



SAN SHA 1 Hao: Purpose built ro-pax for China

Shipbuilder: **Bohai Shipbuilding Heavy Industries**
 Vessel's name: **San Sha 1 Hao**
 Owner/operator: **Sansha local government**
 Country: **China**
 Designer: **Knud E. Hansen & CS Marine**
 Country: **Denmark/China**
 Model test establishment used: **Test Basin Shanghai, China**
 Flag: **China**
 Total number of sister ships already completed (excluding ship presented): **nil**
 Total number of sister ship still on order: **nil**

SAN SHA 1 Hao is the first Ro-Pax cruiser purposely designed and built in China for the Chinese market. The vessel was constructed at Bohai Shipbuilding Heavy Industry and delivered to its owner Sansha City in Hainan Province in September. With the design of the vessel carried out by Danish designer Knud E. Hansen.

The ship is intended for the transportation of passengers and cargo for unrestricted service and will be engaged primarily in the comprehensive supply for the Xisha, Nansha and Zhongsha islands belonging to the city of Sansha.

The conventionally powered ro-ro passenger vessel is designed to transport vehicle and containers on a single cargo deck in compliance with Chinese Classification Society Rules and Chinese Flag regulations.

San Sha 1 Hao is able to carry containers, up to 20 standard trailers as well as 456 passengers and measures 122.3m long and 21m wide, the ship has a displacement of 7,800tonnes with endurance of 6,000 nautical miles. The ship is also equipped with a helicopter landing platform, which makes it convenient for maritime rescue and island patrolling.

Three medium speed, four-stroke, turbocharged, charge-air cooled marine diesel engines, each directly coupled to an AC generator fitted on common bedplate are to be provided.

The engines are designed for running on HFO and meet with DIN ISO 3046-1 for Emission Standard Tier II regulations for emissions (NOx optimised).

The two main engines are flexibly coupled to two single input, single output reduction gearboxes with reduction ratio from the main engine RPM to approx. 130 RPM on the propeller shaft. Each gear incorporates a thrust bearing.

One remote controlled integrated hydraulic clutch is fitted between each gearbox and engine for engaging and disengaging of the main engines.

The vessel has been developed with optimised work flow in mind, which will allow maximum operational efficiency including boat to boat embarkation procedures which will be required in specific islands without dedicated berthing facilities.

As compared with *Qiongsa No. 3*, the existing transport vessel for Sansha City, *San Sha 1 Hao* can sail normally against Beaufort 8 winds and remain

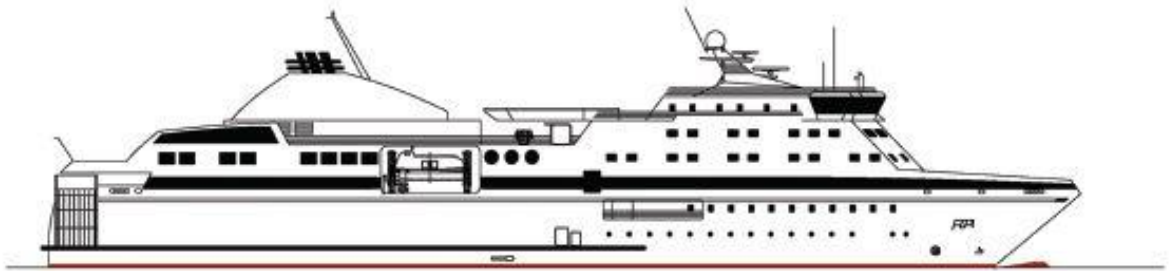
secure in the gale. The vessel is expected to shorten the cruise time from Qinglan Port in Wenchang City, Hainan Province to Yongxing Island of Sansha City from 15 hours to 10 hours.

TECHNICAL PARTICULARS

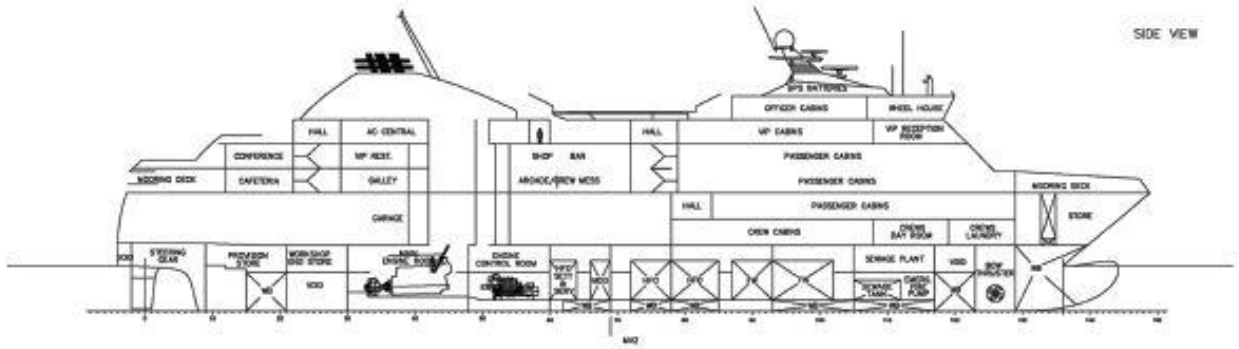
Length oa: 122.30m
 Length bp: 109.40m
 Breadth moulded: 21m
 Depth moulded
 To main deck: Deck 3-7.8m
 To upper deck: Deck 5 - 14.0m
 Draught
 Scantling: 5.40m
 Design: 5.20m
 Gross: 12,580gt
 Displacement: 7,800tonnes
 Lightweight: 5,300tonnes
 Deadweight
 Design: 2,480dwt
 Block co-efficient: 0.6 @ 5.2m
 Speed, service: 18knots at 90%MCR
 Bunkers
 Heavy oil: 700m³
 Diesel oil: 180m³
 Water ballast: 780tonnes
 Daily fuel consumption
 Main engine only: 30tonnes/day
 Auxiliaries: 4.7tonnes/day
 Classification society and notations: CCS - Ropax unrestricted voyage
 % high tensile steel used in construction: about 5% on car deck
 Heel control equipment: two sets six mooring stations, two at the forward mooring deck, two at the midship either side on deck 5 and two at the aft mooring deck of heeling tanks
 Roll stabilisation equipment: One pair of active type folding fin stabilisers
 Main engines
 Model: MAN 9L32/40 IMO Tier II
 Manufacturer: Chinese built under Licence
 Number: 2
 Type of fuel: HFO
 Output of each engine: 4,600kW x 750rpm
 Auxiliary gensets
 Number: 3
 Design: medium speed four-stroke, turbocharged, charge-air cooled
 Generator rating: Approx. 950kWe
 Engine types: MAN 5L21/31 IMO Tier II
 Engine fuel: HFO 380 cSt at 50°C
 Gearboxes
 Number: 2
 Propellers
 Material: Ni-Al-Bronze
 Number: 2
 Fixed/controllable pitch: Controllable

Diameter: 4.2m
 Diesel-driven alternators
 Number: 3 self-ventilating, self-excited, brushless type, with electronic voltage regulation, air/water cooler and sleeve bearings
 Boilers
 Number: 1 x oil fired, 1 x exhaust gas
 Output, each boiler: approx. 1,000kg steam/hour @ 7bar. And approx. 500kg steam/hour @ 7bar
 Mooring equipment
 Number: Six mooring stations, two at the forward deck, two at midship either side on deck 5 and two at the aft mooring deck
 Type: Hydraulic
 Special lifesaving equipment
 Number of each and capacity: 2 x MES, 2 x lifeboats (95 persons each)
 Containers
 Total TEU capacity
 On deck: max 40 20' containers on cargo deck
 Vehicles
 Total lane length: 350m
 Total cars: 140
 Total freight units: Trailers 20
 Doors/ramps/lifts/movable car decks
 Number of each: 1 stern ramp also acts as stern door
 Type: Quarter
 Designer: Shipyard
 Ballast control system
 Type: Remote controlled
 Complement
 Officers: 7
 Crew: 74
 Passengers
 Total: 450
 Number of cabins: 145
 Stern appendages/
 special rudders: Twin flap type
 Bow thruster
 Number: 1
 Output: sbt. 700kW
 Fire extinguishing systems
 Engine room: Water system, CO₂, portable expansion foam, portable extinguishers
 Vehicle spaces: Water fire extinguishing system, manual drencher system, portable fire extinguishers
 Cabins: Water system, automatic sprinkler, portable extinguishers
 Radars
 Number: 2
 Contract date: December 2012
 Launch/float-out date: September 2014
 Delivery date: December 2014

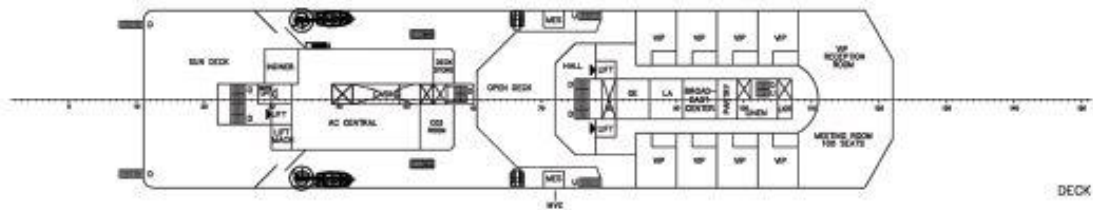
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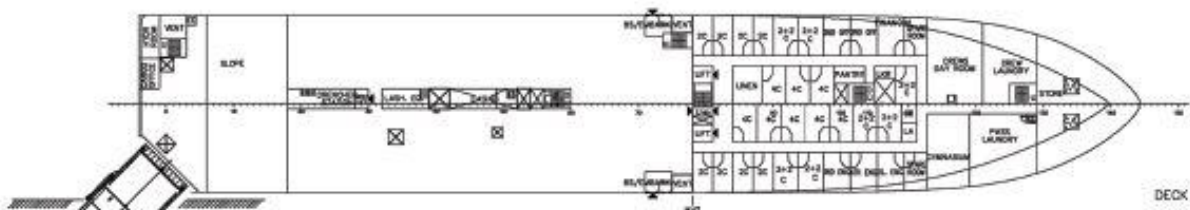
SIDE VIEW



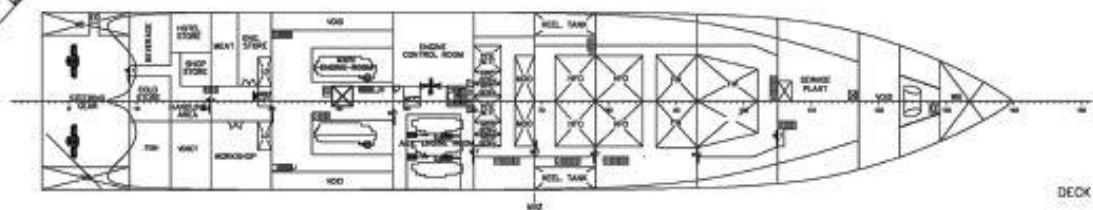
DECK 7



DECK 5



DECK 3



DECK 2