

Maritime Holland



Special

Inland Shipping

Werkendam
Kabanbay Batyr
Bacchus

Khalid Tachi
Expertise and innovation
Electric propulsion

KABANBAY BATYR

© Reprinted from Maritime Holland | No. 3 May 2018
www.maritimeholland.com | Publisher: Navingo BV | www.navigo.com

Shipyard De Hoop's ASD and harbour tugs ready for logistical offshore challenge



Photo by Huib Trommel

The Lobith facilities of Shipyard De Hoop have completed the first two shallow draught ASD tugs, named *Kabanbay Batyr* and *Karasay Batyr*, for Caspian Offshore Constructions (COC) of Kazakhstan. With the handover of yard number 481 and 482, De Hoop commenced the delivery of a series of six tugs to this client. The series are of two different (De Hoop in-house) custom ice-classed designs and comprise four larger and two smaller vessels.

This first and second vessel were handed over on completion of very successful sea/river trials at the end of March, respectively mid-April, after which they immediately began their maiden trips by sea, in the direction of Kazakhstan. In succession to this, the remaining four tugboats will be delivered consecutively, at regular intervals, with the final handover in June 2018.

Shipyard De Hoop's relationship with COC already dates back to 2006, when they built their first shallow-draught tugs, *Iskander* and *Alpamys*, also intended for the Caspian Sea and Kazakhstan. Being a satisfied client and following up on a previous successful collaboration, COC came back to De Hoop with the implementation of the integrated Future Growth Project / Wellhead Pressure Man-

agement Project (FGP-WPMP) - designed to further increase total daily production from the Tengiz reservoir and maximise the ultimate recovery of resources. Yet again, the knowledge and experience of the yard was called upon to develop custom designs dedicated to this specific project, with its complex and comprehensive logistics.

Kabanbay Batyr and *Karasay Batyr* are the first of the four larger tugs (29.15 x 10.73 metres), featuring azimuthing stern drive propulsion units and a bollard pull of 42 tonnes. Their primary task is to assist with the 'straight-line' transport of components and supporting equipment to the Tengiz Oilfield. The designs, again, are characterised by a special hull with a shallow draught and large diameter propellers.

Kazakh warriors

Like *Kabanbay Batyr* and *Karasay Batyr*, all six vessels are named after famous Kazakh warriors. 'Batyr' is an honorific term, meaning 'brave warrior' in the Kazakh language and all vessel names are derived from warriors that played a major role in liberating and defending the Kazakh Empire and its people. The Batyrs were a particular social stratum, only dealing with military affairs - employment in other business was considered a disgrace. The profession of Batyr passed down through the generations, from father to son.

The combat challenge

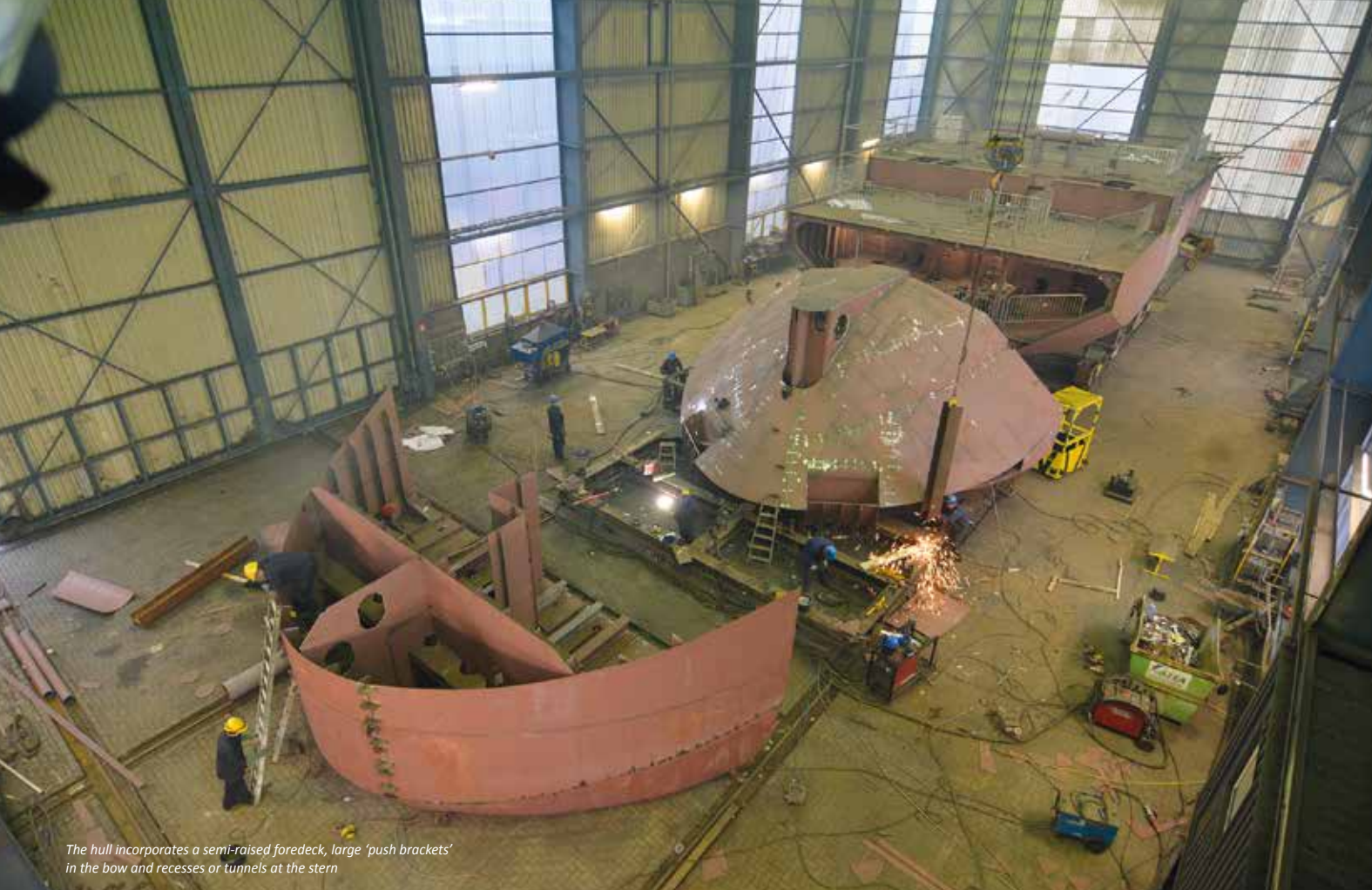
The order for six tugboats was granted to Shipyard De Hoop last year, after which the design, engineering and construction had to start immediately, due to the very short lead-time. The tugs are intended for the TCO (Tengizchevroil, an amalgamation of Tengiz Chevron Oil) project of COC for the

further development of the Tengiz Oilfield. The tugs will primarily be tasked to assist with the transportation of offshore platform components, barges and vessels, along a 75 kilometres long channel - through the shallow waters of the Caspian Sea - to the offloading facilities at Prorva. They will provide further support inside the offloading facility, with other port-related work, to ensure all cargo will be delivered in a safe and efficient way. Due to the special requirements for operating in the CaTRo (Cargo Transportation Route) channel and at the offloading facilities in Prorva, Dutch offshore tycoons, Van Oord and Blue Water Shipping, play a prominent role in providing material and equipment to the consortium. Assisting in the transportation of approximately 250 modules in total, with an average footprint of 30 x 30 metres, the tugs are a vital part of the entire logistical set-up in the CaTRo and at Prorva.

The briefing

The newly designed *Kabanbay Batyr* and her sisters, are, in most respects, derived from *Iskander* and *Alpamys*, but with a redesigned hull shape and more powerful machinery. The heavily built hull incorporates a semi-raised foredeck, large 'push brackets' in the bow and recesses or tunnels at the stern to accept the azimuthing propellers in their 360-degree rotating nozzles.

42 TONNES BOLLARD
PULL, OPERATIONAL
DRAUGHT:
2.80 METRES



The hull incorporates a semi-raised foredeck, large 'push brackets' in the bow and recesses or tunnels at the stern

With this design, Shipyard De Hoop has focused on developing reliable and economic vessels, with a high level of comfort for the crew, yet low in OPERating EXPenses (OPEX). In this series, De Hoop's knowledge and experience of luxury cruise vessels is reflected in the high standard of accommodation, including low noise and vibration levels to enhance the comfort of the crew. As a result of the design of the vessel and its propulsion configuration, in combination with a sophisticated insulation (floating interior!) and climate control system, pleasantly low sound and high comfort levels are achieved.

Kabanbay Batyr is a shallow draught ASD (Azimuth Stern Drive) tug configuration, characterised by a special hull, with a shallow draught and large diameter propellers. The propulsion system, the ship's hull (shape) and the arrangement of the propulsion system in the ship are the main influencing factors on the available bollard pull. Whilst the hull design has a mere draught of 2.80 metres and a requirement for two 2.20 metres diameter propellers, the use of nozzles, partially recessed in the ship's hull, was inevitable. The requirement for a high manoeuvrability dictated to the choice of an

azimuthing Z-drive configuration with a fixed pitch propeller, matching the specific engine power and shaft speed of the Mitsubishi engines. This well-balanced configuration led to the impressive bollard pull of 42 tonnes, required to push pontoons through the transportation route.

The shining armour

Kabanbay Batyr boasts a comprehensive suite of deck equipment, as is to be expected and is appropriate for a tug of this calibre. The foredeck houses one Kraaijeveld hydraulically driven combined anchor and mooring winch, each with a drum for cable/wire. In addition, there are two barge-coupling winches, one on each side against the bulwark, which are also supplied by Kraaijeveld. Further mooring and tow/push equipment on foredeck consists of a double bollard on each side, just aft of the barge

coupling winches, and a 15 tonnes crucifix bit at the bow.

The entire 80 square metres aft work deck has the usual protective wooden planking and features mooring bollards, a set of towing pins and a line-handling fork at the stern. A hydraulically driven, twin-drum Kraaijeveld winch with a 70 tonnes brake holding load, is mounted immediately aft of the superstructure, with a 45 tonnes crucifix behind. The towing drums - located on the vessel's centreline - carry 700 metres of 38 millimetres diameter steel wire rope and are equipped with spooling gear. Both drums can achieve a line pull of 40 tonnes at 10 metres per minute on the first wire layer. A Mampaey quick-release towing hook is fitted adjacent to the winch, for secondary use.

Another item of deck equipment, particularly important in this type of vessel, is a powerful deck crane. On starboard side, next to the twin-drum winch, a Sormec fully hydraulic FB-series marine crane, with a capacity of two metrical tons at an outreach of ten metres, is provided. This foldable knuckle boom crane has a telescopically extendable boom.

WHEN THE GOING GETS TOUGH, DUTCH OFFSHORE TYCOONS GET GOING



The required bollard pull and manoeuvrability dictated an azimuthing Z-drive configuration with a propeller in a nozzle

To meet the safety requirements, two inflatable life rafts are provided - one on port and one on starboard side. The rafts are gravity launched and stored in racks next to the wheelhouse. A vessel of this type and size does not require a SOLAS/IMO Man-Overboard-Boat (MOB), however, on a foundation partially above the towing winches, a DSB Semi-rigid Inflatable Rescue / MOB boat, by Survitec, is added to the lifesaving equipment.

The tough warrior heart

Due to the comparatively large beam of the vessel, the engine room is a relatively spacious compartment. Although the height

is slightly restricted, because of the shallow draught and the small hull depth, most of the engine room has ample headroom. All engines and equipment are easily accessible for maintenance and repairs.

The propulsion system of the vessel consists of two Mitsubishi S16R-MPTAW-2 main diesel engines, supplied by Machinefabriek G. Olthof, providing an output of 1380kW each at 1650rpm. The engines directly drive two Schottel SRP- 360FP rudder propellers with a propeller in a nozzle. The thrusters are slightly recessed, limiting the minimum operational draught to only 2.80 metres. This brings the maximum 'free sailing'

speed of the vessel to 12.8 knots, while the economical speed of the vessel lies just above ten knots - greatly exceeding the six or seven knots maximum on competing ships. Furthermore, the starboard side main engine has an additional clutch, connecting the forward end of the diesel to a hydraulic pump. This pump feeds the hydraulic system of the twin-drum Kraaijeveld winch. Two Sisu 49 CTAG (C0201) diesel engine powered alternators supply electrical power for the vessel, each providing 116kW at 1500rpm. The generator assemblies have been provided by Veth, while Droste Elektro are responsible for the complete electrical installation, including the design installation of all switchboards, drives, converters, the power management system and the alarm/detection systems.

A settlement for the warriors

The entire accommodation is fully heated and air-conditioned, to meet the demanding climate conditions in the environment of Kazakhstan and the Caspian Sea. The wheelhouse, the highest accommodation level, is equipped with a single central control position, with all of the engine and propulsion controls and instruments to hand. The Alphanon navigation and communication package installed complies with the requirements of GMDSS Area 3. In the portside aft corner of the wheelhouse is the



The propulsion system consists of two 1380kW engines directly driving rudder propellers and a hydraulic pump on SB



The main engines directly drive two rudder propellers



Two 116kW generator assemblies supply electrical power for the vessel

radio console, while the chart table is found to starboard side of centreline, above the (central) stairs to lower decks.

Below the bridge are two further accommodation levels, with provisions for nine persons in six cabins, including the usual domestic facilities. The interior is designed to the current standards in the 24/7 offshore industries. Each cabin has satellite television, sanitary facilities according to ILO regulations and individually controlled air-conditioning/heating. The crew accommodation is divided over three twin berth cabins and 3 single berth cabins - the latter for the captain, chief engineer and one additional officer.

Additionally, the superstructure and below-deck accommodation level, feature a separate changing/shower room with separate sanitary spaces, laundry, galley, mess room and cooled/dry storages.

The little sisters

As stated above, the COC-series of tugboats from De Hoop comprises six vessels: *Kabanbay Batyr* and *Karasay Batyr*, to be followed later by *Bogenbay Batyr* and *Raiymbek Batyr*, are of the larger designs. *Naurzybay Batyr* and *Otegen Batyr*, (yard number 485 and 486) are of the smaller type. The two smaller vessels (24.80 x 10.73 metres) also accommodate azimuthing stern drives, but they provide 1040kW each, resulting in a bollard pull of 30 tonnes. To aid manoeuvrability, a Schottel STT 60FP bow thruster of 70kW is fitted in the short rounded stem, requiring a long transverse tube. Both *Naurzybay Batyr* and *Otegen Batyr* were launched on the 17th of April 2018 for final-

ising their outfitting, after which they were successfully tested in the Eems canal.

They will be assigned as harbour tugs and will predominantly be assisting during precise manoeuvring actions. Whilst the bigger

sisters each provide night accommodation for a total of nine crewmembers, the harbour tugs can accommodate ten people. In contrast with the four larger ships that are being built at the De Hoop headquarters in Lobith, the smaller two are erected at their



Particularly important for this vessel is the foldable knuckle boom deck crane on starboard side



The wheelhouse is equipped with a single central control position, with all controls and instruments to hand

Foxhol facilities. At this location Alewijnse Marine supported Droste Elektro with the complete electrical installation on-board. Interestingly, yard number 485 and 486 are the smallest vessels ever built in the history of Shipyards De Hoop.

Shipyards De Hoop

Even in the years following the recession, Shipyards De Hoop was facing rough seas, as a result of the global recession. However,

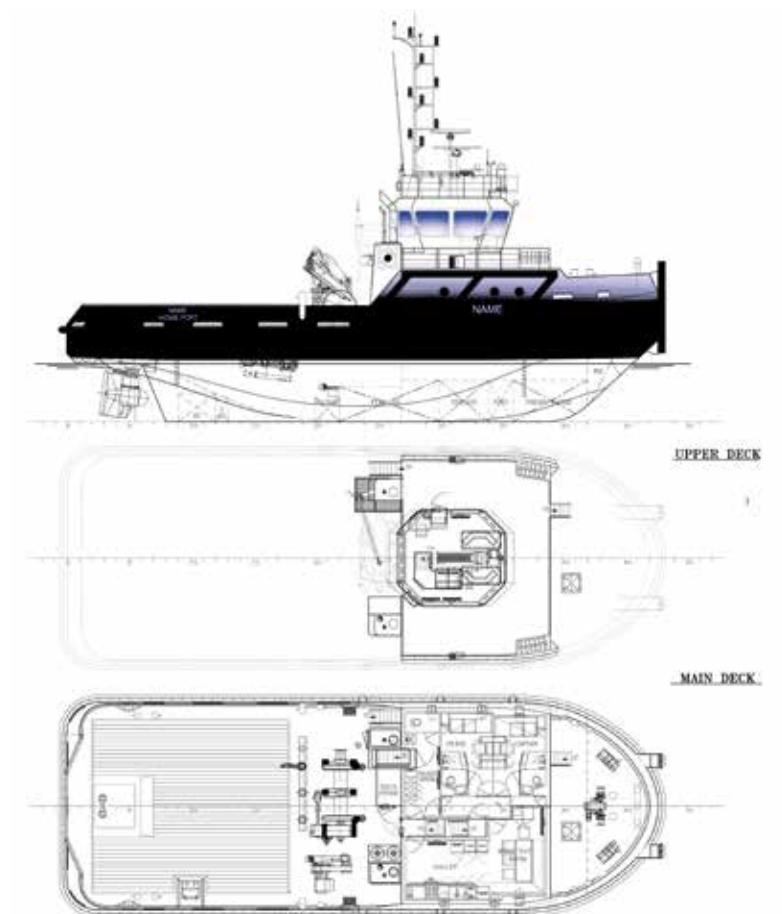
er, like other Dutch shipyards, De Hoop is renowned for their flexibility, knowledge and skills - particularly in specialist vessels

and niche markets. These characteristics were confirmed with this order from the COC/Blue Water/van Oord consortium. In combination with the delivery of Lüftner's river cruiser, *Amadeus Queen*, the shipyard has had successful reprise up to now. Moreover, in the years 2018 and 2019, Shipyards De Hoop anticipates an impressive number of new vessels to be built and conversions to be performed - including an innovative expedition cruise vessel for Celebrity Cruises, as well as the redesign and conversion of two hybrid Patrol Vessels / FSIVs (Fast Supply & Intervention Vessels). Proof indeed of the resilience, versatility and flexibility of the Shipyards in serving niche markets.

Tom Oomkens

All the photos by Harts Productions

Principal particulars	
Builder	Shipyards De Hoop, Lobith, the Netherlands
Owner	Caspian Offshore Construction, Almaty, Republic of Kazakhstan
Length oa	29.15 m
Length mld	26.86 m
Length bpp	27.42 m
Beam oa	10.73 m
Beam mld	10.00 m
Depth	4.60 m
Draught des	2.80 m
GT	336 GT
Performance	
Bollard pull	42 t
Speed	12.8 kts
Tank capacities	
Fuel oil	80 m ³
Fresh water	25 m ³
Sewage	25 m ³



Subcontractors and suppliers of equipment fitted on board the *Kabanbay Batyr* & *Karasay Batyr*, YN 481 & 482

Alewijnse Noord, Drachten: electrical installation on-board 485 & 486 in collaboration with **Droste Elektro**; **Alphatron Marine**, Rotterdam: navigation, communication, bridge equipment; **Ampak**, Leerdam: anodes; **Atlas Copco Netherlands**, Zwijndrecht: work air compressor; **Anko Piping**, Dordrecht: piping installation for tank ventilation, sounding systems, ballast system, bilge system, exhaust systems, fuel systems and hydraulic system; **Axces**, Tholen: engine exhaust system; **Bureau Veritas**, Rotterdam: classification; **Damen Marine Components**, Hardinxveld-Giessendam: bottom wells (thruster trunk); **Datema Nautical Safety**, Delfzijl: fire fighting and safety equipment; **De Boer Staal**, Uitgeest: steel plating and profiles; **Delade Interieurbouw**, Doetinchem: furniture and upholstery; **Droste Elektro**, Tolkamer: complete electrical installation, main switchboard; **Eriks-Econosto**, Rotterdam: valves and couplings, air whistle, air vessel, mechanical remote controls, temperature and tank sounding system; **Exalto**, Hardinxveld-Giessendam: window wipers; **Famos**, Poland: modular interior walls, ceilings, wooden doors, doorframes, doorsills; **GEA Westfalia Separator Nederland**, Cuijk: fuel oil separator; **Global Marine Decking**, Brakel: rough flooring; **H.K. van Wingerden & Zn**, Gorinchem: *Wigo*® windows and bottom plugs; **Heinen & Hopman**, Bunschoten: heating, ventilation, air conditioning; **Intersona**, Epe: noise and vibrations; **Machine- & Lierenfabriek C. Kraaijeveld**, Sliedrecht: anchor winches and barge coupling winches; **Machiefabriek G. Olthof**, Capelle aan den IJssel: *Mitsubishi* main engines; **Mampay Offshore Industries**, Dordrecht: quick release towing hook; **MarteQ**, Rotterdam: accommodation ladders, radar mast forward and aft; **Metos**, Deventer: cooking range, refrigerator and freezer; **Miele Nederland**, Vianen: washing machine; **Minimax**, Rotterdam: firefighting installation engine room; **Nicoverken**, Schiedam: *Blücher* piping and stainless steel outfitting material; **NRF, Nederlandse Radiatoren Fabriek**, Mill: coolers (central and box type); **Reikon**, Spijkenisse: *Azuc* pumps, *Ueberall-1* uv sterilizer; **Rensa**, Ridderkerk: hot water boilers and heaters; **Rubber Design**, Herjansdam: silencers and spark-arresters; **Rubbermagazijn.nl**, Zoetermeer: vibration damper, steel cup boards; changing room; **Schottel Nederland**, Zoetermeer: *Azimuth* propellers; **SEC Groningen**, Groningen: mooring equipment; **Sormec**, Italy: deck crane; **Survitec Group**, England: MOB and rescue boat; **Trinox**, Hardinxveld-Giessendam: steel doors, weld-in window frames; **Tuppins**, Schiedam: towing pins; **VDI Isolatie**, Ridderkerk: insulation pipeline exhaust gas, racks in stores; **Veth Propulsion**, Papendrecht: *SISU* diesel generator sets; **Wasco**, Rotterdam: sanitary equipment, bunk ladders, door hooks; **Wessels**, Germany: wheelhouse interior; **Wet Cab**, Poland: sanitary units; **Winel**, Assen: hatches; **Winteb**, Winschoten: vent caps; **Wortelboer**, Rotterdam: anchors and chain cables.