



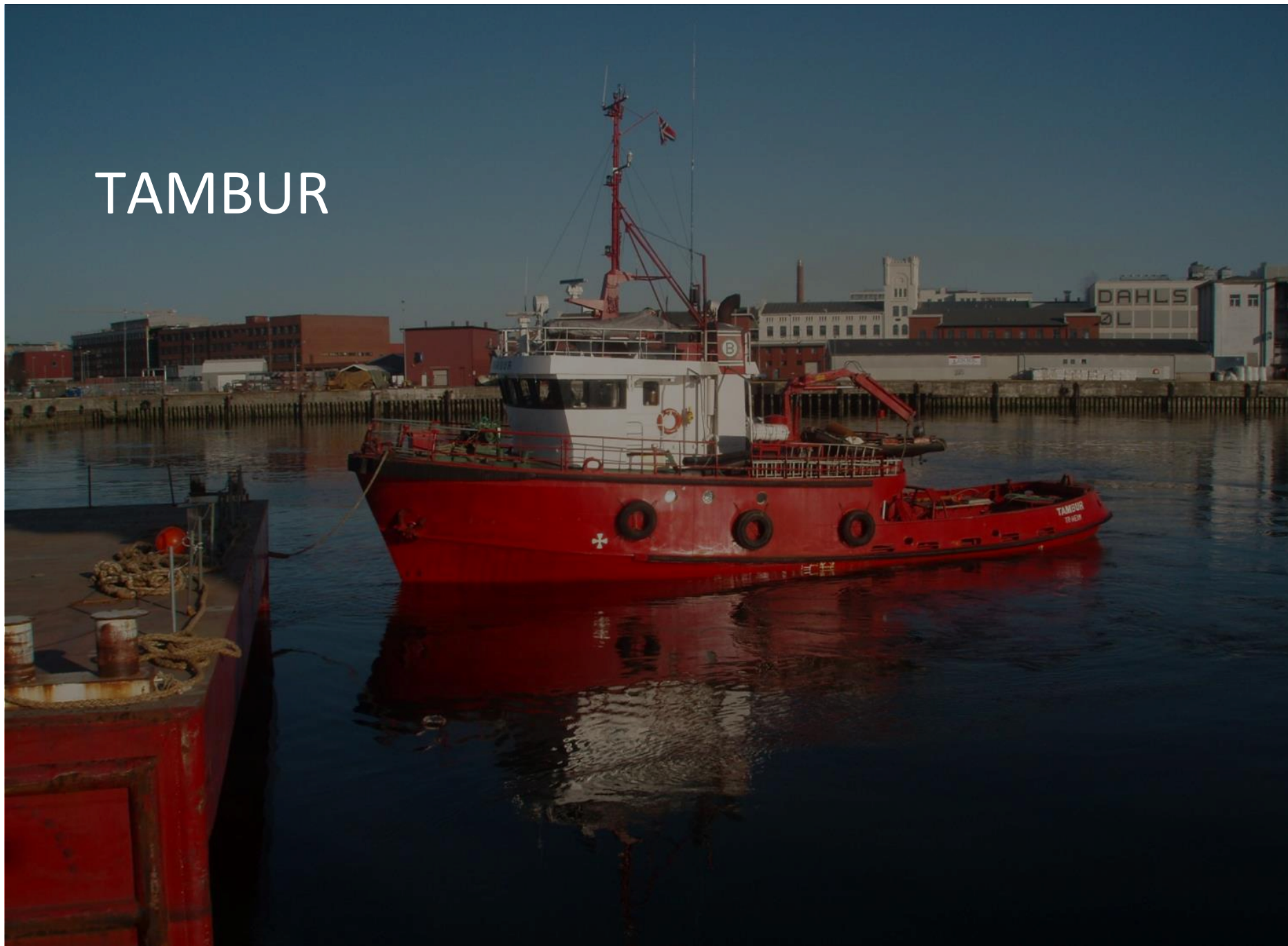
Malvik Rotary
13.2.2024





OSCARSBORG

TAMBUR





CHIEF

BJØRN ESKIL



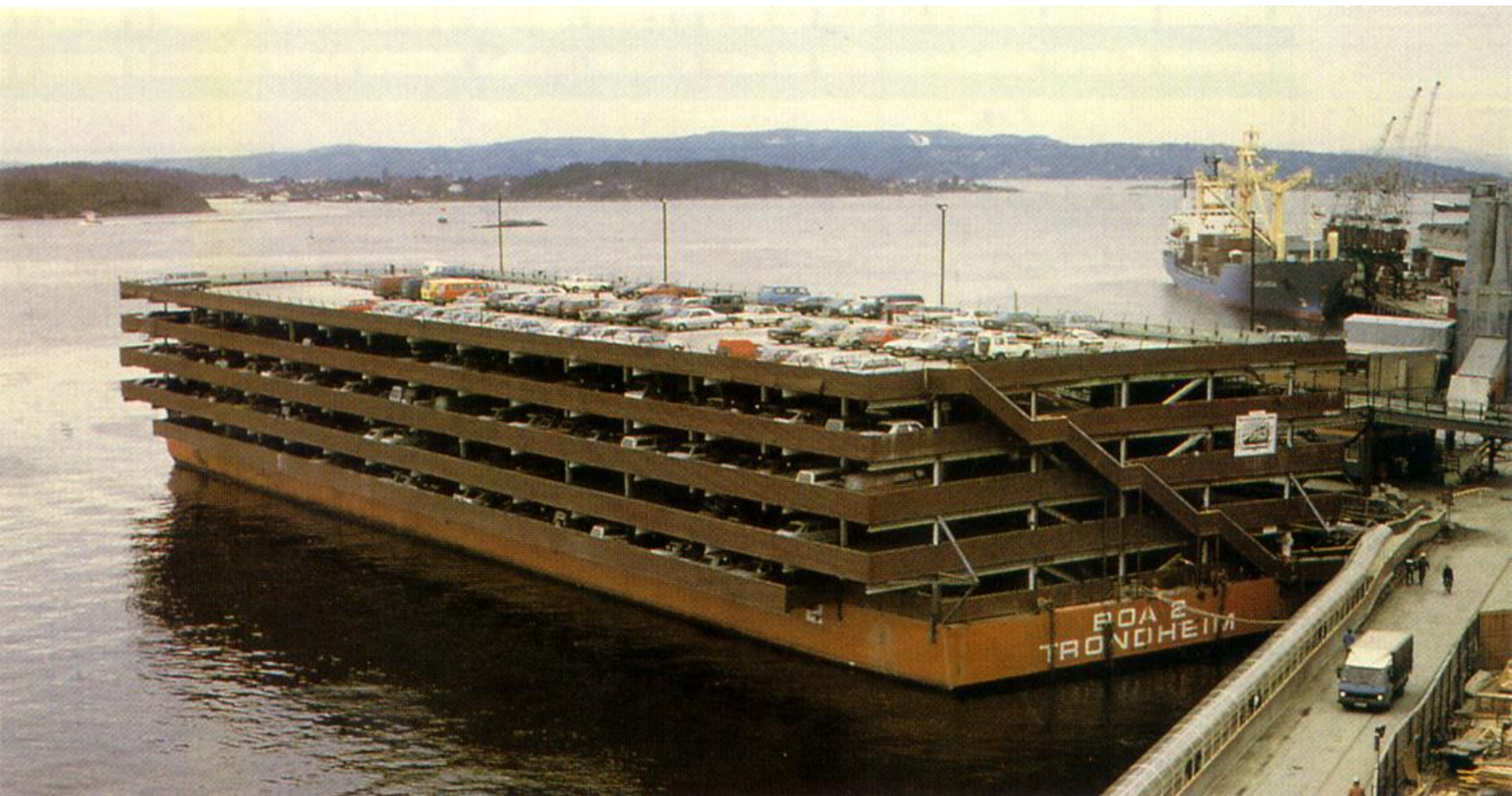
BARGE

"BOA 1"



FLATTOP BARGE

"BOA 2"



M/S "RHINO" .
Salvage operation February 1993.



BERGING MS RHINO 1991

"HAUKELI" -
Salvage operation June 1993.



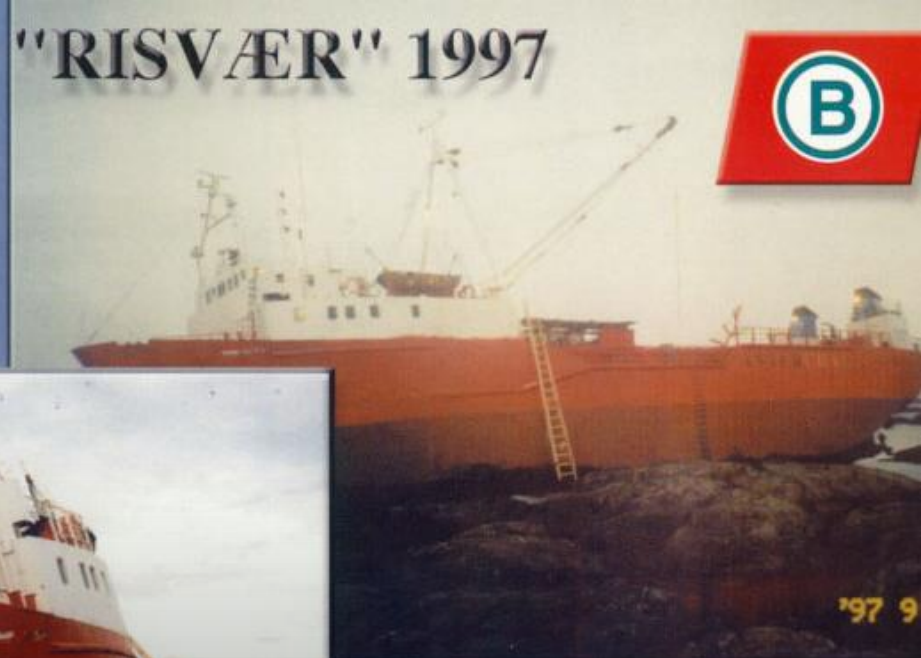
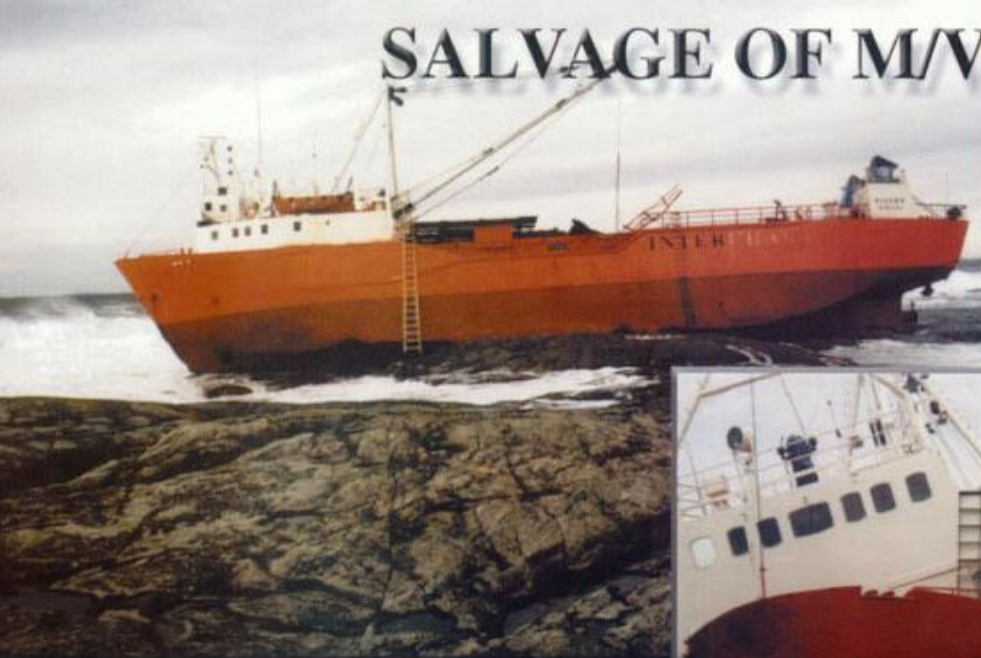
"NARVIK" -
Salvage operation April 1991.



M/S "TEANO" -
Salvage operation February 1994.



SALVAGE OF M/V "RISVÆR" 1997



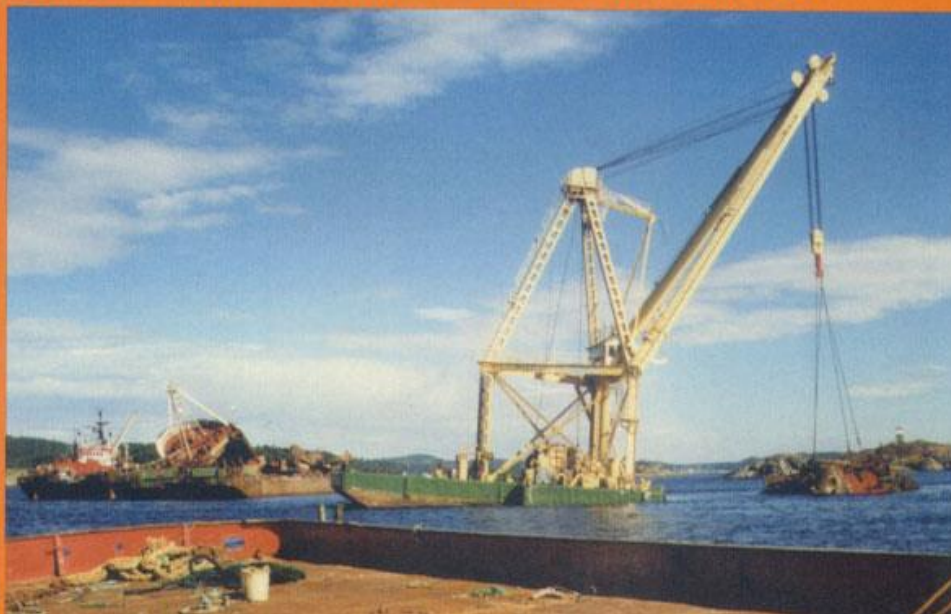


Wreck removal of M/V «Oldersund» with a steelweight of 240 tonn from 10 m. at Rørvik January 1997.

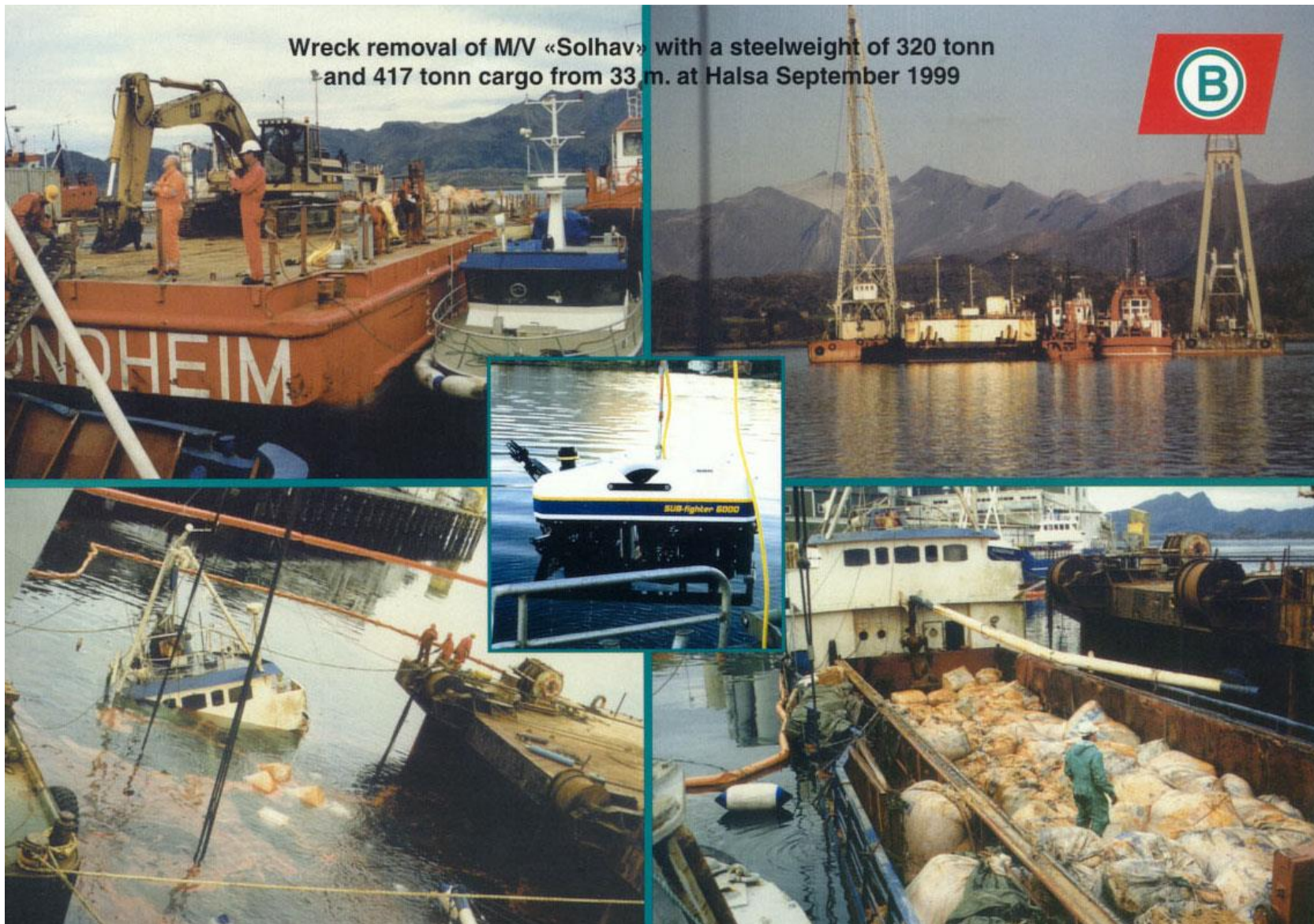




Wreck removal of M/V «Sønnodd» with a steelweight of 550 tonn from 17 m. at Grimstad summer 1999.



Wreck removal of M/V «Solhav» with a steelweight of 320 tonn
and 417 tonn cargo from 33 m. at Halsa September 1999





SALVAGE "ANJA" 2007 - LØKTA





SALVAGE FEDERAL KIVALINA
2008





Salvage of KNM Helge Ingstad

- On 8th November 2018, HNoMS Helge Ingstad collided with a tanker on the west Coast of Norway, substantially damaging the frigate at the starboard side. The warship subsequently grounded and was secured to land with steel wires, partially submerged.
- BOA was hire as the main contractor for the salvage operation and developed the method of work to salvage the frigate;

There were four main steps in the salvage plan

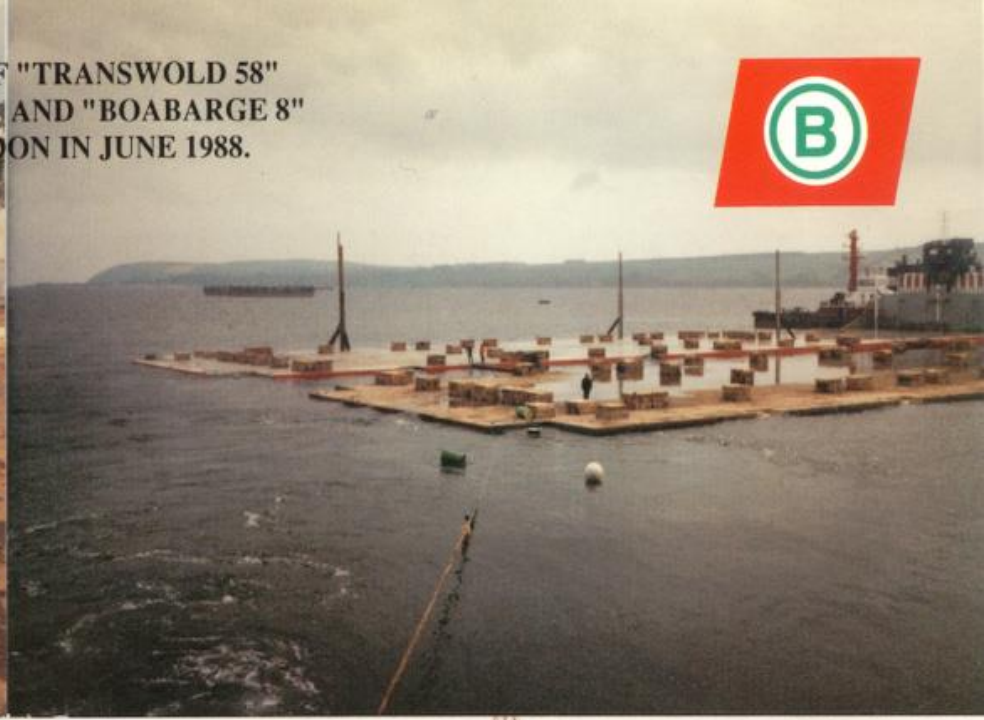
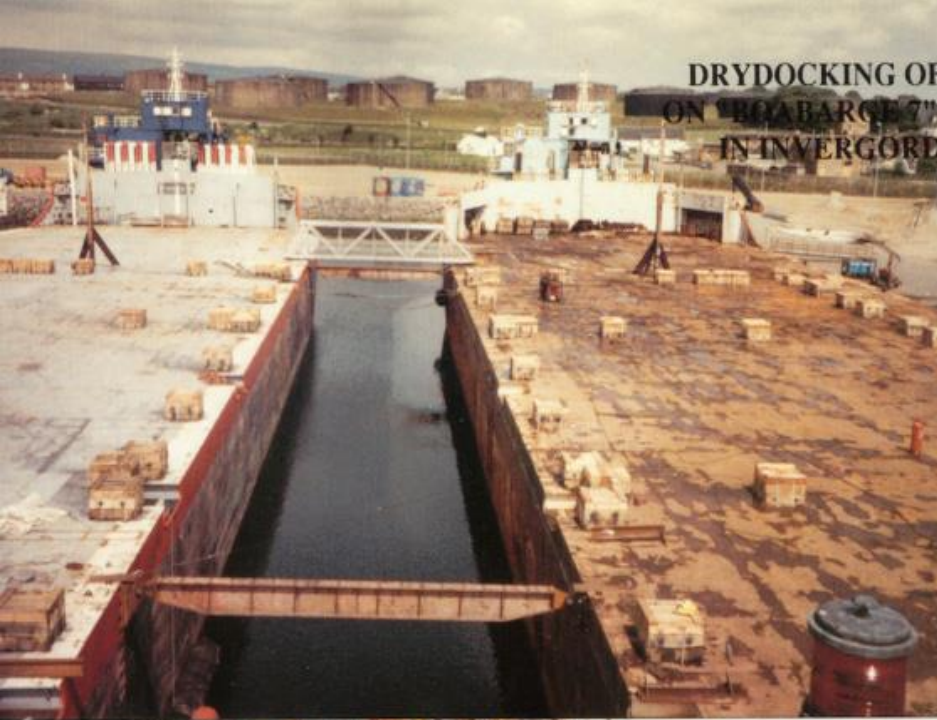
- To secure HNoMS Helge Ingstad to shore to avoid further sinking
 - Remove fuel onboard and preparing the frigate for lifting by placing and securing lifting chains around the hull
 - Lifting, dewatering and loading onboard Boa Barge 33
 - Transport and redelivery to the owner
-
- On February 26th, after complex preparations, HNoMS Helge Ingstad was successfully lifted of the bottom and then up-righted to zero trim and zero list
 - Due to unfavorable weather, it was decided to transfer HNoMS Helge Ingstad to a sheltered location for the remaining operations.
 - With the frigate hanging in the cranes, the HLV transited to sheltered location where the submerging of Boa Barge 33 and the subsequent loading of HNoMS Helge Ingstad could be carried out without any risk to personnel or environment.
 - After successful loading of HNoMS Helge Ingstad, the barge was towed to Haakonsvern where the frigate was temporarily patched before float-off operation was carried out.



SALVAGE OSFJORD



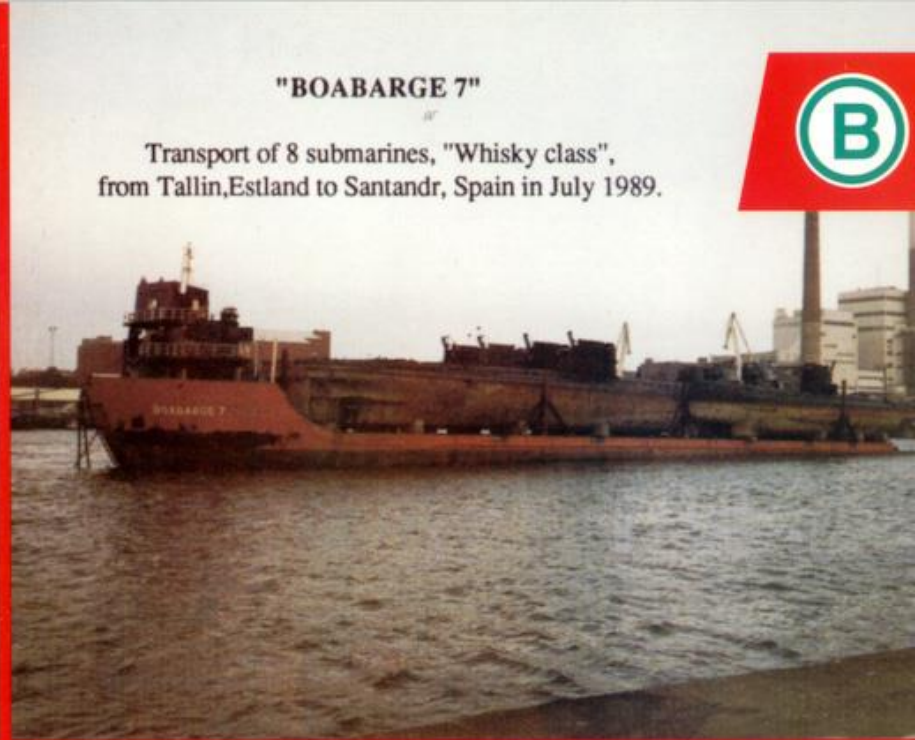
DRYDOCKING OF "TRANSWOLD 58"
ON "BOABARGE 7" AND "BOABARGE 8"
IN INVERGORDON IN JUNE 1988.





"BOABARGE 7"

Transport of 8 submarines, "Whisky class",
from Tallin, Estland to Santandr, Spain in July 1989.



"BOABARGE 7"

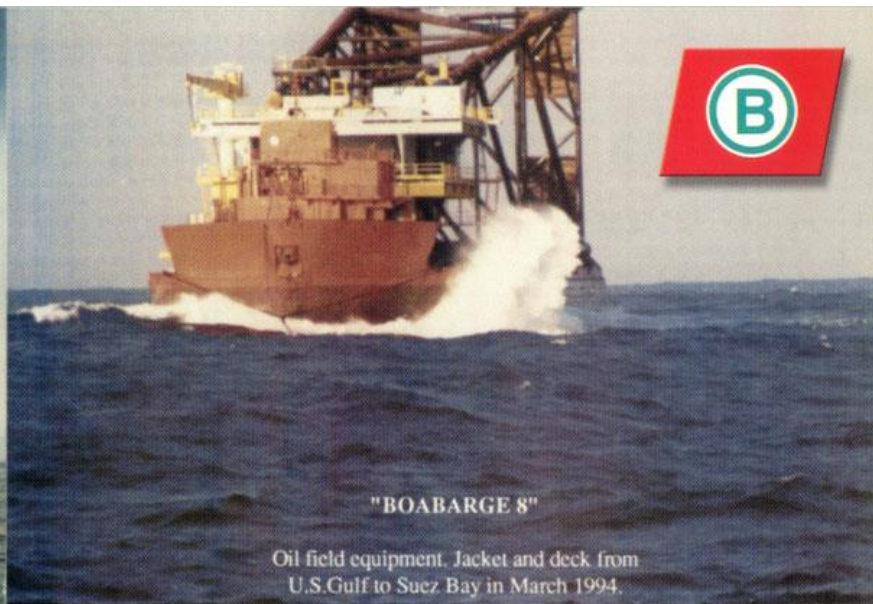
Transport of 12 trawlers from Kotka / Finland
to Santander / Spain in August 1989.





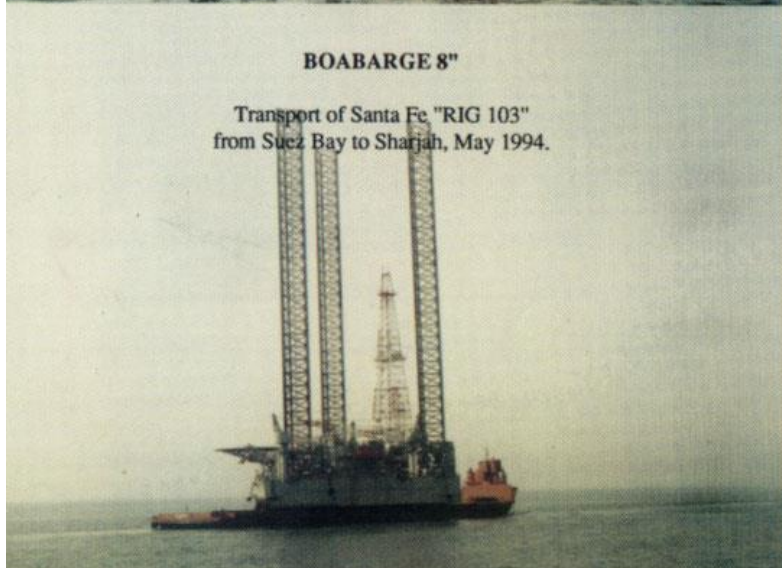
"BOABARGE 7"

Transport of cranes from Gothenburg to Florø and Ulsteinvik, June 1993.



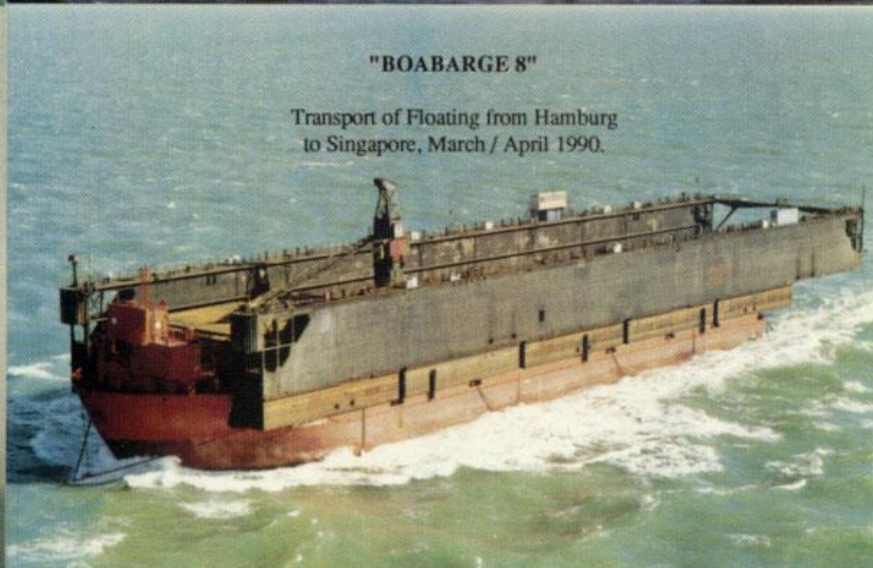
"BOABARGE 8"

Oil field equipment. Jacket and deck from U.S.Gulf to Suez Bay in March 1994.



BOABARGE 8"

Transport of Santa Fe "RIG 103" from Suez Bay to Sharjah, May 1994.



"BOABARGE 8"

Transport of Floating from Hamburg to Singapore, March / April 1990.



BARGE TRANSPORT









MULTI PURPOSE DIVING VESSEL

"BOA CANOPUS"





ANCHOR HANDLIG TUG SUPPLYVESSEL

"BOA SCOTIA"



ANCHOR HANDLIG TUG SUPPLYVESSEL

"BOA CAPTAIN"



ANCHOR HANDLIG TUG SUPPLYVESSEL

"BOA CHAMPION"



AHTS

"BOA SWORD"



PSV

"BOA REEL"



PSV

"BOA TRADER"



BOA FORTUNE





BOA QUEEN



Maureen Demating







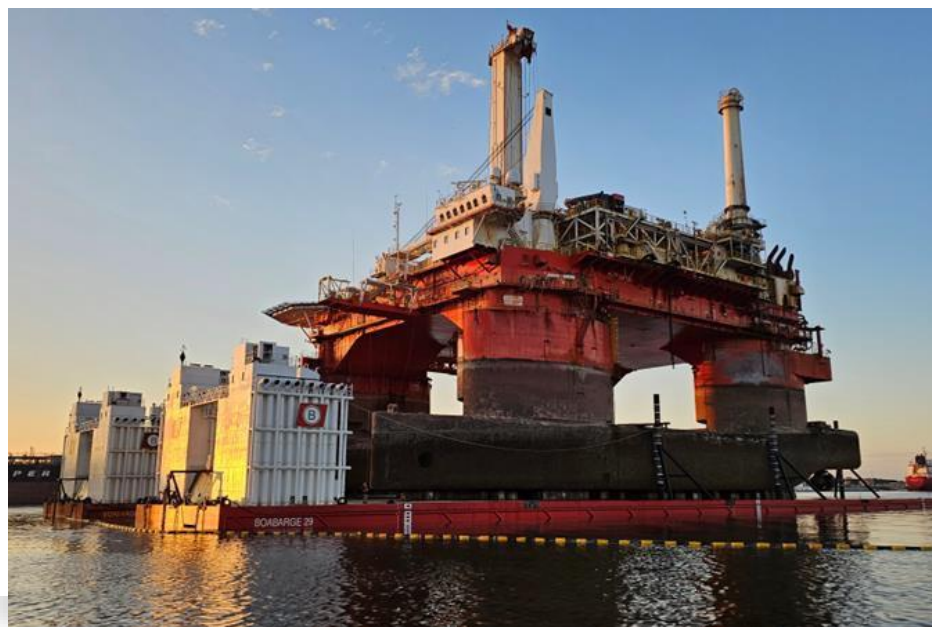
STENA DON B





An Introduction to BOA

- Boa Offshore currently owns, operates and manages a diversified fleet of vessels and barges in various segments
 - Sea transportation and load-out and launching of heavy objects (Barges)
 - Rig moves (Tugs)
 - Naval and Defense support (AHTS/Barges)
 - Harbor and costal towage
 - Salvage operations (Tugs/Barges)
- Today BOA has a global presence and operations, and leading player in the global market for semi-submersible barges.
- BOA is head quartered in Trondheim (Norway) and with an office in Houston (USA)
- Engineering and project management capacity is carried out of Trondheim and Houston.



BOA- Concentrated in three main segments

Assets

Description/operations



1 Engineering Services

- Engineering solutions
- Turney Boa projects

World wide operations

Boa Offshore operations offer external and internal project management solutions, including engineering and services



2 16 Barges

- 10 semi-submersible barges
- 6 deck cargo barges

World wide operations

Leading player in the semi-submersible barge market

Continuous new building program since 1999 →

Tonnage provider, also solution/project provider for:

- All engineering related to barges. In house design
- Turn key transportation projects
- Load out and launching
- Dry docking operations
- Float over



3 5 Tugs & 2 offshore vessels

- 4 ASD escort tugs
- 1 harbour / towage tugs

Coast of Norway and North Sea operations

Tugs has been the core business of Boa since inception

Owns and operates two high spec modern AHTS

Tonnage provider and solution/project provider for:

- Salvage operations
- Turn key towage / transport / handling operations



Barge Fleet List



Barge	Type	Dimensions (m)
25.000 – 30.000 DWT		
BB 38	Heavy lift, semi sub. (35t/m2)	152,00 x 38,00 x 9,15
BB 37	Heavy lift, semi sub. (35t/m2)	152,00 x 38,00 x 9,15
BB 33	Heavy lift, semi sub. (31,5t/m2)	140,00 x 57,00 x 8,54
BB 34	Heavy lift, semi sub. (31,5t/m2)	140,00 x 36,00 x 8,54
17.500 DWT		
BB 36	Heavy lift, semi sub. (31,5t/m2)	124,00 x 31,50 x 7,60
BB 35	Heavy lift, semi sub. (31,5t/m2)	124,00 x 31,50 x 7,60
BB 30	Heavy lift, semi sub. (31,5t/m2)	124,00 x 31,50 x 7,60
BB 29	Heavy lift, semi sub. (31,5t/m2)	124,00 x 31,50 x 7,60
11.000 DWT		
BB 22	Heavy lift, semi sub. (25t/m2)	92,00 x 31,50 x 6,70
BB 21	Heavy lift, semi sub. (25t/m2)	92,00 x 31,50 x 6,70
BB 44	Flat top, heavy deck (25t/m2)	91,40 x 30,50 x 6,10
BB 43	Flat top, heavy deck (25t/m2)	91,40 x 30,50 x 6,10
3.000 DWT		
BB 42	Flat top (12t/m2)	65,00 x 17,25 x 4,00
BB 32	Flat top (12t/m2)	65,00 x 17,25 x 4,00
1.000 DWT		
BB 50	Flat top (12t/m2)	33,80 x 14,40 x 3,20
BB 15	Flat top (12t/m2)	33,80 x 14,40 x 3,20

13 BARGES



BOA ODIN & BOA TOR





BOABARGE 22
TRONDHEIM

2001 3 29



BOA BALDER & BOA HEIMDAL





BOA OCV
AS
BOA DEEP
C
BOA SUB C



BOA GALATHEA BOA THALASSA



5+5 YEARS CONTRACT TO COASTGUARD

BOA BISON

BOA JARL



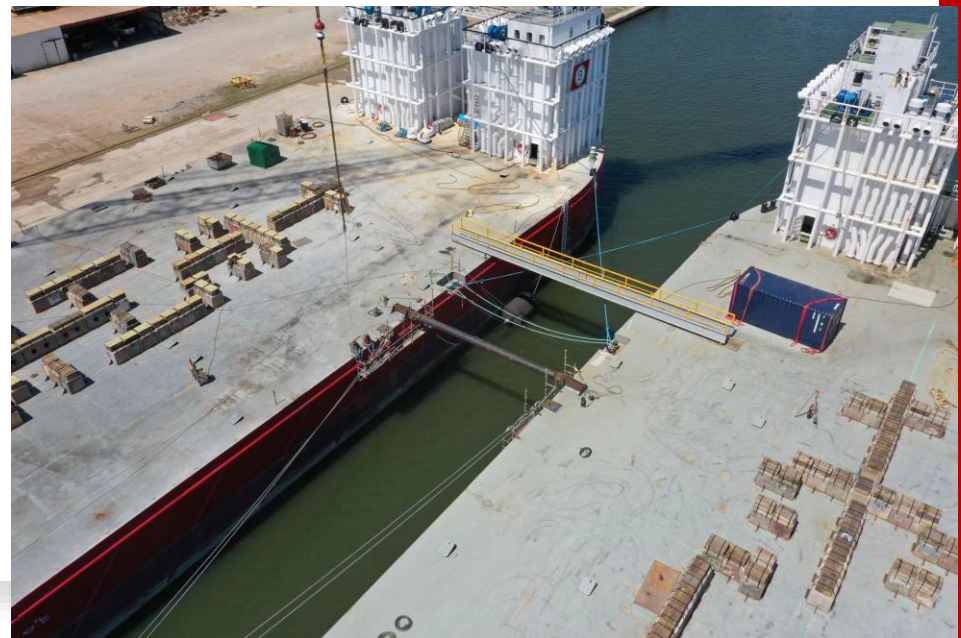
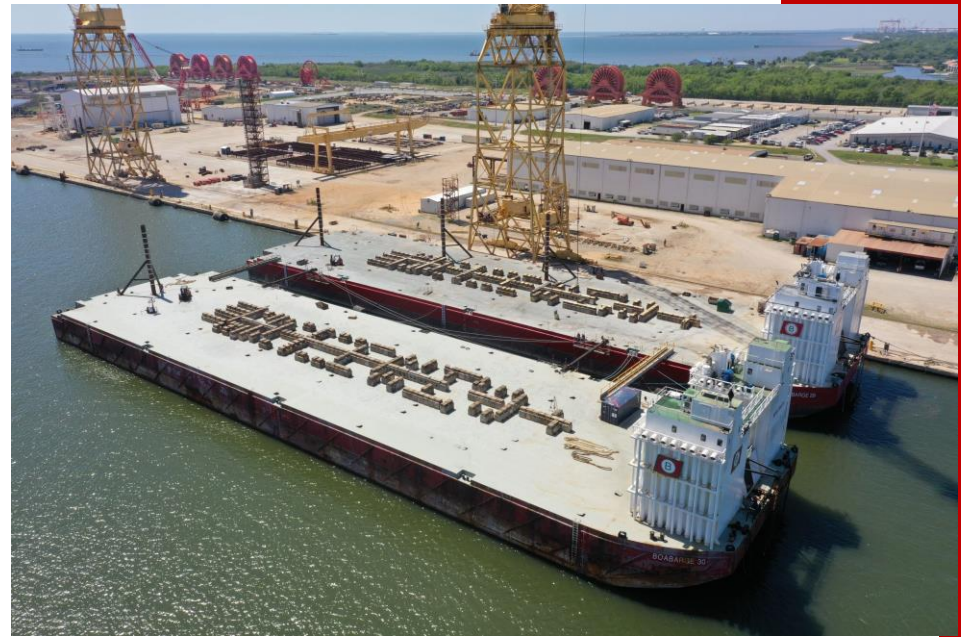
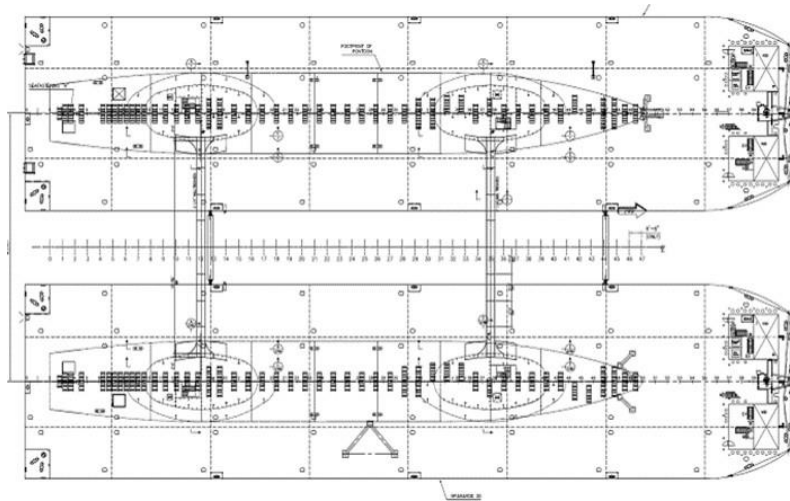


Project Highlights



Non-rigid connection between the barges

- The mechanical connection between the barges consists of two systems: i) link beams to control the transverse distance between the barges and ii) cross-laid wires/ropes to control the longitudinal position between the barges.
 - i) Tubular braces hinged at both ends
 - ii) Steel wire or Dyneema ropes. End connections/tensioning by use of heavy-duty turnbuckles





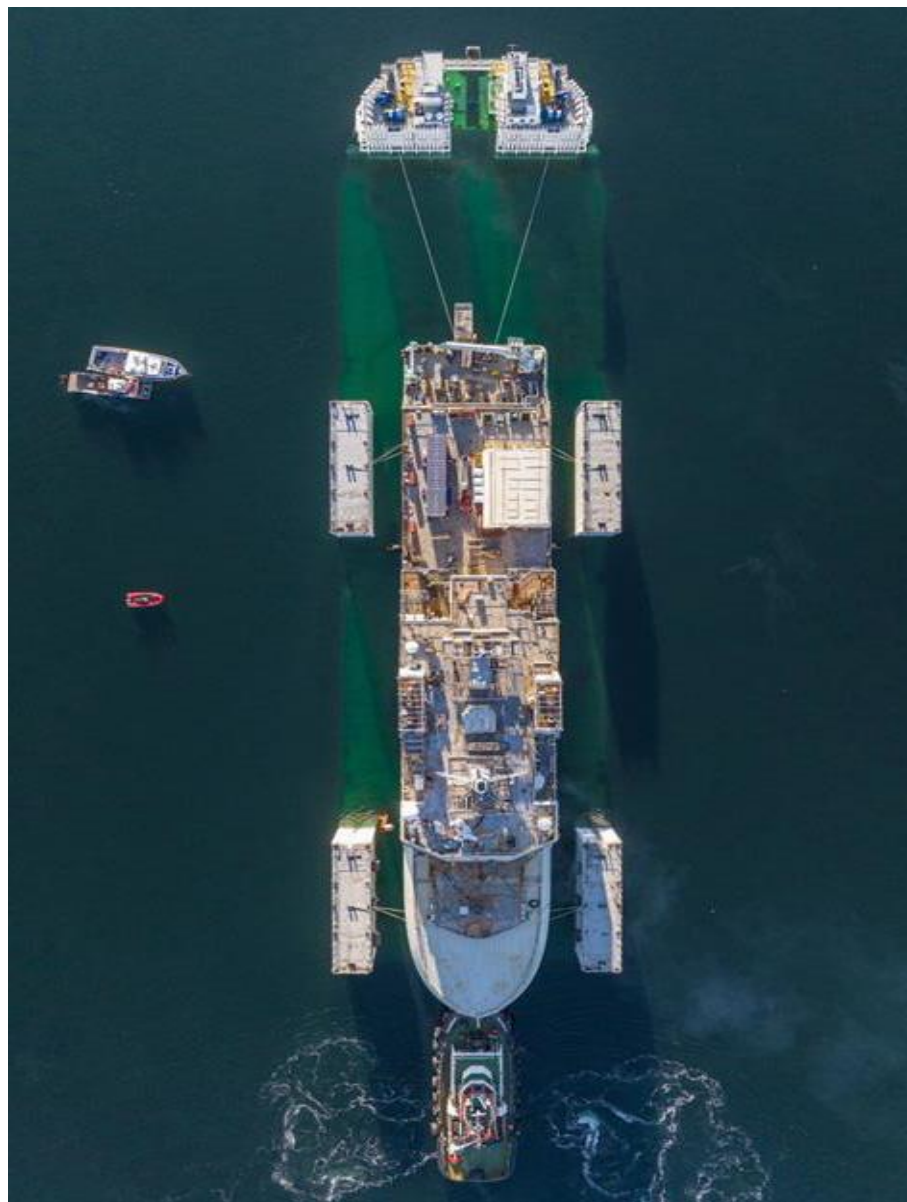
Load-on, transport & Float-off of LNG Caissons

- BOA was hired as the main contractor for load-on, transport and float-off of 56 caissons in total. Each caisson weighed approx. 3600 tonnes.
- For each transport, four caissons were loaded onto Boa Barge 33 (140 m x 36 m x 8.54 m) and Boa Barge 35 (124 m x 31.5 m x 7.93 m) by roll-on in Henderson, Australia.
- After seafastening and preparations the barges were towed to Barrow Island where the caissons were successfully floated off
- The marine engineering for transportation and submerging offshore was carried out by our in-house engineering team;
 - Barge Ballasting Procedure
 - Structural outfitting design
 - Structural strength verifications
 - Float-off operations manual
- BOA had the operational responsibility for the caissons float-off operations offshore



Launching of AOPS Vessels

- BOA is engaged for a 4 years + options for load-out/float-off of 6 Arctic and Offshore Patrol Ships. Each vessel weight approx. 5.500 t.
- BOA has successfully completed the first float-off operation of the AOPS vessel. The AOPS vessel was loaded on the barge by SPMTs and after installation of seafastening, towed to the float-off site and the vessel floated off by ballasting the barge down to a draft of 20 m
- All engineering and operational management with regards to the transport and float-off of the vessels is the responsibility of BOA.



Launching of AOPS Vessels



Dual Barge Drydocking



- BOA was contracted by Helix Energy Solutions to drydock their well intervention semi-submersible vessel in the Gulf of Mexico.
- Due to the vessels footprint, BOA provided our industry leading dual barge solution. The operation was performed with out Boabarge 29 and Boabarge 30 and BOA operated the barge in sync and oversaw the float-on operation in accordance with our procedures and manuals.
- In addition to operational management, BOA's scope of work also included design for link beams, cribbing and guideposts

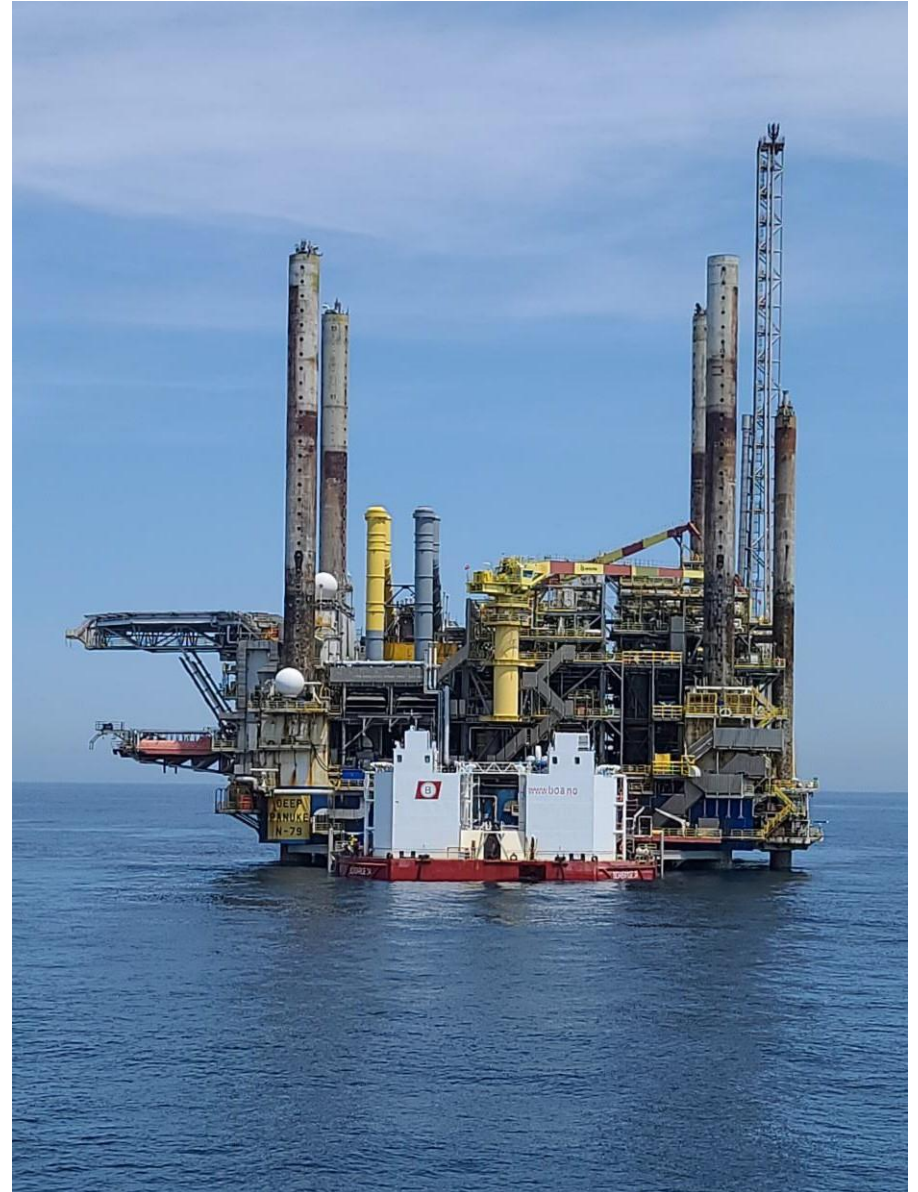
Hebron Topside Mating

- BOA successfully completed the record breaking 50.900 t heavy Hebron Topside Mating operation with the Topside load transfer to the floating GBS at Bull Arm, Canada.
- The topside lift off, transport and mating operation were performed using the Boabarge 34 and Boabarge 37 in catamaran configuration. The operation took 5 days from topside lift-off until final load transfer to the GBS and removal of the mating barges.
- BOA's engineering teams is responsible for extensive engineering and operational services during both planning and execution for the operations offshore



Deep Panuke de-installation and transport

- BOA was hired as the main contractor for de-installation and transportation of the 25.000 t PFC Deep Panuke.
- For the first time in history a jack-up structure has been de-installed by use of a barge.
- In favorable weather conditions offshore Nova Scotia, the PFC Deep Panuke was jacket downward onto Boabarge 34 and the leg jacking system retracted the legs from the seabed and the production platform was secured to Boabarge 34 for transport. The barge was thereafter towed to Halifax where the platform was successfully redelivered to its owner.
- All operational management with regards to the float-on and transport was the responsibility of BOA.

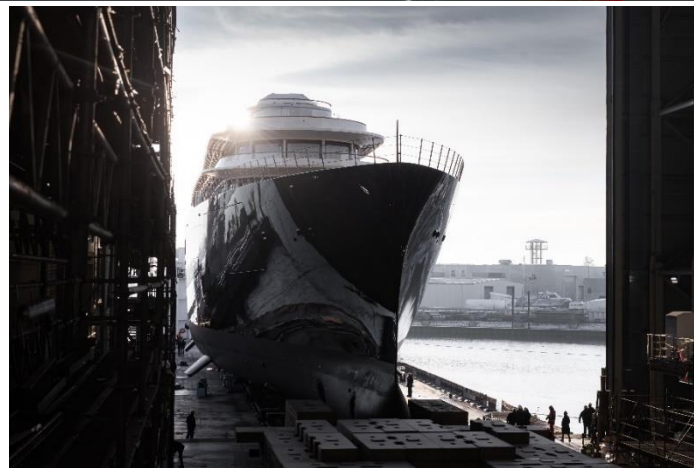
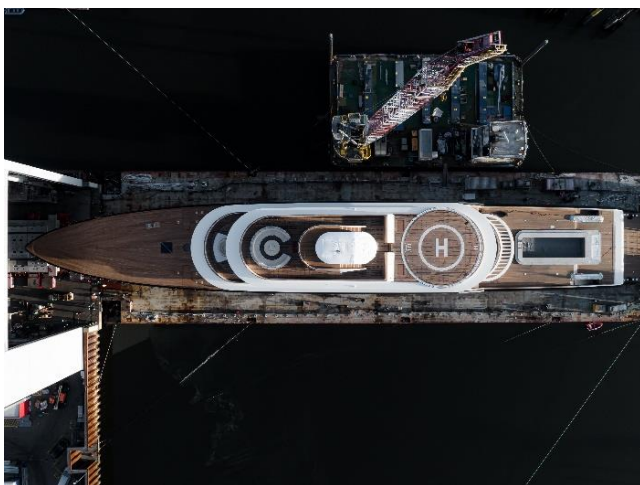


Launching of 118 m megayacht

- BOA has successfully launched the 118 m megayacht. The launching operation was done by use of the Semi-submersible Boabarge 36 on the river Weser.
- On the 18th December 2022 the Yacht was rolled onto the Boa Barge 36. After seafastning, fitting of the main mast and surveys the Boa Barge 36 with the superyacht on its deck was shifted from Abeking & Rasmussen's yard in Lemwerder up the river Weser to Bremen. Early morning on the 22nd December the Boa Barge 36 was submerged onto the river bed thus successfully launching the superyacht onto the river Weser.
- BOA carried out a comprehensive engineering scope and all operational management of the barge during load-out and float-off was the responsibility of BOA.

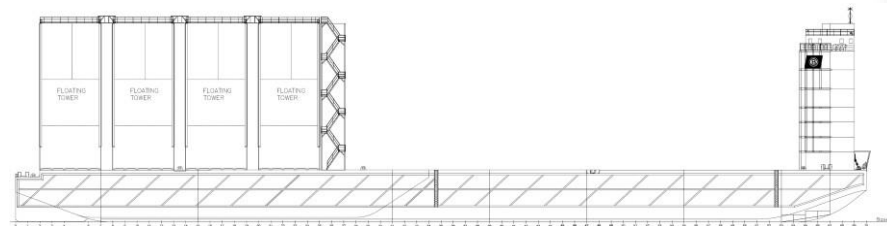
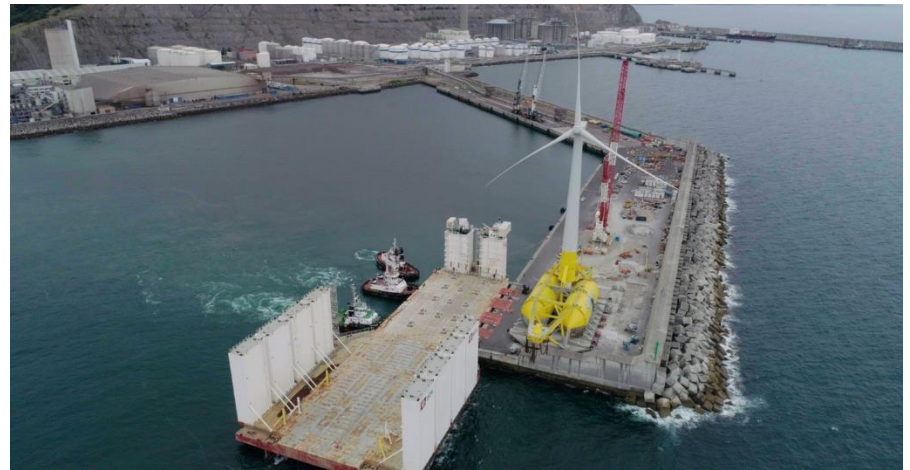


Launching of 118 m Mega yacht- A & R Germany 2022



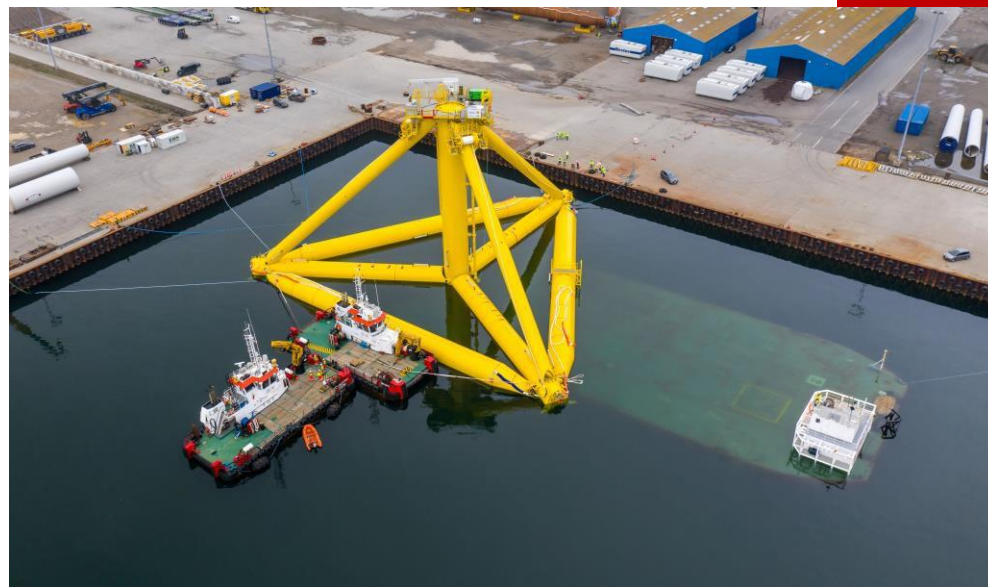
Launching of DemoSATH

- BOA has successfully launched the Saitec designed DemoSATH full scale prototype. The launching operations was done by use of the Semi-submersible Boabarge 33 (140m x 57m x 8,54 m) in Bilbao, Spain.
- In addition to contributing with the main asset, Boabarge 33, for the launching operation, Boa contributed with Project Management and Engineering for the Load-Out and Float-Off scope.



Launching of Tetraspar Demonstrator Floater and Keel

- BOA have successfully launched the Tetraspar Demonstrator Floater and Keel by use of the Semi-submersible Boabarge 21 (92m x 31.5m x 6.71m) in the port of Grenaa, Denmark.
- The Floater and Keel was loaded-out by means of SPMTs and floated-off the Boabarge 21 in 2 consecutive operations. Each operation was executed in close cooperation between project teams of BOA and BMS, whereas BMS took charge of the loading operation while BOA took charge of shifting, ballasting and submersion of the BOA barge 21 and float-off of the TetraSpar units.
- Following the final assembly of the wind turbine, the combined structure was towed and installed at the Marin Energy Test Center (Metcentre), off Stavanger.

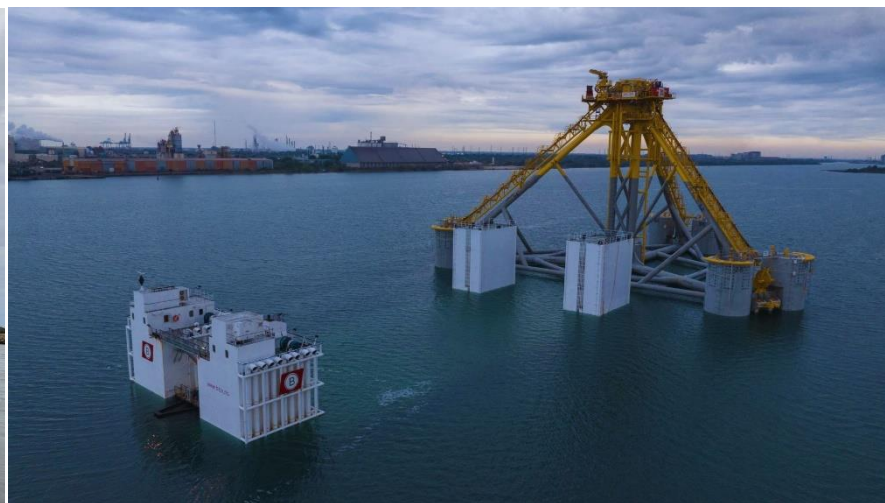
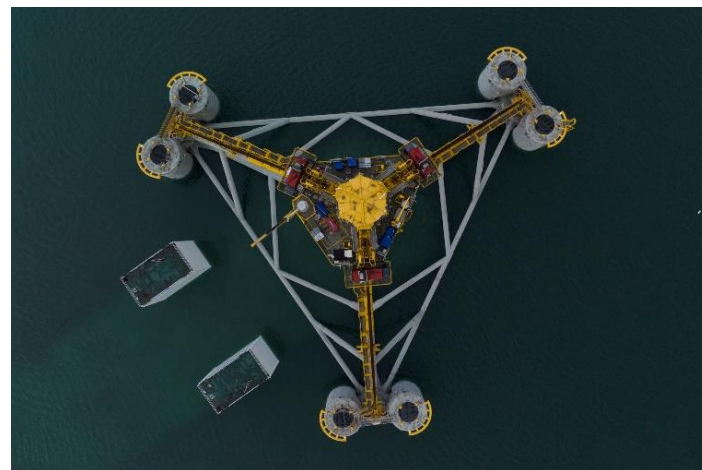


Launching of 3 x Floating Sub Structures PGL project

- BOA has successfully launched the 3 x Floating Sub Structures for the Provence Grand Large (PGL) Project. The scope of work included engineering, project management and operation was performed with the semi-submersible barge, Boabarge 36 and ASD tug BOA Heimdal.
- The Provence Grand Large Floating offshore windfarm will be located offshore Marseille, France and will consist of three 8 MW wind turbines installed on floating foundations designed and manufactured by SBM offshore.

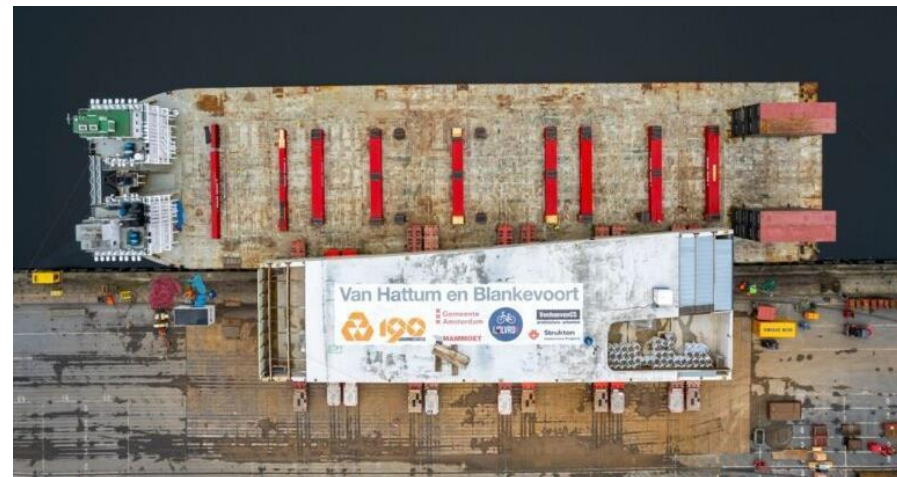


Launching of 3 x Floating Sub Structures- PGL project



Load-on and float-off of concrete elements for the IJboulevard

- BOA is hired as the main contractor for load-out and float-off of 3 consecutive operations in Amsterdam with the semi-submersible Boabarge 35.
- The concrete elements, each with weights from 4900 t to 7200t, will be installed by the Amsterdam central station of the Project IJboulevard, where they will be used as and underwater bicycle parking with capacity of 4000 bicycles.
- BOA carried out a comprehensive engineering scope and all operational management of the barge during load-out and float-off was the responsibility of BOA.



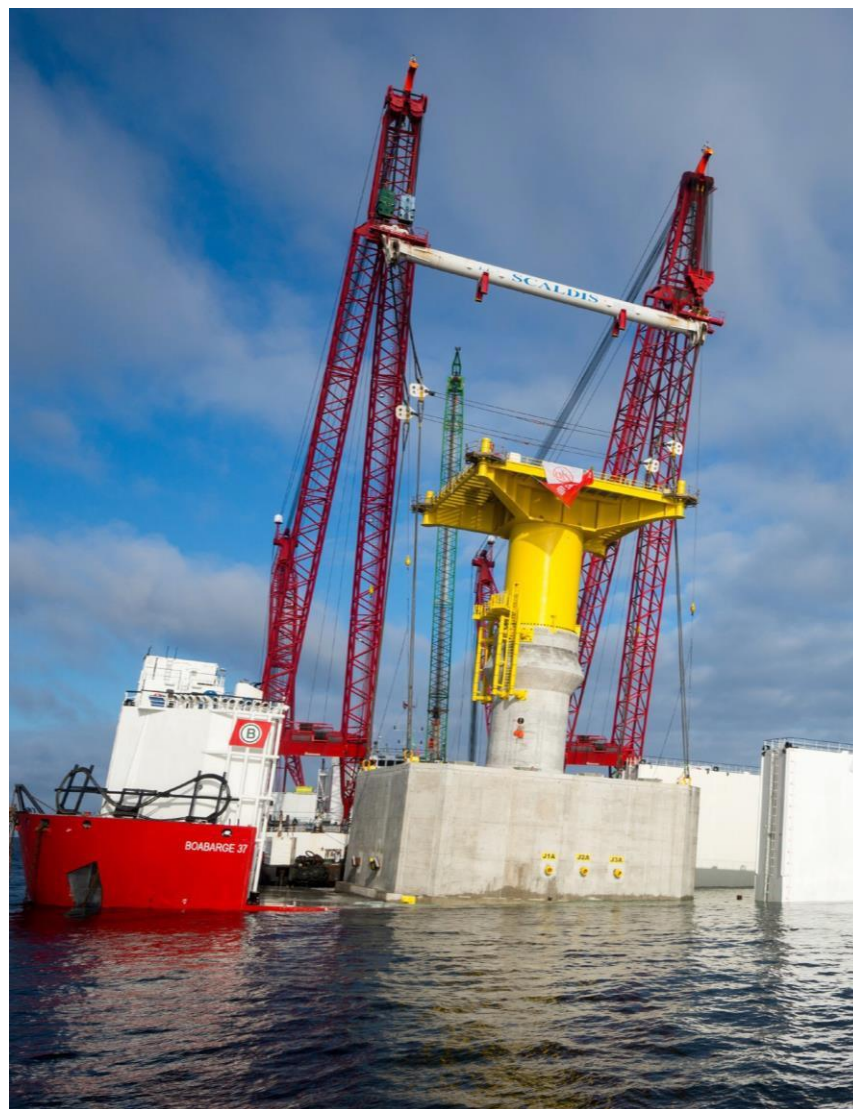
Load-on, Transport & Float-off & Installation of Linkspans

- BOA was hired as the main contractor for transport and float-off of 3 newbuilt mega linkspans for MacGregor in Calais, France. Each linkspan is over 2000 t, 35 m wide and 100 m long. Each linkspan came in parts from China and was assembled on the Boabarge 35 while laying alongside in Rotterdam.
- BOA provided turn-key solutions of the complete marine scope. Including transport from Rotterdam to Calais, float-off of the Linkspan and fine maneuvering of the linkspan until connected to hinges on land.
- The marine engineering for transportation and submerging was carried out by our in-house engineering team;
 - Operation Manual
 - Step by step shifting procedures
 - Motion response analysis
 - Seafastning design and analysis
 - Towing Manual
- BOA had the operational responsibility for the linkspans from sail-away Rotterdam until installed in Calais



Construction, Transport & Float-off off GBS's

- Construction of two Gravity Based Substructures onboard Boa Barge 37 (152m x 38m x 9.15m) in Oostende, Belgium
- Boa Barge 37 was thereafter towed to the installation site, Kriegers Flak Offshore Windfarm, where the foundations, together weighing ~16.800t, were floated off by means of submerging the barge to a depth of 20 m.
- The GBS's were floated off in two operations and installed on the seabed by the HLV "Rambiz 3000".
- The marine engineering for transportation and submerging offshore was carried out by our in-house engineering team;
 - Design brief
 - Barge Deflection Analysis
 - Barge ballasting procedure
 - Motion response analysis
 - Barge Operations Manual
 - Barge Mooring analysis
 - Structural Design report
 - Towing Manual
- BOA had the operational responsibility for the caissons float-off operations offshore





Load-on, transport and float-off of Main Plinth for Storstrøm Bridge

- BOA is hired as the main contractor for load-on, transport and float-off of the Main Plinth for the new Storstrøm Bridge. The Plinth 1C weighted approx. 12.250 t, 34 m wide, 42 m long and with a height of 21 m.
- The Plinth was loaded onto Boabarge 24 by skidding and thereafter the barge was towed and moored in a 4-point pre-laid mooring system close to the installation site before the barge was submerged to a depth of 21.5 m aft and 17 m forward allowing the Plinth to safely float free and towed to final position.
- All engineering and operational management of the barge during load-out and float-off was the responsibility of BOA.





Load-on, transport and float-off of Main Plinth for Storstrøm Bridge





Load-on, Transport & Load-in of AOF Fish Farming Unit

BOA provided turn-key solutions of the complete marine scope, load-out in Emden, Marine Warranty Surveyor and transportation from Emden to Verdal, Norway and load-in in Verdal for consecutive transports, each of 1 half ring of the fish farm cage.

The marine engineering for the scope was carried out by our in-house engineering team covering;

- Analysis and design of grillage and seafastening
- Operation manual
- Transport manual
- Morring analysis

All engineering and operational management with regards to the load-out, transport and load-in of the fishfarm was the responsibility of BOA.



Engineering Capabilities

- BOA is committed to safety and dedicated continuous improvement of engineering practices which make operations safe, optimized and more cost-efficient for our clients. We create added value to our clients by developing optimized engineering solutions
- With over 40 years' experience, BOA's exceptional in-house team is the key to BOA's success. We have built a team of experienced engineers and project managers and developed procedures to provide first class engineering and project executions for marine operations.
- Methods and layouts are optimized for each project, considering client's objectives, maximizing efficiency of the project operations and safeguarding personnel assets throughout the project. Consistency is essential, and our policy is such that continuity in engineering is maintained throughout the lifecycle of each project



Our Expertise

- Feasibility study
- Concept Design
- Structural design and analysis
- Stability and damage stability analysis
- Hydrodynamic analysis
- Float-off and load-out analysis
- Ballast procedures
- Mooring design and analysis
- Marine Operations Support

Our team comprises of

- Naval Architects
- Marine Engineers
- Structural Engineers
- Marine Warranty Surveyor
- Project Manager
- Master Mariners
- Risk Managers

FISHFARM NRS- Load-out, Transport & Float-off



"Marine Donut" fish farm for BlueGreen
Boabarge 34
June 2023
Bamble, Norway.





Marine Donut Load-out & Float-off Bluegreen Group



Client: **Bluegreen** | Period: **2023** | Project: **Marine Donut Launching** | Vessel: **Boabarge 34**

Helix Q4000 docking
Boabarge 29 and Boabarge 30
June 2023
Pascagoula, USA





BOABARGE 29 & 30

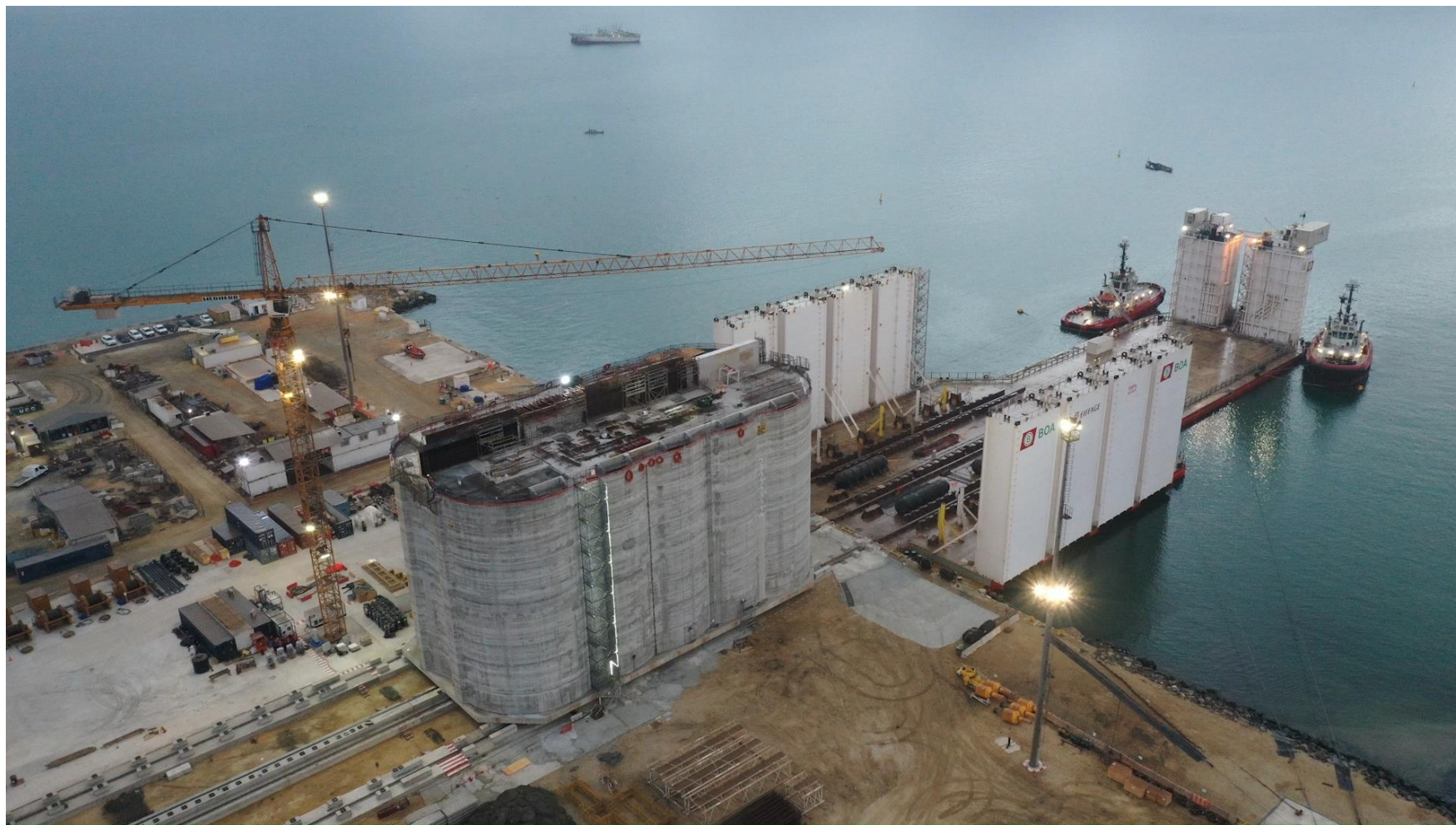
CAISSON LOAD-OUT & FLOAT-OFF EIFFAGE TORTUE 2020-2021

- Boabarge 33 modified for submersion depth to 21.5m water above main deck.
- Boabarge 33 outfitted with 10.5m X62m sponsons on both SB and PS side.
- The marine engineering for transportation and submerging offshore was carried out by our in-house engineering team;
 - Barge – Gravel bed interaction analysis
 - Barge Deflection Analysis
 - Barge global and local structural verification
 - Grillage and Skid Beam design
 - Guidepost and Sea-fastening design
 - Barge ballasting procedure
 - Motion response analysis
 - Barge Operations Manual
 - Barge Mooring analysis
 - Towing Manual
- BOA had the operational responsibility for the caissons float-off operations offshore

Client: **EIFFAGE (EGCM)** | Period: **2020-2021** | Project: **Caisson Load-out and Float-off** | Vessel: **Boabarge 33**



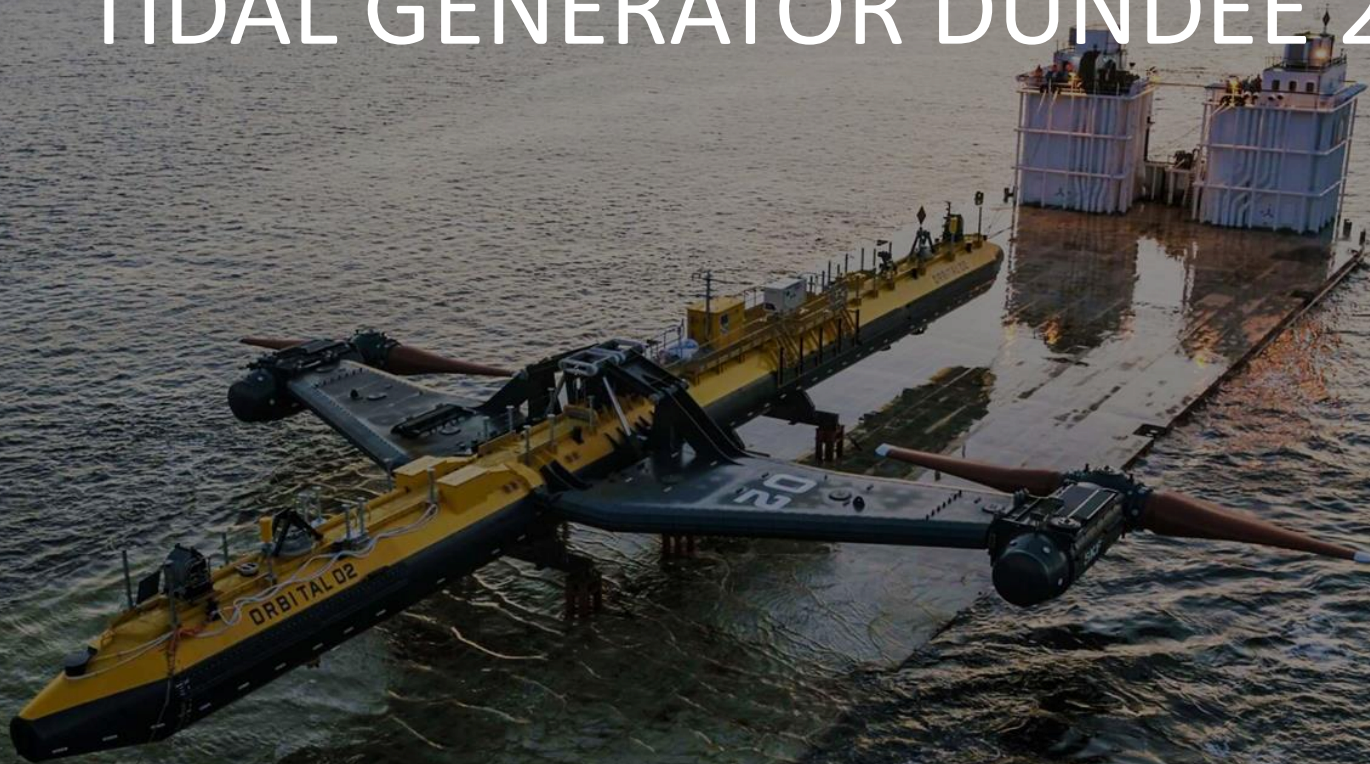
EIFFAGE TORTUE 2020-2021





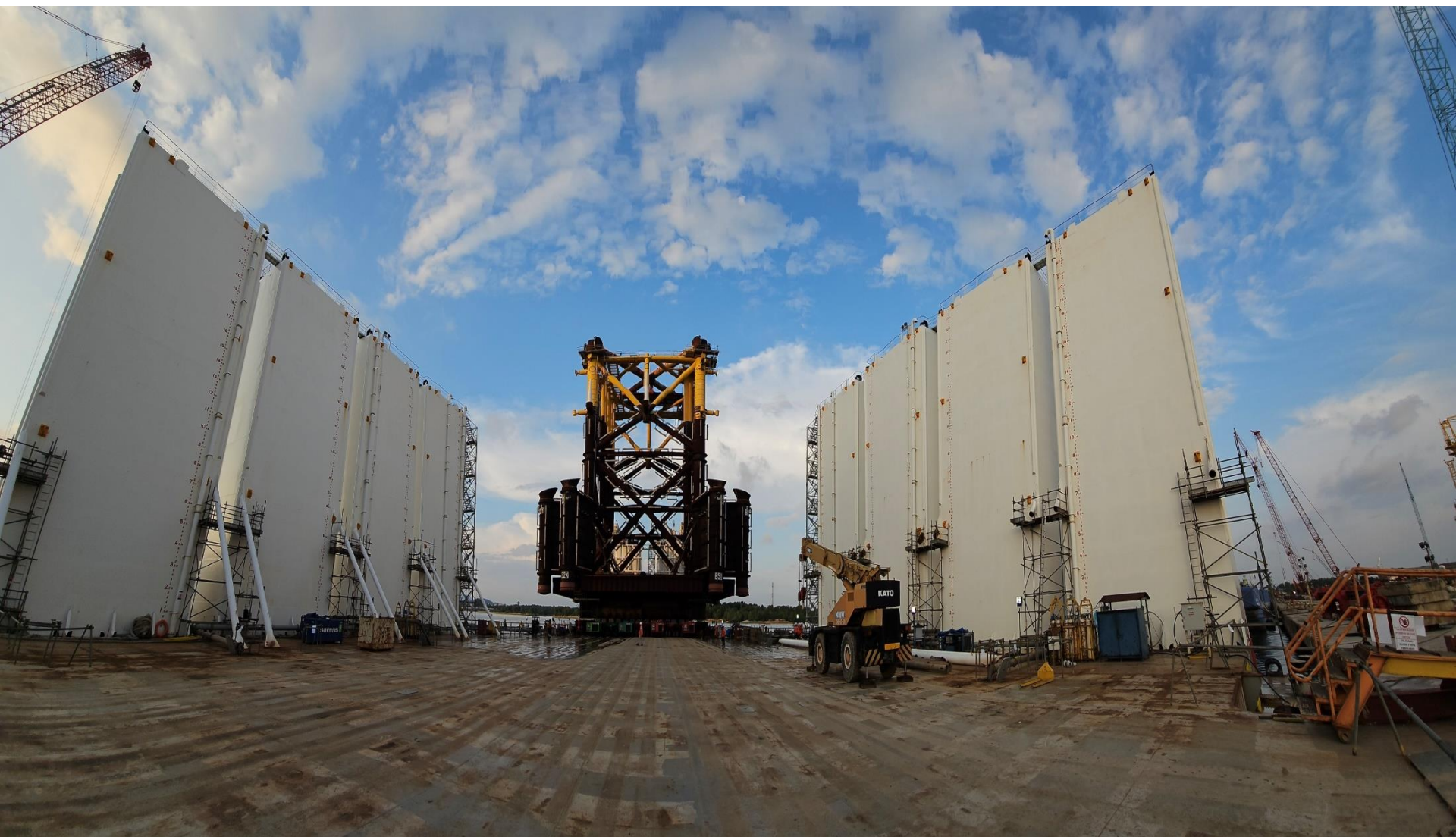
Topside transports for Harlyn Solutions
Boabarge 34 and Boabarge 36
October-December 2023
Nigg bay, Scotland

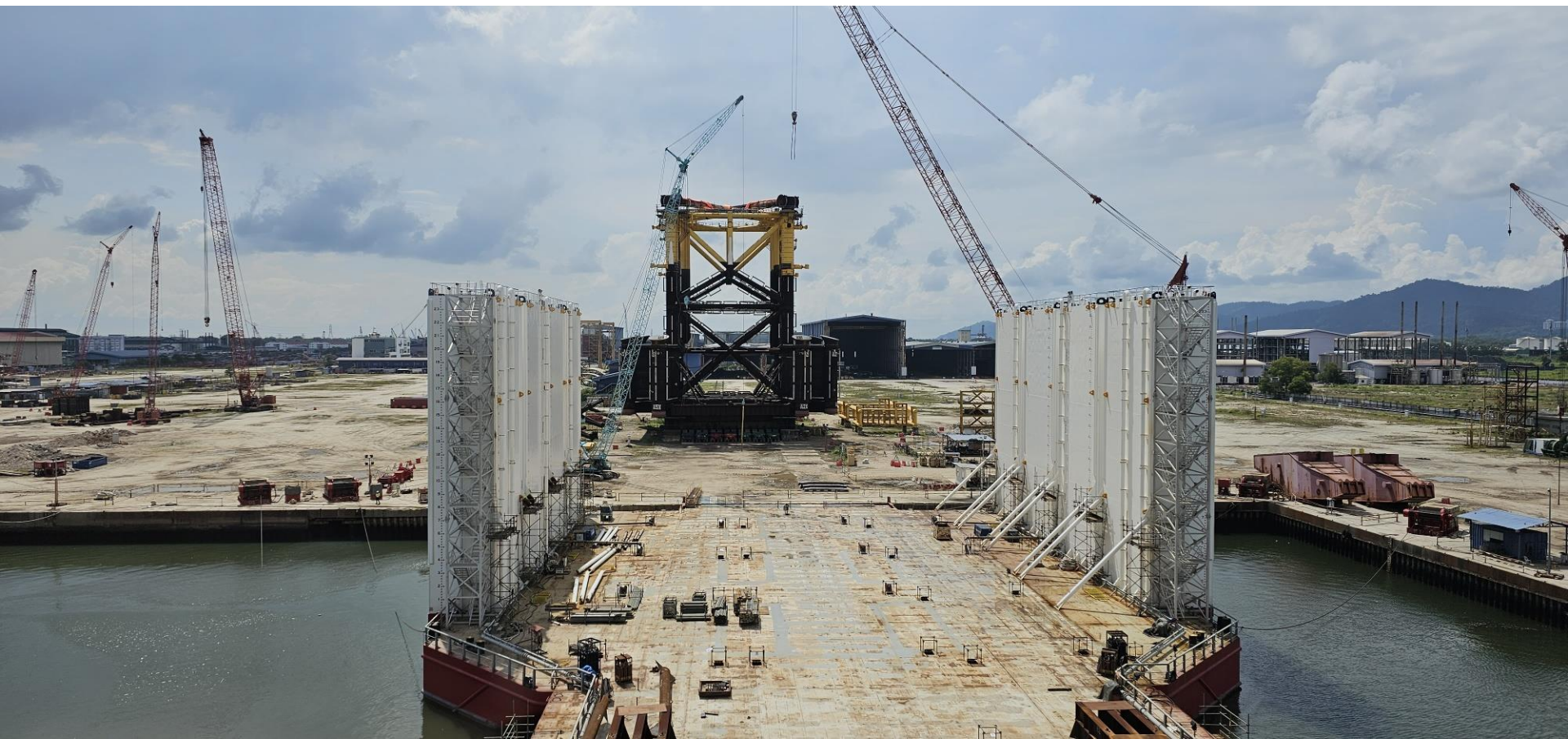
LOADING AND TRANSPORT OF TIDAL GENERATOR DUNDEE 2021

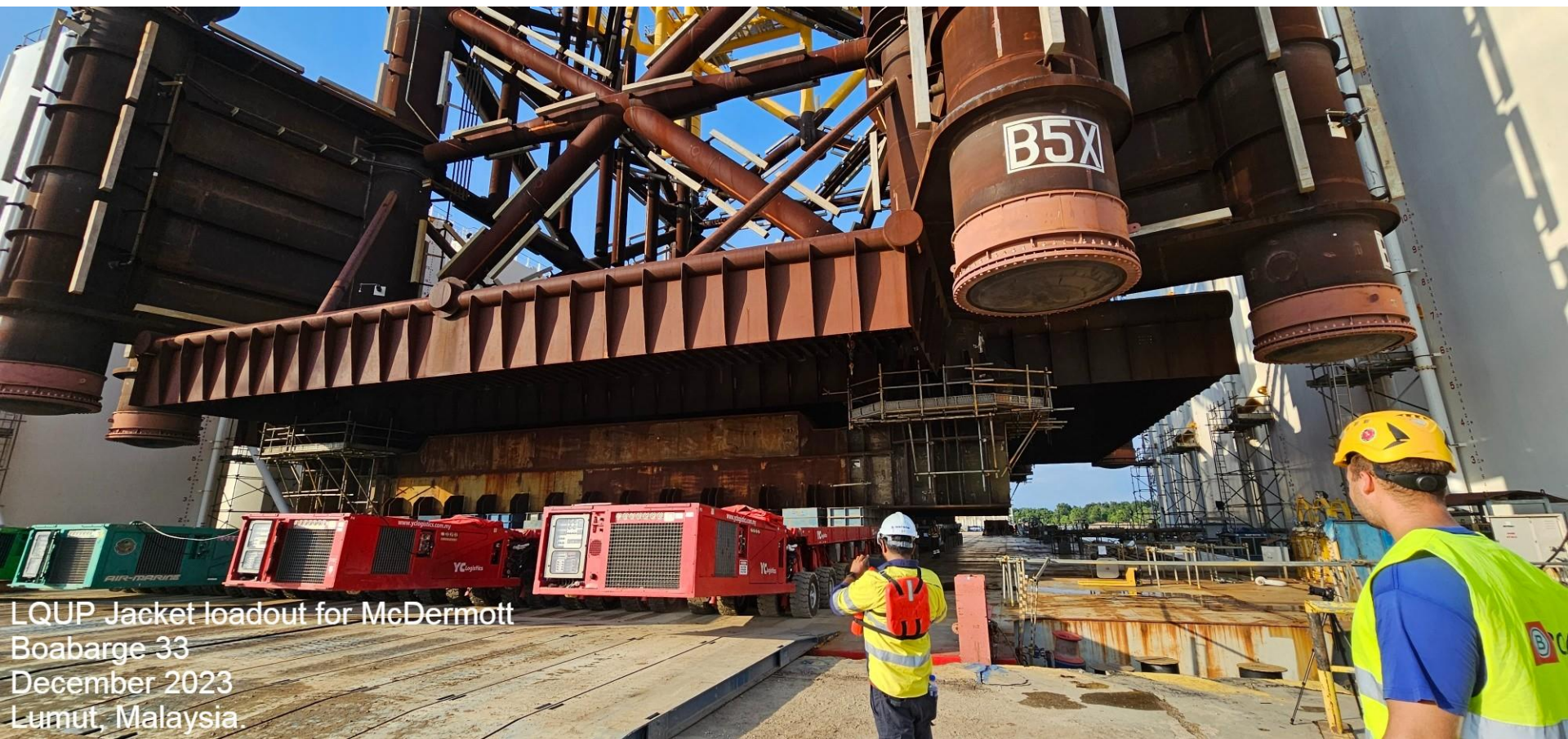


Wind farm blades transport for Deugro
Boabarge 21
Summer 2023.
Between Portugal and Sweden







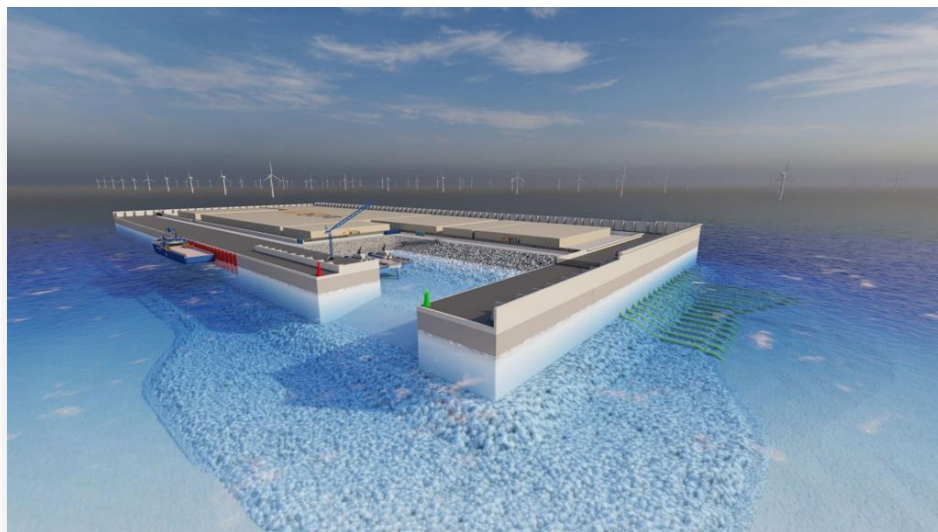


LQUP Jacket loadout for McDermott
Boabarge 33
December 2023
Lumut, Malaysia.



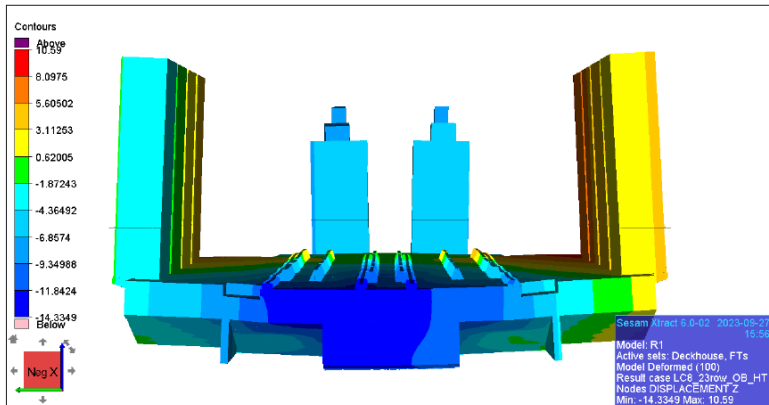
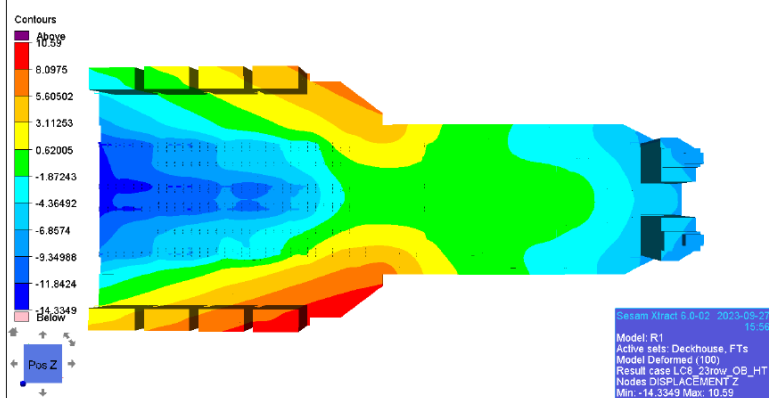
Launching of Caissons for Belgium Energy Island

- BOA has been awarded the contract for launching of 23 caissons for the world's first energy island, Princess Elisabeth Island, located in the Belgium Part of the North Sea.
- For launching of these caissons with weights up to 22.400 t, BOA will provide the semi-submersible barge, Boabarge 33, modified to manage load-outs of extreme weights over the stern.
- BOA's scope of work also includes project engineering and operational management.
- The operations will commence during spring 2024

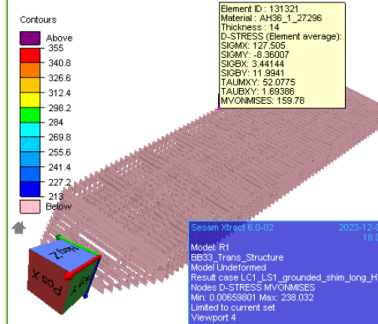
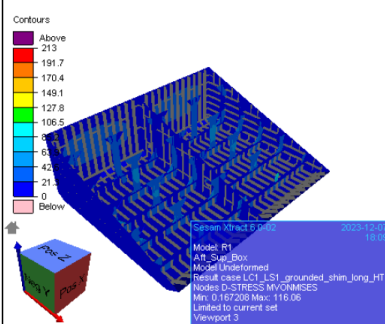
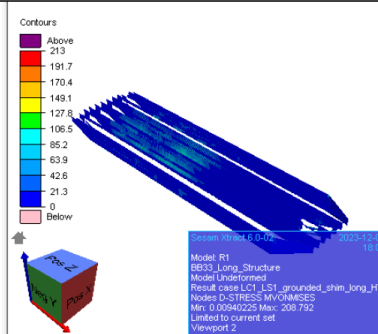
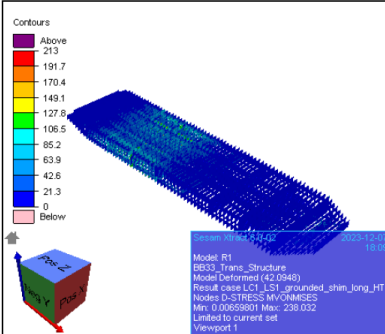
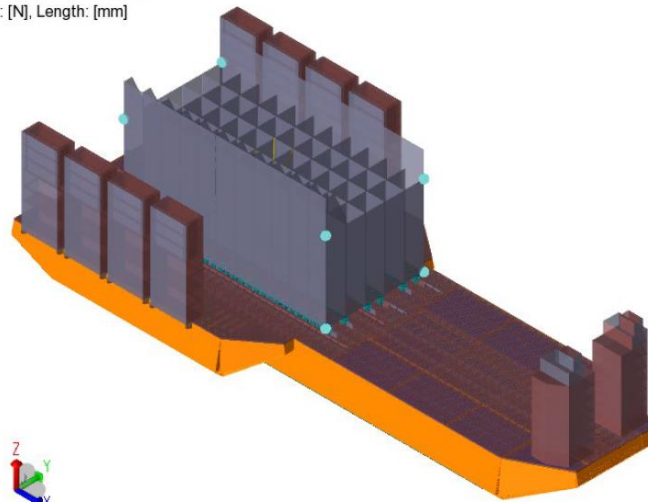




Launching of Caissons for Belgium Energy Island- Engineering



LC1_LS1_grounded_shim_long_HT
FEM Loadcase = 9
No results for this loadcase
Force: [N], Length: [mm]

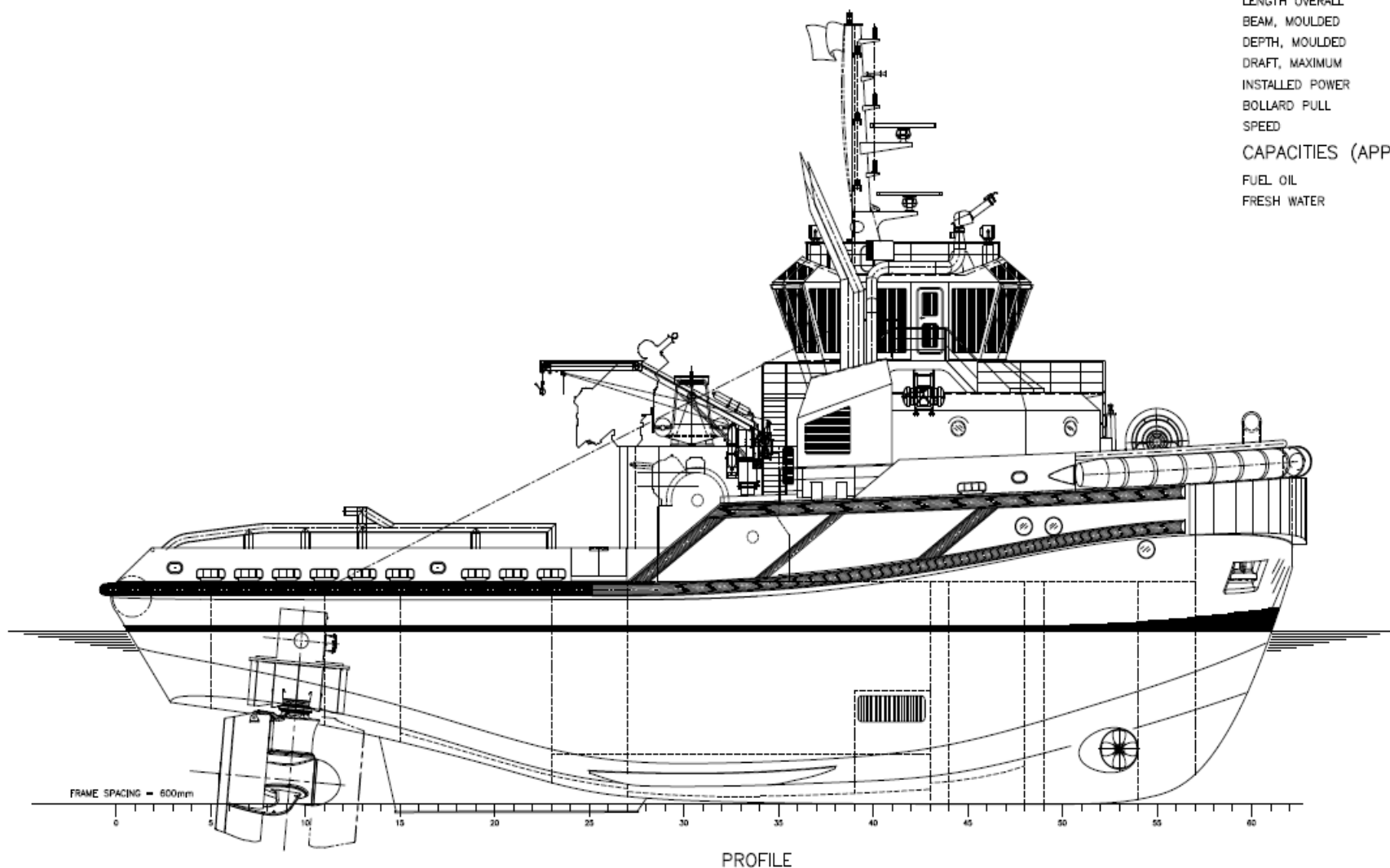


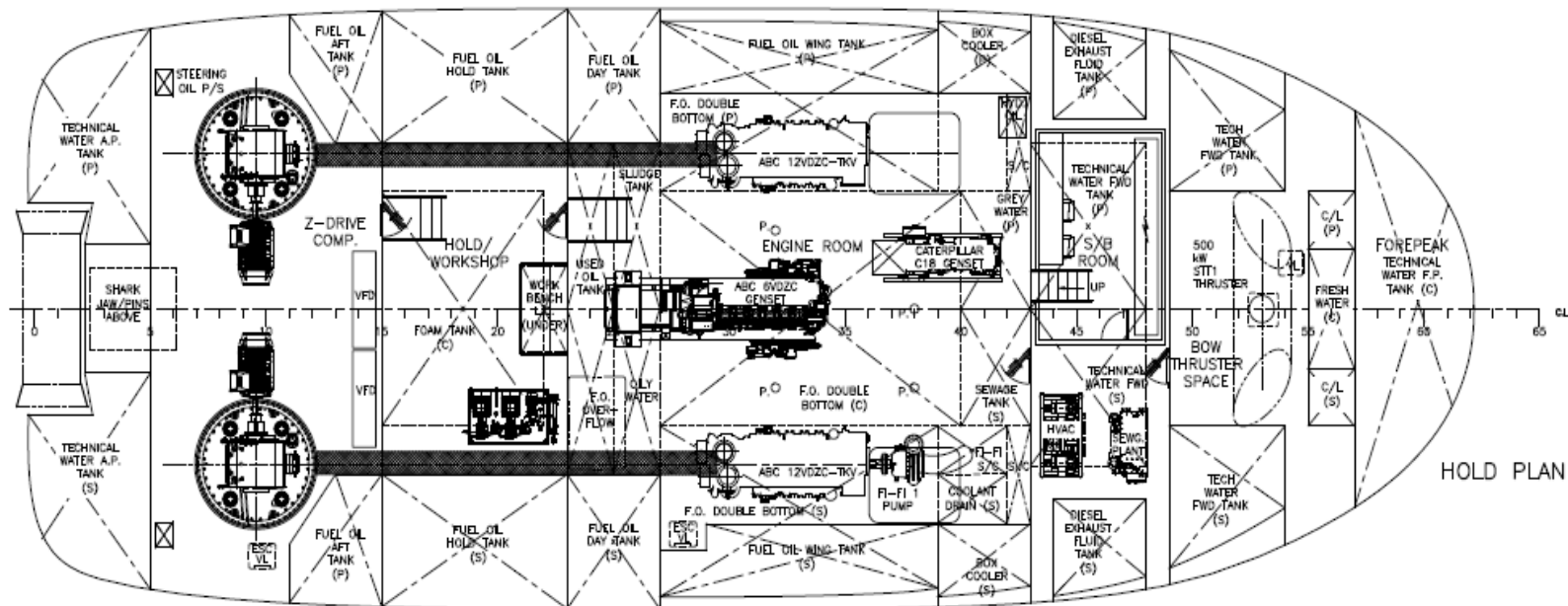
GENERAL PARTICULARS:

LENGTH OVERALL	37.5 m
BEAM, MOULDED	14.5 m
DEPTH, MOULDED	6.1 m
DRAFT, MAXIMUM	6.5 m
INSTALLED POWER	2 x 2652 kW
BOLLARD PULL	100 TONNES
SPEED	12 KNOTS

CAPACITIES (APPROX.):

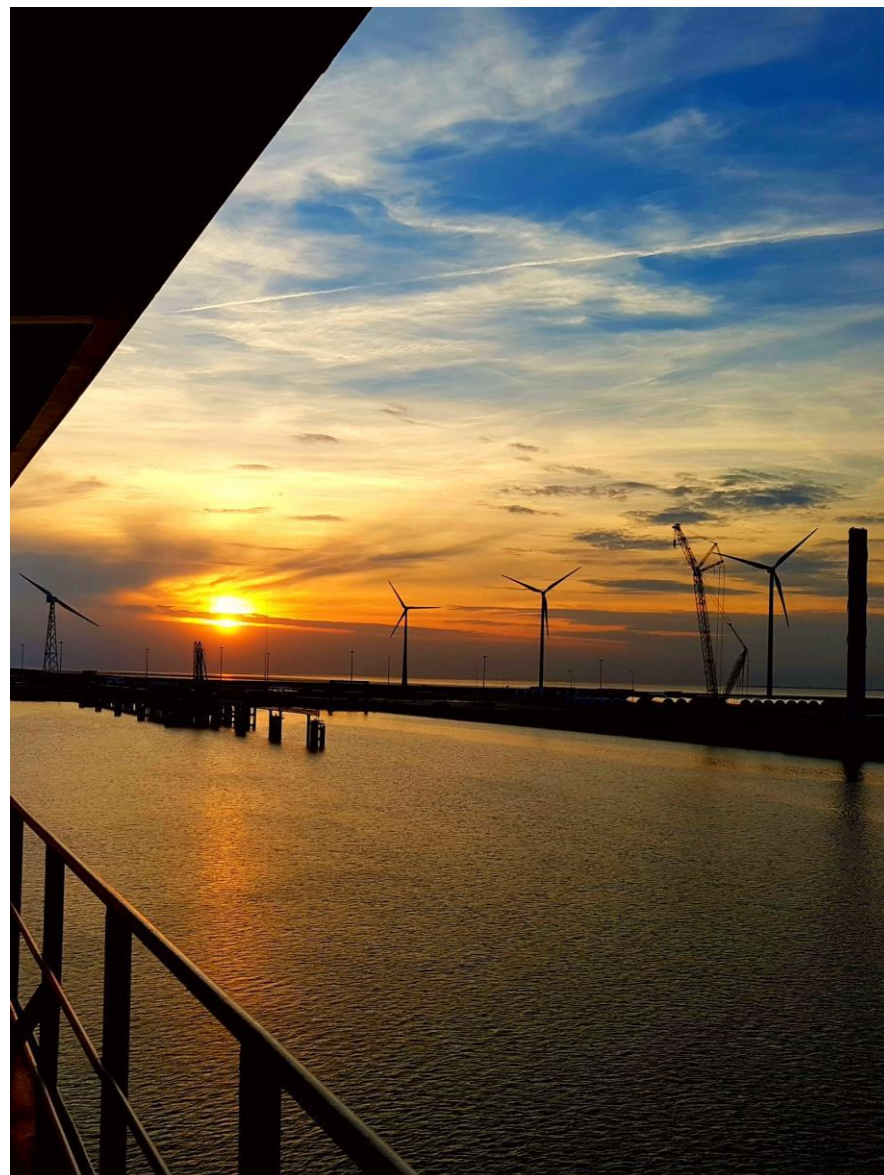
FUEL OIL	500 m³
FRESH WATER	15 m³





Future Strategy and development for floating wind

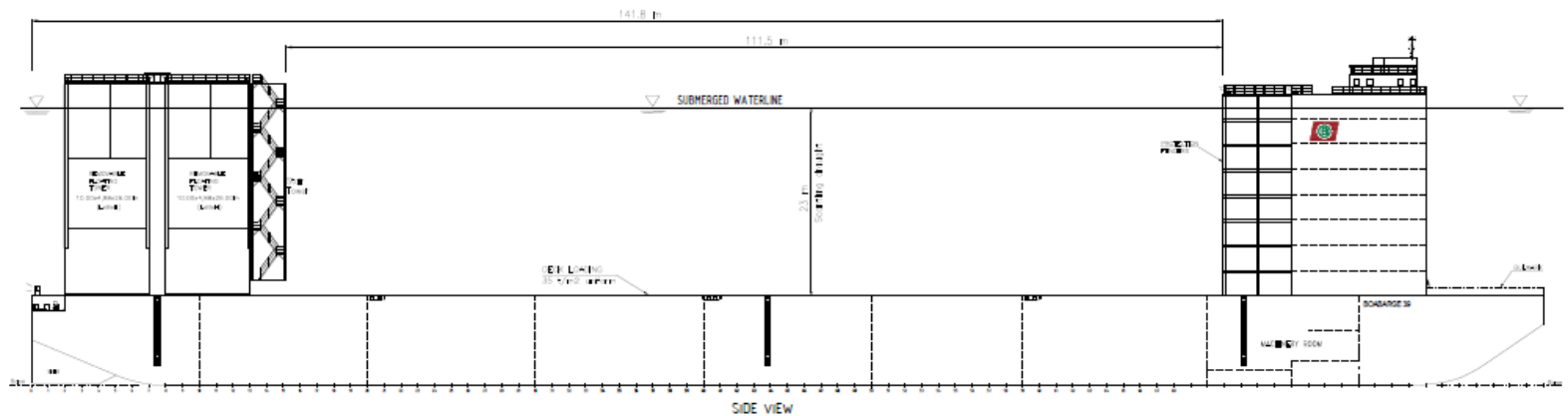
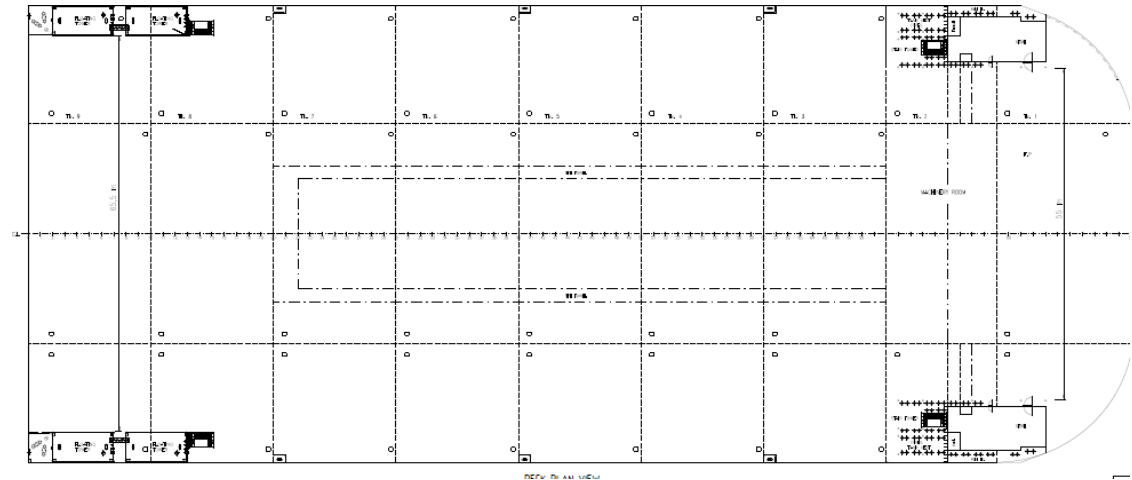
- Floating offshore wind turbines moves towards larger turbines, further offshore in deeper water, which requires larger floating sub-structures. We see an increase in inquiries requiring large modifications on existing barges in order to meet the project requirements.
- BOA is currently working on conceptual development of “next generation semi-submersible barges” with extreme weight, size and submerging capacities, which will meet the project requirements for future increase in size for floating sub-structures and to make a more efficient float-off operation for future projects.
- Further workshops, simulations and analysis are now being done optimize the more detailed design, capacity, capabilities and general arrangements.
- Plans for 1+1 barges purpose built for offshore wind.
- Preliminary dimensions and capacities
 - 166 x 73,38 x 9,15m
 - Submersing depth 22,5 m above barge deck
 - 70.000 DWT



Boabarge 39/40

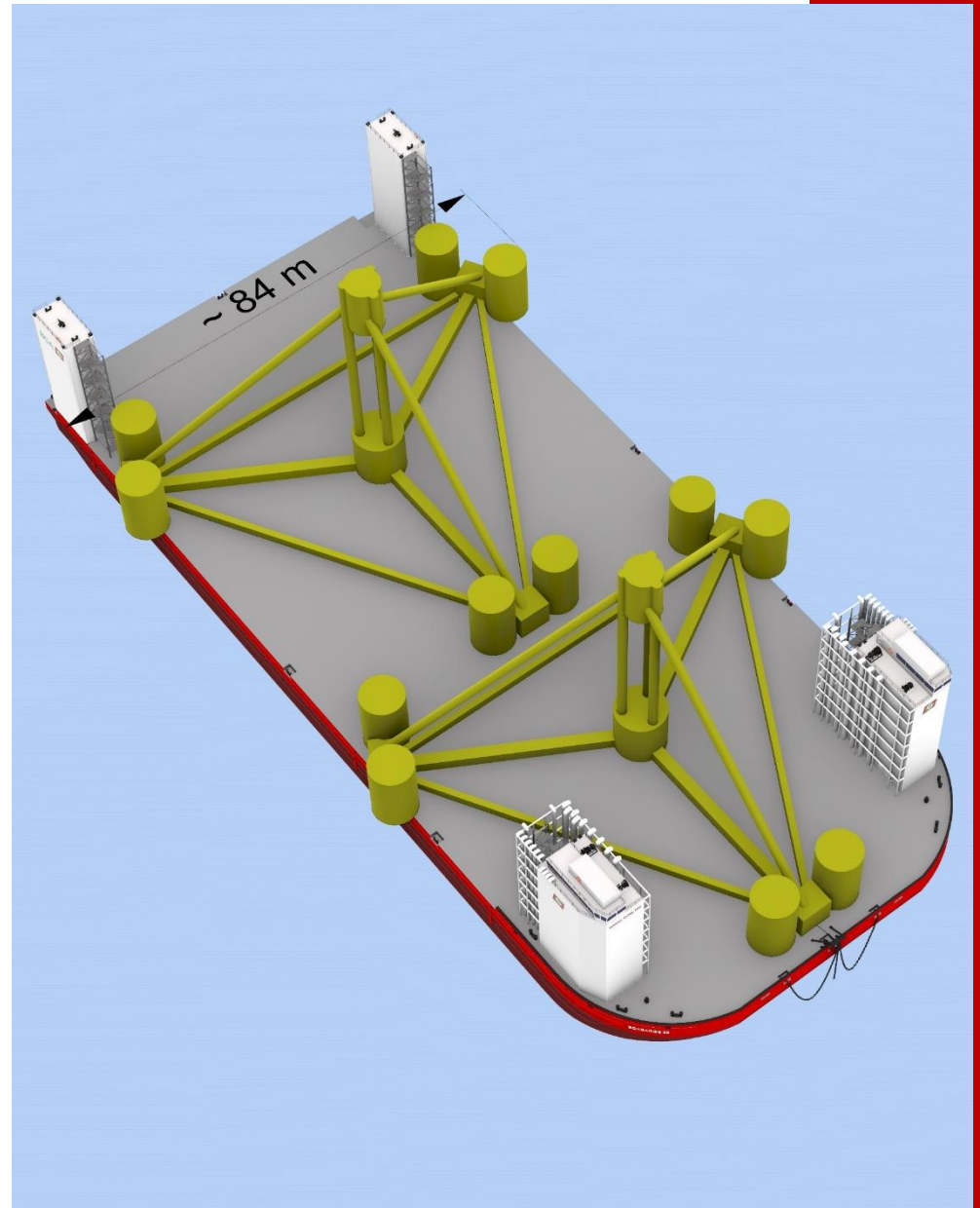
Concept Barges

Main Particulars	
Lenght	166.0 m
Breadth moulded	73.38 m
Depth moulded	9.15 m
Capacities	
Submerging depth (water ab. Main deck)	22.5 m
Deadweight approx.:	70.000 t
Deck strenght	35 t/m2



Future Strategy and development for floating wind

- BOA is currently working on conceptual development of “next generation semi-submersible barges” with extreme weight, size and submerging capacities, which will meet the project requirements for future increase in size for floating sub-structures and to make a more efficient float-off operation for future projects.
- Plans for 1+1 barges purpose built for offshore wind.
- Targeting selection of shipyard within 2024 with first barge in operation in 2026.
- Preliminary dimensions and capacities
 - 166 x 73,38 x 9,15m
 - Submersing depth 22.5 m above barge deck
 - Approx 75.000 DWT





Boabarge 39/40

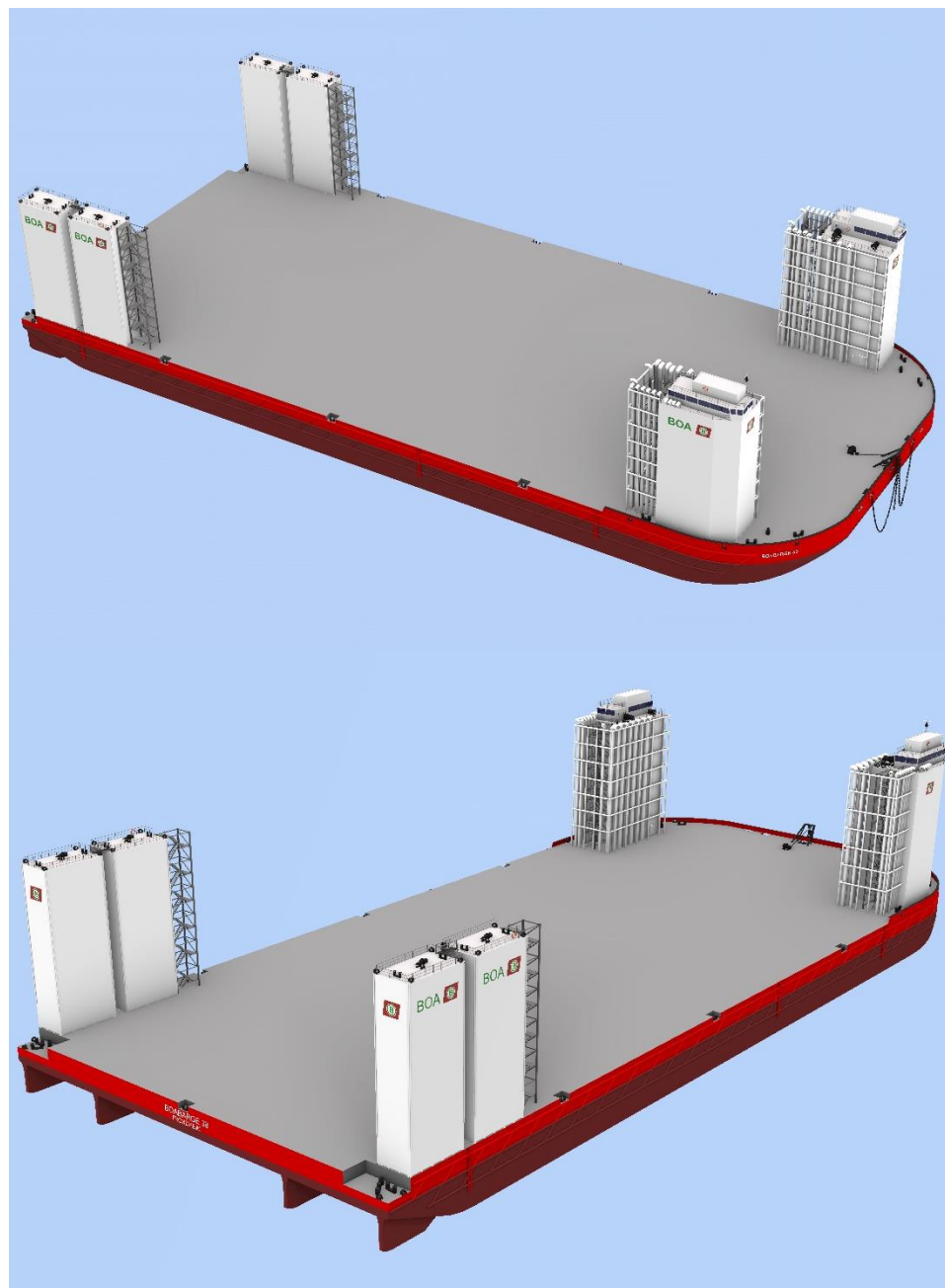
Concept Barges

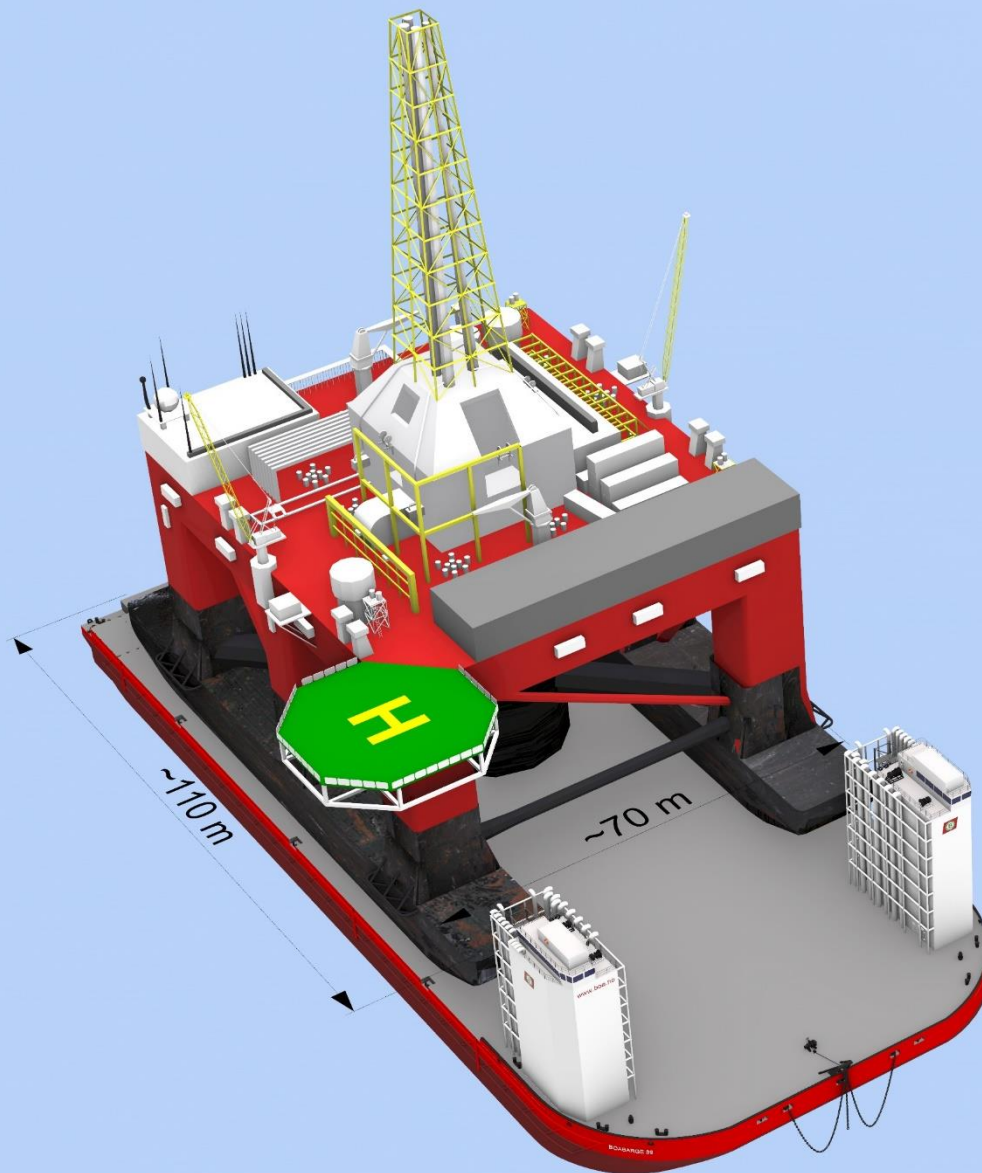
Main Particulars

Lenght	166.0 m
Breadth moulded	73.38 m
Depth moulded	9.15 m

Capacities

Submerging depth (water ab. Main deck)	22.5 m
Deadweight approx.:	75.000 t
Deck strenght	35 t/m2
Ballast pump capacity	20.000 m3/h
4 removable floatation towers	
Hybrid operation battery/generators/ shore power	

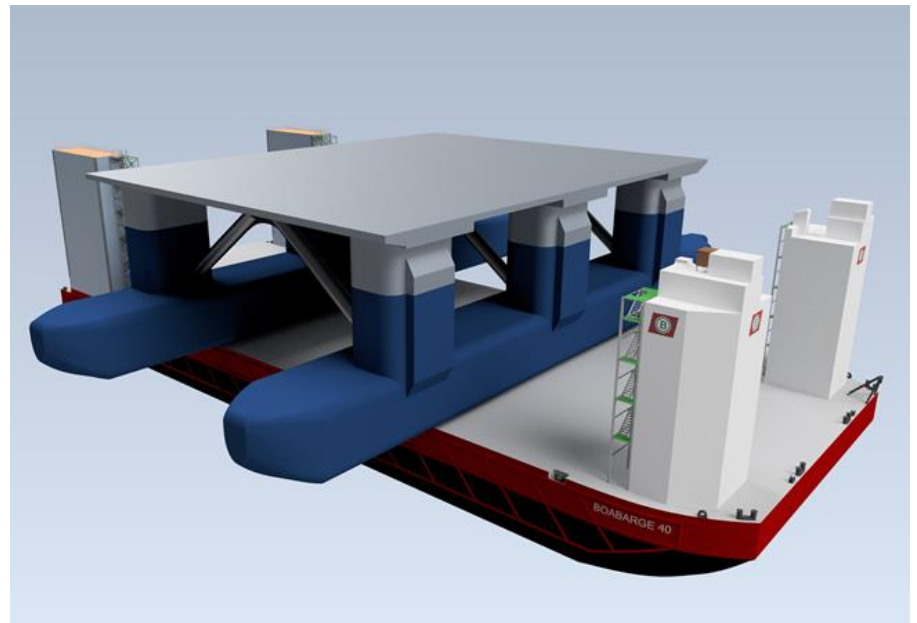
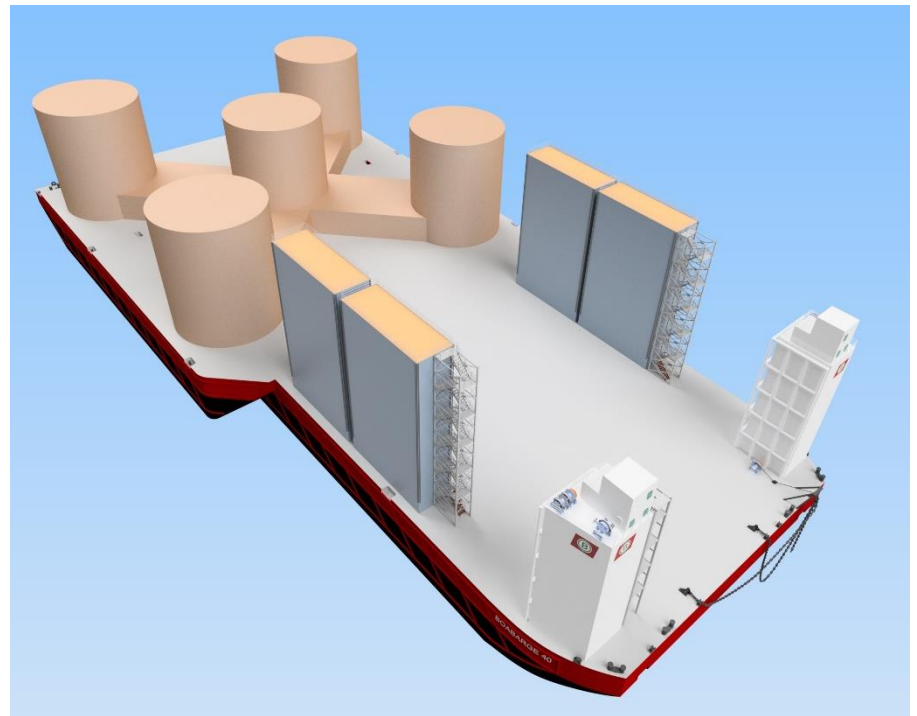
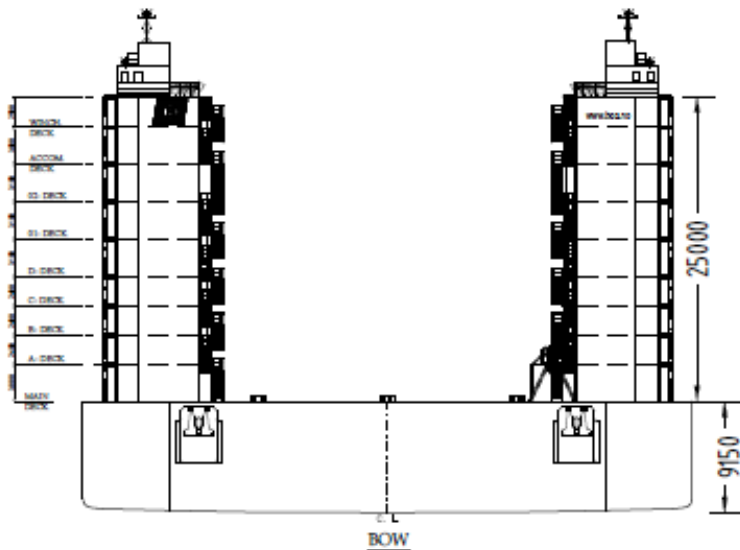




Boabarge 39/40

Concept Barges

- BOA are currently working on conceptual development of 2 “next generation semi-submersible barges” with extreme weight and submerging capacities.
- Boabarge 39 and 40 can be designed and optimized to meet your project operational requirements





The New Barge can fit
The White House
-in all its splendor



Thank you!

Our deepest gratitude to:

- Koteng Holding AS – Ivar Koteng
- Johs. J. Syltern AS – Øystein Syltern
- Aqua Seaworks AS – Arne Magnar Guttelvik
- Stjern Entreprenør AS – Helge Stjern / Siri Stjern
- Kastor Invest AS – Bernt / John Thoresen
- L.K. Holding AS – Leif Krogstad
- Brevik Shipping AS – Trond Kittelsen
- ONS Konsulenttenester – Oddvar Sørtømme
- Toralwi AS – Tor Widing
- Trond A. Kittelsen AS
- Trond Stavne

Without you, this would not have been possible!

Together, we made it!

