

Multi Purpose Cargo Carrier (MPCC) on Lake Victoria

A preliminary concept generated by Jens Nilsson and Johan Ruzsits, MSY 2006.

Abstract

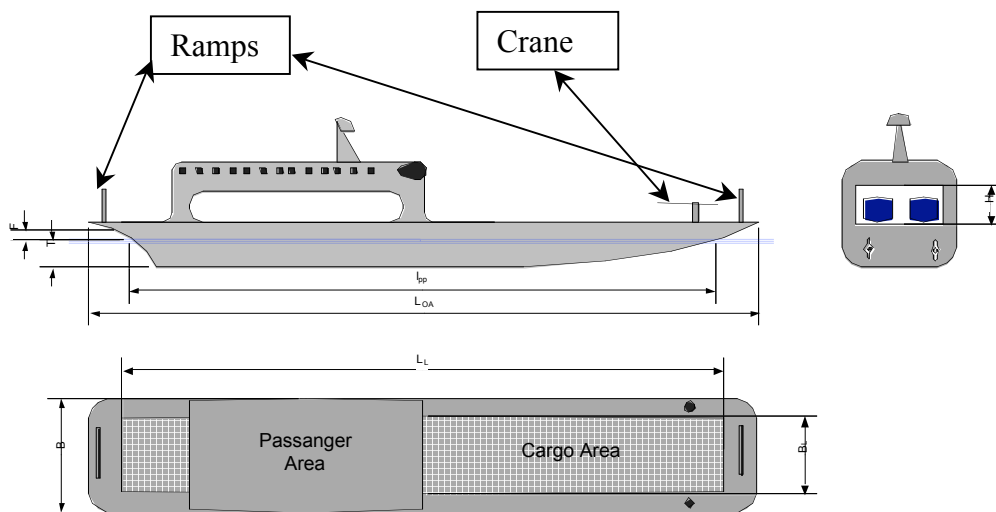
The Victoria Lake is one of the largest freshwater lakes in the world. Unfortunately the whole potential of the sea basin is not used. Therefore is the creating of sea lanes in the region an important issue. The transporting needs is just not only between the main harbors in each country but also between the mainland and the islands in the lake.

The design philosophy depends on the ability to have a small draft. This results in compromises in areas as hull geometry and course stability. Other aspects considered within the design process are that the ship should be simple to build and maintain and constructed in the docks in Lake Victoria especially those in Mwanza, Port Bell and Kisumu. By using TRIBON a model of a multipurpose cargo carrier have been created. The model has been analyzed in terms of stability and powering.

The resulting ship has ability to take all sorts of cargo and is independent of harbor conditions when it loads or unloads its manor by two cranes and ramps both in stem and stern. Manor can consist of buses, trucks, cars, pallets and containers but also passengers. The ship also has the ability to land on beaches when an ordinary harbor does not exist. Because of big fuel- and freshwater tanks it has been possibly to maintain long time endurance during operations. Because of its extreme geometry the course stability will quite poor but as a consequence of that the maneuverability in for example harbors will be rather good.

Because if it's multifunction possibilities it can participate in sea rescue operations and if necessary change its loads to medivac-containers to transport injured people to the mainland. The concept includes a rescue boat which can be launched quickly by the cranes on the stem of the mother ship.

Arrangement sketches



Picture 1. Sketch of MPCC.

Main data

Dimension		Loaded	Unit
Length over all	L_{OA}	40	[m]
Length between perpendiculars	L_{pp}	38	[m]
Beam	B	10	[m]
Draft, max	T	2	[m]
Freeboard	F	0,26	[m]
Height above keel	H	9,66	[m]
Displacement		388	[tones]
Dead weight	DW	194	[tones]
Length, cargo area	L_L	38	[m]
Width, cargo area	B_L	6	[m]
Height , cargo area	H_L	4,4	[m]

Table 1. Main dimensions for MPCC as in picture 1.

Machinery		Unit
Output	2_500	[kW]
Alternator	200	[kW]
Design speed	12	[kn]
Endurance	1000	[NM]

Table 2. Machinery data for MPCC.

Load case:	1		2		3	
	Amount	Weight [tones]	Amount	Weight [tones]	Amount	Weight [tones]
Trucks	-	-	4	80	-	-
TEU	-	-	-	-	8	96
Buses	4	60	-	-	-	-
Pallets	10	6	10	6	10	6
Passenger	200	20	200	20	200	20
Bulk	1	50	1	50	1	50
Σ		136		156		172

Table 3. Example of possibly loading conditions for MPCC.

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