



The BAHRI ABHA is the first of six innovative newbuildings delivered in February for Bahri, formerly the National Shipping Company of Saudi Arabia (NSCSA). Constructed by ro-ro expert yard Hyundai Mipo Dockyard (HMD) in South Korea, the new fleet will replace four ageing con-ro vessels built by Kockums in Malmo, Sweden in 1983. Two of these have already been sold for recycling.

Bahri's operating profile involves a regular service from the Gulf and Red Sea to the East Coast of North America. Having concluded that they would be unable to compete for container traffic, BAHRI decided to specialize in the general cargo sector, including the heavy lift, project and ro-ro sectors, an area that was not as fiercely competitive but also strategically important. Bearing in mind recent history and the threat from across the Gulf, the Saudi Government wanted to retain a significant military sealift capability.

Danish naval architects Knud E Hansen were tasked with developing the design and contract specifications. The basic concept that Bahri wanted to achieve was not far removed from Grimaldi's con-ro ships. A large under-deck vehicle capacity combined with

a relatively limited on deck container and heavy lift intake. During the initial stages of the design, the size of the aft deckhouse garage was optimized given the required 24,000m² garage area.

This stowage area is considerably greater than on the previous generation of 248.7m long vessels which were typical 3rd generation deep-sea ro-ro vessel equipped with Jumbo quarter ramp, three main ro-ro decks and a weatherdeck mainly for up to 2,025 TEU. The new BAHRI ABHA features a lo-lo/project cargo area occupying the forward 30% of the vessel. Two side mounted 120 tonne capacity cranes gives the opportunity to carry large pieces of project cargo on the flush upperdeck (Deck 4) forward. Flush lift-away hatch covers access the forward hold. If containers are transported, 64 TEU can be stacked in the hold on Deck 3 and up to 300TEU on Deck 4.

The route which Bahri operates is not transporting so many passenger cars but rather the kind of vehicles mass produced by US based manufacturers. These include trucks, SUVs and MPVs which is why the hoistable decks are rated at 0.5t/m², greatly uprated from the decks typically used on PCTCs which are designed for normal cars. A

wide variety of construction machinery and oilfield equipment is exported by US manufacturers as well as military cargo. While Decks 2 and 3 are dimensioned for double stack container loading, this is not the most profitable kind of cargo. Bahri also transports significant volumes of breakbulk cargo both east and westbound. This includes large volumes of aluminium produced in Qatar from the port of Mesaieed to Houston and Savannah in the USA.

HULL

The advanced single skeg hullform developed by Knud E Hansen is finer than

MAIN PARTICULARS BAHRI ABHA

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|-------------|--------------------------------------|
| IMO | 9620944 |
| LOA | 225.0 |
| BEAM | 32.3 |
| DRAFT | 8.9 |
| DWT | 23,000 |
| GT | 50,714 |
| SPEED | 17 kts |
| MAIN ENGINE | Wärtsilä 6 RTflex58T |
| MCR | 12,500kW |
| CAPACITY | 364 TEU + 24,800m ² ro-ro |
| CLASS | LRS |

SHIPPAXDATABASE



BAHRI ABHA in Livorno.



the older con-ro ships but still giving an acceptable deadweight on the 8.9m operating draft. To achieve an economic 17 knots service speed, a Wärtsilä 6 cylinder RT flex58T main engine has been selected with 12,500kW output. The engine not only has the highest thermal efficiency but by virtue of the electronic control and common rail fuel injection, it has low IMO II compliant emissions.

POWER

Electricity generation on board is taken care of by a 2200kW shaft generator while at sea and by three Himsen gensets while manoeuvring and in port. Two 6H25/30 gensets with 1,500kW rating at 750 rpm and one 2,200 kW 8H25/30 unit can be operated on HFO.

Wärtsilä has also supplied the CP propeller and integrated Energopac rudder hub system for maximum efficiency. The high lift twisted leading edge flap rudder used in conjunction with the stern and bow thrusters engender the new class with the best possible manoeuvrability. This is a very important part of Bahri's strategy with their new vessels, opening new opportunities to call at small ports with very basic facilities.

Unlike other recent deepsea ro-ro ships such as Messina Line's quartet from Daewoo, the BAHRI ABHA does not require any moveable transverse bulkheads for damaged stability compliance. Despite the higher requirements

Cargo Accessibility

- Ro-ro access is via a 250t capacity MacGregor quarter ramp. While not as large or heavy as the Jumbo ramps, it is eminently fit for purpose having an 8.5m wide carriageway width, permitting two-way traffic. The ramp has an overall length of 39m plus 1.6m long end flaps. At the entrance to Deck 3, the top hinged door has a clear width of 15.5m and height of 6.8m. In typical ro-ro fashion, immediately inside of the door, fixed ramps are provided to distribute wheeled cargo to the other decks. On the starboard side, the two ramps go up to Deck 4 and down to Deck 2. Just offset to port, the engine casing is compact, not significantly intruding into the parking area. Centreline pillars provide structural support throughout all the ro-ro decks.
- When Deck 3A is locked in its hoisted position, the 6.8m high Deck 3 is dimensioned for the heaviest ro-ro cargoes, including steel and forest products or containers double stacked by fork-lift trucks. Deck 3A is lowered or raised by jigger winches and can be locked in position to give a 1.8m or 2.5m clear headroom, suitable for trucks, SUVs and MPVs, while still giving a 4.3m height below on deck 3. The hoistable deck is accessed via the ramp to Deck 4.
- The fixed ramp climbing up to Deck 4 over the main engine is 7.0m wide. The 4.8m high Deck 4 has a total area of 3,490m². Like deck

3A, hoistable Deck 4A is also operated in 16 sections by hydraulic jigger winches, affording a 1.8 or 2.2m headroom, depending on the class of vehicle being transported.

- The open weatherdeck, Deck 5, is reached via a fixed ramp on the portside. With a 3.4m clear height under the accommodation block, the deck is designed for a wide variety of wheeled and tracked cargoes up to a uniformly distributed load of 2t/m².
- Deck 2 is accessed via a 6.5m wide fixed ramp on the starboard side. The end hinged cover is directly operated by hydraulic cylinders and is 52.8m long by 6.5m wide. A 6.5m wide by 5.8m high bulkhead door, hinged to the fixed ramp, is located at the engine room bulkhead. The ramp to Deck 1 continues directly but is only 3.5m wide. The end hinged ramp cover on Deck 2 measures 33.6m long by 3.5m wide. The tanktop space has a free height of 3.8m, suitable for all kinds of wheeled ro-ro cargoes as well as breakbulk general or project cargoes.
- In total, the ro-ro decks have an area of 24,165m², equivalent to about 2,800 standard cars. The ships therefore cannot compete directly with PCTCs for large volumes of standard vehicles but are rather aimed at any general and project cargo that is uncontainerisable.