

CREATIVE DESIGN
BAOBAB NAVAL CONSULTANCY – BIURO OKRĘTOWE BAOBAB
MPV NATHALIE
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TYPE OF THE VESSEL

Multi-purpose dry cargo vessel MPV NATHALIE is flexible, user-friendly, safe and green combi-freighter equipped for carriage of containers. She has three holds: the short Hold No1 for one bay of 40ft containers, the fully box-shaped Hold No2 and the Hold No3 to carry containers of different sizes. All holds are provided with lift-away covers. Covers create one long plane when closed. Total container capacity is appr. 690TEU. The stability of the ship at scantling draft is sufficient to carry appr. 450TEU (14t, IMO, VCG=0.45H, no tweendeck onboard).

Four-tier accommodation deckhouse with the wheelhouse on the top provides attractive and practical living quarters for 15 persons + 4-berth Suez crew cabin.

A total segregation of oil tanks from the sea is an outstanding feature of the vessel: all HFO, MGFO and Lube Oil tanks are placed outside of double skin reducing the risk of oil spill.

In order to decrease building costs several measures have been adopted:

- simple and logical arrangement,
- excellent continuity of main structure which gives very good support of the accommodation deckhouse, decreases danger of vibration and eliminates costly reinforcements,
- only one frame spacing on the whole ship length,
- identical arrangement of four accommodation decks.

Other important features of the design include:

- Green design (bilge water holding tank, waste water holding tank, food waste grinder and garbage compactor).
- Anchoring/mooring equipment protected against green waters by the wave breaker.
- High degree of inbuilt safety (bilge wells in holds always accessible, no easy to damage goose-neck type vents, etc).
- Enhanced manoeuvrability.
- Enhanced damage stability (double skin in way of the Engine Room).
- User-friendly operational design (galley and provision stores at the same level, apartment of Chief Engineer on the 1st Accommodation Deck).

The main engine (MCR 5040kW) is coupled to a counter-clockwise CP propeller (4600mm) through a gearbox fitted with a power take-off for 650kW alternator. At 90% MCR and 650kW for shaft generator, the ship can achieve service speed of 15 knots at the design draught of 7.00m. Two (or three) 320kW diesel driven generators provide electrical power, and a 120 kW emergency generator supplements the electric energy output.

CLASS

The vessel will be designed and constructed acc. to the requirements and under the survey of the Germanischer Lloyd for the class:

**+ 100 A5 E EQUIPPED FOR CARRIAGE OF CONTAINERS, STRENGTHENED FOR HEAVY CARGO, G, IW, BWM, NAV-OC, ENVIRONMENTAL PASSPORT, SOLAS II-2, Reg.19 +MC E
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- “G” means inner bottom reinforced for grab operation.
 “IW” means in-water survey.
 “BWM-F” ballast water management with flow-through method.
 “NAV-OC” one man bridge for ocean and costal waters.

The vessel will meet all rules and requirements necessary to fly the Cyprus flag.

PRINCIPAL PARTICULARS

	Length overall	L _{OA}	126.30m	
	Length between perpendiculars	L _{BP}	119.00m	
	Breadth moulded	B _{mld}	19.20m	
	Depth to main deck	D	11.05m	
	Design draught	d ₁	7.00m	
	Scantling draught	d ₂	8.00m	
	Deadweight at d ₁			
	Deadweight at d ₂		9500t	
	Cargo capacity without tweendeck			
	Container capacity			

CAPACITIES OF TANKS

Contrary to many new vessels with fuel tanks in ship sides or double bottom the NATHALIE will have all oil tanks arranged according to the new revised MARPOL Annex I, Regulation 13A, in order to decrease the risk of oil spill in the case of shell damage.

Fuel will be stored in box-shaped deep fuel tanks between holds, which do not need extensive heating and are simpler for cleaning and maintenance.

The capacity of HFO storage tanks will ensure a cruising range of appr. 7,000 Nm at service speed with 10% allowance for real fuel, unpumpable rest in tanks and bad weather. Capacity of ship tanks will be sufficient to accommodate the following quantities of liquid stores:

No		Volume [m ³]	Spec. gravity	Capacity (t)
1	Heavy fuel oil (IFO 380cst)		0,980	
2	Gas oil (MGO)		0,860	
3	Lubrication oil (LO)		0,900	
4	Fresh water		1,000	
5	Ballast water		1,025	

CARGO HOLDS AND HATCH COVERS

The vessel has three holds fitted with flush container foundations:

- The short Hold No1, capacity appr. 30TEU containers.
- The long (32.20m x 15.6m x 11.5m) Hold No2 fully box-shaped with tank top strengthened for heavy cargo and grab operation. Capacity 120TEU, grain volume 5777m³ without tweendeck.

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- The long (32.20m x 15.6m x 11.5m) Hold No3 with tank top strengthened for heavy cargo and grab operation. Capacity 118TEU, grain volume appr. 5600m³ without tweendeck.
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All holds closed by lift-away hatch covers lifted and stacked by ship cranes.

Optionally holds 2 and 3 can be equipped with folding hatch covers.

Hold No2 and Hold No3 are suitable for transport of 6 rows of containers (2438 or 2500mm wide), general cargo, forest products, dry bulk, grain, steel coils and a project cargo. Permissible tank top loading is 18-20t/m².

Both holds will be provided with flush type twistlock sockets and can accommodate 5 bays of TEUs, or two bays of FEUs + one bay of TEUs, or two bays of 45ft containers.

Both holds are fitted with a complete set of loose tweendeck pontoons adjustable in two heights. Pontoons are supported by knuckable supports integrated in the side tanks.

Bilge wells are arranged in such way to be accessible when holds are loaded.

Permissible loads

	Hold No1	Hold No2	Tweendeck	Hold No3	Hatch covers	Main Deck
Uniform load (t/m ²)	-	20	3.5	20	3.5	-
Stack load TEU (t)	80	80	40	80	40	60
Stack load FEU (t)	120	120	50	120	50	80

Packed dangerous cargoes can be loaded in all holds. Provision for this includes fitting explosion-proof fans and separate CO2 fire extinguishing systems for holds and the Engine Room. All holds are mechanically ventilated with six air changes hourly.

Reefer containers can be transported only on open deck. 50 electric plugs will be fitted.

MANOEUVRING EQUIPMENT

The ship is provided with an electro-hydraulic operated rotary vane type steering gear with built-on pump units and rudder carrier and a flap type high lift rudder. The system features a maximum rudder angle of 2 x 45 degrees. Manoeuvring capacity is optimized by the installation of a CPP type bow thruster with a power output of 500 kW driven by an electric motor. This enables the vessel to track sideways and turn in its own length.

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MOORING EQUIPMENT

Two combined widlass/mooring winches will be provided fore and two mooring winches aft. All winches with electric drive and split mooring drums. Chocks and bollards arranged according to Panama Canal requirements.

LIFTING APPLIANCES

The ship will be provided with the following lifting gear:

1. Two cylinder-luffing cranes located on the ship port side, SWL40t, outreach 34m. Jibs of both cranes are well supported in stowage positions.
2. One combined crane of SWL5t for lifeboat recovery and provisions/stores handling is provided aft of the Accommodation Deckhouse.

Optionally the ship can be provided with davit of SWL 1t for provisions/stores handling and launching ramp with integrated recovery system.

3. The ship is provided with one rescue boat/liferaft davit with stored power and hydraulically driven slewing gear.

LIFE-SAVING APPLIANCES

The ship is provided with one 15-person free-fall lifeboat with simple launching ramp located on SB and one 6-person rescue boat placed on PS. One throw-over-board inflatable liferaft with hydrostatic release, and one davit launched inflatable liferaft, each for 15 persons, are provided as well. Additionally, one 6-person inflatable liferaft is stowed on the Forecastle Deck.

ACCOMMODATION

The four-tier accommodation deckhouse located on the Poop Deck will be designed with particular care in order to provide an on-board environment that increase crewmember alertness and well-being. At the same time high degree of standardization has been achieved and living quarters on four decks have the identical arrangement. The accommodation deckhouse offers 4 identical apartments for Senior Officers and 11 single berth standard cabins. All apartments and cabins have private sanitary units arranged in vertical lines with access doors to pipe connections. Standard cabins have a window with a view non-obstructed by containers.

Direct exits will enable access to external stairs on PS from all accommodation decks. Internal stairs will be arranged on SB.

The arrangement of storerooms and Provision Stores will enable direct and easy transport using the combined life-saving/stores crane and two transport hatches located behind the accommodation deckhouse in order to not interfere with cargo handling.

Detailed arrangement of the Poop and the Accommodation Deckhouse is as follows:

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Main Deck

On the Main Deck there are the Galley, Pantry and adjacent Provision Stores, Crew's and Officers Messrooms, Changing Room, Laundry and Linen Store. In addition there are the 4-berth Suez crew cabin, Air Condition Room, Deck Store and the CO₂ Room, all with direct access from the open deck.

Poop Deck

Short accommodation ladders for boarding when in port are located on this deck, far away from cargo handling area. The main entrance to the Accommodation Deckhouse and spaces below is arranged on PS, leading through a "reception area" with Cargo Office, Deck Office and public toilet. This area is separated from accommodation. In this way the entrance to the ship is under control.

In addition the stairs arranged aft of the accommodation deckhouse enable direct access to Main Deck, to the Steering Gear Room and the Engine Room.

There are also the Fire Station, the Fire & Safety Equipment Store, Pain Store and the Emergency Genset Room, all with access from open deck.

The Emergency Genset Room on SB is well separated from machinery spaces of category "A" as well as from compartment containing the Main Switchboard.

1 Accommodation Deck

Apartment of the Chief Engineer, three single cabins. Rescue boat with davit and one davit-launched liferaft are located on SB. Open recreation area with banks and tables is arranged on PS.

2 Accommodation Deck

Apartment of 2nd Engineer Chief Officer, two single cabins and the First Aid Room. Free-fall lifeboat is located on SB.

3 Accommodation Deck

Apartment of Chief Officer and three single cabins.

4 Accommodation Deck

Apartment of Captain and three single cabins.

Navigation Deck

Wheelhouse with large chart & radio area, WC, space for electric equipment and space for battery. Conning positions according to Panama Canal requirements.

Note: All data preliminary and subject to detailed design.

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