

Design #02, September 2019, a medium displacement IOR Quarter Tonner

Project : Quartertonner #02
Designer : Delta Consultants-P.Visser
Created by : Free!Ship
Filename : I:\freeships\Quartertonner02\quartertonner#02.fbm

Length over all : 8.000 m
Beam over all : 2.950 m
Draft : 1.800 m
Midship location : 3.200 m
Water density : 1.025 t/m³
Appendage coefficient : 1.0000

Volume properties :

Displaced volume : 2.341 m³
Displacement : 2.399 tonnes
Total length of submerged body : 7.122 m
Total beam of submerged body : 2.568 m
Block coefficient : 0.0711
Prismatic coefficient : 0.5366
Vert. prismatic coefficient : 0.1090
Wetted surface area : 16.943 m²
Longitudinal centre of buoyancy : 3.775 m
Longitudinal centre of buoyancy : -1.990 %
Transverse centre of buoyancy : 0.000 m
Vertical centre of buoyancy : 1.643 m

Midship properties:

Midship section area : 0.612 m²
Midship coefficient : 0.1325

Waterplane properties:

Length on waterline : 6.913 m
Beam on waterline : 2.568 m
Waterplane area : 11.930 m²
Waterplane coefficient : 0.6523

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Waterplane centre of floatation	:	3.644 m
Y coordinate of DWL area CoG	:	0.000 m
Half entrance angle of DWL	:	19.075 degree
Transverse moment of inertia	:	4.721 m ⁴
Longitudinal moment of inertia	:	27.764 m ⁴

Initial stability:

Vertical of transverse metacentre	:	3.660 m
Transverse metacentric radius	:	2.017 m
Longitudinal transverse metacentre	:	13.504 m
Longitudinal metacentric radius	:	11.861 m

Lateral plane:

Lateral area	:	3.082 m ²
Longitudinal centre of effort	:	3.657 m
Vertical centre of effort	:	1.265 m

Hull characteristics above waterline:

Lateral wind area	:	6.183 m ²
Z coordinate of wind area CoG above DWL	:	0.417 m
Distance from bow to wind area CoG	:	3.174 m

The following layer properties are calculated for both sides of the ship:

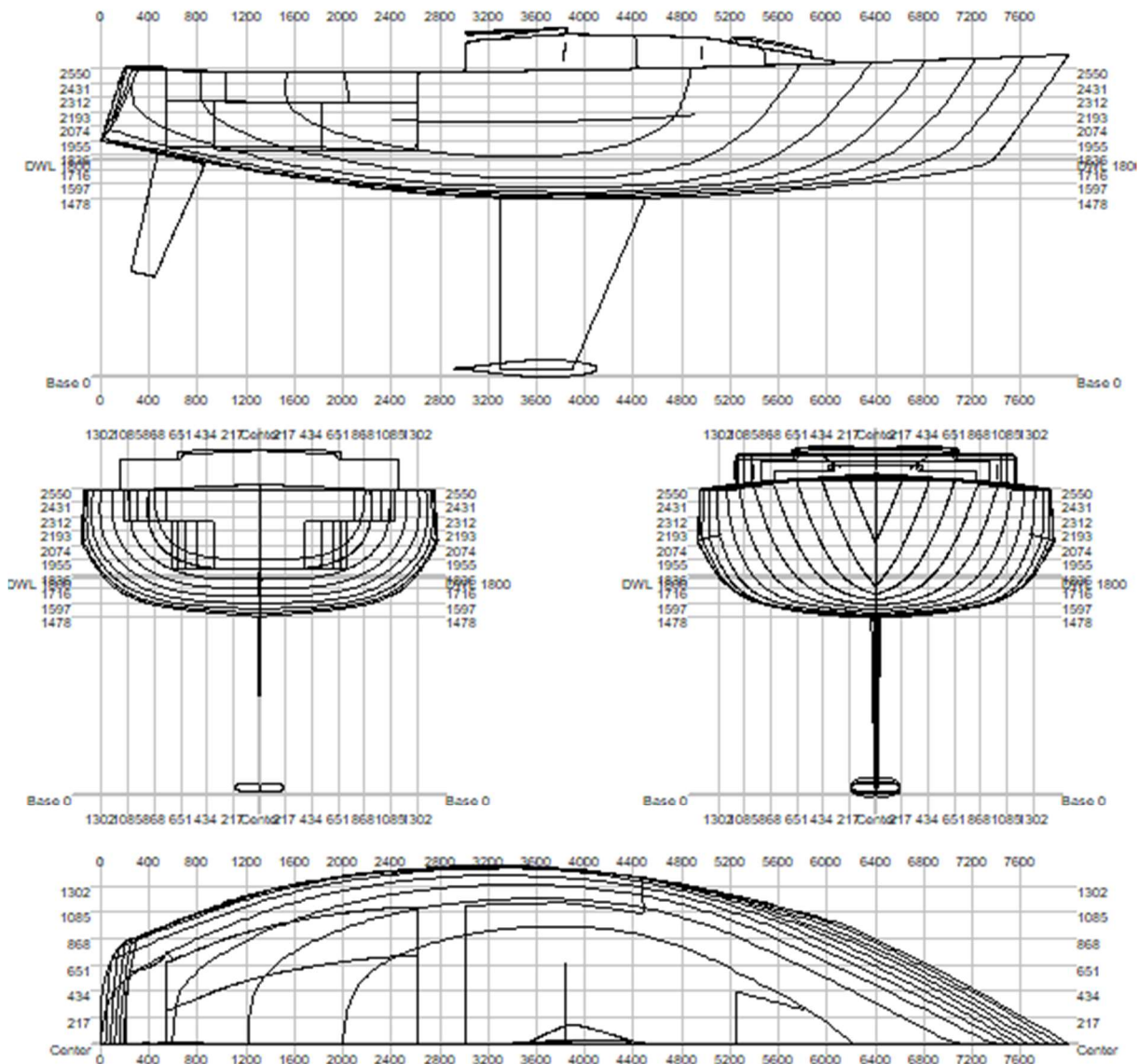
Layer	Area	Thickness	Weight
	m ²	mm	tonnes
Hull	27.96	15.000	0.461
Deck & superstructure	22.80	10.000	0.251
Trapezoidal keel NACA63	2.60		1.200
Wing_NACA63-012	1.07		weight for keel+wing
Trapezoidal rudder NACA	0.61		0.005
Engine, rig, sails & interior			0.500
Total	56.80		2.412

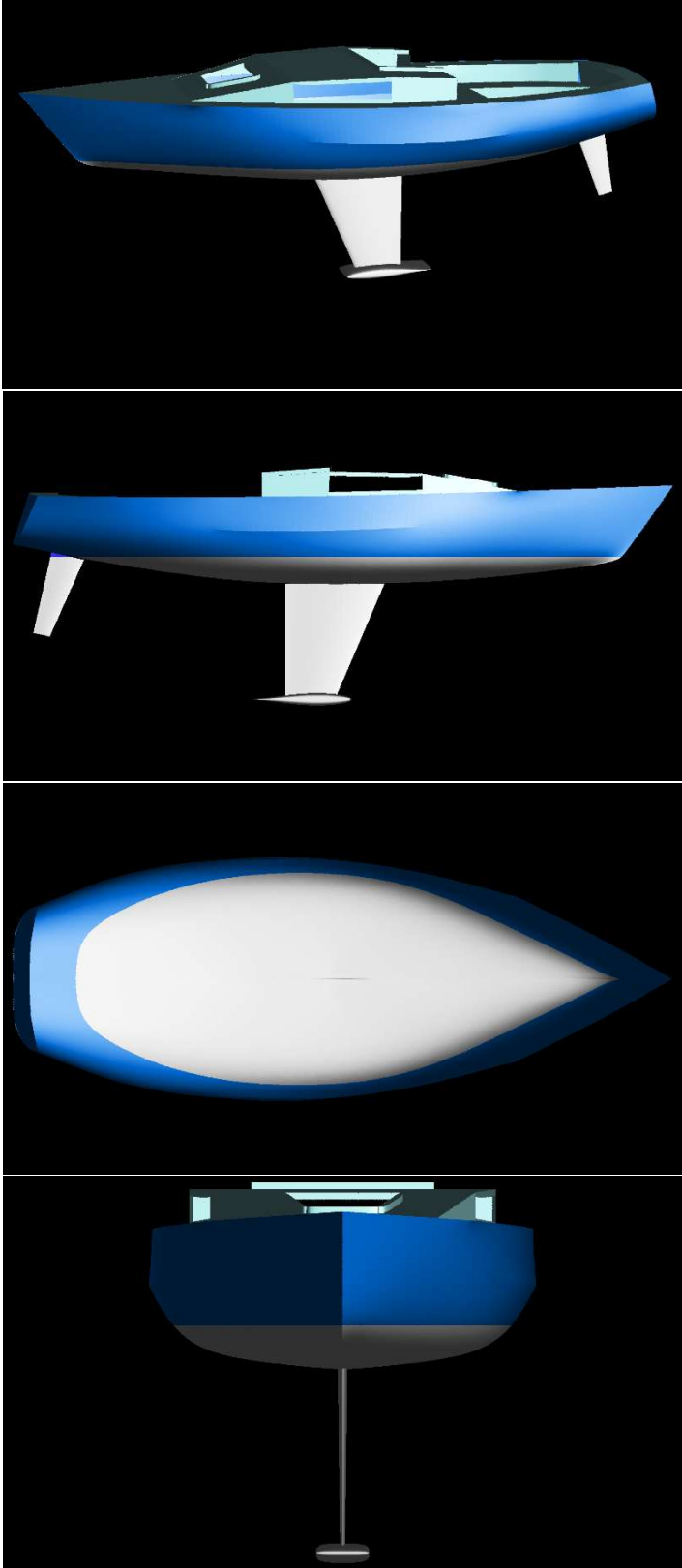
Parameters of ship sinkage:

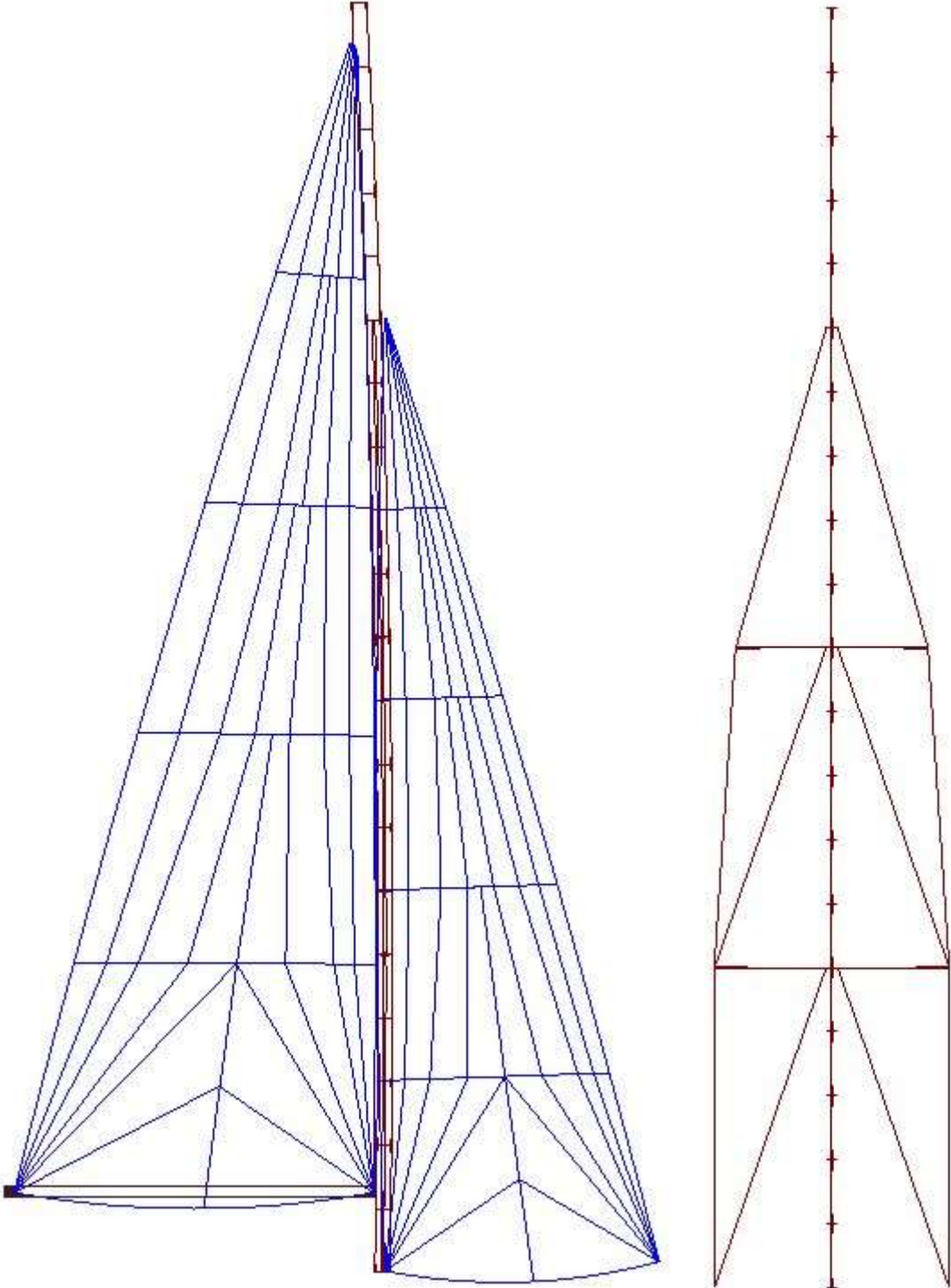
Difference of midship draft	:	0.001 m
Midship draft	:	1.801 m
Initial transverse metacentric height h_0	:	2.432 m
Initial longitudinal metacentric height H_0	:	12.276 m
Angle of heel Ψ	:	0.000 degree
Angle of trim	:	-0.451 degree

NOTE 1: Draft (and all other vertical heights) is measured above the lowest point of the hull! (Z= 0.000)

NOTE 2: All calculated coefficients based on actual dimensions of submerged body.







High aspect 15.2m²¹ Main 21m²