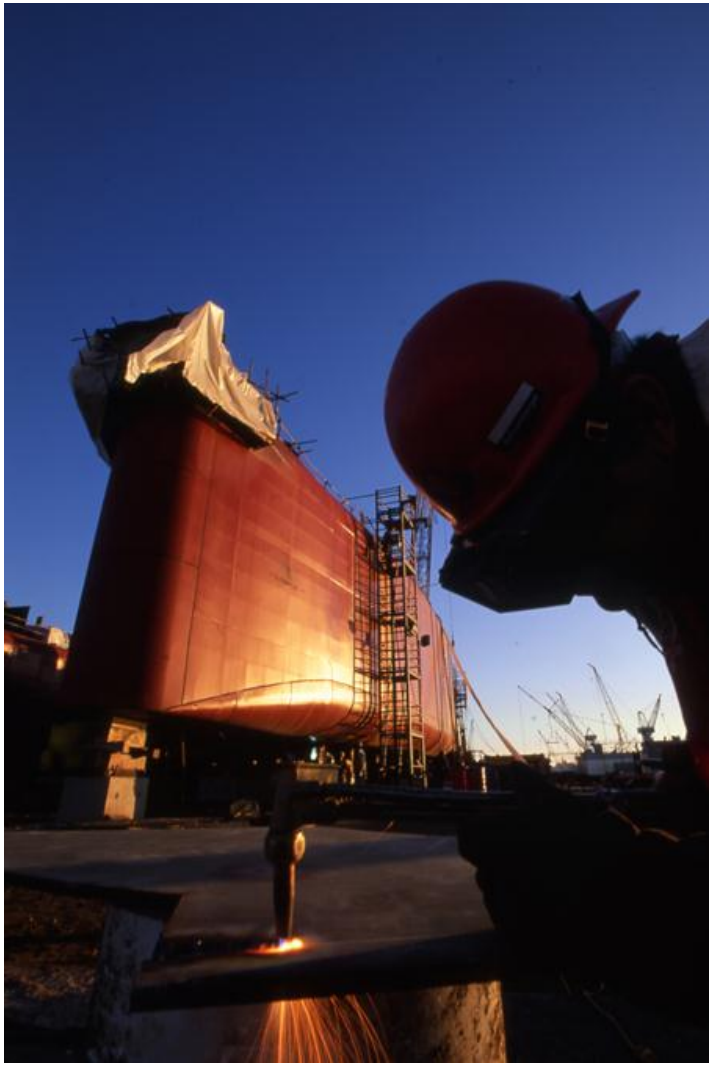
- Through tubing well intervention
- Top hole drilling
- Extended top hole drilling
- Riserless Mud Return
- Subsea Rotary Controlled Device
- Well flowback and Well testing
- Subsea Construction

Downhole Well Intervention Solutions



Helix Intervention Industry Firsts

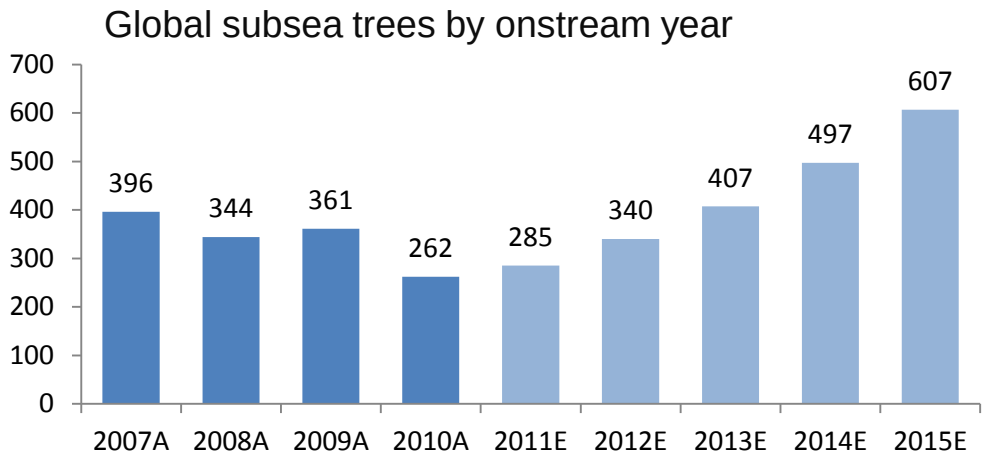
- ✓ First Subsea Intervention Lubricator operations in the North Sea
- ✓ First build and launch of dedicated intervention vessel - *Seawell*
- ✓ First coil tubing deployed on a subsea well from a rig alternative monohull
- ✓ Build and operation of prototype vessel *Q4000*
- ✓ First rig alternative decommissioning of offshore production facility with multiple subsea wells
- ✓ First application of Huisman multipurpose tower

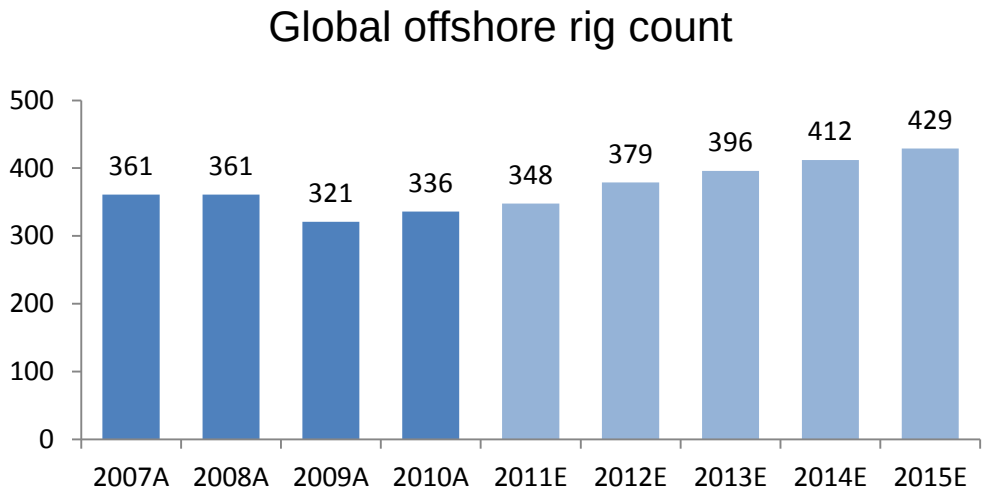


Growing Market

- As production goes to deeper water, subsea well count grows.
- As the number of subsea wells increase and they age, the demand and frequency of required servicing through intervention grows.
- The market is in its infancy with huge growth potential.

Well Intervention Demand Drivers



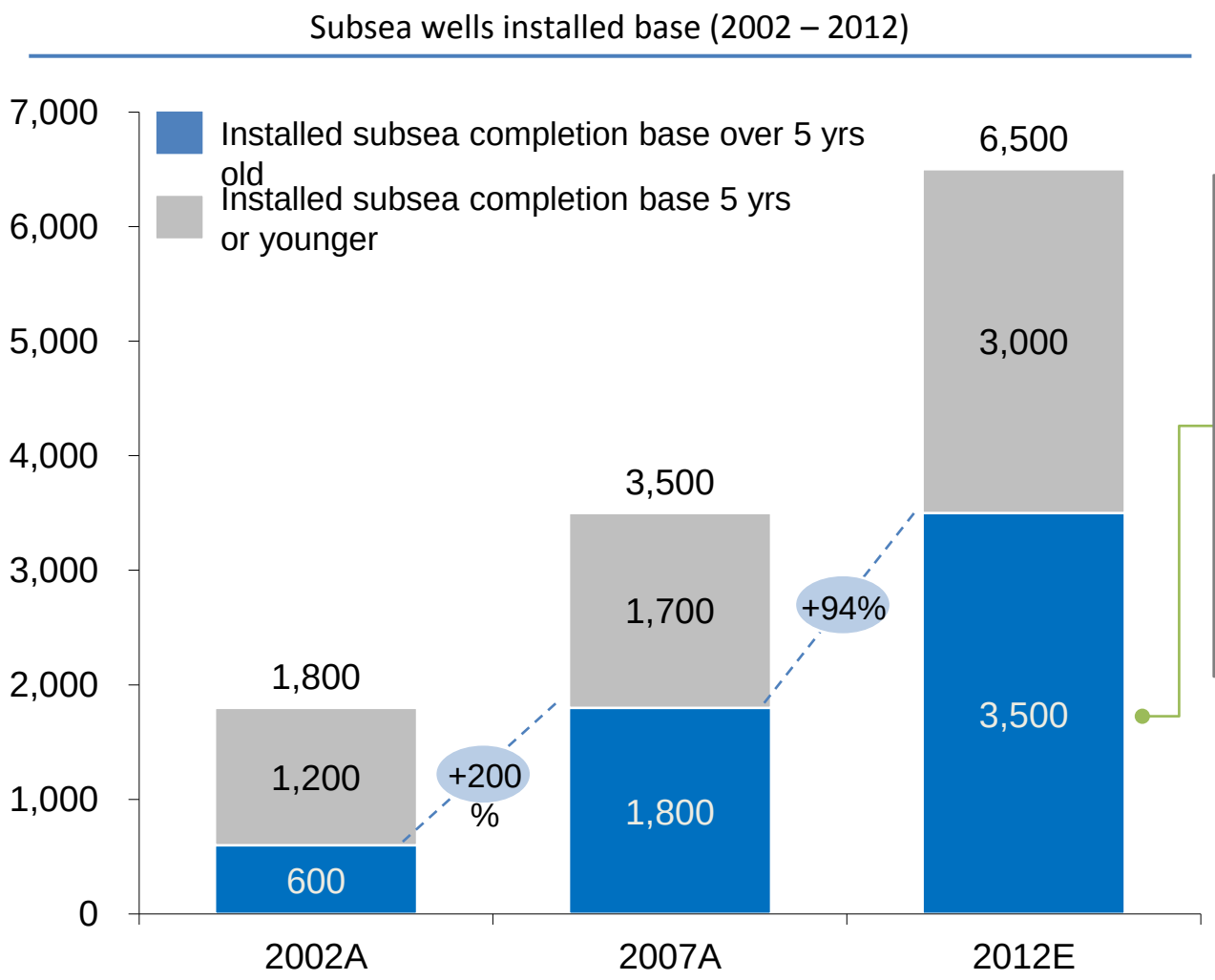


- Declining shallow water resources have spurred technical advances that allow offshore exploration and production in deeper, harsher environments
- New discoveries and pressure to improve recovery rates from developed fields increase demand for subsea intervention
- Subsea trees are expected to increase at an 18.3% CAGR and global offshore rig count is expected to increase at a 5% CAGR from 2010 to 2015

The global subsea intervention market is expected to expand as the focus of offshore drilling shifts to more challenging environments

Source: Spears & Associates, Quest Offshore Resources

Intervention Needs Rises with Subsea Well Count

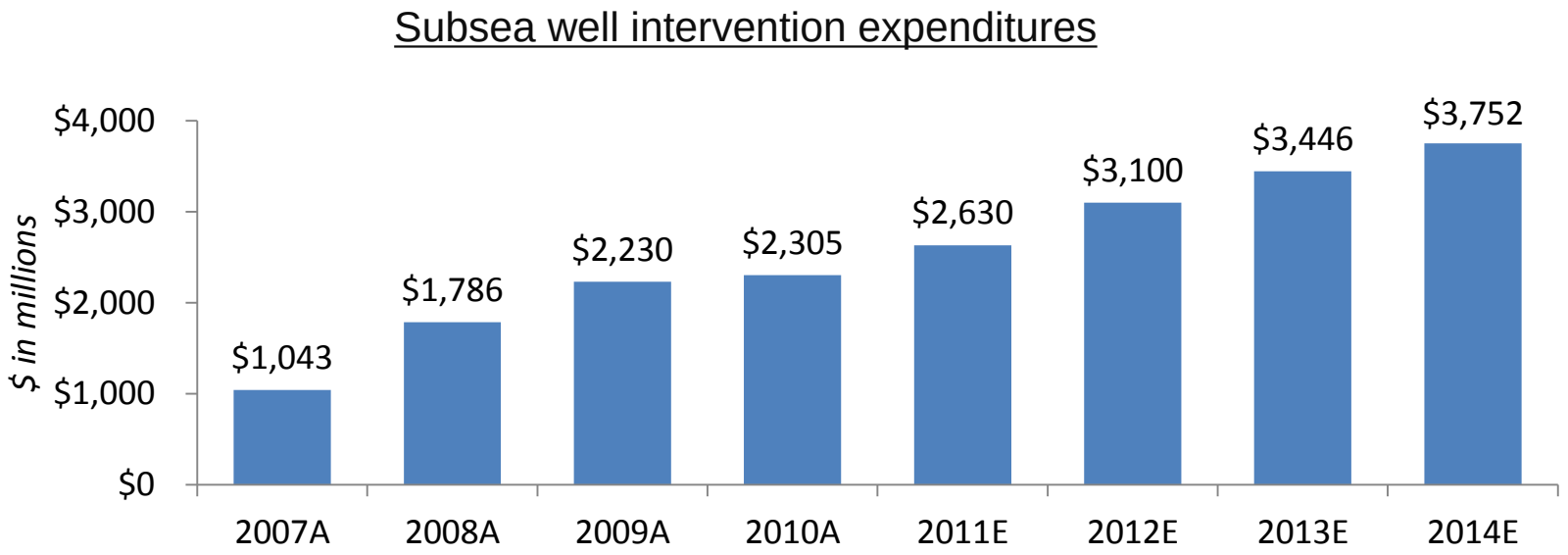


- Need for intervention typically occurs after 5 years of production, due to:
  - Reduced pressure in wells
  - Increased water or sand production
  - Scaling in wells
  - Other factors
- Oil wells generally have a greater need for intervention than gas and injection wells

Note: Total installed base includes all subsea well completions from 1990, not adjusted for wells decommissioned 2007-2012

Source: Quest Offshore Resources

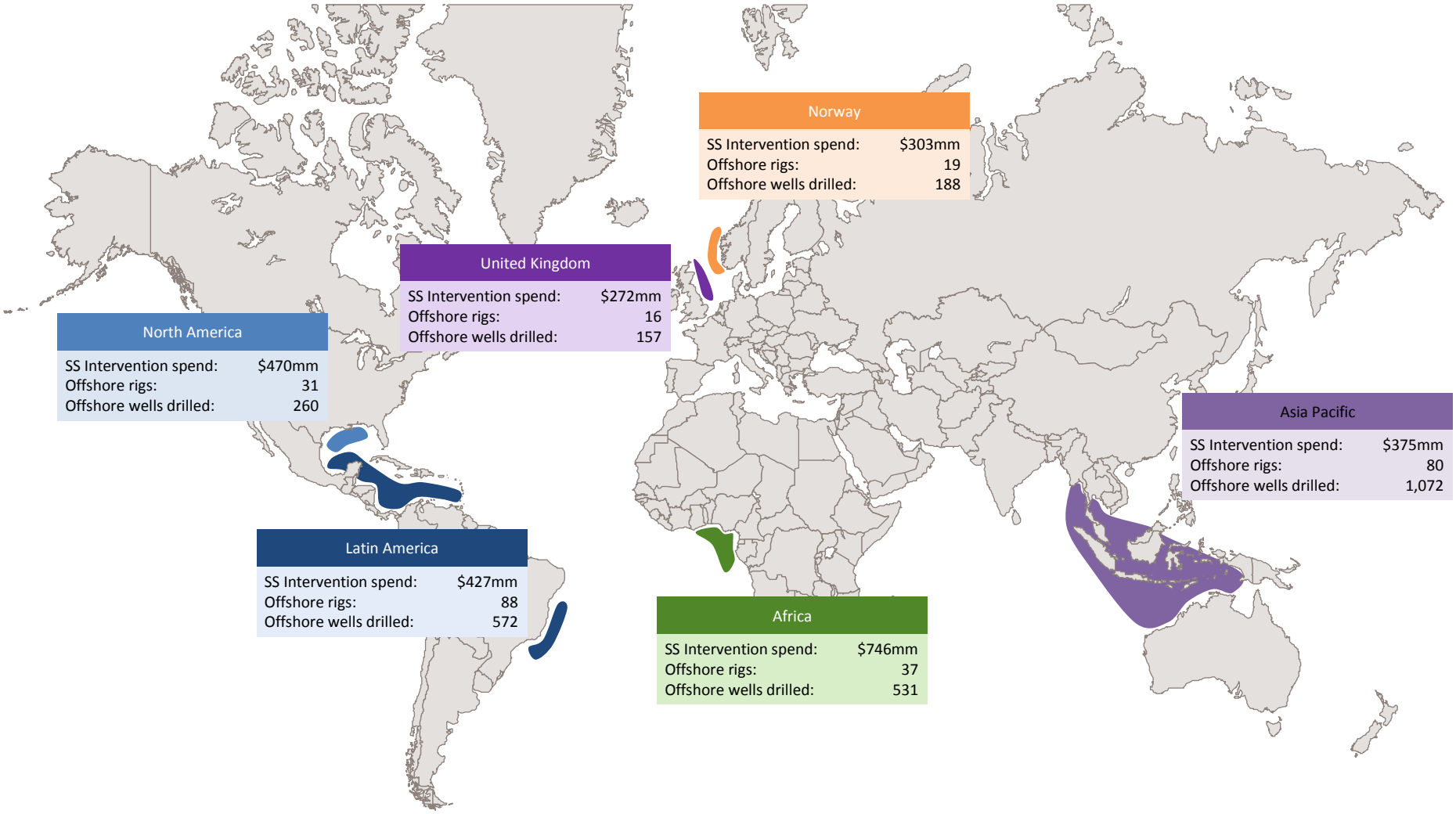
Market Outlook for Well Intervention



- Subsea intervention demand driven by increasing activity and rising subsea well counts
- Maintenance intensity expected to rise as greater share of production moves into deepwater fields and as operators face increasing oil recovery needs from maturing fields
- Global expenditures on intervention are expected to grow 11% annually from 2009 to 2014, reaching nearly $3.8 billion

Source: Douglas-Westwood

2011 Market for Well Intervention Services



Source: Douglas-Westwood, Spears & Associates

Regulatory Limitations

Vessel Class – Many independent classing societies

- Most Prominent – DNV (Det Norske Veritas), ABS (American Bureau of Shipping)
- MODU Notation – Specific requirements for a vessel used in intervention including zoning for handling hydrocarbons.
- Government – No international standard. All strictly enforced by each country.
- Prescription vs. Safety Case

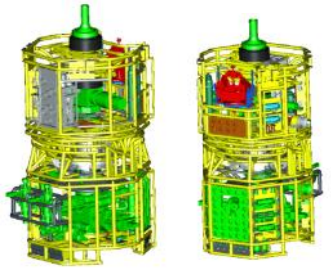
Client – Every client and sometimes every engineer has a different set of compliance standards. Now driven by SEMS.

Industry – Many depositories of guidance principles.

- Voluntary Compliance
- Generally accepted by Industry but different clients will look at different sets of guidance.
- APL – Most generally accepted.

Wireline Deployment via SIL

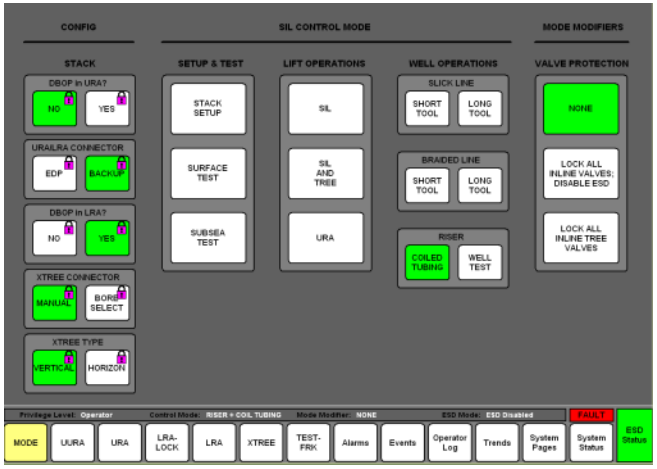
- 7-3/8” bore, 10ksi WP – single trip
- 600 m water depth rated
- Various wireline & coiled tubing modes with sub-modes (long and short tools, etc.)
- Live well decommissioning & stimulation modes
  - Balanced stabs with valves
- Modular design
  - LRA / URA – VXT, HXT & CT riser
  - URA only – VXT wireline
  - Dual BOP position
- 18.5 m or 22 m toolstrings
- Norwegian compliant
  - Except DNV-E-101 re: QOD
- Minor lessons learned in next version



SIL Overview – MUX Controls

MUX EH control system

- Mode Screens
  - Auto Set Interlocks
  - Configuration, Set Up & Test, Lifting Ops
  - Slickline, Braided Line & Riser
- ROV electronics technology
- Grease system same as Seawell & Enhancer
  - Not electric pump - seawater powered from surface
  - No wireline shear upon subsea comms failure
    - 6hrs POOH – batteries & surface grease pump
    - Auxiliary umbilical option to LRA / URA & extend
- ROV controls
  - Full LRA WCE
  - Primary URA safety functions
- Client Mimic Screen

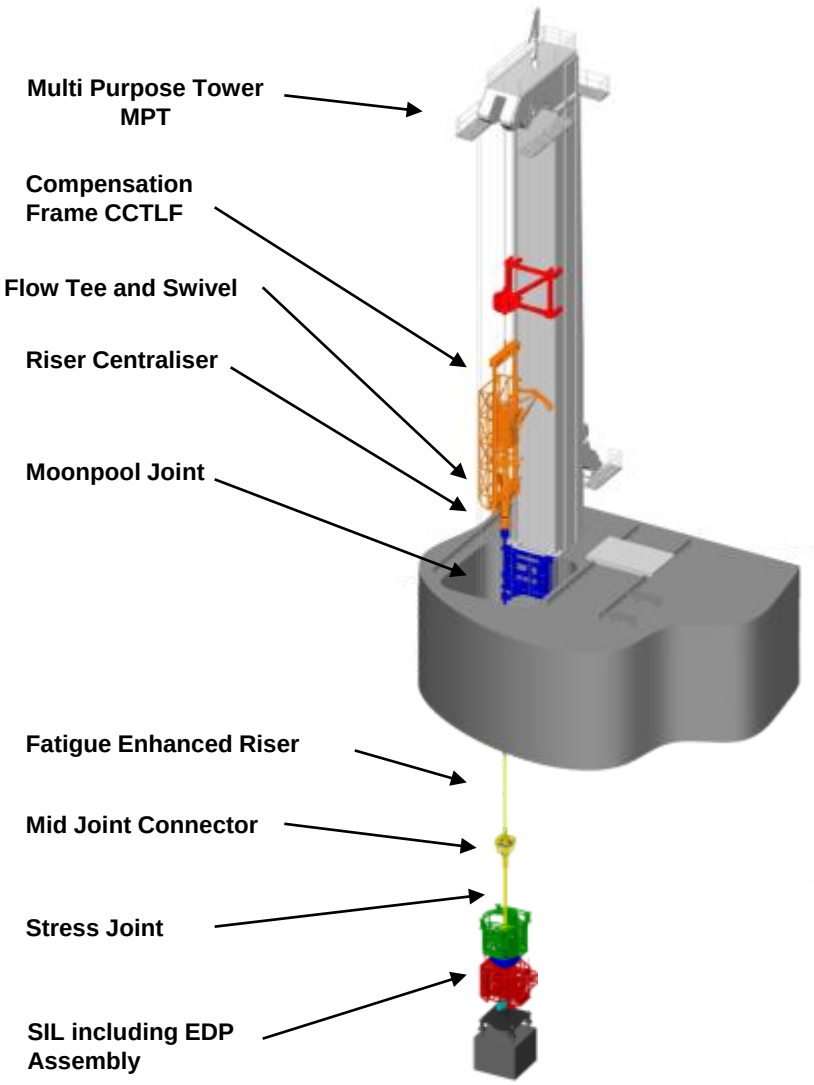


Intervention Riser System for CT Deployment

- As water depth increases, the cost of intervention increases. If a problem is encountered, wireline alone is limited in being an effective remediation tool.

- To run coiled tubing into a well requires either an absurdly complicated well head mounted system or requires a riser back to the surface. This creates an extremely complicated interface occurring between the stationing riser and a mooring vessel. These relative motions and the fact that the interface between the well's high pressured hydrocarbons and the low ambient pressures on the vessel creates technical challenges.

Helix Coiled Tubing Setup



Vessels – Category A Intervention

Category A – Wireline only deployed via a SIL. Typically, a monohull due to capital cost and cost of transit.

- Smaller the better to keep costs down commensurate with limited capability.
- Limited deck area required for necessary equipment. $110 million and larger typically.
- Operability limited if size is so small that motions become too great for safe operating. Has even greater effect in harsh environments
- Water depth is limited by seal technology and cost associated with complexity of system required to accommodate depth.

Vessels – Category A+ Wireline

Category A + – wireline and coiled tubing deployed via SIL and sub 7” riser, i.e. drill pipe. Also typically, a monohull.

- Greater capability with CT but unable to work full bore 7” which restricts what can be done.
- Advantage of being smaller and lower cost.
- Motions are high thus complexity is difficult.
- High motions result in narrow operating envelope resulting in more down time and higher risk if emergency disconnect is required. Smaller vessel makes it difficult to be able to operate on station in high seas.
- High motions adds to safety risk, i.e. man riding.

Vessels – Category A++ Intervention

Category A ++ - Wireline and CT deployed via a 7” riser.

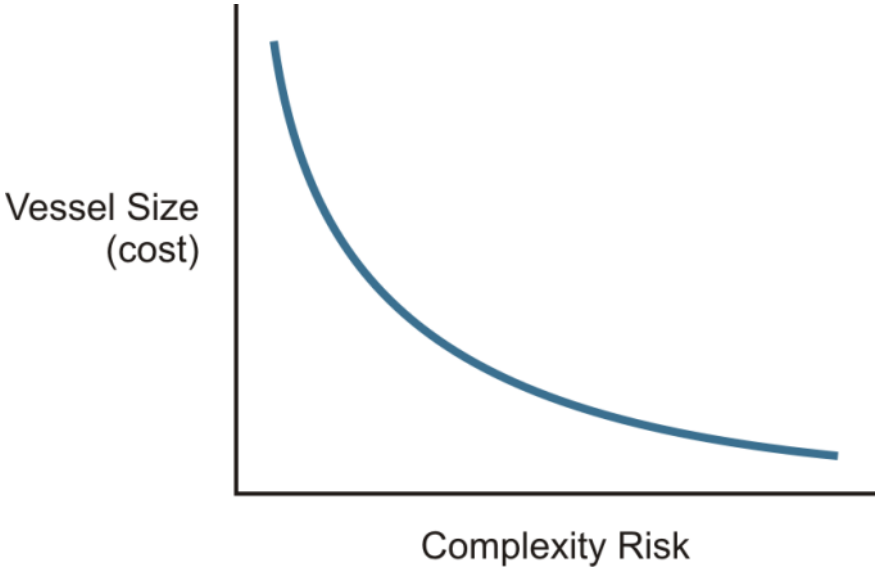
- Has full bore capability with coiled tubing through full 7” bore of the well.
- May have limited capability of pulling tubing.
- Size of the vessel increases deck space required for equipment and riser handling.
- Larger size vessels handle sea motion better.
- System required to compensate for motions is still relatively complex.
- Overall cost is now getting high.

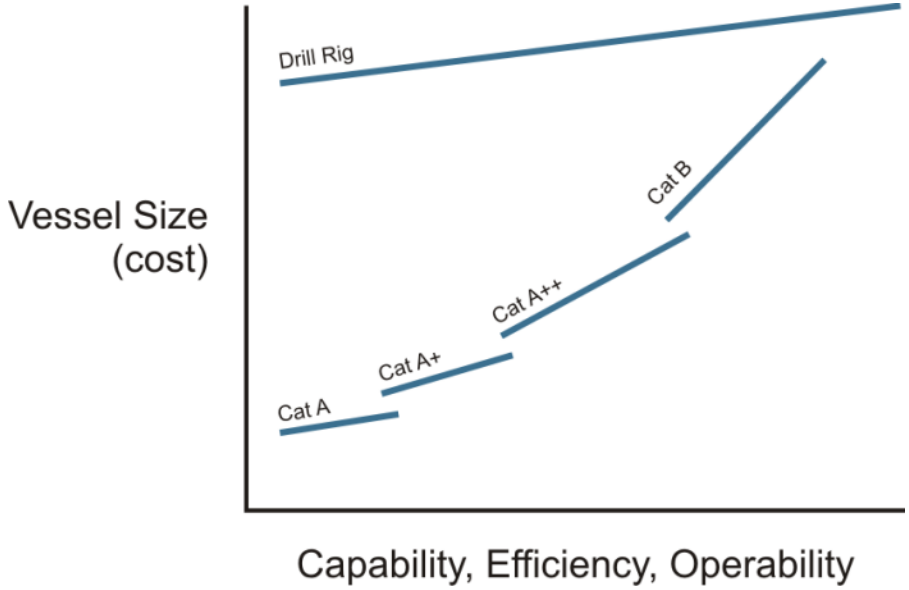
Vessels – Category B Intervention

Category B – Semi Submersible

- Ample deck area
- Motions are the best and allows for less complexity and risk in systems design.
- Greatest number of applications possible.

Industry Considerations





Conclusion

Determining which solution makes sense is a balance between small, low cost vessel with a complex high risk system. (Technology is not fully developed)

Or

Larger, high cost vessel with simpler low risk system.

Primary Focus: Semi Platform Deploying IRS

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Colin Johnston, Helix Well Ops Senior Engineer

Well Intervention Fleet Overview

Well Intervention Assets


MODU DP3 *Q4000*


MSV DP3 *Well Enhancer*


MSV DP2 *Seawell*


Vessel of opportunity

Providing World Class Intervention Services

Helix is the leader in subsea through-tubing intervention

- Global Reach
  - 24 years experience in the North Sea on more than 600 wells
  - 14 years experience in the Gulf of Mexico on more than 100 wells
  - 5 years experience in Australia & Sea East Asia on more than 20 wells
- Successful application of prototype equipment
  - Q4000 – IRS, HFRS, MPT, VDS
  - Well Enhancer
- Track record of cooperative contracting and scheduling
  - Gulf of Mexico
  - North Sea Collaboration – Multi client
  - Helix Well Containment Group
- Proven capability to manage:
  - Marine vessels,
  - Crewing
  - Subsea systems
- Subsea controls, downhole services, diving, construction, and WROV operations
  - Well Enhancer CT system
  - WOUS IRS MUX upgrade

History and Evolution – *Seawell*

History and Evolution – *Well Enhancer*

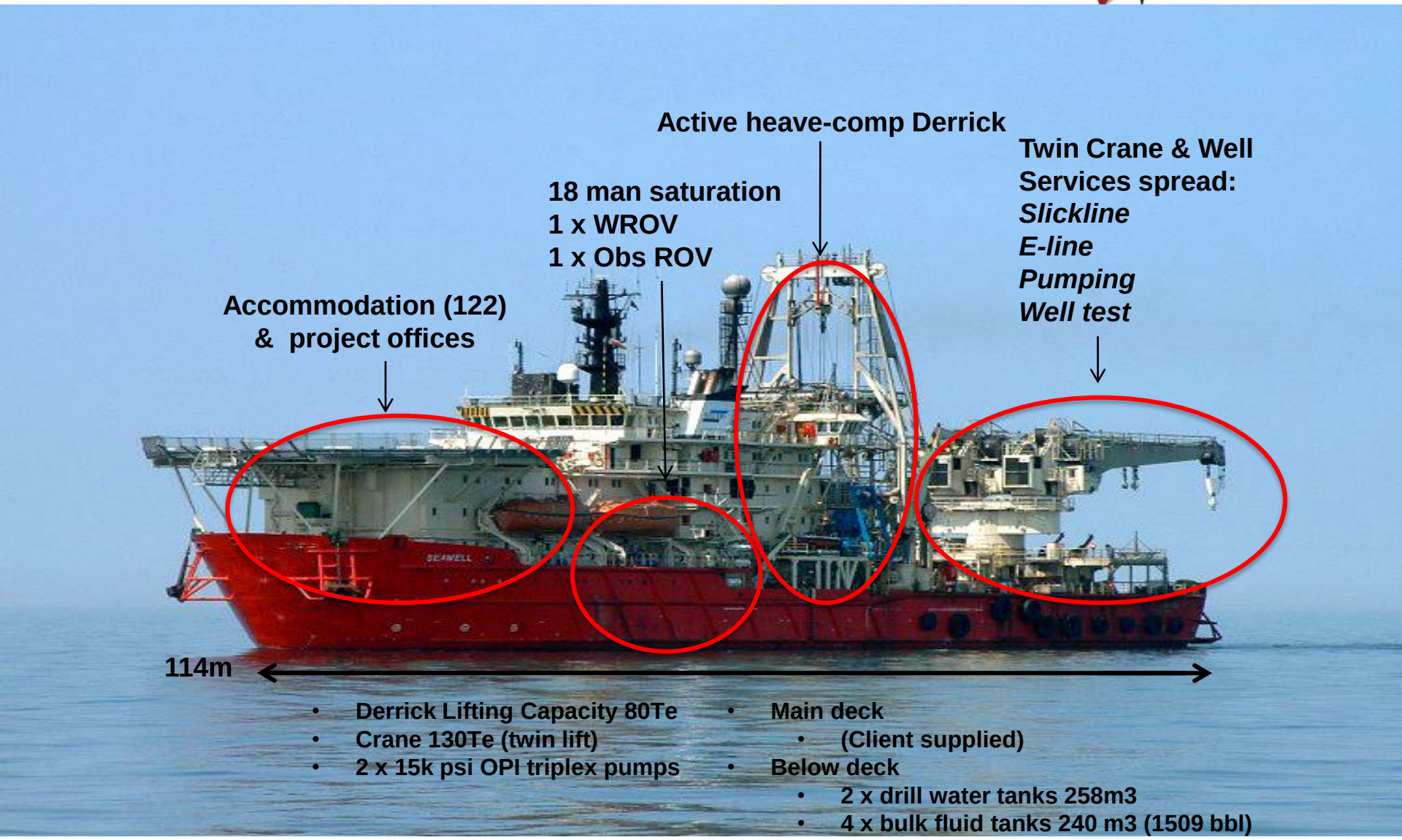
History and Evolution – Vessels of Opportunity

History and Evolution – *Q4000*

Where the value is found

- Efficiency – Main Driver
  - Time efficient
  - Cost efficient
  - Campaign Based
    - Shared across BU, Assets, Operators
  - Broad Functionality
    - Minimal Built-ins
    - Variable deck lay out
  - Construction Support
    - Construction and well intervention capability
    - Seabed access and recovery
  - Emergency Response
- Knowledgeable, integrated crews
- Integrated Onshore Management
- Assessment and investment in new technology
- Integration of Technology

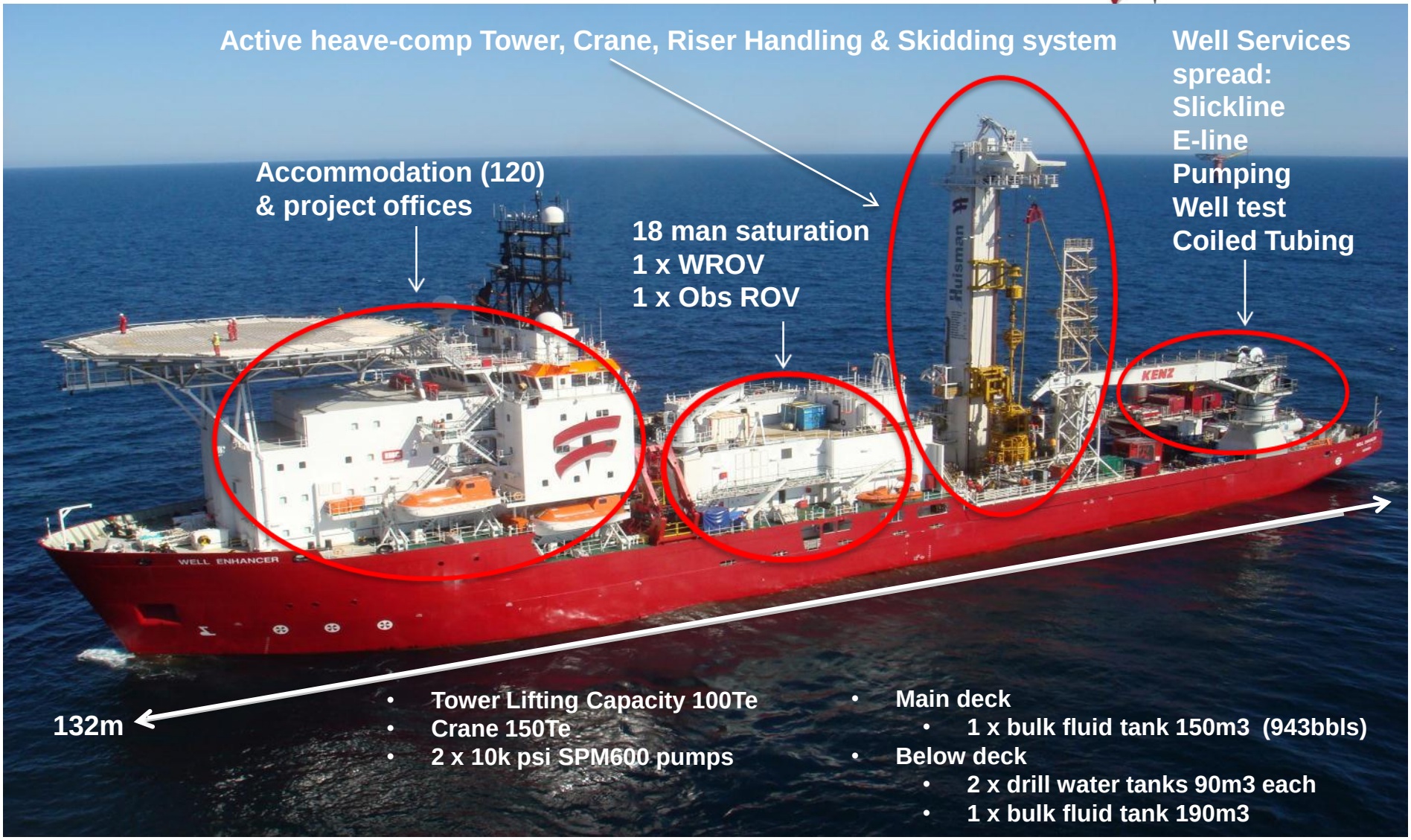
Seawell Light Well Intervention Vessel



- Derrick Lifting Capacity 80Te
- Crane 130Te (twin lift)
- 2 x 15k psi OPI triplex pumps

- Main deck
  - (Client supplied)
- Below deck
  - 2 x drill water tanks 258m3
  - 4 x bulk fluid tanks 240 m3 (1509 bbl)

Well Enhancer Light Well Intervention Vessel



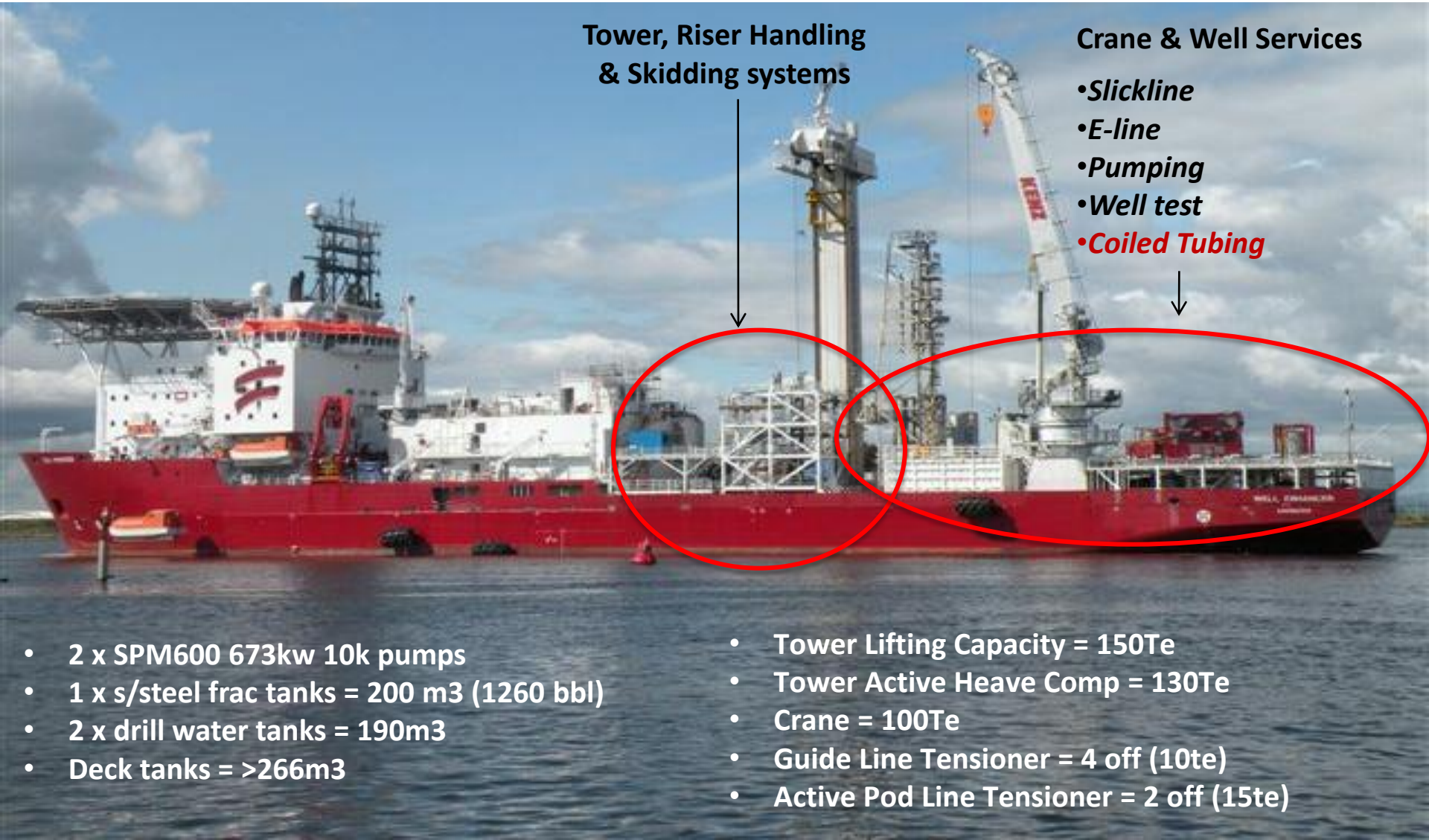
Subsea Intervention Lubricators (SILs)

7 3/8” SIL in the Well Enhancer Tower

7 1/16” SIL in the Seawell Derrick

5 1/8” SIL in the Seawell Derrick

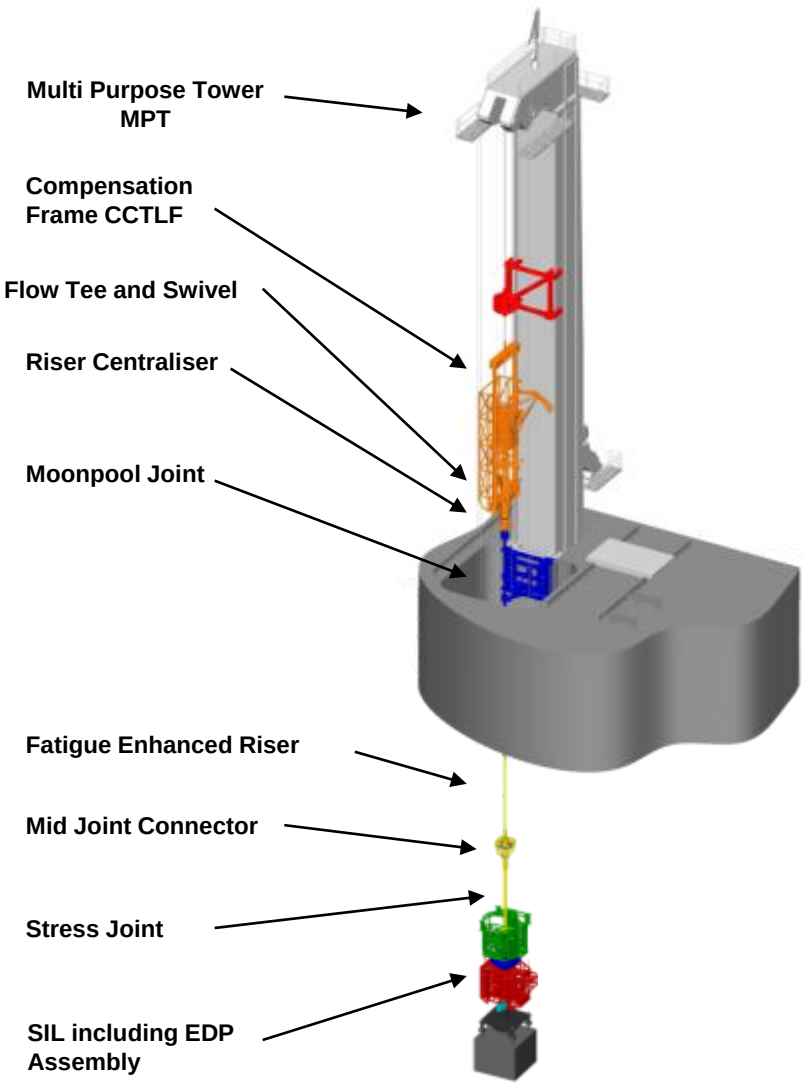
Well Enhancer – Overview



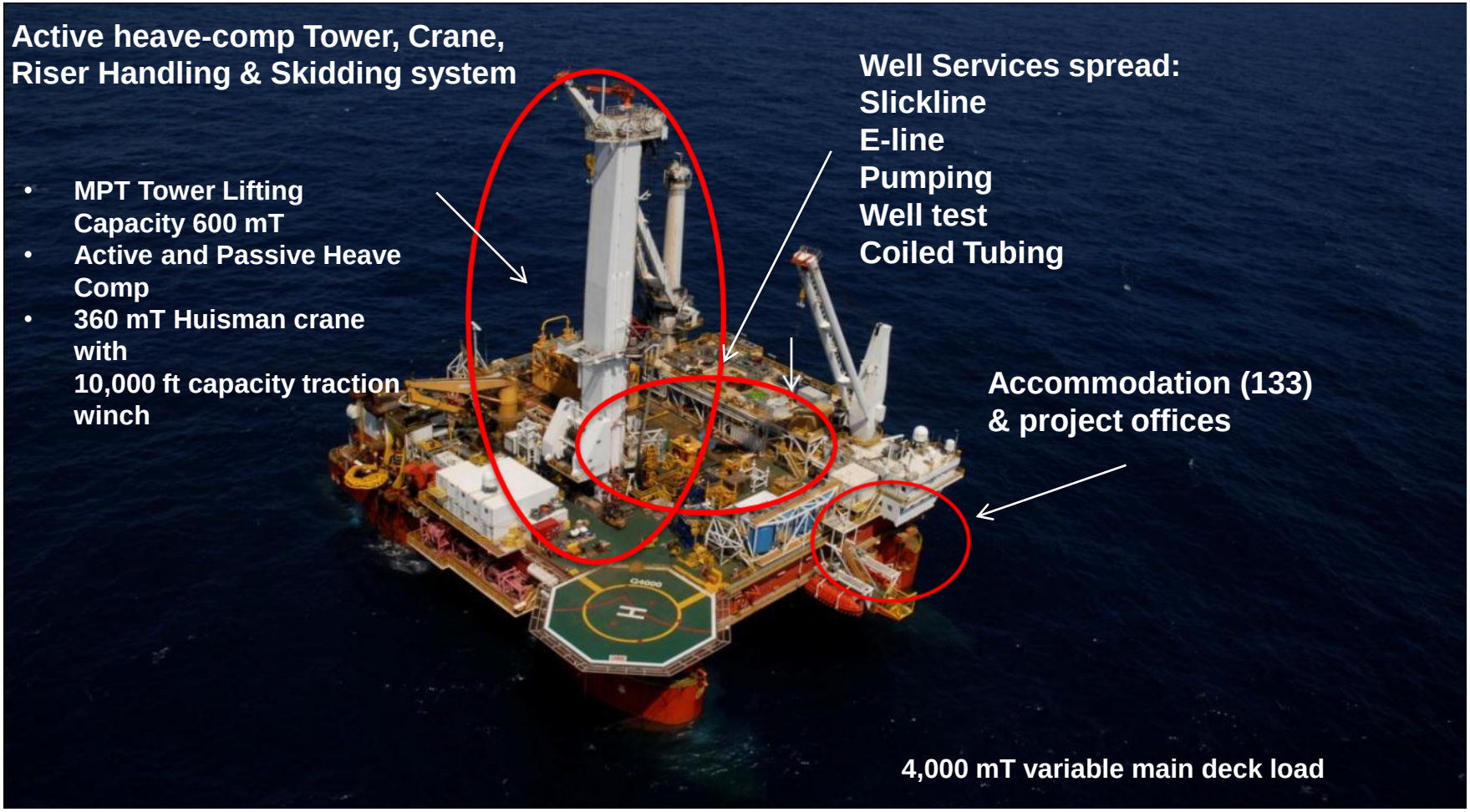
- 2 x SPM600 673kw 10k pumps
- 1 x s/steel frac tanks = 200 m3 (1260 bbl)
- 2 x drill water tanks = 190m3
- Deck tanks = >266m3

- Tower Lifting Capacity = 150Te
- Tower Active Heave Comp = 130Te
- Crane = 100Te
- Guide Line Tensioner = 4 off (10te)
- Active Pod Line Tensioner = 2 off (15te)

Well Enhancer Coiled Tubing Setup



Q4000 DP3 MODU Semi-submersible

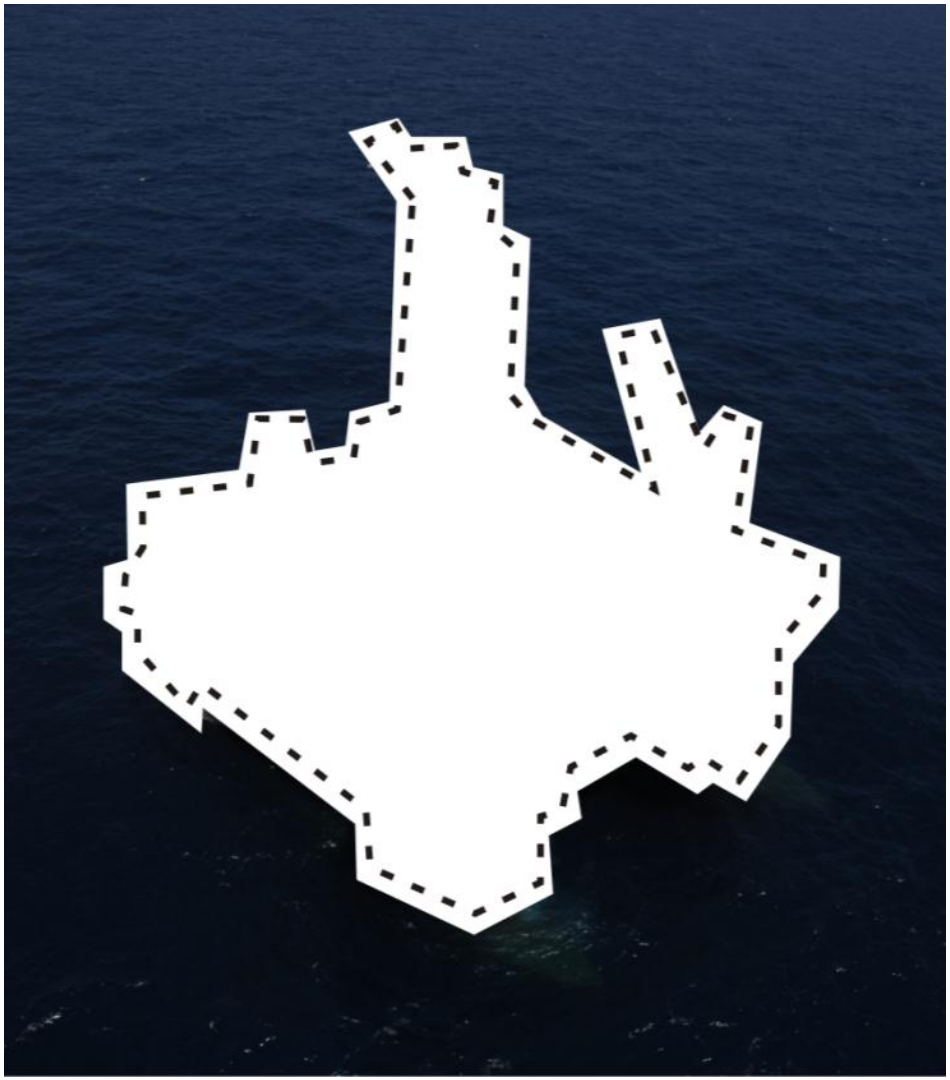


Well Ops 7-3/8” Intervention Riser System

- 7 3/8” system internal diameter
- Standard Riser 6 5/8” pipe
- 10,000 psi rated
- Dual barrier in Lower Riser Package (LRP)
- Emergency Disconnect Package (EDP)
- Retainer valve at EDP
- Annulus hose or 2 3/8” tubing
- Direct and MUX Hydraulic Controls

Future Vessels

- Through tubing well intervention
- Top hole drilling
- Extended top hole drilling
- Riserless Mud Return
- Subsea Rotary Controlled Device
- Well flow back, well testing
- Subsea construction
- Subsea processing support
- Open Water Completions



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Kurt Hurzeler, Helix Well Ops Commercial Manager

Well Intervention Methodologies

Consistent Success Requires…

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Critical Skill Sets

- Specialized vessels and vessel management
- Down hole & Service Options expertise
- ROV expertise
- In-house Subsea expertise
- Construction expertise
- Saturation Diving expertise
- Multi Functional Crew Management

Vessel Functions

- Adequate usable Deck space
- Adequate Accommodation
- Certified and classed for hydrocarbons on deck
- Lifting Capacity and Stability
- Heavy weather dynamic positioning
- Fluid storage and handling
- IRS tubular handling and tensioning

Where the Value is Found

Facilitate Wellbore Access
- Flexibility of system to interface with all subsea well types with minimal modification.
- Provide systems on a day rate basis to reduce end user's cost
- Minimize complication, deployment and testing time
- Reduce rig requirements and costs

Reduce Decommissioning Liability
- Lower cost well abandonment
- Reliable and successful completion

Improve Intervention Response
- Provide a rig alternative with 4 season capability.
- Minimize mobilization, demobilization and transit time
- Pre-engineer capability to allow rapid response for clients needs
- Stay in the field

Provide Surveillance & Flow Assurance
- Reduce access costs for subsea production evaluation
- Reduce Inspection, Repair & Maintenance (IRM) Costs

Where the Value is Found

Campaign Based
- Shared costs across BU's, fields and operators
- Reduced transit time
- Minimal port and duty costs

Construction Support
- Ability to carry out construction and well intervention
- Lift and/or transport heavy equipment from port to location, install via crane or drill pipe, assist platform operation

Emergency Response
- Offshore fire fighting, diving and ROV support
- Ready availability, construction, accommodation, intervention and general operations support

Operational overview – *Seawell* North Sea

The Client objective was to maximise the operational functionality of the *MSV Seawell* in order to complete the following well workscopes:

- Mechanical repair/well maintenance/integrity
- Production logging
- Mechanical repair/well maintenance; tree change-out; well integrity
- Well suspension operations (temporary abandonment)
- 3 x well P&A and wellhead removal
- Pumping – scale-squeeze operations

Operational overview – *Seawell* North Sea

- In field 16 days **Highlander Field**
- In field 16 days **Tartan Field**
- In field 14 days **Enoch / South Wood**
- In field 17 days **Claymore**
- In field 9 days **Tweedsmuir**

5 1/8” SIL in the MSV Seawell Derrick

Seawell Operation summary

- Number of well locations = 7
- Water depth range = 90 – 141m

- Full demobilisation of 5 1/8” SIL in order to mobilise 7 1/16” SIL for TNT

- Total days = 68
  - Vessel off-hire 0 days
  - Wait on Weather 9.5 days
  - Uptime 58.1 days

- Well-work completed:
  - 4 Interventions (Well Maintenance & Production Enhancement)
  - 3 wells P&A’d (Decommissioning)
  - All the above workscopes were supported with Saturation Diving operations

- All procedures developed and work supported by in-house WOUK project engineers

Q4000 Gulf of Mexico Snapshot

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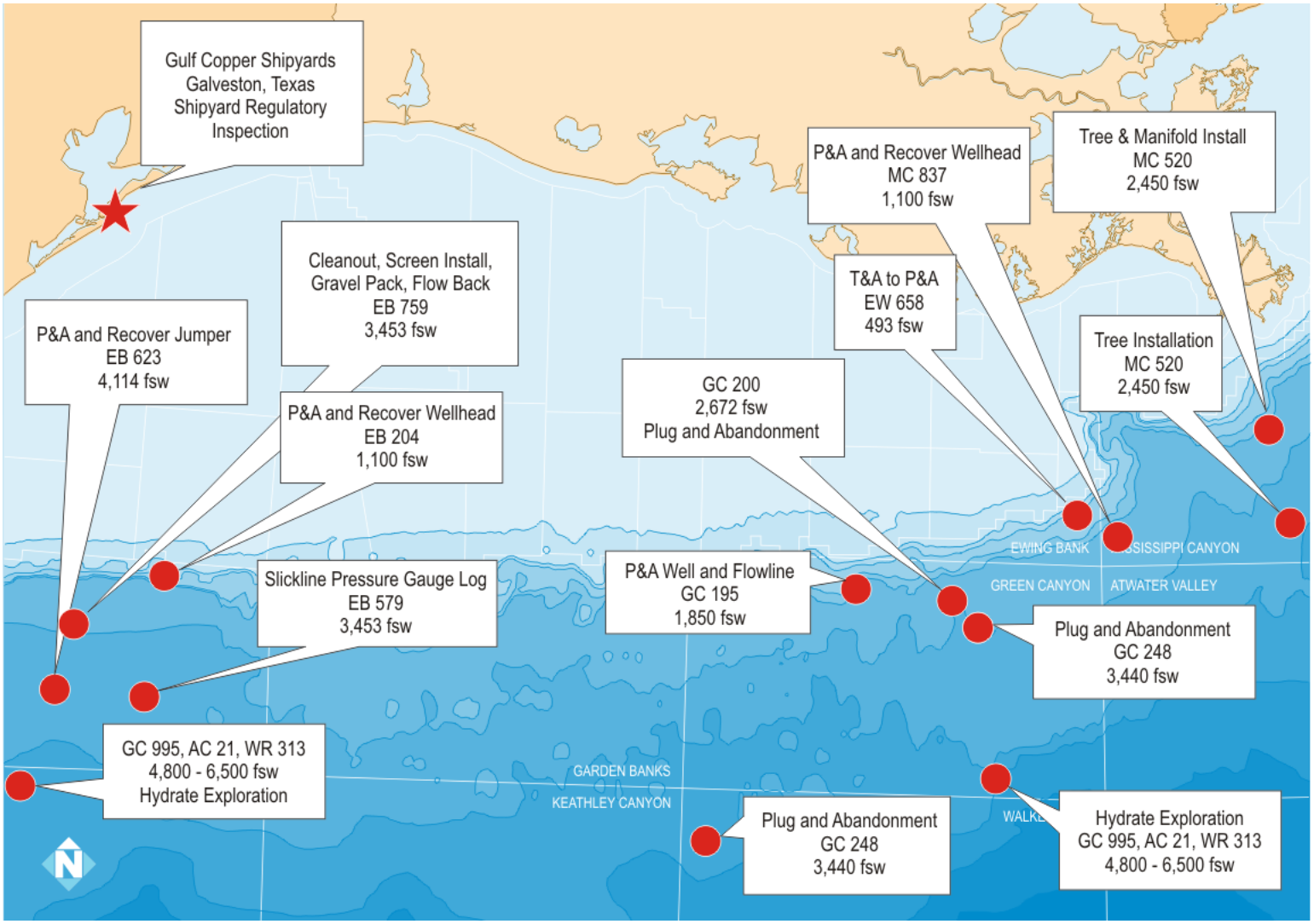
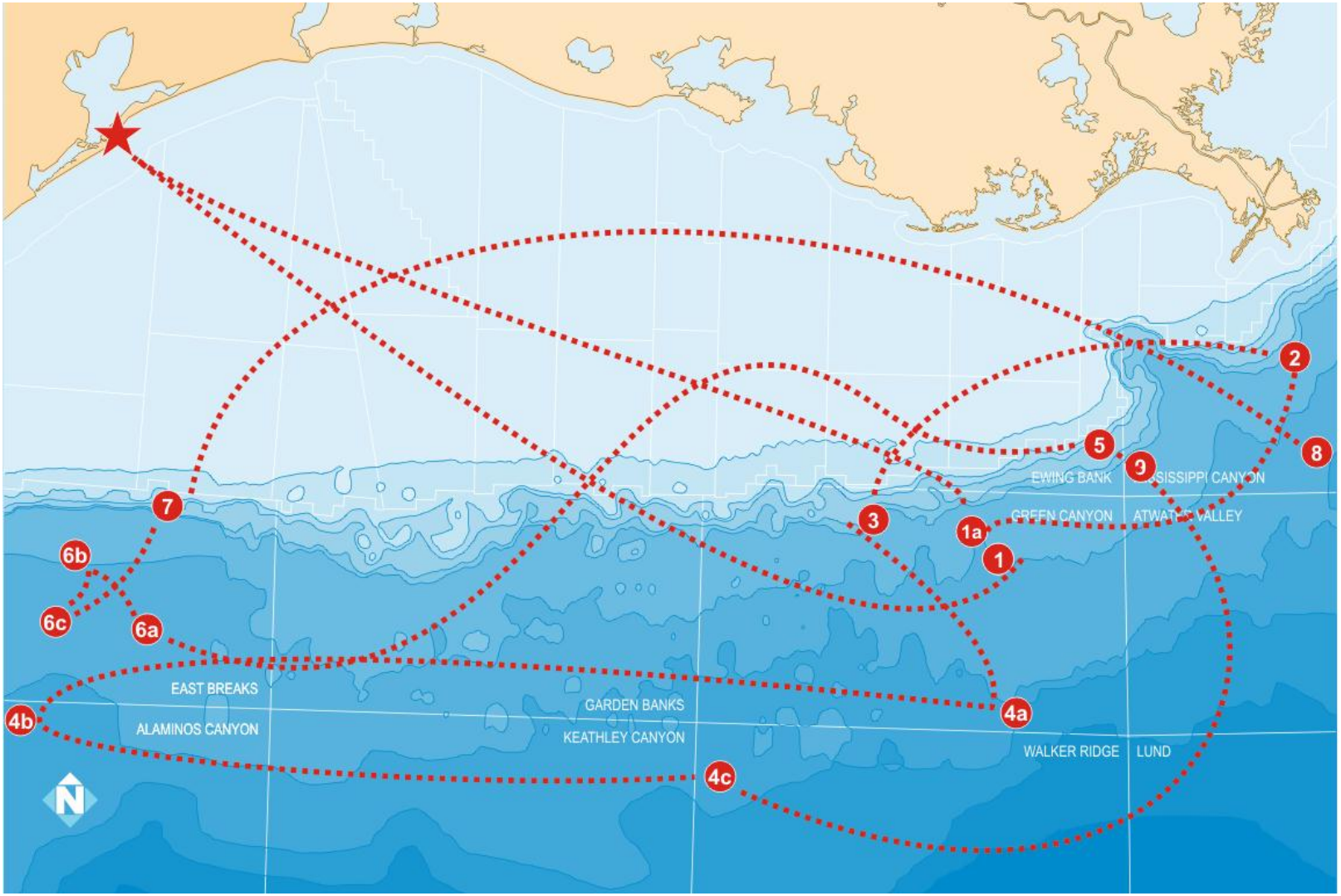


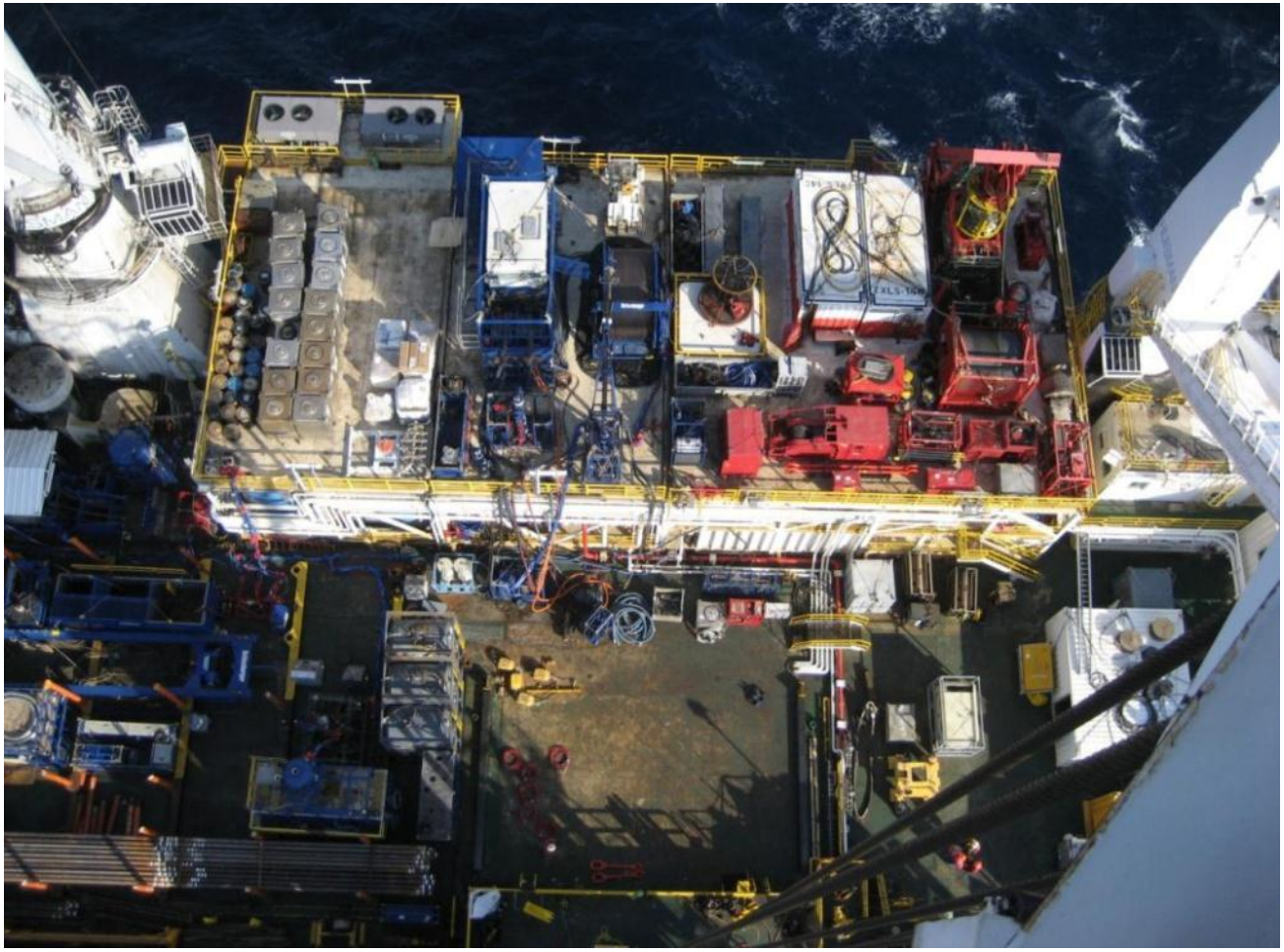
Q4000 Gulf of Mexico Snapshot



Deck Space- More is Better

***Q4000* Deck Layout for Well Stimulation**

Intervention Deck Space and Positioning



Drilling module roofs with complete coiled tubing system, E-Line, Slick Line, fluids and second WROV system

Critical Components Remain Onboard

- Coil-tubing Lift Frame
- Intervention Riser Package
- Flowhead
- H4 Connector
- Riser
- 3rd Party Service Equipment

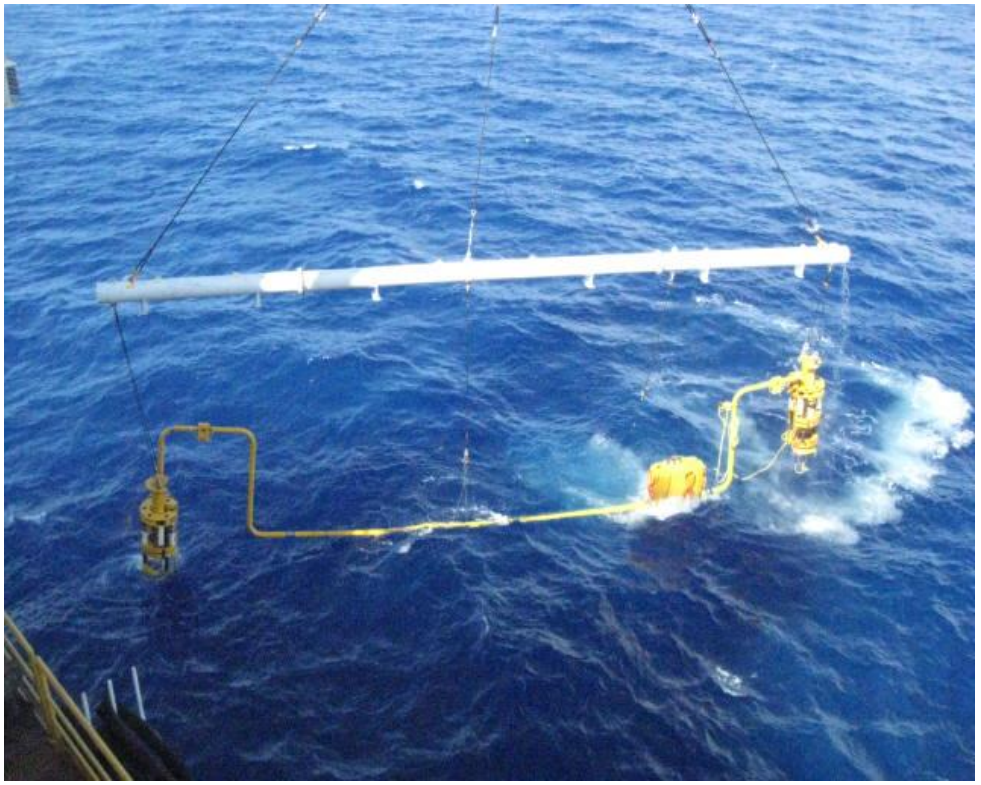
Construction - Dock to Seabed

280 MT Manifold being deployed

Construction - Concurrent Operations

- Seabed debris recovery
- Debris cap recovery and reinstall

- Flowline plug and burial
  Flowline clean out
- Jumper disconnect and recovery



Q4000 Versatility and Capabilities

HELIX ENERGY SOLUTIONS GROUP

Dynamic Kill

Static Kill

Oil & Gas Burn

SIMOPS

Helix Well Ops Provides

- A unique combination of specialized skills and equipment
- A clear understanding of Client value
- Recognition of operational technical limits
- The means, ability and experience to manage and control diverse assets and personnel effectively and reliably