

**IMR in Subsea 7 for Statoil, past and future,  
the new IMR vessel “Seven Viking”**

*13<sup>th</sup> March 2013*

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# Agenda

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IMR Scope of Work

Asset Development

Drivers for 365 days  
operation

Past - Future

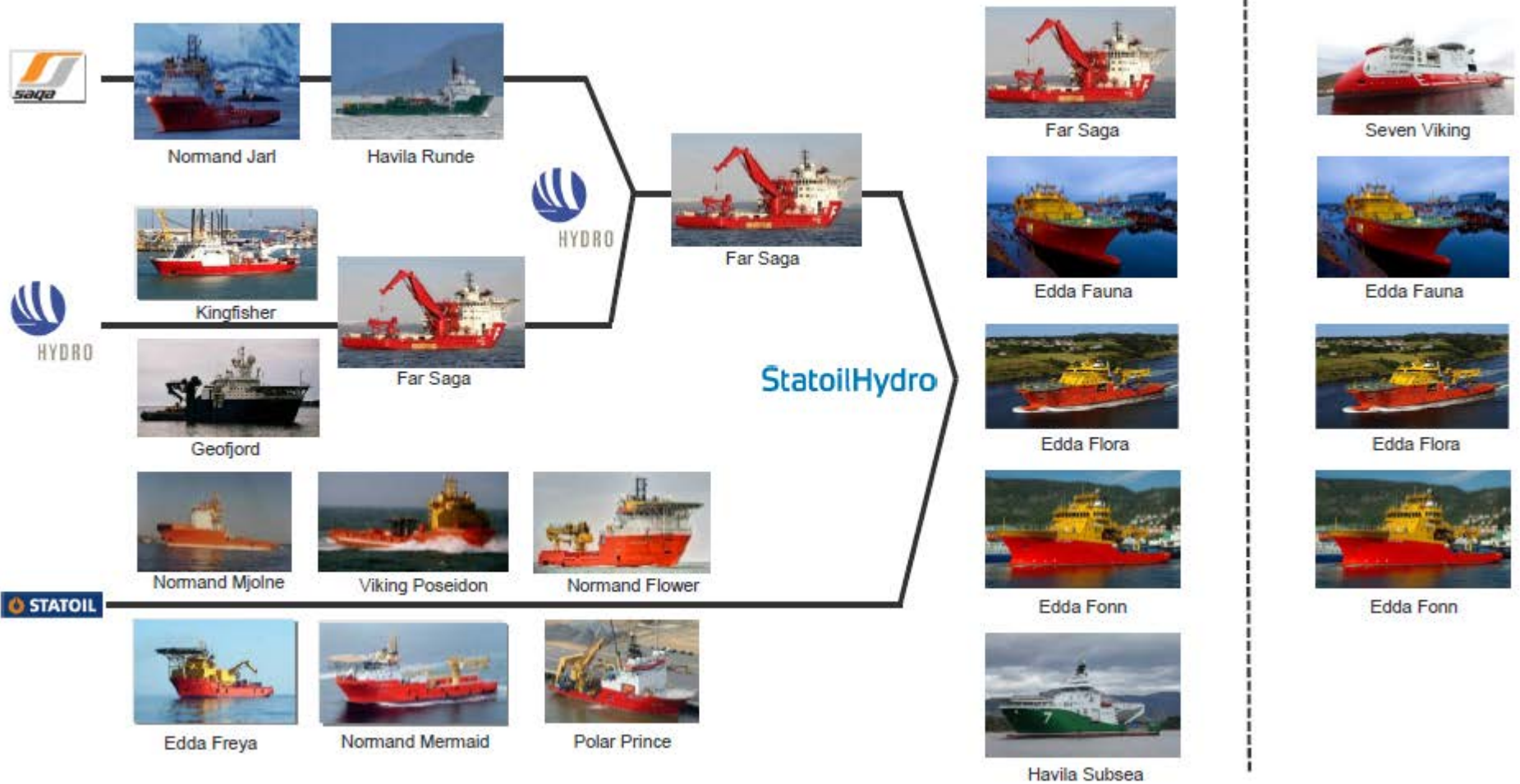
The difference; Seven Viking

## Statoil IMR Contracts – Scope of Work

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- The Statoil Contracts comprises work for Inspection Maintenance and Repair (IMR) of Statoil's subsea facilities and installations in the North Sea and Norwegian Sector. The work can be separated into the following main categories:
  - a) Inspection and ROV operations
  - b) Module replacement on Statoil's subsea facilities
  - c) Light construction work
  - d) Scale treatment and pumping operation
  - e) RFO operations
  - f) Air diving support
  - g) Other support work

# IMR in Norway – Driven By Statoil



Ref /1/ Statoil, P.O. Foss, FFU Seminar 2013

## Norway experience development

1st Gen	2nd Gen	3rd Gen	4th Gen (today and the future)
Kingfisher	Far Saga	Havila Subsea	Seven Viking
Converted	PSV	ROVSV	X-bow
Moonpool	Moonpool	Moonpool	Moonpool
AHC partly	AHC	AHC	AHC
	ROV Hangar	ROV hangar	ROV hangar
		MHS hangar	MHS integrated
	Comfort C(3)	Comfort V3C3	Comfort V(3)C(3)
		Clean Design	Clean Design
		DEICE	DEICE
			Scale Squeeze

AHC: Active Heave Compensation

# Drives for 365 days a year Operability

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North Sea challenge is weather, for year round operability which is driving the specs of the ships

## 1. Ship

- Hold position on DP (power, thrust)
- Free board
- Sea worthy
- Integrated solutions

## 2. Equipment (the Hs mark)

- Launch & Recovery systems for ROV, modules, ...
- Active Heave Compensation for cranes, winches,
- Deeper waters
- Increased capacities

## 3. People

- Safety
- Hangar (heat, dry, protection)
- Motion (hull shape, position to centre line, )
  - ✓ Work (control room, deck station)
  - ✓ Rest (cabins)
  - ✓ Eat (galley and mess room)

## 4. Dedicated onshore organisation – Fire Brigade

Past - Future

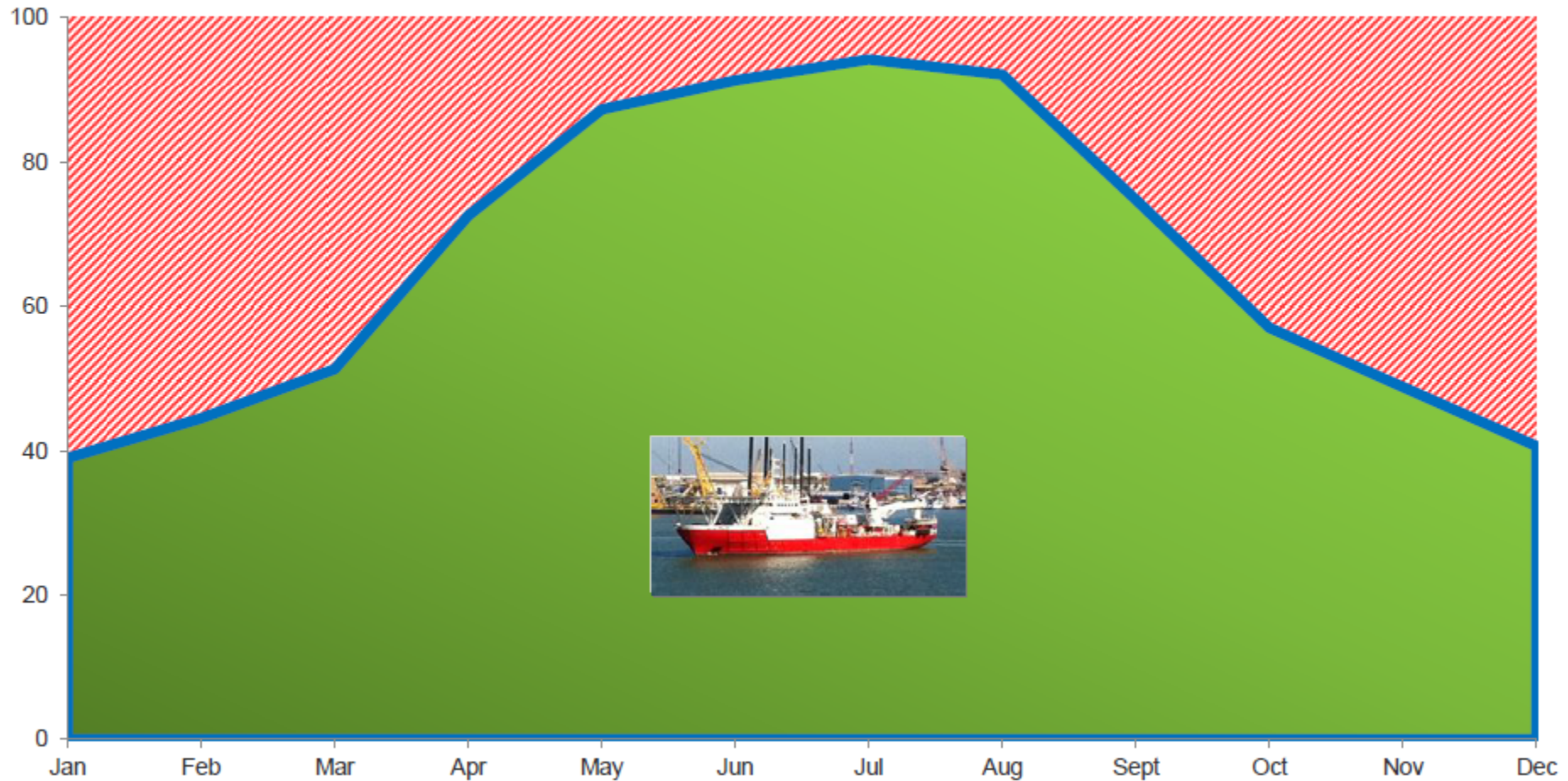
# IMR vessels - development



	Kingfisher	Seven Viking
MHS	30 t (2,5 m Hs)	70 t, 10m high (5,0m Hs)
Crane	50 t (AHC)	135 t (AHC)
Number of ROVs	1 WROV + 1 OROV(2,5m Hs)	2 WROV + 1 OROV (5,0 m Hs)
Deck space	500 m <sup>2</sup>	830 m <sup>2</sup>
Deck strength	5 Te/m <sup>2</sup>	10 Te/m <sup>2</sup>
Service speed	12 knots	16 knots

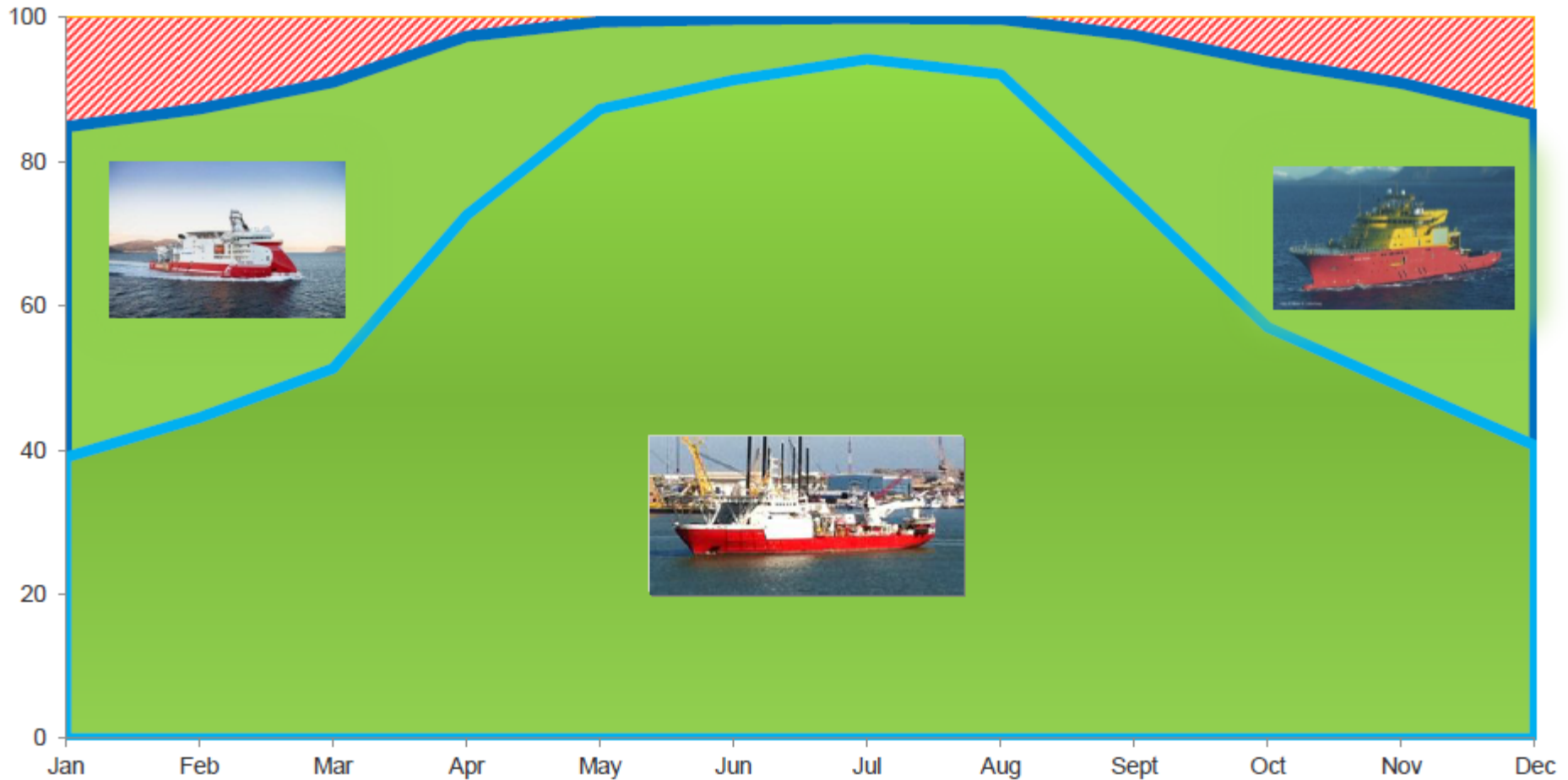
Ref /1/ Statoil, P.O. Foss, FFU Seminar 2013

# Operational window – 2,5m Hs



Ref /1/ Statoil, P.O. Foss, FFU Seminar 2013

# Operational window – 5,0m Hs



Ref /1/ Statoil, P.O. Foss, FFU Seminar 2013

*Seven Viking*



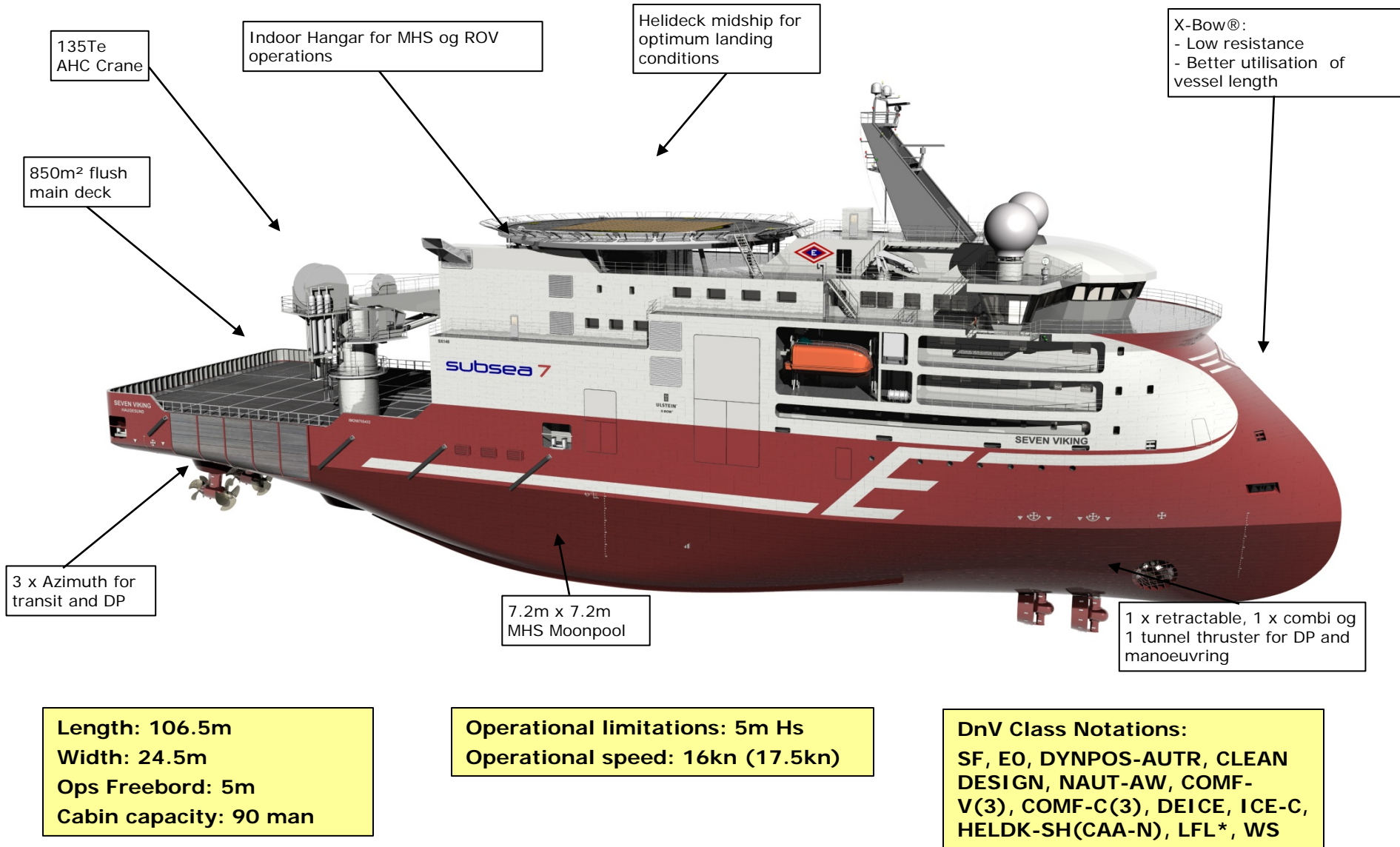
## *Seven Viking*

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- Long term IMR-contract for Statoil
- Developed by Subsea 7 in close co-operation with our partners, Eidesvik Shipping and Ulstein Design.
- Developed to fulfill Statoil's vessel specifications 100%, as well as including Subsea 7's extensive experience with IMR operations.
- Main focus through the design phase has been demanding weather conditions, HSE and modern working conditions onboard
- Built by Ulstein Verft
- Steel work started 01.07 2011
- Delivered from yard 23.01.2013



# Key data



## DP system

- Operational requirements: DP II in 5m Hs, 45 deg heading, 19 m/s wind combined with worst possible single failure
- Wind is the governing design criteria
- 3-parted ship system which maintain 2/3 capacity in a worst single failure condition.
  - 3-parted main switch board
  - 3 thrusters aft
  - 3 thrusters fore
  - 3 parted generator system



## Accommodation

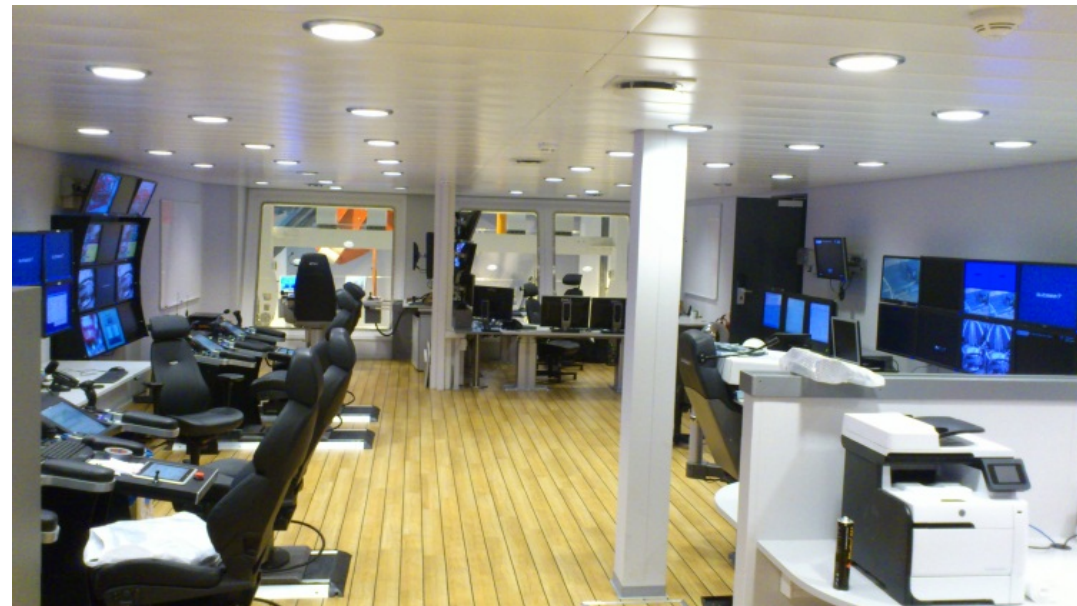
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- Combined transit and DP operation desks reduces the required area for the bridge
- All cabins are single or semi-single with shared bathrooms
- All day rooms, gully and conference room at D-Deck has large windows for view and daylight
- The cabins are separated from the offices and work stations to minimise the noise level for resting and sleeping personnel off shift
- Provisions crane loading directly to store
- Hospital and Heli-lounge in close proximity to elevator



## Offices and Operational Control room

- One large (105m<sup>2</sup>) operational control room includes all functions on board. Eliminates communication barriers and provide a flexible platform for multi-skill positions
- Latest technology within man-machine interface
- Direct view from the control room, project office and OM-office to the hangar through large panorama windows
- All offices in close proximity to the control room
- Direct access from the offices and control room to the hangar area without passage through cabin area.



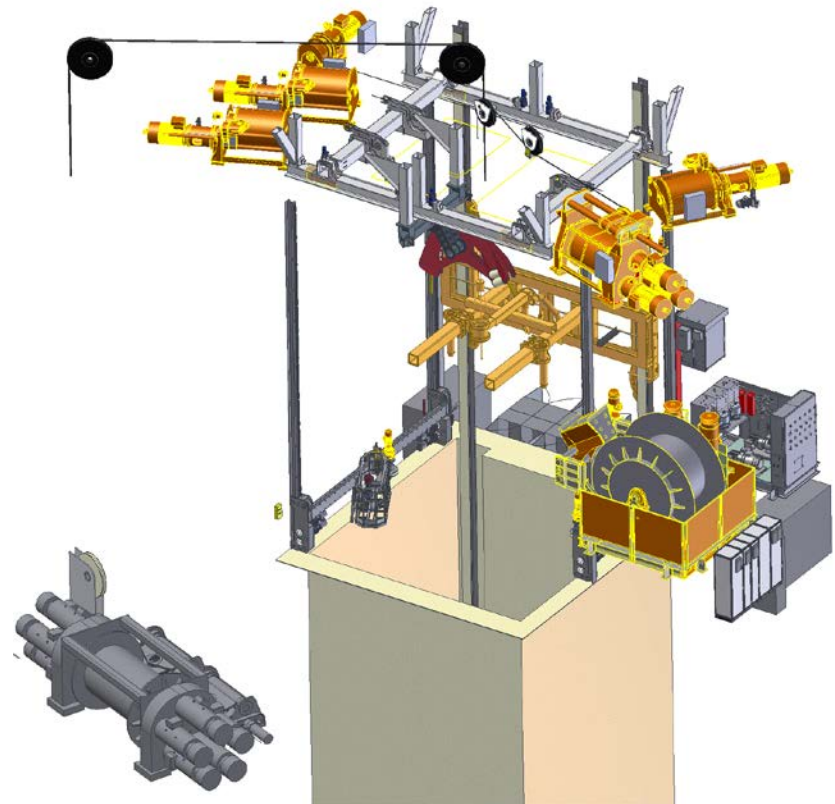
## Hangar area - ROV

- 2 off latest edition of Schilling HD WROV systems with AHC LARS for operations up to 5m Hs.
- 1 off SubAtlantic Mohican ObsROV system with AHC LARS for operations up to 5m Hs.
- 7.2x7.2m (true opening) moon pool with expansion tanks and large venting channels to avoid green water on deck.
- Continuous skidding system from aft deck through MHS to WROV area, including 4 indoor storage positions for modules on pallets
- Offshore grating on deck for drainage of water
- Storage room, work shop, rigging store with direct access from hangar and deck



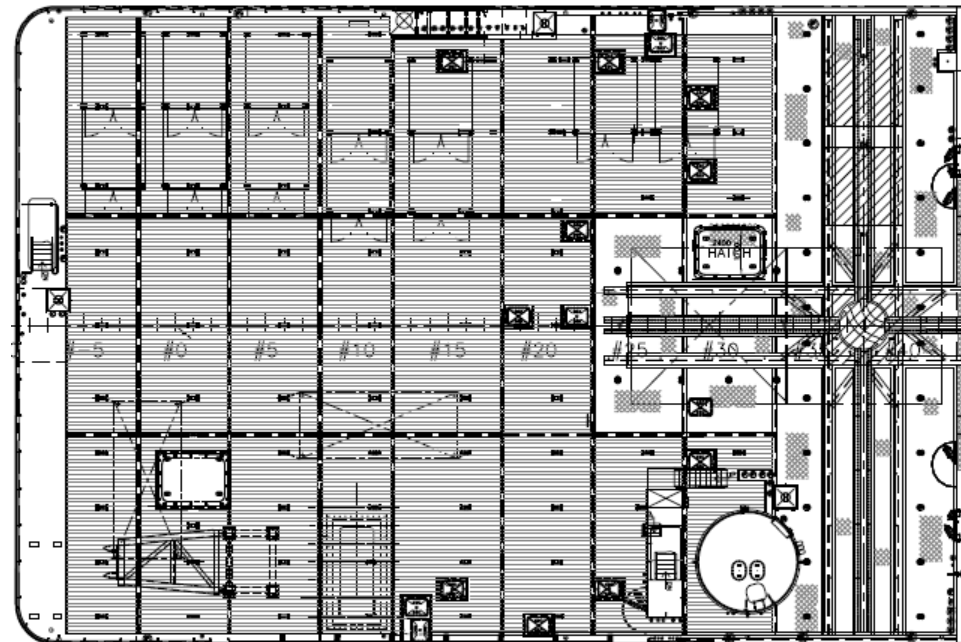
## Hangar area – Module Handling System (MHS)

- 2 off man riding lifts with work area over moon pool
- 4 off ships cranes for load handling up to 3Te, including one located on a skidding pallet
- Permanent installed AHC, 12line umbilical, 600m downline for hydraulic, flushing, pressure testing, HP water jetting etc.
- Integrated MHS without tower structure
  - ✓ 2 off AHC lifting winches, 70Te, 2,000m and 20Te, 1,000m
  - ✓ 3 off 5Te Guidewires c/w winches
  - ✓ Possibilities for combined lifting
  - ✓ Automatic prong/cursor system.
  - ✓ Operations up to 5m Hs
  - ✓ Full electric



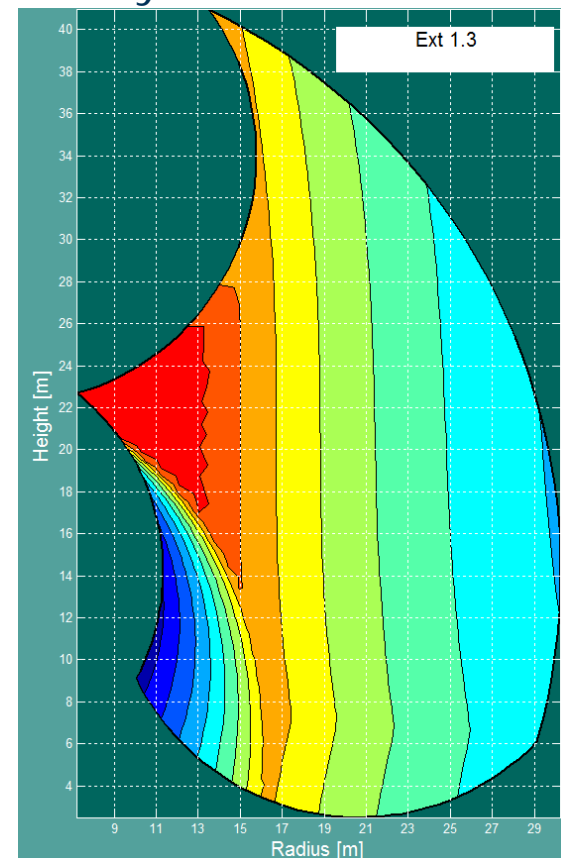
## Main Deck

- 850m flat working deck without obstructions
- 1.3m bullwark, 15m removable in the lifting and overboarding area
- Wooden deck with integrated HD T-bars giving reduced impact loads, yet providing strength for welded sea-fastening.
- 65 off integrated D-rings for quick and easy sea-fastening.
- Integrated container locks for up to 8 off containers
- Integrated position for light diving craft
- Mooring stations below main deck level
- Direct access to stores without steps
- 3 off complete utility stations



## Offshore Crane

- Operational limitations 5m Hs, 19m/s wind
- Active heave compensation with 95% reduction of motions
- Two off alternative boom rest positions provides flexibility for efficient deck utilisation and deck layouts
- Logging of MRU data and wire tension
- 135Te at 13m radius at sea
- 2000m working depth
- 10Te, 1000m AHC whip line
- Manriding up to 10Te



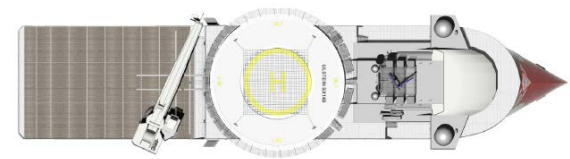
## Scale treatment and RFO pumping system

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- Complete integrated pumping system for Scale treatment and RFO operations
- Maximum capacity 2,800 l/min@345 bar. RFO pump to 1,400 l/min@60bar
- Heating system up to 90°C@400 l/min
- Integrated control system in operational control room
- LFL\* and WS class notation
- 900m<sup>3</sup> tanks for special cargo, incl. MEG.
- 2,500m<sup>3</sup> Drill water and 2,000m<sup>3</sup> Fuel Oil.



# Pictures



## In conclusion

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- Incorporates tomorrow's technology today
- Distinctive X-BOW design to reduce motion in transit and operations
- Ability to manoeuvre in confined spaces
- Extended capacity of essential subsea tools, complex equipment packages
- Versatile and specialised, efficient and comfortable working environment
- Several new notable environmental features

*"The vessel closes an innovation gap in the offshore market."*



seabed-to-surface

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