RI 61055

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Busan

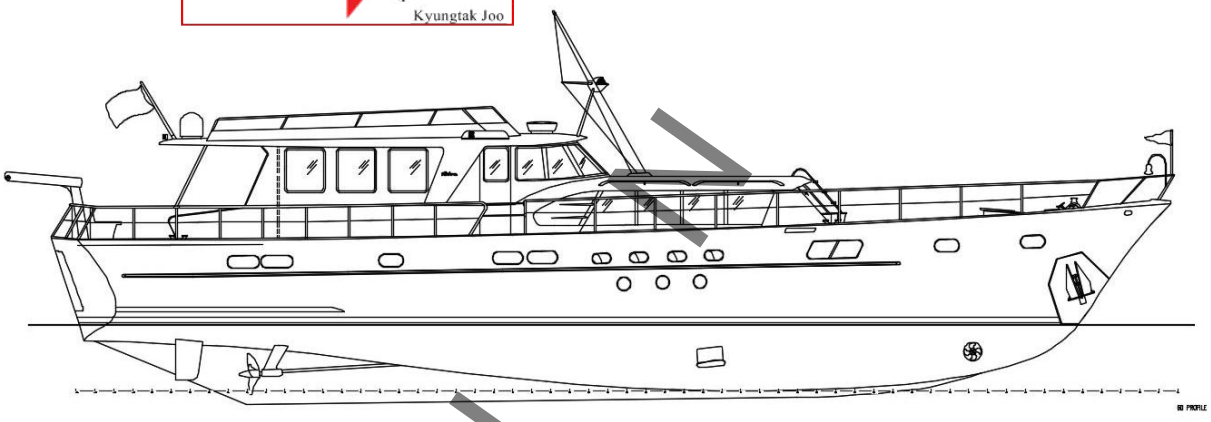
RINA
Kyungtak Joo

DE VOOGT NAVAL ARCHITECTS

FINAL STABILITY INFORMATION BOOKLET

HULL NO 586
MY "CARAVELLE"

APRIL 2019



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YARD	YARD NO.
De Vries Makkum	586
CLASS/REGULATIONS	DESCRIPTION
RINA	23.95M TS Motor Yacht

Rev	Date	Description	Author	Checked
H				
G				
F				
E				
D				
C				
B				
A	31-12-19	Update without ballast	FG	
0	12-04-19	Original issue	FG	

DWG/CALC. NO	TITEL
5862 000 224	**FINAL INTACT STABILITY BOOKLET**

Total 73 sheets with a cover

TABLE OF CONTENTS

1 SUMMARY

GENERAL

This report is submitted as the final stability information booklet for MY Caravelle, built at De Vries shipyard under yard number 586 and refitted in 2019.

The calculations are performed with the calculated centres of gravity and lightship weight from the inclining experiment executed on Dec 3rd 2018 and witnessed by Class. A copy of this inclining experiment is included in this document.

INTACT STABILITY

The intact stability calculations were assessed for the following loading conditions:

1.	0% FO – 0% FW – 0% GW	Light ship condition (as described by RINA)
2.	10% FO - 10% FW – 50% GW	Arrival condition
3.	10% FO - 10% FW - 100% GW	Fully loaded arrival condition (as described by RINA)
4.	50% FO - 50% FW - 50% GW	Half loaded condition
5.	100% FO - 100% FW - 0% GW	Fully loaded departure condition (described by RINA)

The yacht complies to the intact stability requirements as described under IMO Resolution A. 749 (18) section 3.1.2 in all lading conditions.

Other stability criteria: heel due to turning and heel due to crowding of guests are also checked on this motor yacht. The motor yacht complies with the criteria for heel due to turning and crowding of guests for all conditions. The heel remains smaller than 10 degrees.

2 INTRODUCTION TO INTACT STABILITY

2.1 GENERAL PARTICULARS

Yacht's name	:	Caravelle
Yard no	:	586
Flag	:	Cayman Islands
Port of Registry	:	George town
Rina number	:	C5 - RI 61055
Class Notation	:	100-A-1.1;Y

2.2 MAIN DIMENSIONS

Length o.a	:	23.95 m
Length w.l.	:	21.38 m
Length bpp.	:	19.90 m
Beam mld	:	5.10 m
Depth mld	:	3.25 m
Draught Design	:	1.67 m
Displ. at cwl	:	67 ton
Lightship weight	:	58.405 ton
LCG	:	8.936 m
VCG	:	2.311 m
TCG	:	0.016 m (to SB)

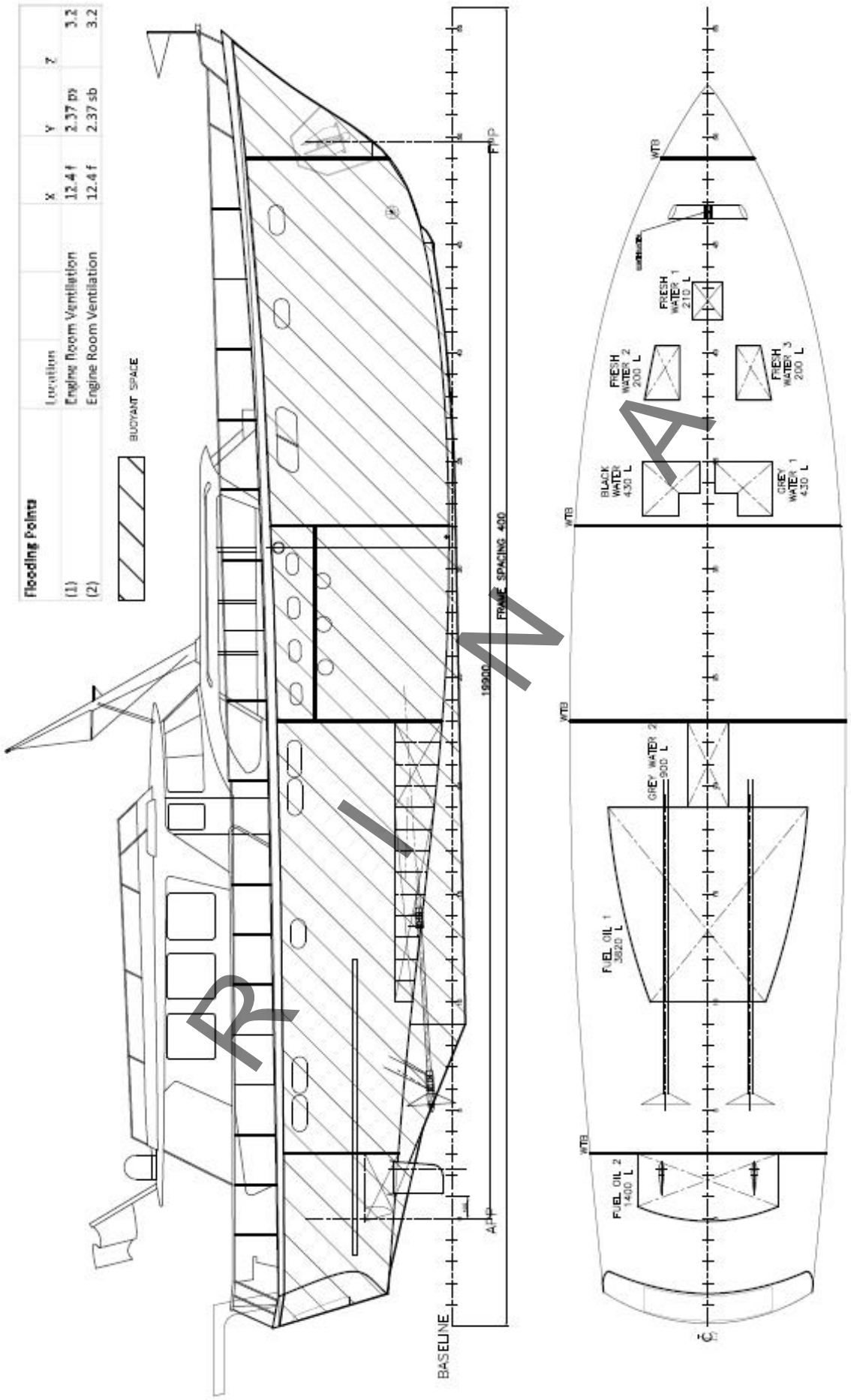
Axis reference system			
Common reference	X	:	frame 0
	Y	:	center line plane
	Z	:	baseline

Aft perpendicular	:	0 m aft of frame 0
Fore perpendicular	:	19.9 m forward of aft perpendicular

2.3 SPECIAL NOTES REGARDING THE STABILITY AND LOADING OF THE YACHT

The following pages give an overview of the intact stability of the yacht in four loading conditions.
Please note the following when interpreting the results of the calculations:

- Draft is measured from the baseline and is given at perpendicular.
- All dimensions are in meters.
- The centers are aft perpendicular, baseline and centerline
- All displacements and weights are in metric tonnes
- The buoyant spaces, down flooding points used in the calculations for determining the range of stability are shown on the following page.
- The flooding points are defined either all on the starboard side, or all on the port side of the ship to depending on what side the ship heels to in the calculations.
- Downflooding points are taken at the Engine Room Vent Openings.
- Theoretical tank volumes and quantities are used in the stability calculations; calibrated values due to suctions losses are not accounted for.
- Drafts are given to Baseline. For the extreme draught add 0.27 m.

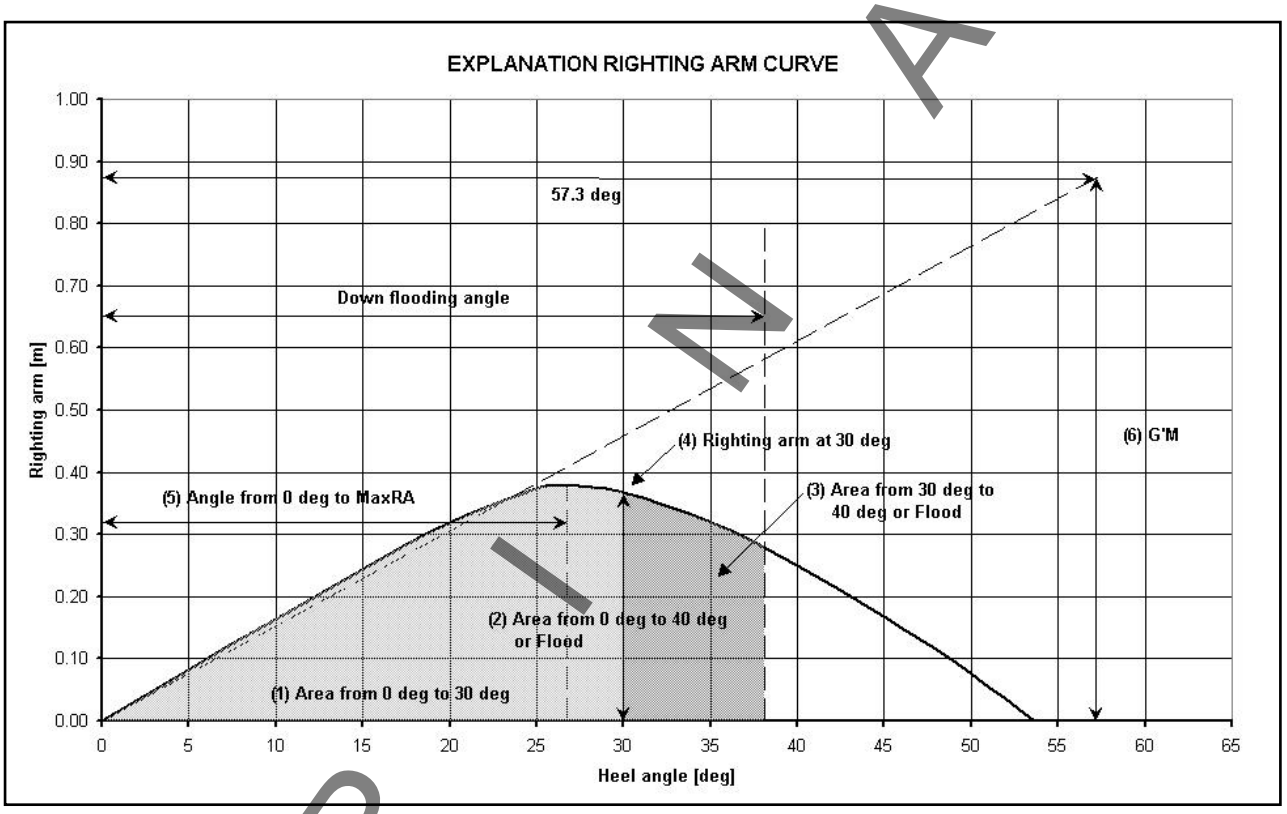

Flooding Points
Location
X
Y
Z
(1) Engine Room Ventilation 12.4 f 2.37 ps 3.2
(2) Engine Room Ventilation 12.4 f 2.37 sb 3.2
BUOYANT SPACE
FP
AP
FRAME SPACING 400
19900
BASELINE
WTB
FRESH WATER 1 210 L
FRESH WATER 2 200 L
FRESH WATER 3 200 L
BLACK WATER 430 L
GREY WATER 1 430 L
GREY WATER 2 900 L
FUEL OIL 1 3920 L
FUEL OIL 2 1400 L
RINA

ADOPTED CRITERIA

In the following stability calculations, the intact stability was assessed using the following applicable criteria: IMO Resolution A.749 (18). These criteria are commensurate to the intact stability criteria as described by RINA Rules for Classification of Pleasure Yachts Part B.

These criteria can be summarised as follows:

1. The area under the curve of righting arms should not be less than 0.055 mrad up to 30 degrees heel.
2. The area under the curve of righting arms should not be less than 0.090 mrad up to 40 degrees heel or the downflooding angle whichever is less.
3. The increase of area under the curve of righting arms should not be less than 0.030 mrad from 30 degrees to 40 degrees heel or the downflooding angle whichever is less.
4. The righting arm should be at least 0.20 m at a heel angle of 30 degrees or more.
5. The maximum righting arm should occur at a heel angle of 30 degrees or more but not at less than 25 degrees.
6. The initial metacentric height should not be less than 0.15 m.



2.4 LOADING CONDITIONS

The intact stability was assessed for the following loading conditions viz.:

1.	0% FO – 0% FW – 0% GW	Light ship condition (as described by RINA)
2.	10% FO - 10% FW – 50% GW	Arrival condition
3.	10% FO - 10% FW - 100% GW	Fully loaded arrival condition (as described by RINA)
4.	50% FO - 50% FW - 50% GW	Half loaded condition
5.	100% FO - 100% FW - 0% GW	Fully loaded departure condition (described by RINA)

In all conditions at least one pair of fuel oil tank and one pair of fresh water tanks are taken as slack. The calculated righting arms reflect the actual variation of the centre of gravity caused by the slack tanks.

2.5 INSTRUCTIONS TO THE MASTER AND GENERAL PRECAUTIONS AGAINST CAPSIZING

GENERAL

1. A stamped, approved copy of this booklet must be kept on board the vessel at all times. It must also be complete, legible and readily available for use. If this booklet is lost or becomes unusable a replacement copy of the approved booklet must be obtained immediately.

2. Compliance with the stability criteria indicated above does not ensure immunity against capsizing regardless of the circumstances or absolve the master from his responsibilities. Masters should therefore exercise prudence and good seamanship having regard to the season of the year, weather forecasts and the navigational zone and should take the appropriate action as to speed and course warranted by the prevailing circumstances.

3. Care should be taken to ensure that the cargo allocated to the ship is capable of being stowed so that compliance with the criteria can be achieved.

4. Before a voyage commences care should be taken to ensure that the stores and sizeable pieces of equipment have been properly stowed or lashed so as to minimise the possibility of both longitudinal, and lateral shifting while at sea, under the effect of acceleration caused by rolling and pitching.

5. All external hull doors and flush hatches are to be closed and secured.

6. Internal watertight doors should be closed when risk of hull damage and flooding increases, e.g. in fog, in shallow rocky waters, in congested shipping lanes and at any other time the master considers appropriate. WT doors should be checked daily to ensure that nothing has been placed in way of the door or where it might fall into the opening and prevent the door from closing.

7. Hinged WT doors are to be kept closed at sea at all times. They may be opened briefly to pass through the door, but should be closed immediately.

8. In appendix I of this report, a standard form is added for calculating centres of gravity and loading conditions. This form includes a detailed step-by-step explanation.

9. Note that through minor openings such as chain pipes small quantities of water can enter the vessel. The bilge pump capacities are sufficient to counteract this. Bilge pump arrangements are to be standby.

10. No fixed ballast is included in the lightship weight.

NOTES ON THE USE OF FREE SURFACE MOMENTS

Provided a tank is completely filled with liquid no movement of the liquid is possible and the effect on the ship's stability is precisely the same as if the tank contained solid material.

Immediately, after a quantity of liquid is withdrawn from the tank the situation changes completely and the stability of the ship is reduced by what is known as the "free surface effects". This reduction of the stability is referred to as a "loss in GM" or as a "virtual rise in V.C.G." and is calculated as follows:

$$Loss\ in\ GM\ due\ to\ free\ surface\ effect(m) = \frac{Free\ surface\ moment\ x\ specific\ of\ liquied\ in\ tank\ (tons\ x\ m)}{Displacement\ of\ the\ vessel\ (tons)}$$

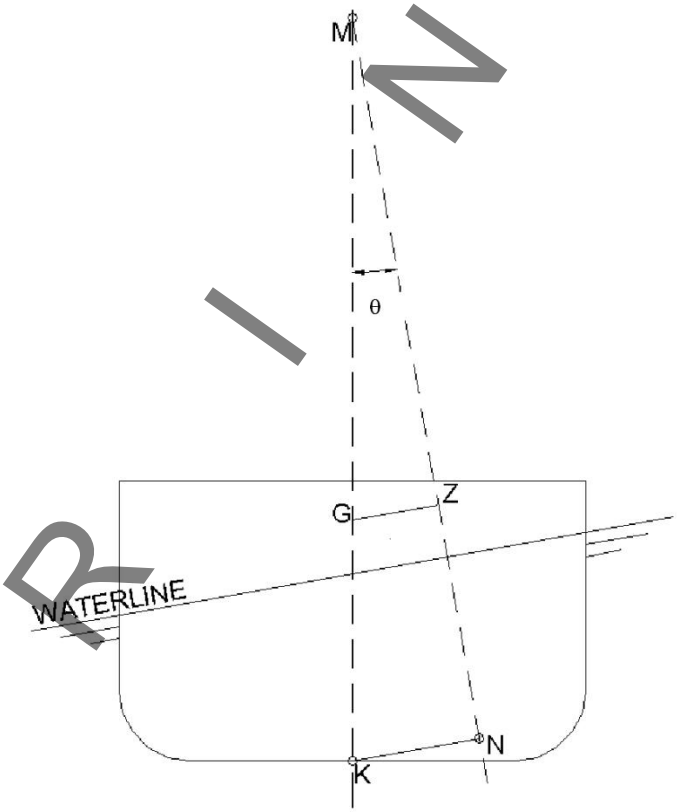
NOTES ON THE USE OF CROSS CURVES OF STABILITY TABLES

Righting lever tables for displacements of 58 to 70 tons are presented in chapter 6 for angles of heel at intervals between 0 and 70 degrees.
To obtain GZ curves at a given displacement, the following equation should be used:

$$GZ = KN - KG \sin\theta$$

Where KN is given in the tables in chapter 5.

This enables the value of GZ to be calculated at each of the heel angles presented, and subsequently plotted as in the loading conditions presented herein.



3 INTACT STABILITY RESULTS

3.1 LIGHT SHIP CONDITION (RINA CONDITION)

The results of the intact stability calculations for the 0% - 0% - 0% condition are shown hereafter.
Summarising these results in terms of static and dynamic stability requirements yields the following table.

Item	Design	Criteria IMO	Unit
Draught Fore	1.53		m
Draught Aft	1.57		m
Displacement	58.4		tonnes
Area under R.A curve 0 – 30 deg	0.094	0.055	mrad
Area under R.A curve 0 – DFA or 40 deg	0.149	0.090	mrad
Increase of Area 30 - DFA or 40	0.055	0.030	mrad
Max R.A. at 30 deg or more	0.298	0.200	m
Maximum value of R.A attained at	48	25	deg
Initial Stability	0.96	0.15	m
Pos righting lever	87		deg
DFA = Down flooding angle	40		deg

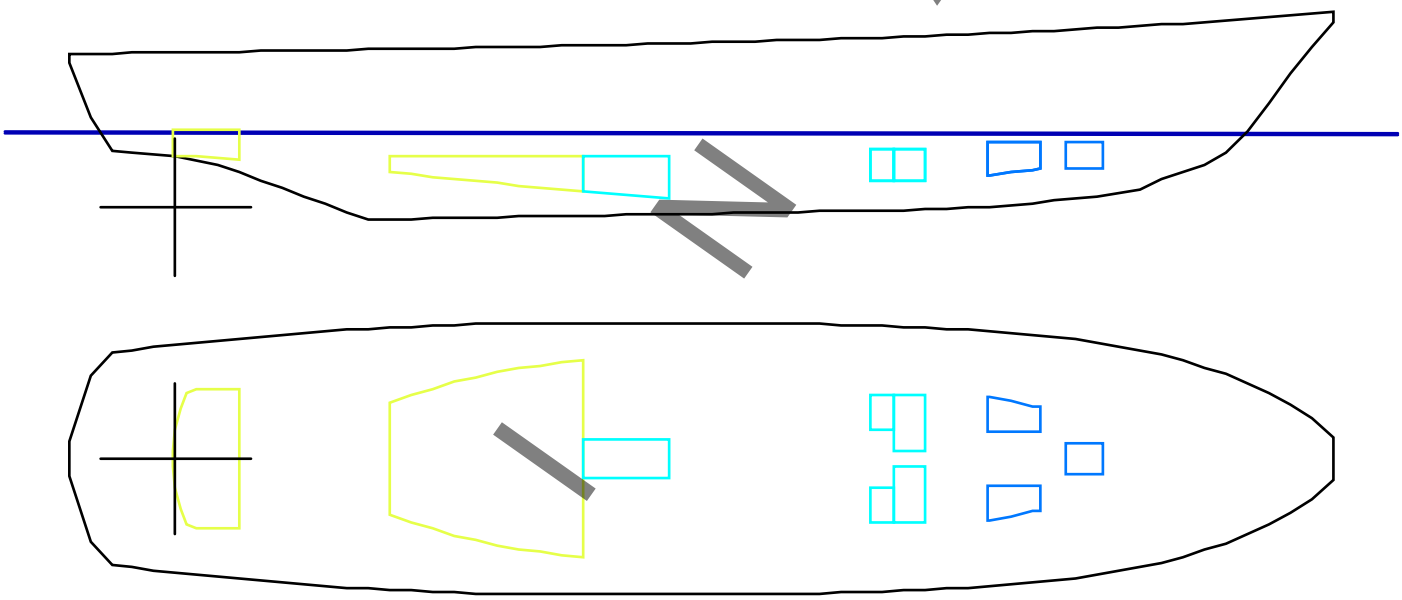
M.Y.YN 586 INTACT STABILITY Lightship CONDITION 0%FO-0%FW-0%GW
USED HULL FORM: 586_2018april.GF1

Floating Status

Draft FP	1.530 m	Heel	0.94s deg	GM(Solid)	0.962 m
Draft MS	1.548 m	Equil	No	F/S Corr.	0.000 m
Draft AP	1.566 m	Wind	Off	GM(Fluid)	0.962 m
Trim	0.04a m	Wave	No	KMT	3.273 m
LCG	8.936f m	VCG-Solid	2.311 m	TPcm	0.82
Displacement	58.4 MT	WaterSpgr	1.025		

Loading Summary

Item	Weight (MT)	LCG (m)	TCG (m)	VCG (m)
Light Ship	58.40	8.936f	0.016s	2.311
Displacement	58.40	8.936f	0.016s	2.311



Fixed Weight Status

Item	Weight (MT)	LCG (m)	TCG (m)	VCG (m)
LIGHT SHIP	58.40	8.936f	0.016s	2.311u
Total Weight:	58.40	8.936f	0.016s	2.311u

Tank Status

FUEL OIL

Tank Name	Spgr	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	FSMT (MT-m)

SEWAGE

Tank Name	Spgr	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	FSMT (MT-m)

FRESH WATER

Tank	Spgr	Load	Weight	LCG	TCG	VCG	FSMT

Name		(%)	(MT)	(m)	(m)	(m)	(MT-m)

All Tanks

	Spgr	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	FSMT (MT-m)

Displacer Status

Item	Status	Spgr	Displ (MT)	LCB (m)	TCB (m)	VCB (m)	Eff /Perm
HULL	Intact	1.025	58.40	8.933f	0.036s	1.102	1.000
SubTotals:			58.40	8.933f	0.036s	1.102	

Unprotected Flood Points

Name	L,T,V (m)	Height (m)
(1) Engine room ventilation	12.400f, 2.370p, 3.200	1.695
(2) Engine room ventilation	12.400f, 2.370s, 3.200	1.617

Righting Arms vs. Heel - MCA REQUIREMENTS (IMO A.749(18))

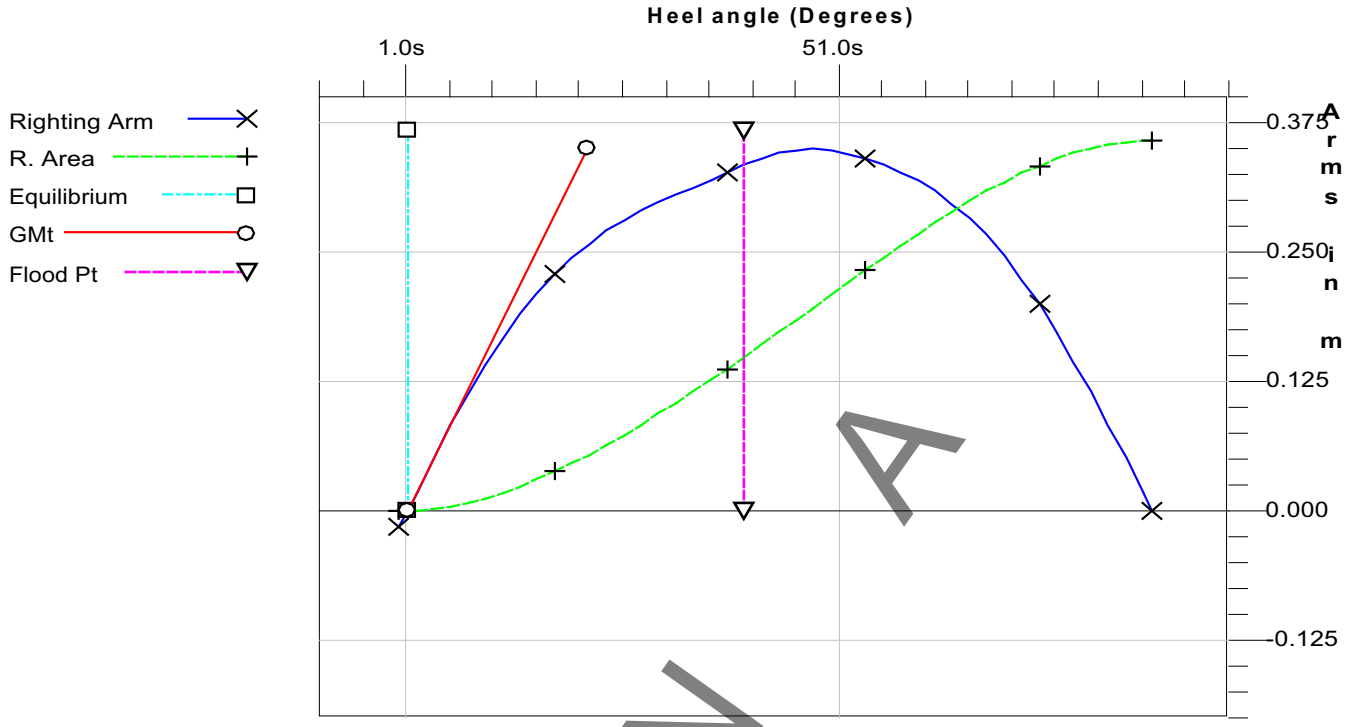
Righting Arms vs Heel Angle

Heel Angle (deg)	Trim Angle (deg)	Origin Depth (m)	Righting Arm (m)	Area (m-Rad)	Flood Pt Height (m)	Notes
0.00	0.10a	1.566	-0.016	0.000	1.656 (1,2)	
0.94s	0.10a	1.566	0.000	0.000	1.617 (2)	Equil
2.00s	0.10a	1.564	0.018	0.000	1.573 (2)	
4.00s	0.09a	1.558	0.051	0.001	1.489 (2)	
6.00s	0.08a	1.549	0.082	0.004	1.404 (2)	
8.00s	0.06a	1.534	0.113	0.007	1.318 (2)	
10.00s	0.04a	1.516	0.141	0.011	1.232 (2)	
12.00s	0.01a	1.493	0.167	0.017	1.145 (2)	
14.00s	0.03f	1.466	0.190	0.023	1.059 (2)	
16.00s	0.07f	1.435	0.211	0.030	0.972 (2)	
18.00s	0.12f	1.399	0.229	0.038	0.886 (2)	
20.00s	0.17f	1.359	0.245	0.046	0.801 (2)	
22.00s	0.22f	1.315	0.258	0.055	0.716 (2)	
24.00s	0.28f	1.268	0.270	0.064	0.632 (2)	
26.00s	0.34f	1.216	0.281	0.074	0.548 (2)	
28.00s	0.39f	1.161	0.290	0.083	0.466 (2)	
30.00s	0.46f	1.103	0.298	0.094	0.385 (2)	
32.00s	0.52f	1.041	0.305	0.104	0.305 (2)	
34.00s	0.58f	0.977	0.312	0.115	0.226 (2)	
36.00s	0.64f	0.909	0.320	0.126	0.148 (2)	
38.00s	0.70f	0.839	0.327	0.137	0.073 (2)	
39.97s	0.75f	0.767	0.335	0.149	0.000 (2)	FldPt
40.00s	0.75f	0.766	0.335	0.149	-0.001 (2)	
42.00s	0.80f	0.692	0.341	0.161	-0.074 (2)	
44.00s	0.85f	0.617	0.346	0.173	-0.146 (2)	
46.00s	0.90f	0.541	0.349	0.185	-0.217 (2)	
47.60s	0.93f	0.479	0.349	0.195	-0.274 (2)	MaxRa
48.00s	0.94f	0.464	0.349	0.197	-0.288 (2)	
50.00s	0.98f	0.387	0.348	0.209	-0.359 (2)	
52.00s	1.02f	0.310	0.345	0.221	-0.429 (2)	
54.00s	1.06f	0.233	0.340	0.233	-0.499 (2)	
56.00s	1.09f	0.155	0.334	0.245	-0.568 (2)	
58.00s	1.13f	0.078	0.327	0.257	-0.636 (2)	
60.00s	1.16f	0.001	0.319	0.268	-0.704 (2)	
62.00s	1.19f	-0.077	0.309	0.279	-0.771 (2)	
64.00s	1.22f	-0.155	0.297	0.289	-0.836 (2)	
66.00s	1.25f	-0.233	0.283	0.299	-0.901 (2)	
68.00s	1.28f	-0.313	0.266	0.309	-0.963 (2)	
70.00s	1.31f	-0.392	0.247	0.318	-1.023 (2)	
72.00s	1.32f	-0.469	0.224	0.326	-1.081 (2)	
74.00s	1.32f	-0.546	0.199	0.334	-1.135 (2)	
76.00s	1.31f	-0.621	0.172	0.340	-1.188 (2)	
78.00s	1.30f	-0.696	0.144	0.346	-1.238 (2)	
80.00s	1.28f	-0.770	0.114	0.350	-1.285 (2)	
82.00s	1.26f	-0.842	0.084	0.354	-1.331 (2)	
84.00s	1.23f	-0.914	0.052	0.356	-1.373 (2)	
86.00s	1.19f	-0.985	0.019	0.357	-1.414 (2)	
87.14s	1.17f	-1.024	0.000	0.357	-1.436 (2)	RaZero

Unprotected Flood Points

Name	L,T,V (m)
(1) Engine room ventilation	12.400f, 2.370p, 3.200
(2) Engine room ventilation	12.400f, 2.370s, 3.200

Righting Arms vs. Heel - MCA REQUIREMENTS (IMO A.749(18))



MCA REQUIREMENTS (IMO A.749(18))

Limit	Min/Max	Actual	Margin	Pass
(1) Area from 0.00 deg to 30.00	>0.0550 m-R	0.094	0.039	Yes
(2) Area from 0.00 deg to 40.00 or Flood	>0.0900 m-R	0.149	0.059	Yes
(3) Area from 30.00 deg to 40.00 or Flood	>0.0300 m-R	0.055	0.025	Yes
(4) Righting Arm at 30.00 deg	>0.200 m	0.298	0.098	Yes
(5) Angle from 0.00 deg to MaxRA	>25.00 deg	47.60	22.60	Yes
(6) GM at Equilibrium	>0.150 m	0.962	0.812	Yes

Hydrostatic Properties

Draft is from Baseline.
Trim: aft 0.036/19.900, heel: stbd 0.94 deg., VCG = 2.311

LCF Draft (m)	Displ (MT)	LCB (m)	VCB (m)	LCF (m)	TPcm (MT/cm)	MTcm (MT-m /cm)	GML (m)	GM(Solid) (m)
1.552	58.405	8.933f	1.102	7.878f	0.82	1.10	37.476	0.962

Water Specific Gravity = 1.025.
Trim is per 19.90m

3.2 ARRIVAL CONDITION

The results of the intact stability calculations for the 10% - 10% - 50% condition are shown hereafter. Summarising these results in terms of static and dynamic stability requirements yields the following table.

Item	Design	Criteria IMO	Unit
Draught Fore	1.58		m
Draught Aft	1.61		m
Displacement	61.9		tonnes
Area under R.A curve 0 – 30 deg	0.091	0.055	mrad
Area under R.A curve 0 – DFA or 40 deg	0.14	0.090	mrad
Increase of Area 30 - DFA or 40	0.049	0.030	mrad
Max R.A. at 30 deg or more	0.297	0.200	m
Maximum value of R.A attained at	46	25	deg
Initial Stability	0.91	0.15	m
Pos righting lever	86.8		deg
DFA = Down flooding angle	38.8		deg

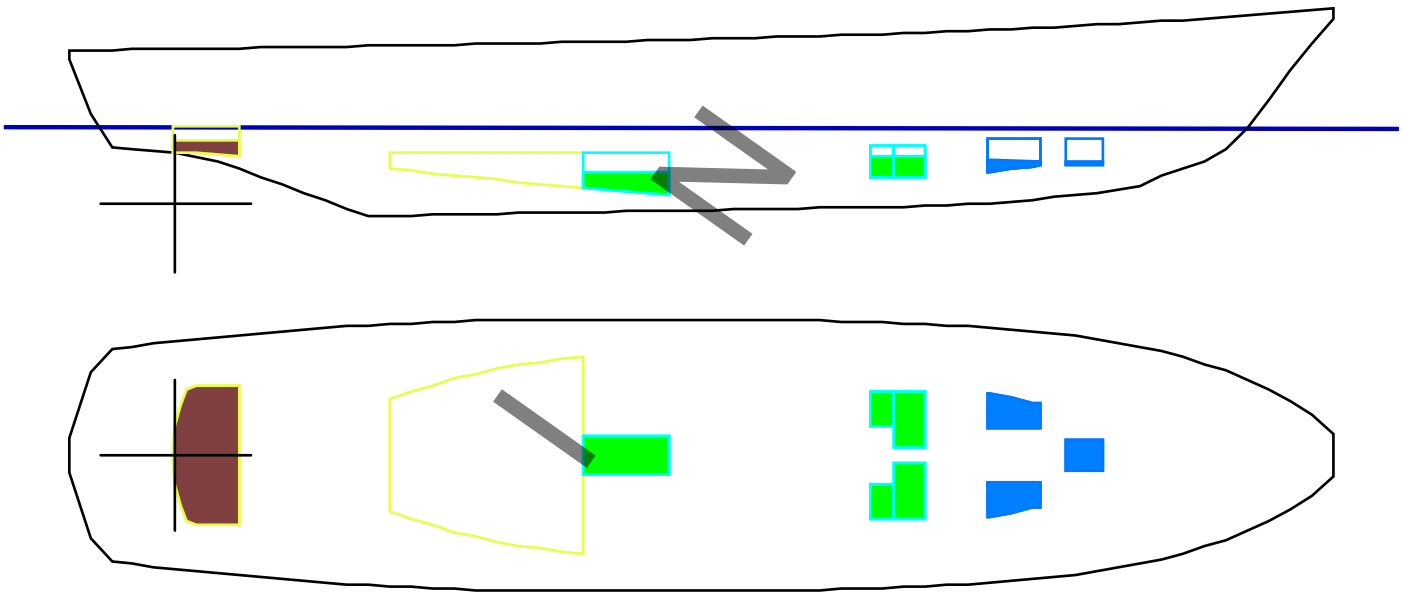
M.Y.YN 586 INTACT STABILITY Light Loaded CONDITION 10% FO - 10% FW - 50% GW
USED HULL FORM: 586_2018april.GF1

Floating Status

Draft FP	1.575 m	Heel	0.94s deg	GM(Solid)	0.932 m
Draft MS	1.591 m	Equil	No	F/S Corr.	0.023 m
Draft AP	1.606 m	Wind	Off	GM(Fluid)	0.909 m
Trim	0.03a m	Wave	No	KMT	3.235 m
LCG	8.887f m	VCG-Solid	2.303 m	TPcm	0.84
Displacement	61.9 MT	WaterSpgr	1.025		

Loading Summary

Item	Weight (MT)	LCG (m)	TCG (m)	VCG (m)
Light Ship	58.40	8.936f	0.016s	2.311
Deadweight	3.47	8.063f	0.007s	2.162
Displacement	61.88	8.887f	0.015s	2.303



Fluid Legend

Fluid Name	Legend	Weight (MT)	Load%
FUEL OIL		.47	10.70%
SEWAGE		.90	50.00%
FRESH WATER		.06	10.00%

Fixed Weight Status

Item	Weight (MT)	LCG (m)	TCG (m)	VCG (m)
LIGHT SHIP	58.40	8.936f	0.016s	2.311u
ALLOWANCE TENDER AND GEAR	0.80	5.200f	0.000	3.100u
PERSONS AND EFFECTS	1.17	10.000f	0.000	3.200u

STORES	0.07	14.000f	0.000	1.500u
Total Fixed:	60.44	8.913f	0.015s	2.338u

Tank Status

FUEL OIL

Tank Name	Spgr	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	FSMT (MT-m)
FO_2	0.840	40.00%	0.47	0.652f	0.044s	1.198	1.3
Subtotals:		10.70%	0.47	0.652f	0.044s	1.198	1.3

SEWAGE

Tank Name	Spgr	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	FSMT (MT-m)
GW_2	1.025	50.00%	0.46	8.446f	0.002s	0.480	0.1
GW_1	1.025	50.00%	0.22	13.569f	0.570s	0.785	0.1
BW	1.025	50.00%	0.22	13.572f	0.561p	0.785	0.1
Subtotals:		50.00%	0.90	10.939f	0.003s	0.628	0.2

FRESH WATER

Tank Name	Spgr	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	FSMT (MT-m)
FW_1	1.000	10.00%	0.02	16.967f	0.008s	0.847	0.0
FW_2	1.000	10.00%	0.02	15.477f	0.602s	0.802	0.0
FW_3	1.000	10.00%	0.02	15.479f	0.601p	0.802	0.0
Subtotals:		10.00%	0.06	15.980f	0.003s	0.817	0.0

All Tanks

	Spgr	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	FSMT (MT-m)
Totals:		21.05%	1.43	7.790f	0.017s	0.823	1.4

Displacer Status

Item	Status	Spgr	Displ (MT)	LCB (m)	TCB (m)	VCB (m)	Eff /Perm
HULL	Intact	1.025	61.88	8.885f	0.035s	1.128	1.000
SubTotals:			61.88	8.885f	0.035s	1.128	

Unprotected Flood Points

Name	L,T,V (m)	Height (m)
(1) Engine room ventilation	12.400f, 2.370p, 3.200	1.652
(2) Engine room ventilation	12.400f, 2.370s, 3.200	1.574

Righting Arms vs. Heel - MCA REQUIREMENTS (IMO A.749(18))

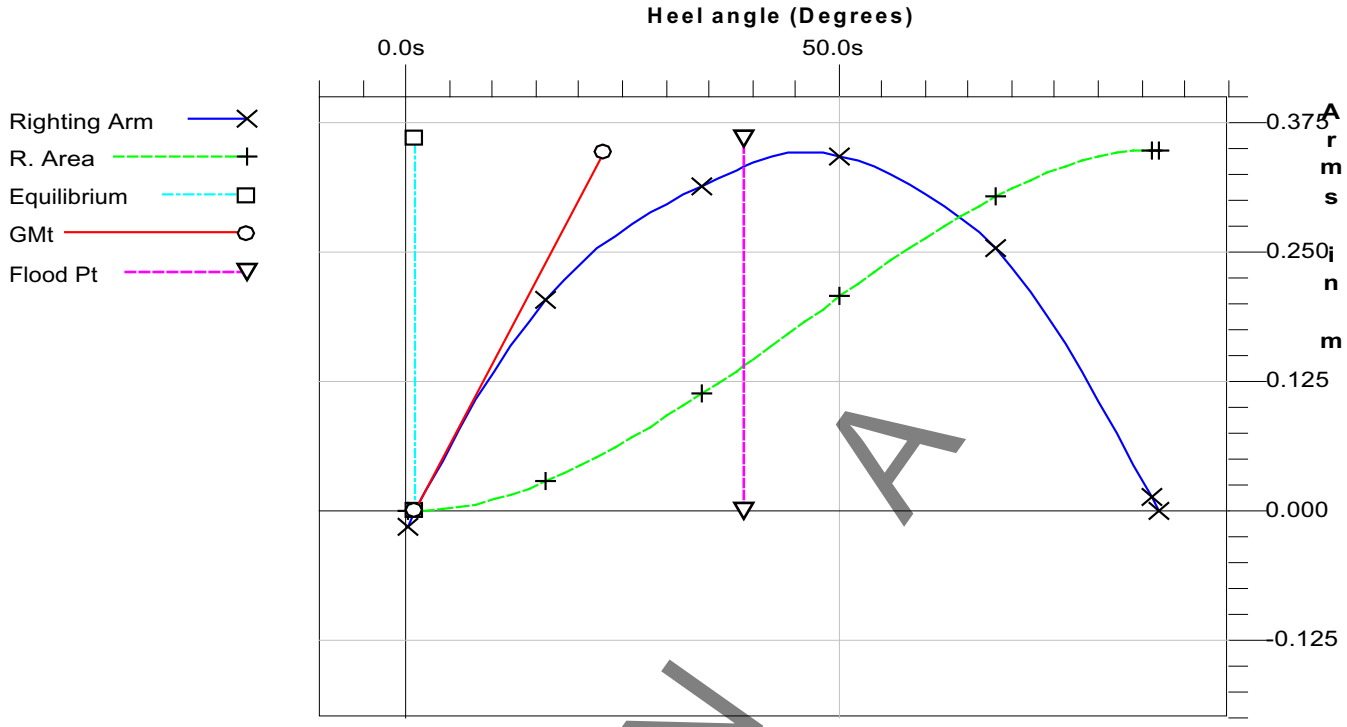
Righting Arms vs Heel Angle

Heel Angle (deg)	Trim Angle (deg)	Origin Depth (m)	Righting Arm (m)	Area (m-Rad)	Flood Pt Height (m)	Notes
0.00	0.09a	1.606	-0.015	0.000	1.613 (1,2)	
0.94s	0.09a	1.606	0.000	0.000	1.574 (2)	Equil
2.00s	0.09a	1.604	0.017	0.000	1.530 (2)	
4.00s	0.08a	1.599	0.048	0.001	1.446 (2)	
6.00s	0.07a	1.589	0.078	0.003	1.361 (2)	
8.00s	0.05a	1.576	0.107	0.007	1.275 (2)	
10.00s	0.03a	1.559	0.135	0.011	1.189 (2)	
12.00s	0.01a	1.537	0.160	0.016	1.102 (2)	
14.00s	0.02f	1.511	0.183	0.022	1.016 (2)	
16.00s	0.06f	1.481	0.204	0.029	0.929 (2)	
18.00s	0.10f	1.447	0.223	0.036	0.843 (2)	
20.00s	0.14f	1.408	0.239	0.044	0.758 (2)	
22.00s	0.19f	1.365	0.254	0.053	0.673 (2)	
24.00s	0.24f	1.319	0.266	0.062	0.589 (2)	
26.00s	0.29f	1.269	0.278	0.071	0.505 (2)	
28.00s	0.34f	1.215	0.288	0.081	0.423 (2)	
30.00s	0.40f	1.158	0.297	0.091	0.342 (2)	
32.00s	0.45f	1.097	0.305	0.102	0.262 (2)	
34.00s	0.51f	1.033	0.313	0.113	0.184 (2)	
36.00s	0.56f	0.967	0.321	0.124	0.107 (2)	
38.00s	0.62f	0.897	0.329	0.135	0.032 (2)	
38.86s	0.64f	0.867	0.333	0.140	0.000 (2)	FldPt
40.00s	0.67f	0.826	0.337	0.147	-0.042 (2)	
42.00s	0.71f	0.753	0.343	0.159	-0.115 (2)	
44.00s	0.76f	0.679	0.346	0.171	-0.187 (2)	
46.00s	0.80f	0.604	0.347	0.183	-0.259 (2)	MaxRa
48.00s	0.84f	0.529	0.346	0.195	-0.330 (2)	
50.00s	0.88f	0.453	0.343	0.207	-0.401 (2)	
52.00s	0.91f	0.377	0.338	0.219	-0.471 (2)	
54.00s	0.94f	0.301	0.332	0.230	-0.541 (2)	
56.00s	0.97f	0.226	0.324	0.242	-0.611 (2)	
58.00s	0.99f	0.150	0.315	0.253	-0.679 (2)	
60.00s	1.02f	0.074	0.306	0.264	-0.747 (2)	
62.00s	1.04f	-0.002	0.295	0.274	-0.815 (2)	
64.00s	1.07f	-0.078	0.283	0.285	-0.881 (2)	
66.00s	1.09f	-0.154	0.269	0.294	-0.946 (2)	
68.00s	1.12f	-0.231	0.253	0.303	-1.009 (2)	
70.00s	1.14f	-0.308	0.234	0.312	-1.071 (2)	
72.00s	1.15f	-0.384	0.212	0.320	-1.129 (2)	
74.00s	1.15f	-0.459	0.188	0.327	-1.185 (2)	
76.00s	1.14f	-0.534	0.162	0.333	-1.238 (2)	
78.00s	1.13f	-0.608	0.135	0.338	-1.289 (2)	
80.00s	1.11f	-0.681	0.106	0.342	-1.337 (2)	
82.00s	1.09f	-0.753	0.076	0.345	-1.383 (2)	
84.00s	1.06f	-0.824	0.045	0.347	-1.427 (2)	
86.00s	1.02f	-0.895	0.013	0.348	-1.468 (2)	
86.81s	1.01f	-0.923	0.000	0.348	-1.483 (2)	RaZero

Unprotected Flood Points

Name	L,T,V (m)
(1) Engine room ventilation	12.400f, 2.370p, 3.200
(2) Engine room ventilation	12.400f, 2.370s, 3.200

Righting Arms vs. Heel - MCA REQUIREMENTS (IMO A.749(18))



MCA REQUIREMENTS (IMO A.749(18))

Limit	Min/Max	Actual	Margin	Pass
(1) Area from 0.00 deg to 30.00	>0.0550 m-R	0.091	0.036	Yes
(2) Area from 0.00 deg to 40.00 or Flood	>0.0900 m-R	0.140	0.050	Yes
(3) Area from 30.00 deg to 40.00 or Flood	>0.0300 m-R	0.049	0.019	Yes
(4) Righting Arm at 30.00 deg	>0.200 m	0.297	0.097	Yes
(5) Angle from 0.00 deg to MaxRA	>25.00 deg	46.00	21.00	Yes
(6) GM at Equilibrium	>0.150 m	0.909	0.759	Yes

Hydrostatic Properties

Draft is from Baseline.
Trim: aft 0.030/19.900, heel: stbd 0.94 deg., VCG = 2.303

LCF Draft (m)	Displ (MT)	LCB (m)	VCB (m)	LCF (m)	TPcm (MT/cm)	MTcm (MT-m /cm)	GML (m)	GM(Fluid) (m)
1.594	61.878	8.885f	1.128	7.879f	0.84	1.12	36.150	0.909

Water Specific Gravity = 1.025.
Trim is per 19.90m

3.3 FULLY LOADED ARRIVAL CONDITION (RINA CONDITION)

The results of the intact stability calculations for the 10% - 10% - 100% condition are shown hereafter. Summarising these results in terms of static and dynamic stability requirements yields the following table.

Item	Design	Criteria IMO	Unit
Draught Fore	1.60		m
Draught Aft	1.61		m
Displacement	62.8		tonnes
Area under R.A curve 0 – 30 deg	0.094	0.055	mrad
Area under R.A curve 0 – DFA or 40 deg	0.142	0.090	mrad
Increase of Area 30 - DFA or 40	0.048	0.030	mrad
Max R.A. at 30 deg or more	0.307	0.200	m
Maximum value of R.A attained at	46.2	25	deg
Initial Stability	0.92	0.15	m
Pos righting lever	88		deg
DFA = Down flooding angle	38.4		deg

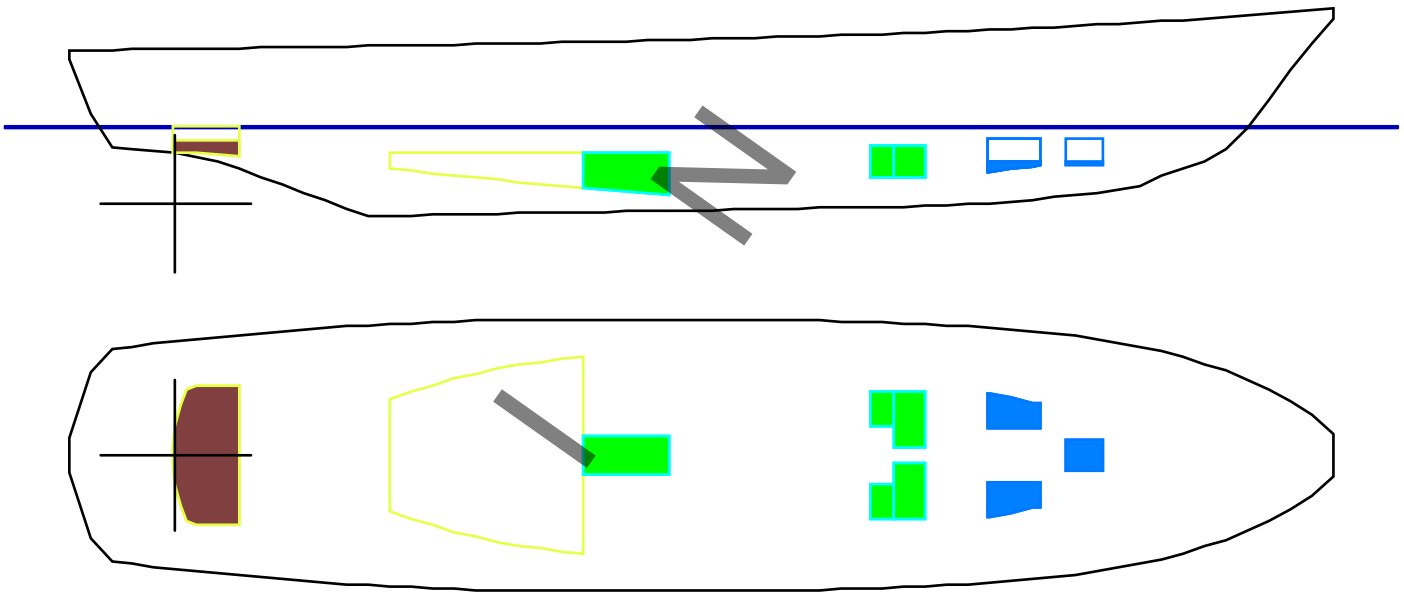
M.Y.YN 586 INTACT STABILITY Fully Loaded Arrival CONDITION 10% FO - 10% FW - 100% GW
USED HULL FORM: 586_2018april.GF1

Floating Status

Draft FP	1.601 m	Heel	0.92s deg	GM(Solid)	0.939 m
Draft MS	1.604 m	Equil	No	F/S Corr.	0.020 m
Draft AP	1.607 m	Wind	Off	GM(Fluid)	0.919 m
Trim	0.01a m	Wave	No	KMT	3.223 m
LCG	8.916f m	VCG-Solid	2.283 m	TPcm	0.84
Displacement	62.8 MT	WaterSpgr	1.025		

Loading Summary

Item	Weight (MT)	LCG (m)	TCG (m)	VCG (m)
Light Ship	58.40	8.936f	0.016s	2.311
Deadweight	4.38	8.648f	0.005s	1.915
Displacement	62.78	8.916f	0.015s	2.283



Fluid Legend

Fluid Name	Legend	Weight (MT)	Load%
FUEL OIL		.47	10.70%
SEWAGE		1.80	100.00%
FRESH WATER		.06	10.00%

Fixed Weight Status

Item	Weight (MT)	LCG (m)	TCG (m)	VCG (m)
LIGHT SHIP	58.40	8.936f	0.016s	2.311u
ALLOWANCE TENDER AND GEAR	0.80	5.200f	0.000	3.100u
PERSONS AND EFFECTS	1.17	10.000f	0.000	3.200u

STORES	0.07	14.000f	0.000	1.500u
Total Fixed:	60.44	8.913f	0.015s	2.338u

Tank Status

FUEL OIL

Tank Name	Spgr	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	FSMT (MT-m)
FO_2	0.840	40.00%	0.47	0.653f	0.043s	1.198	1.3
Subtotals:		10.70%	0.47	0.653f	0.043s	1.198	1.3

SEWAGE

Tank Name	Spgr	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	FSMT (MT-m)
GW_2	1.025	100.00%	0.93	8.424f	0.000	0.671	0.0
GW_1	1.025	100.00%	0.44	13.553f	0.647s	0.931	0.0
BW	1.025	100.00%	0.44	13.553f	0.647p	0.931	0.0
Subtotals:		100.00%	1.80	10.919f	0.000	0.798	0.0

FRESH WATER

Tank Name	Spgr	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	FSMT (MT-m)
FW_1	1.000	10.00%	0.02	16.968f	0.008s	0.847	0.0
FW_2	1.000	10.00%	0.02	15.478f	0.602s	0.802	0.0
FW_3	1.000	10.00%	0.02	15.480f	0.601p	0.802	0.0
Subtotals:		10.00%	0.06	15.981f	0.003s	0.817	0.0

All Tanks

	Spgr	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	FSMT (MT-m)
Totals:		34.31%	2.34	8.991f	0.009s	0.878	1.3

Displacer Status

Item	Status	Spgr	Displ (MT)	LCB (m)	TCB (m)	VCB (m)	Eff /Perm
HULL	Intact	1.025	62.78	8.915f	0.033s	1.135	1.000
SubTotals:			62.78	8.915f	0.033s	1.135	

Unprotected Flood Points

Name	L,T,V (m)	Height (m)
(1) Engine room ventilation	12.400f, 2.370p, 3.200	1.635
(2) Engine room ventilation	12.400f, 2.370s, 3.200	1.559

Righting Arms vs. Heel - MCA REQUIREMENTS (IMO A.749(18))

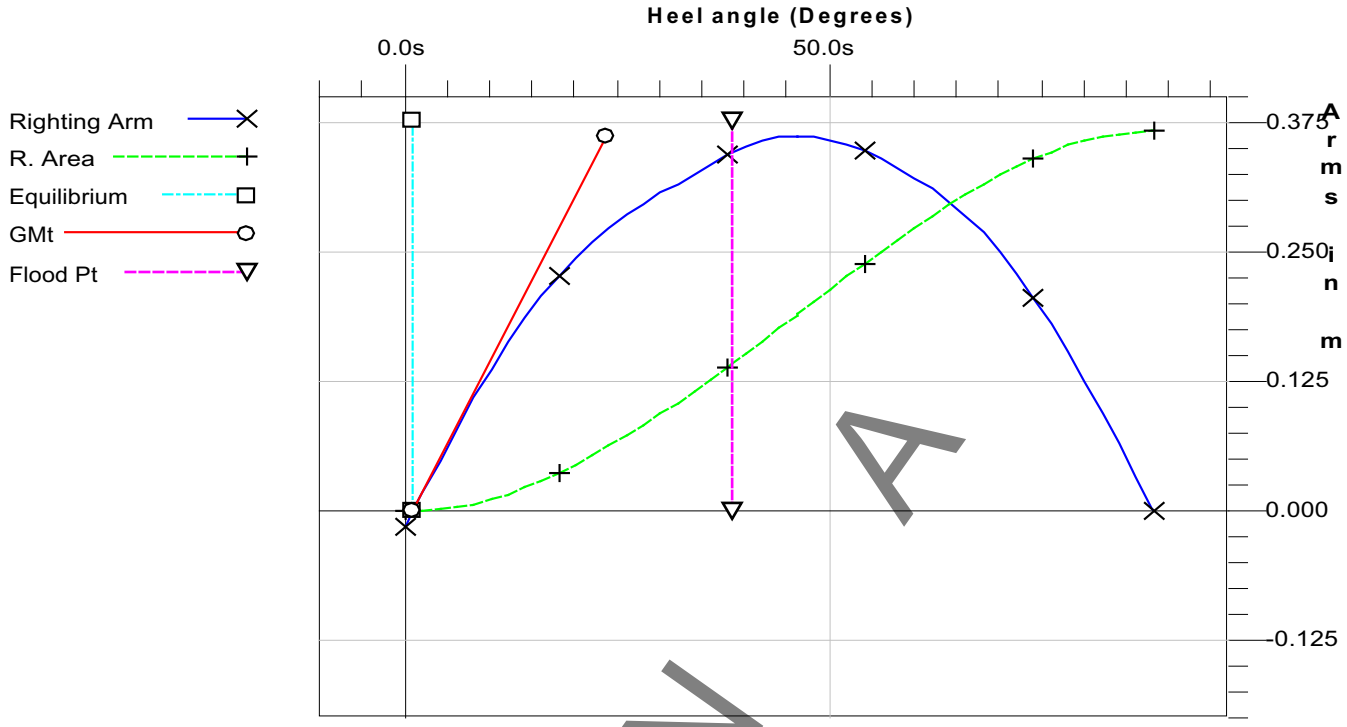
Righting Arms vs Heel Angle

Heel Angle (deg)	Trim Angle (deg)	Origin Depth (m)	Righting Arm (m)	Area (m-Rad)	Flood Pt Height (m)	Notes
0.00	0.02a	1.607	-0.015	0.000	1.597 (1,2)	
0.92s	0.02a	1.607	0.000	0.000	1.559 (2)	Equil
2.00s	0.02a	1.605	0.017	0.000	1.514 (2)	
4.00s	0.01a	1.600	0.049	0.001	1.429 (2)	
6.00s	0.00	1.591	0.079	0.003	1.344 (2)	
8.00s	0.01f	1.577	0.109	0.007	1.259 (2)	
10.00s	0.03f	1.560	0.137	0.011	1.172 (2)	
12.00s	0.06f	1.539	0.163	0.016	1.086 (2)	
14.00s	0.09f	1.513	0.187	0.022	0.999 (2)	
16.00s	0.12f	1.483	0.208	0.029	0.913 (2)	
18.00s	0.16f	1.449	0.228	0.037	0.827 (2)	
20.00s	0.20f	1.410	0.245	0.045	0.742 (2)	
22.00s	0.25f	1.368	0.260	0.054	0.657 (2)	
24.00s	0.30f	1.322	0.274	0.063	0.573 (2)	
26.00s	0.35f	1.272	0.286	0.073	0.490 (2)	
28.00s	0.40f	1.218	0.297	0.083	0.407 (2)	
30.00s	0.46f	1.161	0.307	0.094	0.327 (2)	
32.00s	0.51f	1.101	0.316	0.105	0.247 (2)	
34.00s	0.56f	1.037	0.325	0.116	0.169 (2)	
36.00s	0.61f	0.971	0.334	0.127	0.092 (2)	
38.00s	0.66f	0.901	0.343	0.139	0.017 (2)	
38.46s	0.68f	0.885	0.345	0.142	0.000 (2)	FldPt
40.00s	0.71f	0.830	0.351	0.151	-0.057 (2)	
42.00s	0.76f	0.757	0.357	0.164	-0.129 (2)	
44.00s	0.80f	0.684	0.361	0.176	-0.202 (2)	
46.00s	0.84f	0.609	0.362	0.189	-0.274 (2)	
46.20s	0.85f	0.602	0.362	0.190	-0.281 (2)	MaxRa
48.00s	0.88f	0.534	0.361	0.201	-0.345 (2)	
50.00s	0.92f	0.459	0.358	0.214	-0.416 (2)	
52.00s	0.95f	0.384	0.354	0.226	-0.486 (2)	
54.00s	0.98f	0.308	0.347	0.239	-0.556 (2)	
56.00s	1.00f	0.233	0.340	0.251	-0.625 (2)	
58.00s	1.03f	0.157	0.331	0.262	-0.694 (2)	
60.00s	1.05f	0.082	0.322	0.274	-0.762 (2)	
62.00s	1.08f	0.006	0.311	0.285	-0.829 (2)	
64.00s	1.10f	-0.070	0.298	0.295	-0.896 (2)	
66.00s	1.12f	-0.146	0.285	0.306	-0.961 (2)	
68.00s	1.15f	-0.222	0.269	0.315	-1.025 (2)	
70.00s	1.17f	-0.299	0.251	0.324	-1.086 (2)	
72.00s	1.18f	-0.375	0.229	0.333	-1.145 (2)	
74.00s	1.18f	-0.450	0.205	0.340	-1.201 (2)	
76.00s	1.18f	-0.525	0.180	0.347	-1.255 (2)	
78.00s	1.16f	-0.599	0.153	0.353	-1.306 (2)	
80.00s	1.15f	-0.672	0.125	0.358	-1.355 (2)	
82.00s	1.12f	-0.744	0.095	0.362	-1.401 (2)	
84.00s	1.10f	-0.815	0.065	0.364	-1.444 (2)	
86.00s	1.06f	-0.885	0.033	0.366	-1.485 (2)	
88.00s	1.02f	-0.954	0.001	0.367	-1.524 (2)	
88.06s	1.02f	-0.956	0.000	0.367	-1.525 (2)	RaZero

Unprotected Flood Points

Name	L,T,V (m)
(1) Engine room ventilation	12.400f, 2.370p, 3.200
(2) Engine room ventilation	12.400f, 2.370s, 3.200

Righting Arms vs. Heel - MCA REQUIREMENTS (IMO A.749(18))



MCA REQUIREMENTS (IMO A.749(18))

Limit	Min/Max	Actual	Margin	Pass
(1) Area from 0.00 deg to 30.00	>0.0550 m-R	0.094	0.039	Yes
(2) Area from 0.00 deg to 40.00 or Flood	>0.0900 m-R	0.142	0.052	Yes
(3) Area from 30.00 deg to 40.00 or Flood	>0.0300 m-R	0.048	0.018	Yes
(4) Righting Arm at 30.00 deg	>0.200 m	0.307	0.107	Yes
(5) Angle from 0.00 deg to MaxRA	>25.00 deg	46.20	21.20	Yes
(6) GM at Equilibrium	>0.150 m	0.919	0.769	Yes

Hydrostatic Properties

Draft is from Baseline.
Trim: aft 0.006/19.900, heel: stbd 0.92 deg., VCG = 2.283

LCF Draft (m)	Displ (MT)	LCB (m)	VCB (m)	LCF (m)	TPcm (MT/cm)	MTcm (MT-m /cm)	GML (m)	GM(Fluid) (m)
1.605	62.780	8.915f	1.135	7.896f	0.84	1.13	35.882	0.919

Water Specific Gravity = 1.025.
Trim is per 19.90m

3.4 HALF LOADED CONDITION

The results of the intact stability calculations for the half-loaded condition are shown hereafter. Summarising these results in terms of static and dynamic stability requirements yields the following table.

Item	Design	Criteria IMO	Unit
Draught Fore	1.59		m
Draught Aft	1.64		m
Displacement	64.2		tonnes
Area under R.A curve 0 – 30 deg	0.904	0.055	mrad
Area under R.A curve 0 – DFA or 40 deg	0.142	0.090	mrad
Increase of Area 30 - DFA or 40	0.048	0.030	mrad
Max R.A. at 30 deg or more	0.313	0.20	m
Maximum value of R.A attained at	46	25	deg
Initial Stability	0.89	0.15	m
Pos righting lever	89		deg
DFA = Down flooding angle	38.2		deg

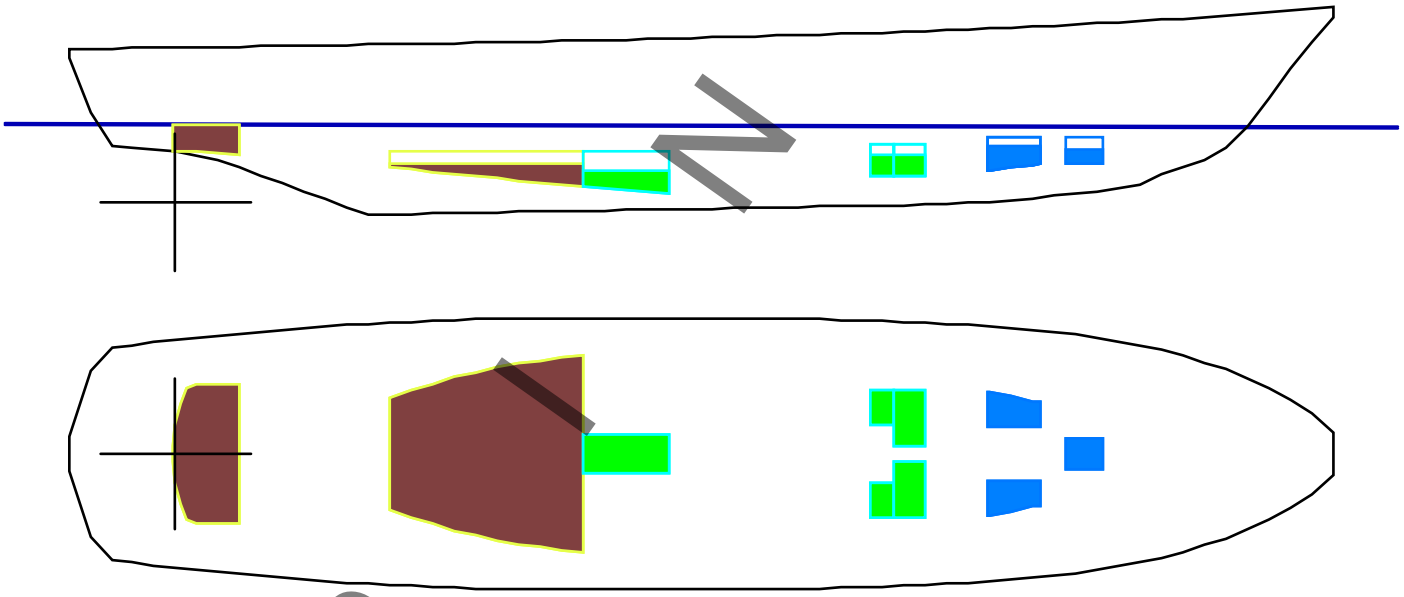
M.Y.YN 586 INTACT STABILITY Half Loaded CONDITION 50% FO - 50% FW - 50% GW
USED HULL FORM: 586_2018april.GF1

Floating Status

Draft FP	1.587 m	Heel	0.92s deg	GM(Solid)	0.956 m
Draft MS	1.616 m	Equil	No	F/S Corr.	0.061 m
Draft AP	1.644 m	Wind	Off	GM(Fluid)	0.894 m
Trim	0.06a m	Wave	No	KMT	3.212 m
LCG	8.803f m	VCG-Solid	2.256 m	TPcm	0.84
Displacement	64.2 MT	WaterSpgr	1.025		

Loading Summary

Item	Weight (MT)	LCG (m)	TCG (m)	VCG (m)
Light Ship	58.40	8.936f	0.016s	2.311
Deadweight	5.83	7.465f	0.011s	1.710
Displacement	64.23	8.803f	0.015s	2.256



Fluid Legend

Fluid Name	Legend	Weight (MT)	Load%
FUEL OIL		2.30	52.39%
SEWAGE		.90	50.00%
FRESH WATER		.31	50.00%

Fixed Weight Status

Item	Weight (MT)	LCG (m)	TCG (m)	VCG (m)
LIGHT SHIP	58.40	8.936f	0.016s	2.311u
ALLOWANCE TENDER AND GEAR	0.80	5.200f	0.000	3.100u

PERSONS AND EFFECTS	1.17	10.000f	0.000	3.200u
STORES	0.35	14.000f	0.000	1.500u
Total Fixed:	60.72	8.937f	0.015s	2.334u

Tank Status

FUEL OIL

Tank Name	Spgr	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	FSMT (MT-m)
FO_1	0.840	35.00%	1.12	6.385f	0.053s	0.680	3.7
FO_2	0.840	100.00%	1.17	0.634f	0.000	1.351	0.0
Subtotals:		52.39%	2.30	3.448f	0.026s	1.022	3.7

SEWAGE

Tank Name	Spgr	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	FSMT (MT-m)
GW_2	1.025	50.00%	0.46	8.445f	0.002s	0.480	0.1
GW_1	1.025	50.00%	0.22	13.569f	0.570s	0.785	0.1
BW	1.025	50.00%	0.22	13.571f	0.561p	0.785	0.1
Subtotals:		50.00%	0.90	10.938f	0.003s	0.628	0.2

FRESH WATER

Tank Name	Spgr	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	FSMT (MT-m)
FW_1	1.000	50.00%	0.10	16.968f	0.002s	0.953	0.0
FW_2	1.000	50.00%	0.10	15.560f	0.672s	0.982	0.0
FW_3	1.000	50.00%	0.10	15.561f	0.670p	0.982	0.0
Subtotals:		50.00%	0.31	16.034f	0.001s	0.972	0.0

All Tanks

	Spgr	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	FSMT (MT-m)
Totals:		51.54%	3.51	6.484f	0.018s	0.917	3.9

Displacer Status

Item	Status	Spgr	Displ (MT)	LCB (m)	TCB (m)	VCB (m)	Eff /Perm
HULL	Intact	1.025	64.23	8.800f	0.033s	1.146	1.000
SubTotals:			64.23	8.800f	0.033s	1.146	

Unprotected Flood Points

Name	L,T,V (m)	Height (m)
(1) Engine room ventilation	12.400f, 2.370p, 3.200	1.629
(2) Engine room ventilation	12.400f, 2.370s, 3.200	1.553

Righting Arms vs. Heel - MCA REQUIREMENTS (IMO A.749(18))

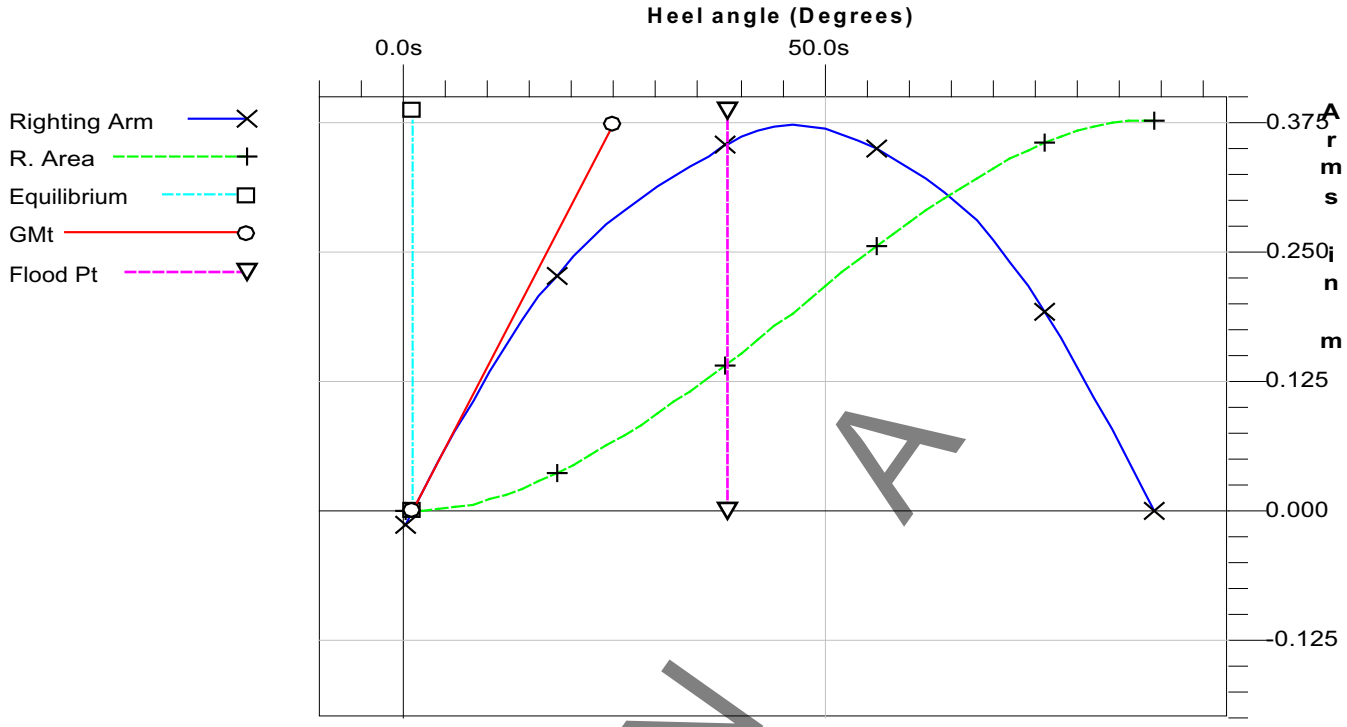
Righting Arms vs Heel Angle

Heel Angle (deg)	Trim Angle (deg)	Origin Depth (m)	Righting Arm (m)	Area (m-Rad)	Flood Pt Height (m)	Notes
0.00	0.16a	1.645	-0.014	0.000	1.591 (1,2)	
0.94s	0.16a	1.644	0.000	0.000	1.552 (2)	Equil
2.00s	0.16a	1.643	0.017	0.000	1.508 (2)	
4.00s	0.16a	1.638	0.047	0.001	1.424 (2)	
6.00s	0.15a	1.629	0.077	0.003	1.339 (2)	
8.00s	0.14a	1.616	0.106	0.007	1.253 (2)	
10.00s	0.12a	1.600	0.134	0.011	1.167 (2)	
12.00s	0.10a	1.579	0.160	0.016	1.080 (2)	
14.00s	0.07a	1.554	0.185	0.022	0.994 (2)	
16.00s	0.04a	1.525	0.207	0.029	0.907 (2)	
18.00s	0.01a	1.492	0.227	0.036	0.821 (2)	
20.00s	0.03f	1.454	0.246	0.045	0.736 (2)	
22.00s	0.07f	1.413	0.262	0.053	0.651 (2)	
24.00s	0.12f	1.367	0.277	0.063	0.567 (2)	
26.00s	0.17f	1.318	0.290	0.073	0.483 (2)	
28.00s	0.22f	1.265	0.302	0.083	0.401 (2)	
30.00s	0.27f	1.209	0.313	0.094	0.320 (2)	
32.00s	0.32f	1.149	0.323	0.105	0.240 (2)	
34.00s	0.37f	1.086	0.333	0.116	0.162 (2)	
36.00s	0.42f	1.020	0.343	0.128	0.085 (2)	
38.00s	0.47f	0.951	0.353	0.140	0.010 (2)	
38.28s	0.47f	0.941	0.354	0.142	0.000 (2)	FldPt
40.00s	0.51f	0.880	0.361	0.153	-0.064 (2)	
42.00s	0.56f	0.808	0.367	0.165	-0.137 (2)	
44.00s	0.60f	0.735	0.371	0.178	-0.209 (2)	
46.00s	0.64f	0.662	0.372	0.191	-0.282 (2)	MaxRa
48.00s	0.67f	0.588	0.371	0.204	-0.353 (2)	
50.00s	0.71f	0.513	0.368	0.217	-0.424 (2)	
52.00s	0.74f	0.438	0.364	0.230	-0.495 (2)	
54.00s	0.76f	0.364	0.357	0.243	-0.565 (2)	
56.00s	0.79f	0.289	0.349	0.255	-0.635 (2)	
58.00s	0.81f	0.215	0.341	0.267	-0.704 (2)	
60.00s	0.83f	0.140	0.331	0.279	-0.772 (2)	
62.00s	0.85f	0.065	0.321	0.290	-0.839 (2)	
64.00s	0.87f	-0.009	0.309	0.301	-0.906 (2)	
66.00s	0.88f	-0.083	0.295	0.312	-0.971 (2)	
68.00s	0.89f	-0.157	0.280	0.322	-1.035 (2)	
70.00s	0.91f	-0.233	0.262	0.331	-1.097 (2)	
72.00s	0.92f	-0.308	0.241	0.340	-1.156 (2)	
74.00s	0.92f	-0.382	0.218	0.348	-1.213 (2)	
76.00s	0.91f	-0.456	0.193	0.355	-1.266 (2)	
78.00s	0.90f	-0.530	0.167	0.361	-1.318 (2)	
80.00s	0.88f	-0.602	0.139	0.367	-1.367 (2)	
82.00s	0.86f	-0.674	0.110	0.371	-1.413 (2)	
84.00s	0.83f	-0.745	0.080	0.374	-1.457 (2)	
86.00s	0.79f	-0.814	0.049	0.377	-1.498 (2)	
88.00s	0.75f	-0.883	0.017	0.378	-1.537 (2)	
89.06s	0.73f	-0.919	0.000	0.378	-1.556 (2)	RaZero

Unprotected Flood Points

Name	L,T,V (m)
(1) Engine room ventilation	12.400f, 2.370p, 3.200
(2) Engine room ventilation	12.400f, 2.370s, 3.200

Righting Arms vs. Heel - MCA REQUIREMENTS (IMO A.749(18))



MCA REQUIREMENTS (IMO A.749(18))

Limit	Min/Max	Actual	Margin	Pass
(1) Area from 0.00 deg to 30.00	>0.0550 m-R	0.094	0.039	Yes
(2) Area from 0.00 deg to 40.00 or Flood	>0.0900 m-R	0.142	0.052	Yes
(3) Area from 30.00 deg to 40.00 or Flood	>0.0300 m-R	0.048	0.018	Yes
(4) Righting Arm at 30.00 deg	>0.200 m	0.313	0.113	Yes
(5) Angle from 0.00 deg to MaxRA	>25.00 deg	46.00	21.00	Yes
(6) GM at Equilibrium	>0.150 m	0.894	0.744	Yes

Hydrostatic Properties

Draft is from Baseline.
Trim: aft 0.057/19.900, heel: stbd 0.92 deg., VCG = 2.256

LCF Draft (m)	Displ (MT)	LCB (m)	VCB (m)	LCF (m)	TPcm (MT/cm)	MTcm (MT-m /cm)	GML (m)	GM(Fluid) (m)
1.622	64.233	8.800f	1.146	7.861f	0.84	1.14	35.233	0.894

Water Specific Gravity = 1.025.
Trim is per 19.90m

3.5 FULLY LOADED DEPARTURE CONDITION (RINA CONDITION)

The results of the intact stability calculations for the 100% - 100% - 0% condition are shown hereafter. Summarising these results in terms of static and dynamic stability requirements yields the following table.

Item	Design	Criteria IMO	Unit
Draught Fore	1.60		m
Draught Aft	1.67		m
Displacement	66.1		tonnes
Area under R.A curve 0 – 30 deg	0.103	0.055	mrad
Area under R.A curve 0 – DFA or 40 deg	0.152	0.090	mrad
Increase of Area 30 - DFA or 40	0.050	0.030	mrad
Max R.A. at 30 deg or more	0.343	0.20	m
Maximum value of R.A attained at	45.8	25	deg
Initial Stability	0.97	0.15	m
Pos righting lever	89		deg
DFA = Down flooding angle	37.8		deg

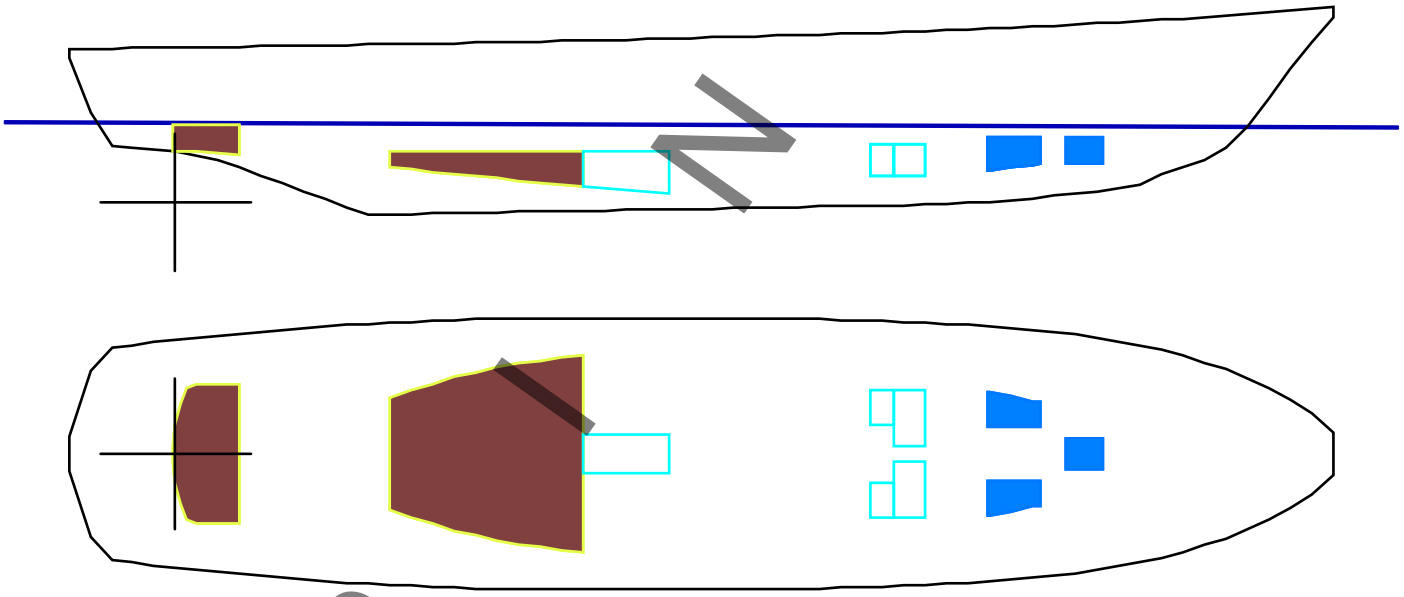
M.Y.YN 586 INTACT STABILITY Fully Loaded Depature CONDITION 100% FO - 100% FW - 0% GW
USED HULL FORM: 586_2018april.GF1

Floating Status

Draft FP	1.599 m	Heel	0.83s deg	GM(Solid)	0.966 m
Draft MS	1.636 m	Equil	No	F/S Corr.	0.000 m
Draft AP	1.673 m	Wind	Off	GM(Fluid)	0.966 m
Trim	0.07a m	Wave	No	KMT	3.193 m
LCG	8.746f m	VCG-Solid	2.228 m	TPcm	0.85
Displacement	66.1 MT	WaterSpgr	1.025		

Loading Summary

Item	Weight (MT)	LCG (m)	TCG (m)	VCG (m)
Light Ship	58.40	8.936f	0.016s	2.311
Deadweight	7.67	7.297f	0.000	1.596
Displacement	66.08	8.746f	0.014s	2.228



Fluid Legend

Fluid Name	Legend	Weight (MT)	Load%
FUEL OIL		4.38	100.00%
FRESH WATER		.62	100.00%

Fixed Weight Status

Item	Weight (MT)	LCG (m)	TCG (m)	VCG (m)
LIGHT SHIP	58.40	8.936f	0.016s	2.311u
ALLOWANCE TENDER AND GEAR	0.80	5.200f	0.000	3.100u
PERSONS AND EFFECTS	1.17	10.000f	0.000	3.200u
STORES	0.70	14.000f	0.000	1.500u

Total Fixed:	61.07	8.966f	0.015s	2.329u

Tank Status

FUEL OIL

Tank Name	Spgr	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	FSMT (MT-m)
FO_1	0.840	100.00%	3.21	6.121f	0.000	0.842	0.0
FO_2	0.840	100.00%	1.17	0.634f	0.000	1.351	0.0
Subtotals:		100.00%	4.38	4.654f	0.000	0.978	0.0

SEWAGE

Tank Name	Spgr	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	FSMT (MT-m)

FRESH WATER

Tank Name	Spgr	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	FSMT (MT-m)
FW_1	1.000	100.00%	0.21	16.969f	0.000	1.085	0.0
FW_2	1.000	100.00%	0.20	15.582f	0.725s	1.117	0.0
FW_3	1.000	100.00%	0.20	15.582f	0.725p	1.117	0.0
Subtotals:		100.00%	0.62	16.049f	0.000	1.106	0.0

All Tanks

	Spgr	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	FSMT (MT-m)
Totals:		73.49%	5.00	6.062f	0.000	0.994	0.0

Displacer Status

Item	Status	Spgr	Displ (MT)	LCB (m)	TCB (m)	VCB (m)	Eff /Perm
HULL	Intact	1.025	66.08	8.742f	0.029s	1.160	1.000
SubTotals:			66.08	8.742f	0.029s	1.160	

Unprotected Flood Points

Name	L,T,V (m)	Height (m)
(1) Engine room ventilation	12.400f, 2.370p, 3.200	1.608
(2) Engine room ventilation	12.400f, 2.370s, 3.200	1.539

Righting Arms vs. Heel - MCA REQUIREMENTS (IMO A.749(18))

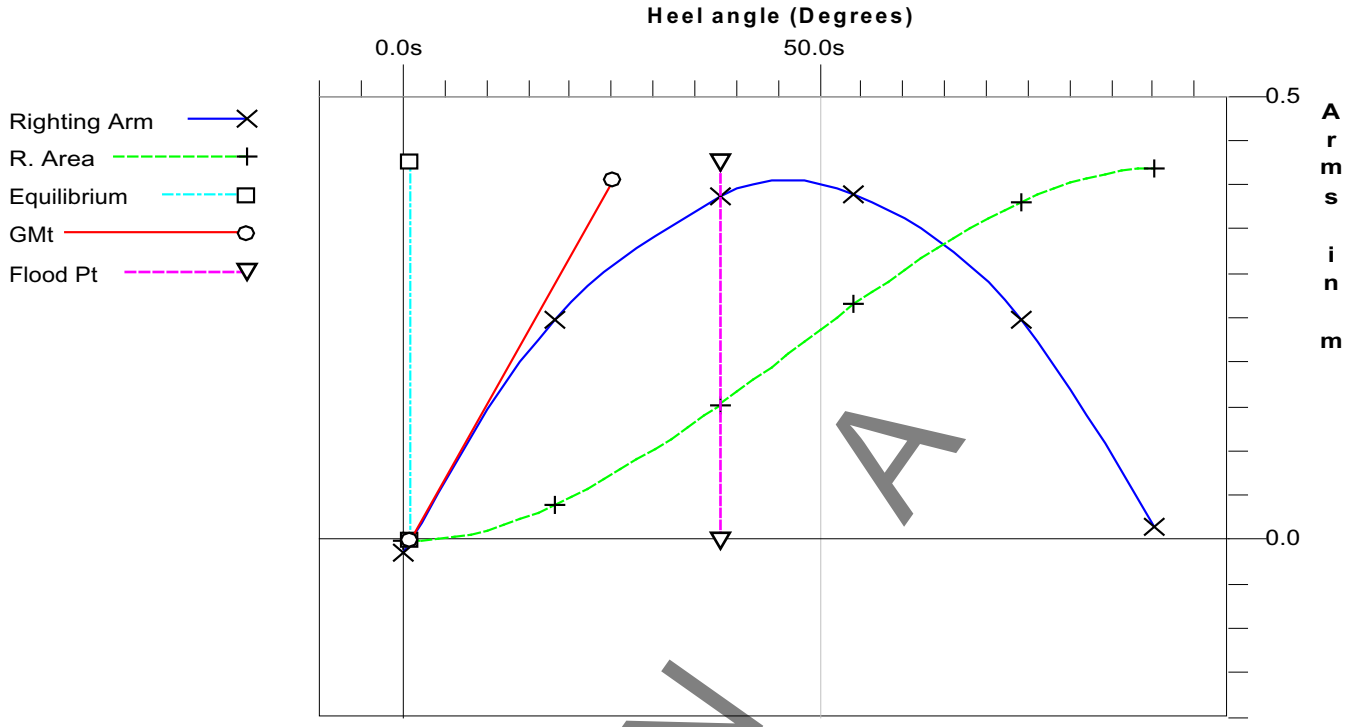
Righting Arms vs Heel Angle

Heel Angle (deg)	Trim Angle (deg)	Origin Depth (m)	Righting Arm (m)	Area (m-Rad)	Flood Pt Height (m)	Notes
0.00	0.21a	1.673	-0.014	0.000	1.573 (1,2)	
0.84s	0.21a	1.673	0.000	0.000	1.538 (2)	Equil
2.00s	0.21a	1.672	0.020	0.000	1.490 (2)	
4.00s	0.21a	1.667	0.053	0.001	1.406 (2)	
6.00s	0.20a	1.658	0.085	0.004	1.321 (2)	
8.00s	0.19a	1.646	0.117	0.007	1.235 (2)	
10.00s	0.18a	1.630	0.147	0.012	1.149 (2)	
12.00s	0.16a	1.610	0.175	0.018	1.062 (2)	
14.00s	0.14a	1.586	0.202	0.024	0.976 (2)	
16.00s	0.11a	1.557	0.226	0.032	0.889 (2)	
18.00s	0.08a	1.525	0.248	0.040	0.803 (2)	
20.00s	0.04a	1.488	0.268	0.049	0.718 (2)	
22.00s	0.00a	1.447	0.286	0.059	0.633 (2)	
24.00s	0.04f	1.402	0.302	0.069	0.548 (2)	
26.00s	0.08f	1.354	0.317	0.080	0.465 (2)	
28.00s	0.13f	1.301	0.331	0.091	0.383 (2)	
30.00s	0.18f	1.246	0.343	0.103	0.302 (2)	
32.00s	0.23f	1.186	0.355	0.115	0.222 (2)	
34.00s	0.28f	1.124	0.366	0.127	0.144 (2)	
36.00s	0.32f	1.058	0.377	0.140	0.068 (2)	
37.80s	0.37f	0.997	0.387	0.152	0.000 (2)	FldPt
38.00s	0.37f	0.990	0.388	0.154	-0.007 (2)	
40.00s	0.41f	0.920	0.396	0.167	-0.081 (2)	
42.00s	0.45f	0.849	0.402	0.181	-0.155 (2)	
44.00s	0.49f	0.777	0.406	0.195	-0.228 (2)	
45.80s	0.52f	0.711	0.407	0.208	-0.293 (2)	MaxRa
46.00s	0.53f	0.704	0.407	0.210	-0.300 (2)	
48.00s	0.56f	0.631	0.406	0.224	-0.372 (2)	
50.00s	0.59f	0.557	0.402	0.238	-0.443 (2)	
52.00s	0.62f	0.483	0.397	0.252	-0.514 (2)	
54.00s	0.64f	0.409	0.390	0.266	-0.585 (2)	
56.00s	0.66f	0.336	0.382	0.279	-0.654 (2)	
58.00s	0.68f	0.262	0.372	0.292	-0.723 (2)	
60.00s	0.70f	0.188	0.363	0.305	-0.792 (2)	
62.00s	0.72f	0.114	0.351	0.318	-0.860 (2)	
64.00s	0.73f	0.042	0.338	0.330	-0.926 (2)	
66.00s	0.74f	-0.031	0.324	0.341	-0.992 (2)	
68.00s	0.75f	-0.104	0.309	0.352	-1.056 (2)	
70.00s	0.76f	-0.178	0.292	0.363	-1.119 (2)	
72.00s	0.77f	-0.253	0.271	0.373	-1.178 (2)	
74.00s	0.77f	-0.327	0.248	0.382	-1.235 (2)	
76.00s	0.76f	-0.400	0.223	0.390	-1.290 (2)	
78.00s	0.75f	-0.473	0.197	0.397	-1.341 (2)	
80.00s	0.73f	-0.545	0.169	0.404	-1.390 (2)	
82.00s	0.70f	-0.616	0.140	0.409	-1.437 (2)	
84.00s	0.67f	-0.687	0.110	0.413	-1.481 (2)	
86.00s	0.64f	-0.756	0.079	0.417	-1.523 (2)	
88.00s	0.60f	-0.825	0.047	0.419	-1.562 (2)	
90.00s	0.56f	-0.892	0.015	0.420	-1.598 (2)	

Unprotected Flood Points

Name	L,T,V (m)
(1) Engine room ventilation	12.400f, 2.370p, 3.200
(2) Engine room ventilation	12.400f, 2.370s, 3.200

Righting Arms vs. Heel - MCA REQUIREMENTS (IMO A.749(18))



MCA REQUIREMENTS (IMO A.749(18))

Limit	Min/Max	Actual	Margin	Pass
(1) Area from 0.00 deg to 30.00	>0.0550 m-R	0.103	0.048	Yes
(2) Area from 0.00 deg to 40.00 or Flood	>0.0900 m-R	0.152	0.062	Yes
(3) Area from 30.00 deg to 40.00 or Flood	>0.0300 m-R	0.050	0.020	Yes
(4) Righting Arm at 30.00 deg	>0.200 m	0.343	0.143	Yes
(5) Angle from 0.00 deg to MaxRA	>25.00 deg	45.80	20.80	Yes
(6) GM at Equilibrium	>0.150 m	0.965	0.815	Yes

Hydrostatic Properties

Draft is from Baseline.
Trim: aft 0.075/19.900, heel: stbd 0.83 deg., VCG = 2.228

LCF Draft (m)	Displ (MT)	LCB (m)	VCB (m)	LCF (m)	TPcm (MT/cm)	MTcm (MT-m /cm)	GML (m)	GM(Solid) (m)
1.644	66.077	8.742f	1.160	7.852f	0.85	1.15	34.715	0.966

Water Specific Gravity = 1.025.
Trim is per 19.90m

OTHER STABILITY CRITERIA

3.6 CALCULATION OF HEEL DUE TO TURNING

IMO RES 749(18)

The heeling moment is approximated by

$$M_H = \frac{0{,}02\ V_0^2 \Delta\ (KG - 0{,}5T_M)}{L_{WL}}$$

Where
Mh = Heeling Moment in ton-metres
V0 = Service Speed in m/s
Δ = Displacement in tons
KG = C.O.G above keel corrected for FSM in metres
TM = Mean Draught in metres
LWL = Waterline length of the yacht in metres

YN 586 HEEL DUE TO TURNING

		Unit	100%-100%	50%-50%	10%-10%
INPUT DATA					
Length waterline	L	[m]	19.90	19.90	19.90
Draught	d	[m]	1.67	1.63	1.60
Displacement		[tons]	68	65	63
Vertical centre of gravity	KG	[m] AB	2.21	2.26	2.30
Metacentric height	GMt	m	0.96	0.89	0.84

CALCULATED HEEL AT CRUISING SPEED 11 [KNOTS]

		Unit	100%-100%	50%-50%	10%-10%
Heeling moment	Mh	[tonm]	3.0	3.0	3.0
Heeling angle		[deg]	2.64	3.01	3.29
Compliance with criterion (<10 deg)			PASSED	PASSED	PASSED

CALCULATED HEEL AT MAXIMUM SPEED 13 [knots]

		Unit	100%-100%	50%-50%	10%-10%
Heeling moment	Mh	[tonm]	4.2	4.2	4.2
Heeling angle		[deg]	3.69	4.20	4.60
Compliance with criterion (<10 deg)		[-]	PASSED	PASSED	PASSED

3.7 THE ANGLE OF HEEL DUE TO CROWDING OF GUESTS ON ONE SIDE

IMO res 748(18)

The heeling moment is approximated by:

$$M_{H\ GUEST} = N * 75 * d$$

Where MH = Heeling Moment induced by the guests in ton-metres
N = Number of guests
d = Shifting distance of guests to one side

The angle of heel due to the crowding guests to one side is:

$$Heel = arctan\left(\frac{M_{H\ GUEST}}{\Delta * G'M}\right)$$

Where G'M = Height of metacenter (corrected for FSM) in metres
Δ = Displacement in tons

YN 586 HEEL DUE TO CROWDING OF GUEST

		Unit	100%-100%	50%-50%	10%-10%
INPUT DATA					
Displacement	Disp	[tons]	68	65	63
Metracentric height incl. FSC	G'M	[m]	0.96	0.89	0.84
Number of guest	N	[-]			
Average weight	W	[kg]			
Shifting distance	d	[m]			
CALCULATED HEEL DUE TO CROWDING OF GUEST					
Heeling moment	Mh	[tonm]			
		Unit	**100%-100%**	**50%-50%**	**10%-10%**
Heeling angle		[deg]	1.65	1.86	2.04
Compliance with criterion (<10 deg)		[-]	PASSED	PASSED	PASSED

4 TABLES OF HYDROSTATIC DATA

YN 586 HYDROSTATIC DATA TRIM 0.40 M FORW

Hydrostatic Properties

Draft is from Baseline.
Trim: fwd 0.400/19.900, No heel, VCG = 0.000

Draft at 9.950f (m)	Displ (MT)	LCB (m)	VCB (m)	LCF (m)	TPcm (MT/cm)	MTcm (MT-m /cm)	KML (m)	KMT (m)
1.400	43.706	10.225f	0.989	8.689f	0.73	0.91	41.349	3.235
1.420	45.176	10.174f	1.002	8.618f	0.74	0.94	41.468	3.234
1.440	46.668	10.123f	1.015	8.558f	0.75	0.97	41.423	3.232
1.460	48.181	10.073f	1.028	8.505f	0.76	1.00	41.276	3.228
1.480	49.714	10.024f	1.040	8.458f	0.77	1.03	41.056	3.225
1.500	51.265	9.976f	1.053	8.417f	0.78	1.05	40.781	3.220
1.520	52.833	9.929f	1.066	8.380f	0.79	1.07	40.465	3.215
1.540	54.418	9.884f	1.078	8.347f	0.80	1.10	40.116	3.208
1.560	56.018	9.839f	1.091	8.317f	0.80	1.12	39.746	3.201
1.580	57.633	9.797f	1.103	8.289f	0.81	1.14	39.359	3.194
1.600	59.262	9.755f	1.116	8.265f	0.82	1.16	38.960	3.186
1.620	60.905	9.715f	1.128	8.243f	0.83	1.18	38.547	3.178
1.640	62.561	9.676f	1.141	8.227f	0.83	1.20	38.084	3.168
1.660	64.228	9.638f	1.153	8.214f	0.84	1.21	37.616	3.158
1.680	65.907	9.602f	1.165	8.202f	0.84	1.23	37.149	3.147
1.700	67.597	9.567f	1.177	8.193f	0.85	1.25	36.682	3.136

Water Specific Gravity = 1.025.
Trim is per 19.90m

YN 586 HYDROSTATIC DATA TRIM 0.20 M FORW

Hydrostatic Properties

Draft is from Baseline.
Trim: fwd 0.200/19.900, No heel, VCG = 0.000

Draft at 9.950f (m)	Displ (MT)	LCB (m)	VCB (m)	LCF (m)	TPcm (MT/cm)	MTcm (MT-m /cm)	KML (m)	KMT (m)
1.400	44.810	9.765f	0.992	8.281f	0.76	0.99	44.135	3.317
1.420	46.334	9.716f	1.006	8.244f	0.77	1.02	43.705	3.311
1.440	47.876	9.668f	1.019	8.211f	0.78	1.04	43.248	3.305
1.460	49.434	9.622f	1.032	8.181f	0.78	1.06	42.764	3.297
1.480	51.008	9.577f	1.045	8.153f	0.79	1.08	42.248	3.288
1.500	52.597	9.534f	1.058	8.128f	0.80	1.10	41.741	3.278
1.520	54.201	9.492f	1.070	8.109f	0.81	1.12	41.197	3.267
1.540	55.818	9.452f	1.083	8.094f	0.81	1.14	40.625	3.255
1.560	57.448	9.414f	1.096	8.080f	0.82	1.16	40.058	3.243
1.580	59.089	9.377f	1.109	8.069f	0.82	1.17	39.493	3.229
1.600	60.743	9.341f	1.121	8.060f	0.83	1.19	38.933	3.216
1.620	62.407	9.307f	1.134	8.053f	0.84	1.20	38.381	3.202
1.640	64.081	9.274f	1.146	8.047f	0.84	1.22	37.836	3.188
1.660	65.766	9.243f	1.159	8.042f	0.85	1.23	37.298	3.173
1.680	67.460	9.213f	1.171	8.039f	0.85	1.25	36.771	3.159
1.700	69.164	9.184f	1.183	8.037f	0.85	1.26	36.253	3.145

Water Specific Gravity = 1.025.
Trim is per 19.90m

YN 586 HYDROSTATIC DATA AT EVEN KEEL

Hydrostatic Properties

Draft is from Baseline.
No Trim, No heel, VCG = 0.000

Draft at 9.950f (m)	Displ (MT)	LCB (m)	VCB (m)	LCF (m)	TPcm (MT/cm)	MTcm (MT-m /cm)	KML (m)	KMT (m)
1.400	46.213	9.284f	1.002	7.981f	0.78	1.04	44.969	3.389
1.420	47.773	9.241f	1.016	7.964f	0.78	1.06	44.264	3.375
1.440	49.348	9.201f	1.029	7.950f	0.79	1.08	43.562	3.361
1.460	50.936	9.162f	1.042	7.938f	0.80	1.10	42.872	3.346
1.480	52.538	9.125f	1.055	7.927f	0.80	1.11	42.190	3.331
1.500	54.152	9.089f	1.068	7.919f	0.81	1.13	41.517	3.314
1.520	55.779	9.055f	1.081	7.913f	0.82	1.15	40.855	3.297
1.540	57.416	9.023f	1.094	7.907f	0.82	1.16	40.206	3.280
1.560	59.065	8.992f	1.107	7.904f	0.83	1.17	39.569	3.263
1.580	60.723	8.962f	1.119	7.900f	0.83	1.19	38.931	3.245
1.600	62.391	8.934f	1.132	7.899f	0.84	1.20	38.326	3.227
1.620	64.068	8.907f	1.144	7.899f	0.84	1.21	37.735	3.209
1.640	65.754	8.881f	1.157	7.900f	0.85	1.23	37.157	3.192
1.660	67.449	8.857f	1.169	7.902f	0.85	1.24	36.597	3.175
1.680	69.153	8.833f	1.182	7.905f	0.85	1.25	36.052	3.157
1.700	70.864	8.811f	1.194	7.908f	0.86	1.26	35.523	3.141

Water Specific Gravity = 1.025.
Trim is per 19.90m

YN 586 HYDROSTATIC DATA TRIM 0.20 M AFT

Hydrostatic Properties

Draft is from Baseline.
Trim: aft 0.200/19.900, No heel, VCG = 0.000

Draft at 9.950f (m)	Displ (MT)	LCB (m)	VCB (m)	LCF (m)	TPcm (MT/cm)	MTcm (MT-m /cm)	KML (m)	KMT (m)
1.400	47.845	8.805f	1.018	7.763f	0.79	1.07	44.411	3.431
1.420	49.428	8.772f	1.032	7.758f	0.80	1.08	43.622	3.412
1.440	51.024	8.740f	1.045	7.754f	0.80	1.10	42.853	3.391
1.460	52.631	8.710f	1.058	7.752f	0.81	1.11	42.102	3.370
1.480	54.250	8.682f	1.071	7.751f	0.81	1.13	41.369	3.349
1.500	55.880	8.655f	1.084	7.752f	0.82	1.14	40.658	3.328
1.520	57.519	8.629f	1.097	7.753f	0.82	1.16	39.966	3.307
1.540	59.169	8.605f	1.109	7.755f	0.83	1.17	39.295	3.286
1.560	60.828	8.582f	1.122	7.759f	0.83	1.18	38.646	3.265
1.580	62.496	8.560f	1.135	7.762f	0.84	1.19	38.016	3.244
1.600	64.173	8.540f	1.147	7.767f	0.84	1.21	37.406	3.224
1.620	65.858	8.520f	1.159	7.772f	0.84	1.22	36.813	3.204
1.640	67.551	8.501f	1.172	7.777f	0.85	1.23	36.240	3.184
1.660	69.252	8.484f	1.184	7.783f	0.85	1.24	35.686	3.165
1.680	70.960	8.467f	1.196	7.789f	0.86	1.25	35.139	3.146
1.700	72.676	8.451f	1.209	7.795f	0.86	1.26	34.622	3.128

Water Specific Gravity = 1.025.
Trim is per 19.90m

YN 586 HYDROSTATIC DATA TRIM 0.40 M AFT

Hydrostatic Properties

Draft is from Baseline.
Trim: aft 0.400/19.900, No heel, VCG = 0.000

Draft at 9.950f (m)	Displ (MT)	LCB (m)	VCB (m)	LCF (m)	TPcm (MT/cm)	MTcm (MT-m /cm)	KML (m)	KMT (m)
1.400	49.656	8.343f	1.040	7.586f	0.80	1.08	43.188	3.447
1.420	51.254	8.319f	1.053	7.590f	0.80	1.09	42.387	3.422
1.440	52.862	8.297f	1.066	7.594f	0.81	1.11	41.613	3.397
1.460	54.480	8.277f	1.079	7.600f	0.81	1.12	40.864	3.373
1.480	56.109	8.257f	1.092	7.605f	0.82	1.13	40.141	3.348
1.500	57.747	8.239f	1.104	7.612f	0.82	1.14	39.442	3.324
1.520	59.394	8.221f	1.117	7.619f	0.83	1.16	38.767	3.300
1.540	61.050	8.205f	1.129	7.626f	0.83	1.17	38.114	3.277
1.560	62.715	8.190f	1.142	7.633f	0.83	1.18	37.483	3.254
1.580	64.387	8.176f	1.154	7.641f	0.84	1.19	36.876	3.231
1.600	66.068	8.162f	1.166	7.649f	0.84	1.21	36.292	3.210
1.620	67.756	8.150f	1.179	7.658f	0.85	1.22	35.728	3.189
1.640	69.452	8.138f	1.191	7.666f	0.85	1.23	35.182	3.168
1.660	71.147	8.128f	1.203	7.724f	0.85	1.22	34.119	3.142
1.680	72.848	8.118f	1.215	7.732f	0.85	1.23	33.629	3.123
1.700	74.555	8.110f	1.227	7.742f	0.86	1.24	33.148	3.104

Water Specific Gravity = 1.025.
Trim is per 19.90m

YN 586 HYDROSTATIC DATA TRIM 0.60 M AFT

Hydrostatic Properties

Draft is from Baseline.
Trim: aft 0.600/19.900, No heel, VCG = 0.000

Draft at 9.950f (m)	Displ (MT)	LCB (m)	VCB (m)	LCF (m)	TPcm (MT/cm)	MTcm (MT-m /cm)	KML (m)	KMT (m)
1.400	51.611	7.904f	1.066	7.438f	0.80	1.08	41.591	3.441
1.420	53.217	7.890f	1.079	7.448f	0.81	1.09	40.828	3.413
1.440	54.832	7.878f	1.092	7.457f	0.81	1.10	40.077	3.385
1.460	56.456	7.866f	1.104	7.467f	0.81	1.12	39.372	3.359
1.480	58.090	7.855f	1.116	7.478f	0.82	1.13	38.692	3.332
1.500	59.732	7.844f	1.129	7.488f	0.82	1.14	38.038	3.307
1.520	61.382	7.835f	1.141	7.499f	0.83	1.15	37.405	3.282
1.540	63.034	7.827f	1.153	7.559f	0.83	1.15	36.209	3.250
1.560	64.692	7.820f	1.165	7.569f	0.83	1.16	35.649	3.227
1.580	66.357	7.814f	1.177	7.580f	0.83	1.17	35.098	3.205
1.600	68.029	7.809f	1.189	7.591f	0.84	1.18	34.559	3.183
1.620	69.708	7.804f	1.201	7.603f	0.84	1.19	34.035	3.162
1.640	71.394	7.799f	1.213	7.615f	0.84	1.20	33.527	3.142
1.660	73.086	7.795f	1.225	7.627f	0.85	1.21	33.035	3.122
1.680	74.785	7.791f	1.236	7.639f	0.85	1.22	32.561	3.103
1.700	76.490	7.788f	1.248	7.651f	0.85	1.23	32.101	3.085

Water Specific Gravity = 1.025.
Trim is per 19.90m

YN 586 HYDROSTATIC DATA TRIM 0.80 M AFT

Hydrostatic Properties

Draft is from Baseline.
Trim: aft 0.800/19.900, No heel, VCG = 0.000

Draft at 9.950f (m)	Displ (MT)	LCB (m)	VCB (m)	LCF (m)	TPcm (MT/cm)	MTcm (MT-m /cm)	KML (m)	KMT (m)
1.400	53.687	7.494f	1.097	7.306f	0.80	1.07	39.791	3.419
1.420	55.291	7.489f	1.109	7.370f	0.80	1.07	38.445	3.381
1.440	56.899	7.486f	1.121	7.382f	0.81	1.08	37.811	3.354
1.460	58.516	7.483f	1.133	7.396f	0.81	1.09	37.188	3.327
1.480	60.142	7.481f	1.145	7.410f	0.82	1.11	36.577	3.301
1.500	61.776	7.480f	1.157	7.424f	0.82	1.12	35.983	3.275
1.520	63.417	7.479f	1.168	7.439f	0.82	1.13	35.409	3.251
1.540	65.066	7.478f	1.180	7.452f	0.83	1.14	34.843	3.227
1.560	66.722	7.477f	1.192	7.467f	0.83	1.15	34.310	3.204
1.580	68.385	7.477f	1.203	7.481f	0.83	1.16	33.790	3.181
1.600	70.054	7.478f	1.215	7.495f	0.84	1.17	33.289	3.160
1.620	71.730	7.478f	1.227	7.510f	0.84	1.18	32.804	3.140
1.640	73.412	7.479f	1.238	7.524f	0.84	1.19	32.334	3.120
1.660	75.101	7.480f	1.250	7.538f	0.85	1.20	31.880	3.101
1.680	76.795	7.482f	1.261	7.552f	0.85	1.21	31.441	3.082
1.700	78.496	7.483f	1.272	7.566f	0.85	1.22	31.015	3.065

Water Specific Gravity = 1.025.
Trim is per 19.90m

5 CROSS CURVES OF STABILITY

No Parts of superstructures and deckhouses were considered for the purpose of these cross curves of stability

YN 586 RIGHTING LEVERS AND CROSS CURVES OF STABILITY

INITIAL TRIM 0.4 MTR FORW

Cross Curves of Stability

Righting Arms(heel) for VCG = 0.00
Trim fwd 0.400/19.900 at heel = 0 (RA Trim = 0)

Displ (MT)	5.000s	10.000s	15.000s	20.000s	25.000s	30.000s	35.000s	40.000s
58.000	0.277s	0.545s	0.796s	1.028s	1.243s	1.443s	1.631s	1.813s
60.000	0.276s	0.543s	0.795s	1.028s	1.244s	1.445s	1.634s	1.817s
62.000	0.275s	0.542s	0.794s	1.028s	1.245s	1.447s	1.637s	1.821s
64.000	0.274s	0.540s	0.792s	1.027s	1.245s	1.449s	1.640s	1.825s
66.000	0.273s	0.539s	0.791s	1.027s	1.246s	1.450s	1.643s	1.829s
68.000	0.272s	0.537s	0.789s	1.026s	1.246s	1.451s	1.646s	1.833s
70.000	0.271s	0.536s	0.788s	1.025s	1.246s	1.453s	1.648s	1.836s
Displ (MT)	45.000s	50.000s	55.000s	60.000s	65.000s	70.000s	Arm	Angle
58.000	1.992s	2.152s	2.285s	2.392s	2.469s	2.515s	1.747s	38.182s
60.000	1.996s	2.152s	2.282s	2.387s	2.462s	2.507s	1.728s	37.543s
62.000	1.999s	2.152s	2.279s	2.381s	2.455s	2.499s	1.708s	36.907s
64.000	2.001s	2.152s	2.276s	2.375s	2.448s	2.491s	1.688s	36.272s
66.000	2.004s	2.152s	2.273s	2.370s	2.441s	2.483s	1.667s	35.640s
68.000	2.005s	2.151s	2.270s	2.364s	2.433s	2.475s		
70.000	2.007s	2.150s	2.266s	2.359s	2.426s	2.467s	1.626s	34.421s

Water Specific Gravity = 1.025.

YN 586 RIGHTING LEVERS AND CROSS CURVES OF STABILITY

INITIAL TRIM 0.2 MTR FORW

Cross Curves of Stability

Righting Arms(heel) for VCG = 0.00
Trim fwd 0.200/19.900 at heel = 0 (RA Trim = 0)

Displ (MT)	5.000s	10.000s	15.000s	20.000s	25.000s	30.000s	35.000s	40.000s
58.000	0.281s	0.551s	0.805s	1.039s	1.254s	1.454s	1.642s	1.821s
60.000	0.279s	0.549s	0.803s	1.038s	1.254s	1.455s	1.644s	1.825s
62.000	0.278s	0.547s	0.801s	1.037s	1.254s	1.456s	1.646s	1.828s
64.000	0.277s	0.545s	0.799s	1.035s	1.254s	1.457s	1.649s	1.832s
66.000	0.275s	0.543s	0.797s	1.034s	1.254s	1.458s	1.650s	1.835s
68.000	0.274s	0.541s	0.795s	1.032s	1.253s	1.459s	1.652s	1.838s
70.000	0.273s	0.539s	0.793s	1.031s	1.253s	1.459s	1.654s	1.841s
Displ (MT)	45.000s	50.000s	55.000s	60.000s	65.000s	70.000s	Arm	Angle
58.000	1.998s	2.158s	2.291s	2.399s	2.476s	2.520s	1.788s	39.063s
60.000	2.001s	2.157s	2.287s	2.393s	2.469s	2.512s	1.769s	38.439s
62.000	2.004s	2.157s	2.284s	2.386s	2.461s	2.504s	1.749s	37.817s
64.000	2.006s	2.157s	2.280s	2.380s	2.453s	2.496s	1.730s	37.196s
66.000	2.008s	2.156s	2.277s	2.374s	2.445s	2.488s	1.709s	36.577s
68.000	2.009s	2.155s	2.273s	2.368s	2.437s	2.479s	1.688s	35.959s
70.000	2.010s	2.153s	2.269s	2.361s	2.430s	2.470s	1.667s	35.341s

Water Specific Gravity = 1.025.

YN 586 RIGHTING LEVERS AND CROSS CURVES OF STABILITY

EVEN KEEL

Cross Curves of Stability

Righting Arms(heel) for VCG = 0.00
Trim zero at heel = 0 (RA Trim = 0)

Displ (MT)	5.000s	10.000s	15.000s	20.000s	25.000s	30.000s	35.000s	40.000s
58.000	0.284s	0.557s	0.813s	1.049s	1.265s	1.466s	1.653s	1.831s
60.000	0.282s	0.555s	0.811s	1.047s	1.265s	1.466s	1.654s	1.834s
62.000	0.280s	0.552s	0.808s	1.045s	1.264s	1.466s	1.656s	1.836s
64.000	0.279s	0.549s	0.805s	1.043s	1.263s	1.466s	1.657s	1.839s
66.000	0.277s	0.546s	0.802s	1.041s	1.261s	1.466s	1.658s	1.841s
68.000	0.275s	0.544s	0.800s	1.039s	1.260s	1.466s	1.660s	1.844s
70.000	0.274s	0.541s	0.797s	1.036s	1.259s	1.466s	1.661s	1.846s
Displ (MT)	45.000s	50.000s	55.000s	60.000s	65.000s	70.000s	Arm	Angle
58.000	2.005s	2.163s	2.296s	2.405s	2.483s	2.523s		
60.000	2.008s	2.163s	2.292s	2.398s	2.475s	2.515s	1.812s	39.379s
62.000	2.010s	2.162s	2.288s	2.391s	2.466s	2.507s	1.792s	38.767s
64.000	2.011s	2.161s	2.284s	2.384s	2.458s	2.498s	1.773s	38.157s
66.000	2.013s	2.160s	2.280s	2.377s	2.449s	2.490s	1.752s	37.547s
68.000	2.014s	2.158s	2.276s	2.370s	2.439s	2.481s	1.732s	36.939s
70.000	2.014s	2.156s	2.272s	2.364s	2.430s	2.472s	1.711s	36.331s

Water Specific Gravity = 1.025.

YN 586 RIGHTING LEVERS AND CROSS CURVES OF STABILITY

INITIAL TRIM 0.2 MTR AFT

Cross Curves of Stability

Righting Arms(heel) for VCG = 0.00
Trim aft 0.200/19.900 at heel = 0 (RA Trim = 0)

Displ (MT)	5.000s	10.000s	15.000s	20.000s	25.000s	30.000s	35.000s	40.000s
58.000	0.286s	0.562s	0.820s	1.058s	1.276s	1.477s	1.664s	1.842s
60.000	0.284s	0.559s	0.817s	1.055s	1.274s	1.476s	1.665s	1.844s
62.000	0.282s	0.556s	0.814s	1.053s	1.273s	1.476s	1.666s	1.845s
64.000	0.280s	0.552s	0.810s	1.050s	1.271s	1.475s	1.666s	1.847s
66.000	0.278s	0.549s	0.807s	1.047s	1.269s	1.474s	1.667s	1.849s
68.000	0.276s	0.546s	0.804s	1.044s	1.267s	1.474s	1.667s	1.851s
70.000	0.274s	0.543s	0.800s	1.041s	1.265s	1.473s	1.667s	1.852s
Displ (MT)	45.000s	50.000s	55.000s	60.000s	65.000s	70.000s	Arm	Angle
58.000	2.013s	2.170s	2.301s	2.410s	2.488s	2.523s	1.878s	41.037s
60.000	2.015s	2.168s	2.297s	2.402s	2.479s	2.515s	1.857s	40.390s
62.000	2.017s	2.167s	2.293s	2.394s	2.469s	2.506s	1.845s	40.000s
64.000	2.018s	2.166s	2.288s	2.387s	2.459s	2.497s	1.817s	39.156s
66.000	2.018s	2.164s	2.283s	2.379s	2.449s	2.489s	1.797s	38.553s
68.000	2.019s	2.162s	2.279s	2.371s	2.439s	2.480s	1.776s	37.950s
70.000	2.019s	2.160s	2.274s	2.364s	2.429s	2.471s	1.755s	37.347s

Water Specific Gravity = 1.025.

YN 586 RIGHTING LEVERS AND CROSS CURVES OF STABILITY

INITIAL TRIM 0.4 MTR AFT

Cross Curves of Stability

Righting Arms(heel) for VCG = 0.00
Trim aft 0.400/19.900 at heel = 0 (RA Trim = 0)

Displ (MT)	5.000s	10.000s	15.000s	20.000s	25.000s	30.000s	35.000s	40.000s
58.000	0.288s	0.566s	0.827s	1.066s	1.286s	1.488s	1.676s	1.853s
60.000	0.285s	0.562s	0.823s	1.063s	1.283s	1.487s	1.676s	1.854s
62.000	0.283s	0.558s	0.819s	1.060s	1.281s	1.485s	1.675s	1.855s
64.000	0.281s	0.555s	0.815s	1.056s	1.278s	1.484s	1.675s	1.856s
66.000	0.279s	0.551s	0.811s	1.053s	1.276s	1.482s	1.675s	1.857s
68.000	0.277s	0.548s	0.807s	1.049s	1.273s	1.481s	1.675s	1.858s
70.000	0.275s	0.544s	0.803s	1.046s	1.271s	1.479s	1.675s	1.858s
Displ (MT)	45.000s	50.000s	55.000s	60.000s	65.000s	70.000s	Arm	Angle
58.000	2.023s	2.176s	2.306s	2.413s	2.489s	2.520s	1.926s	42.120s
60.000	2.024s	2.174s	2.301s	2.405s	2.479s	2.512s	1.905s	41.479s
62.000	2.024s	2.173s	2.296s	2.396s	2.469s	2.503s	1.885s	40.840s
64.000	2.025s	2.170s	2.291s	2.387s	2.458s	2.495s	1.863s	40.204s
66.000	2.025s	2.168s	2.286s	2.379s	2.447s	2.486s	1.843s	39.594s
68.000	2.024s	2.165s	2.280s	2.371s	2.437s	2.477s	1.822s	38.994s
70.000	2.023s	2.162s	2.275s	2.363s	2.427s	2.467s	1.801s	38.394s

Water Specific Gravity = 1.025.

YN 586 RIGHTING LEVERS AND CROSS CURVES OF STABILITY

INITIAL TRIM 0.6 MTR AFT

Cross Curves of Stability

Righting Arms(heel) for VCG = 0.00
Trim aft 0.600/19.900 at heel = 0 (RA Trim = 0)

Displ (MT)	5.000s	10.000s	15.000s	20.000s	25.000s	30.000s	35.000s	40.000s
58.000	0.289s	0.569s	0.832s	1.074s	1.295s	1.498s	1.687s	1.865s
60.000	0.286s	0.565s	0.827s	1.070s	1.292s	1.496s	1.686s	1.865s
62.000	0.284s	0.561s	0.823s	1.066s	1.289s	1.494s	1.685s	1.865s
64.000	0.282s	0.557s	0.818s	1.062s	1.285s	1.492s	1.684s	1.865s
66.000	0.279s	0.553s	0.814s	1.057s	1.282s	1.490s	1.683s	1.865s
68.000	0.277s	0.549s	0.810s	1.053s	1.279s	1.488s	1.682s	1.865s
70.000	0.275s	0.545s	0.805s	1.050s	1.276s	1.486s	1.682s	1.865s
Displ (MT)	45.000s	50.000s	55.000s	60.000s	65.000s	70.000s	Arm	Angle
58.000	2.033s	2.183s	2.310s	2.413s	2.486s	2.515s	1.976s	43.245s
60.000	2.033s	2.180s	2.304s	2.404s	2.476s	2.507s	1.955s	42.607s
62.000	2.033s	2.178s	2.298s	2.395s	2.465s	2.498s	1.933s	41.970s
64.000	2.032s	2.175s	2.292s	2.386s	2.454s	2.489s	1.912s	41.330s
66.000	2.031s	2.172s	2.286s	2.377s	2.443s	2.480s	1.890s	40.693s
68.000	2.029s	2.168s	2.281s	2.369s	2.432s	2.470s		
70.000	2.027s	2.164s	2.275s	2.361s	2.422s	2.460s	1.846s	39.453s

Water Specific Gravity = 1.025.

YN 586 RIGHTING LEVERS AND CROSS CURVES OF STABILITY

INITIAL TRIM 0.8 MTR AFT

Cross Curves of Stability

Righting Arms(heel) for VCG = 0.00
Trim aft 0.800/19.900 at heel = 0 (RA Trim = 0)

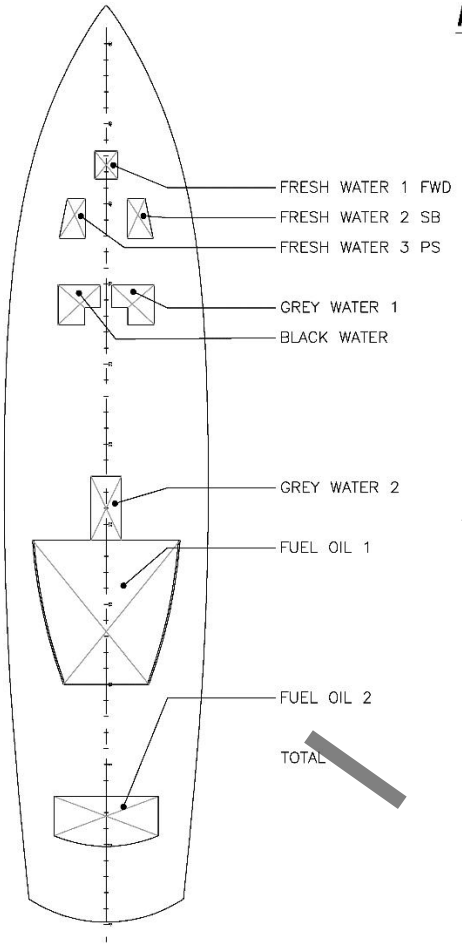
Displ (MT)	5.000s	10.000s	15.000s	20.000s	25.000s	30.000s	35.000s	40.000s
58.000	0.290s	0.571s	0.836s	1.080s	1.304s	1.509s	1.698s	1.876s
60.000	0.287s	0.567s	0.831s	1.076s	1.300s	1.506s	1.697s	1.876s
62.000	0.284s	0.562s	0.826s	1.071s	1.296s	1.503s	1.695s	1.875s
64.000	0.282s	0.558s	0.821s	1.066s	1.292s	1.500s	1.693s	1.875s
66.000	0.280s	0.554s	0.816s	1.062s	1.288s	1.497s	1.692s	1.874s
68.000	0.277s	0.550s	0.812s	1.057s	1.285s	1.495s	1.690s	1.873s
70.000	0.275s	0.546s	0.807s	1.053s	1.281s	1.492s	1.689s	1.871s
Displ (MT)	45.000s	50.000s	55.000s	60.000s	65.000s	70.000s	Arm	Angle
58.000	2.043s	2.189s	2.312s	2.411s	2.480s	2.508s	2.024s	44.410s
60.000	2.042s	2.186s	2.305s	2.401s	2.470s	2.499s	2.003s	43.765s
62.000	2.040s	2.182s	2.299s	2.392s	2.459s	2.490s	1.981s	43.121s
64.000	2.038s	2.178s	2.293s	2.383s	2.448s	2.481s	1.959s	42.479s
66.000	2.036s	2.174s	2.286s	2.375s	2.437s	2.472s	1.936s	41.839s
68.000	2.034s	2.170s	2.280s	2.366s	2.426s	2.461s	1.914s	41.201s
70.000	2.031s	2.165s	2.274s	2.358s	2.416s	2.451s	1.891s	40.565s

Water Specific Gravity = 1.025.

6 TANK PLAN

MY "C5"

FEADSHIP CARAVELLE



FUEL OIL	FRESH WATER	GR./BL. WATER
LTRS.	LTRS.	LTRS.
	210	
	200	
	200	
		430
		430
		900
3820		
1400		
5220	610	1770

Drawing title:

TANK CAPACITIES

FEADSHIP

Design No.: 1719

Yard No.: 586

Scale: NO SCALE | Size: A4 | Drawn: JS

Date: 11-04-2018 | Dwg No.: | Sheet: De Voogt

Printed by Jeroens on April 19 2016

DE VOOGT
NAVAL ARCHITECTS

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AutoCAD file nr.: 586-457 Tank cap

7 TANK CAPACITIES

Tank Capacities for FW_1 containing FRESH WATER (1.000)

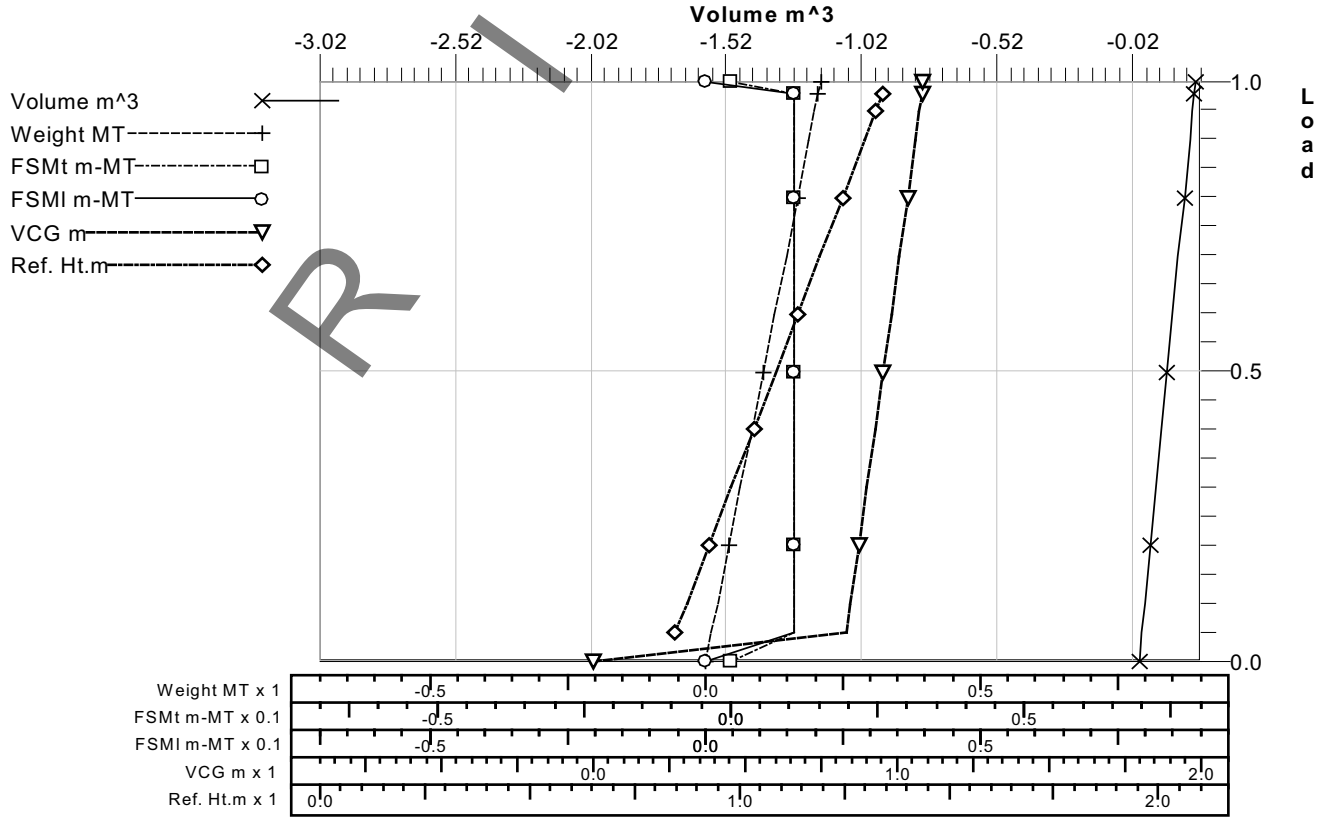
No Trim, No Heel

Ref Ht (m)	Load (%)	Volume (m^3)	Weight (MT)	Lcg (m)	Tcg (m)	Vcg (m)	FSMt (MT-m)	FSMl (MT-m)
	0.00%	0.00	0.00					
0.85	5.00%	0.01	0.01	16.969f	0.000	0.833	0.01	0.02
0.87	10.00%	0.02	0.02	16.969f	0.000	0.847	0.01	0.02
0.93	20.00%	0.04	0.04	16.969f	0.000	0.873	0.01	0.02
0.98	30.00%	0.06	0.06	16.969f	0.000	0.900	0.01	0.02
1.03	40.00%	0.08	0.08	16.969f	0.000	0.926	0.01	0.02
1.08	50.00%	0.10	0.10	16.969f	0.000	0.952	0.01	0.02
1.14	60.00%	0.12	0.12	16.969f	0.000	0.979	0.01	0.02
1.19	70.00%	0.15	0.15	16.969f	0.000	1.005	0.01	0.02
1.24	80.00%	0.17	0.17	16.969f	0.000	1.032	0.01	0.02
1.30	90.00%	0.19	0.19	16.969f	0.000	1.058	0.01	0.02
1.32	95.00%	0.20	0.20	16.969f	0.000	1.072	0.01	0.02
1.34	98.00%	0.20	0.20	16.969f	0.000	1.080	0.01	0.02
	100.00%	0.21	0.21	16.969f	0.000	1.085		

Reference Point

Part	Long.(m)	Trans.(m)	Vert.(m)
FW_1	0.000	0.000	0.000

Tank Characteristics



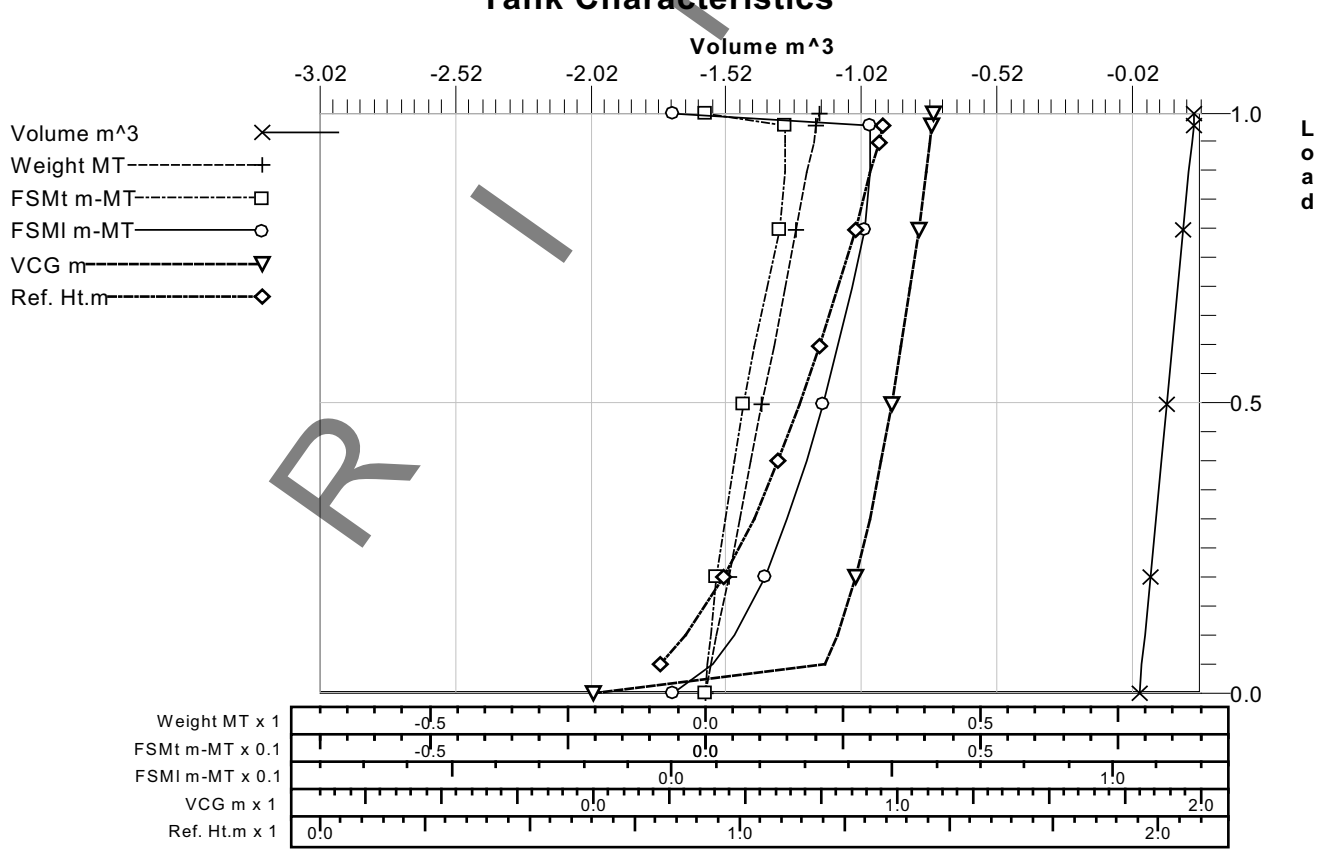
Tank Capacities for FW_2 containing FRESH WATER (1.000)

No Trim, No Heel

Ref Ht (m)	Load (%)	Volume (m^3)	Weight (MT)	Lcg (m)	Tcg (m)	Vcg (m)	FSMt (MT-m)	FSMl (MT-m)
	0.00%	0.00	0.00					
0.81	5.00%	0.01	0.01	15.425f	0.588s	0.760	0.00	0.01
0.87	10.00%	0.02	0.02	15.479f	0.601s	0.802	0.00	0.01
0.96	20.00%	0.04	0.04	15.521f	0.623s	0.862	0.00	0.02
1.03	30.00%	0.06	0.06	15.541f	0.641s	0.908	0.00	0.03
1.09	40.00%	0.08	0.08	15.553f	0.657s	0.947	0.01	0.03
1.14	50.00%	0.10	0.10	15.561f	0.671s	0.982	0.01	0.03
1.19	60.00%	0.12	0.12	15.567f	0.684s	1.013	0.01	0.04
1.23	70.00%	0.14	0.14	15.572f	0.696s	1.041	0.01	0.04
1.27	80.00%	0.16	0.16	15.576f	0.707s	1.068	0.01	0.04
1.31	90.00%	0.18	0.18	15.579f	0.717s	1.093	0.01	0.04
1.33	95.00%	0.19	0.19	15.581f	0.721s	1.105	0.01	0.04
1.34	98.00%	0.20	0.20	15.581f	0.724s	1.112	0.01	0.04
	100.00%	0.20	0.20	15.582f	0.725s	1.117		

Reference Point

Part	Long.(m)	Trans.(m)	Vert.(m)
FW_2	0.000	0.000	0.000



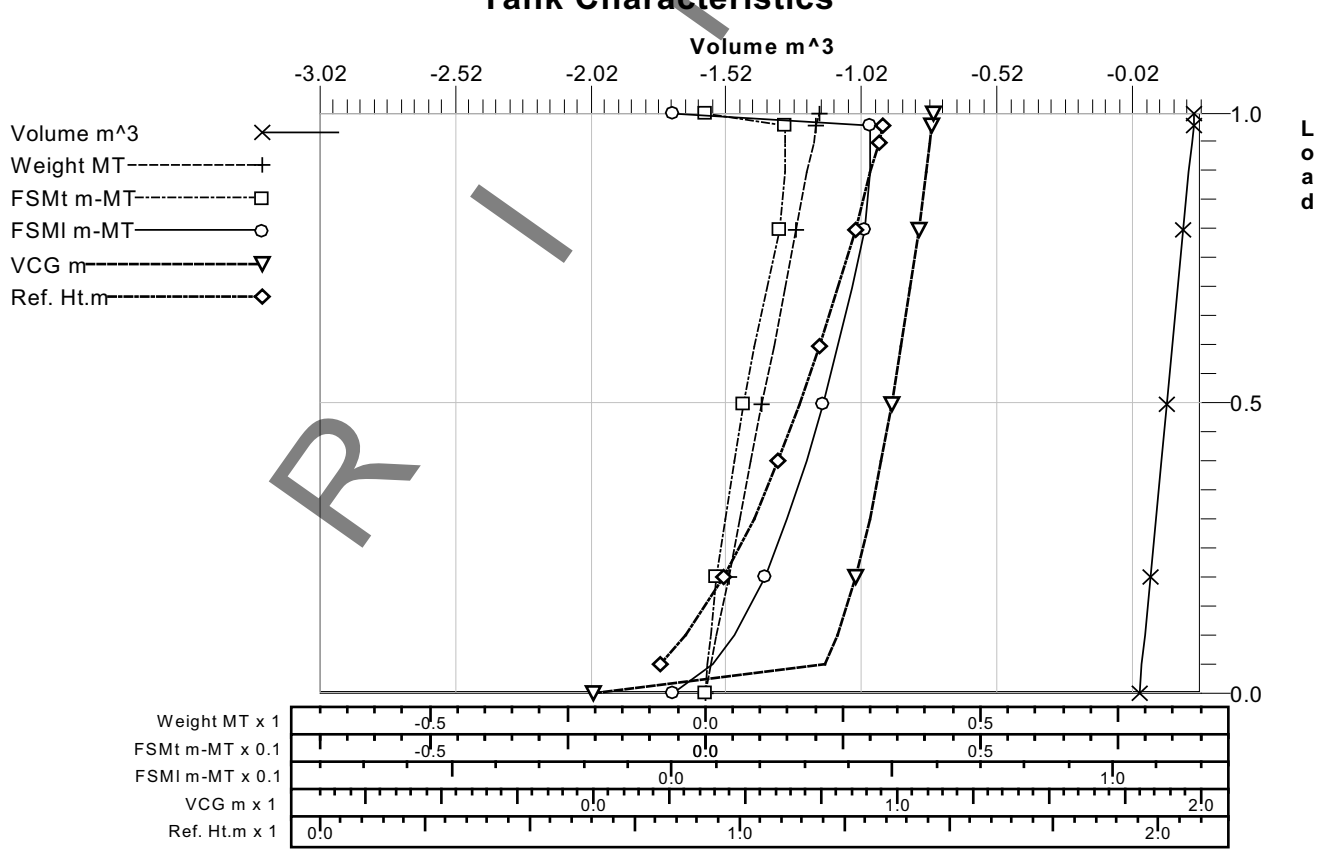
Tank Capacities for FW_3 containing FRESH WATER (1.000)

No Trim, No Heel

Ref Ht (m)	Load (%)	Volume (m^3)	Weight (MT)	Lcg (m)	Tcg (m)	Vcg (m)	FSMt (MT-m)	FSMl (MT-m)
	0.00%	0.00	0.00					
0.81	5.00%	0.01	0.01	15.425f	0.588p	0.760	0.00	0.01
0.87	10.00%	0.02	0.02	15.479f	0.601p	0.802	0.00	0.01
0.96	20.00%	0.04	0.04	15.521f	0.623p	0.862	0.00	0.02
1.03	30.00%	0.06	0.06	15.541f	0.641p	0.908	0.00	0.03
1.09	40.00%	0.08	0.08	15.553f	0.657p	0.947	0.01	0.03
1.14	50.00%	0.10	0.10	15.561f	0.671p	0.982	0.01	0.03
1.19	60.00%	0.12	0.12	15.567f	0.684p	1.013	0.01	0.04
1.23	70.00%	0.14	0.14	15.572f	0.696p	1.041	0.01	0.04
1.27	80.00%	0.16	0.16	15.576f	0.707p	1.068	0.01	0.04
1.31	90.00%	0.18	0.18	15.579f	0.717p	1.093	0.01	0.04
1.33	95.00%	0.19	0.19	15.581f	0.721p	1.105	0.01	0.04
1.34	98.00%	0.20	0.20	15.581f	0.724p	1.112	0.01	0.04
	100.00%	0.20	0.20	15.582f	0.725p	1.117		

Reference Point

Part	Long.(m)	Trans.(m)	Vert.(m)
FW_3	0.000	0.000	0.000



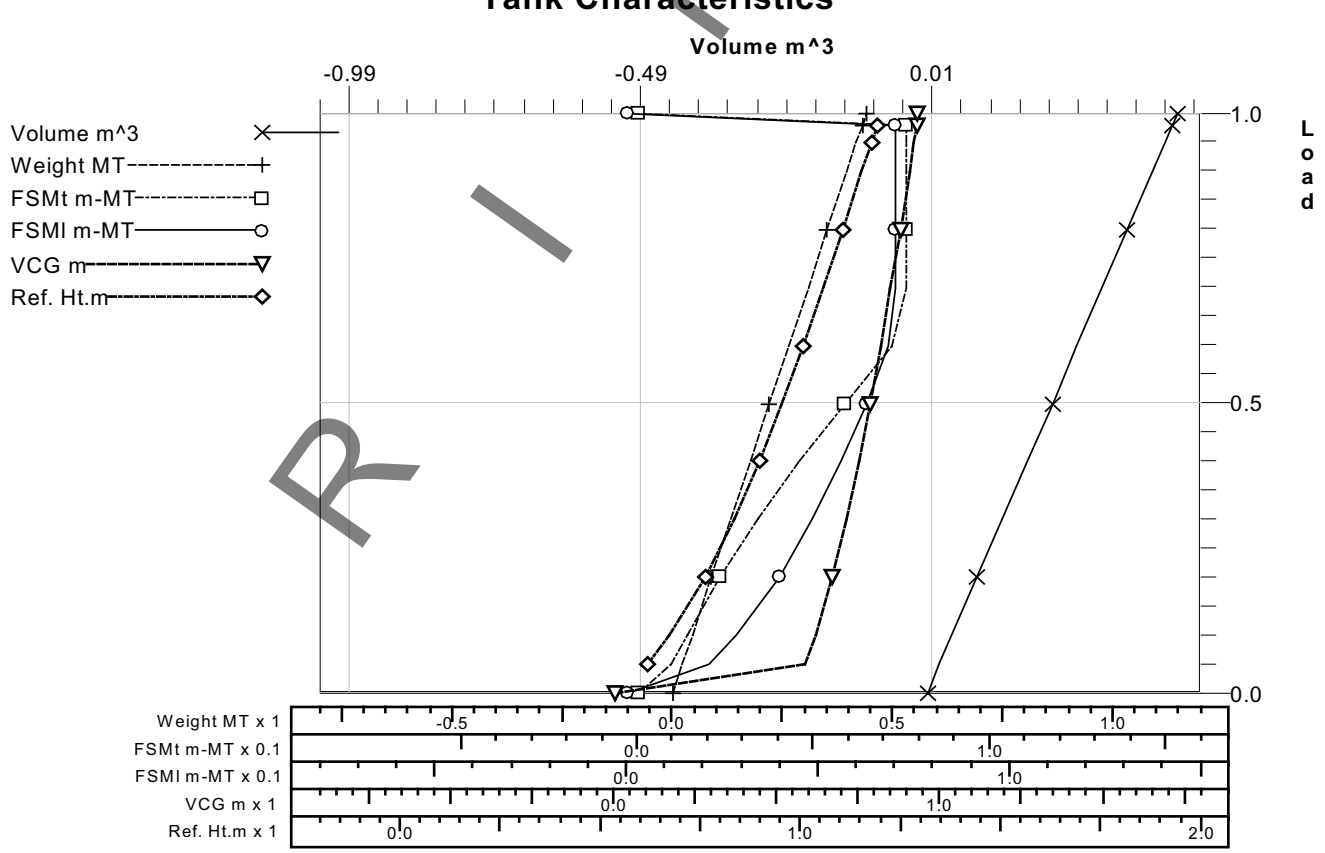
Tank Capacities for GW_1 containing SEWAGE (1.025)

No Trim, No Heel

Ref Ht (m)	Load (%)	Volume (m^3)	Weight (MT)	Lcg (m)	Tcg (m)	Vcg (m)	FSMt (MT-m)	FSMl (MT-m)
	0.00%	0.00	0.00					
0.62	5.00%	0.02	0.02	13.634f	0.409s	0.586	0.01	0.02
0.67	10.00%	0.04	0.04	13.618f	0.435s	0.616	0.01	0.03
0.76	20.00%	0.09	0.09	13.599f	0.476s	0.667	0.02	0.04
0.83	30.00%	0.13	0.13	13.587f	0.510s	0.711	0.03	0.05
0.90	40.00%	0.17	0.18	13.578f	0.539s	0.750	0.05	0.06
0.95	50.00%	0.21	0.22	13.571f	0.565s	0.785	0.06	0.06
1.01	60.00%	0.26	0.26	13.566f	0.589s	0.817	0.07	0.07
1.05	70.00%	0.30	0.31	13.561f	0.609s	0.848	0.08	0.07
1.10	80.00%	0.34	0.35	13.558f	0.625s	0.876	0.08	0.07
1.15	90.00%	0.39	0.39	13.555f	0.637s	0.904	0.08	0.07
1.18	95.00%	0.41	0.42	13.554f	0.642s	0.918	0.08	0.07
1.19	98.00%	0.42	0.43	13.554f	0.645s	0.926	0.08	0.07
	100.00%	0.43	0.44	13.553f	0.647s	0.931		

Reference Point

Part	Long.(m)	Trans.(m)	Vert.(m)
GW_1	0.000	0.000	0.000



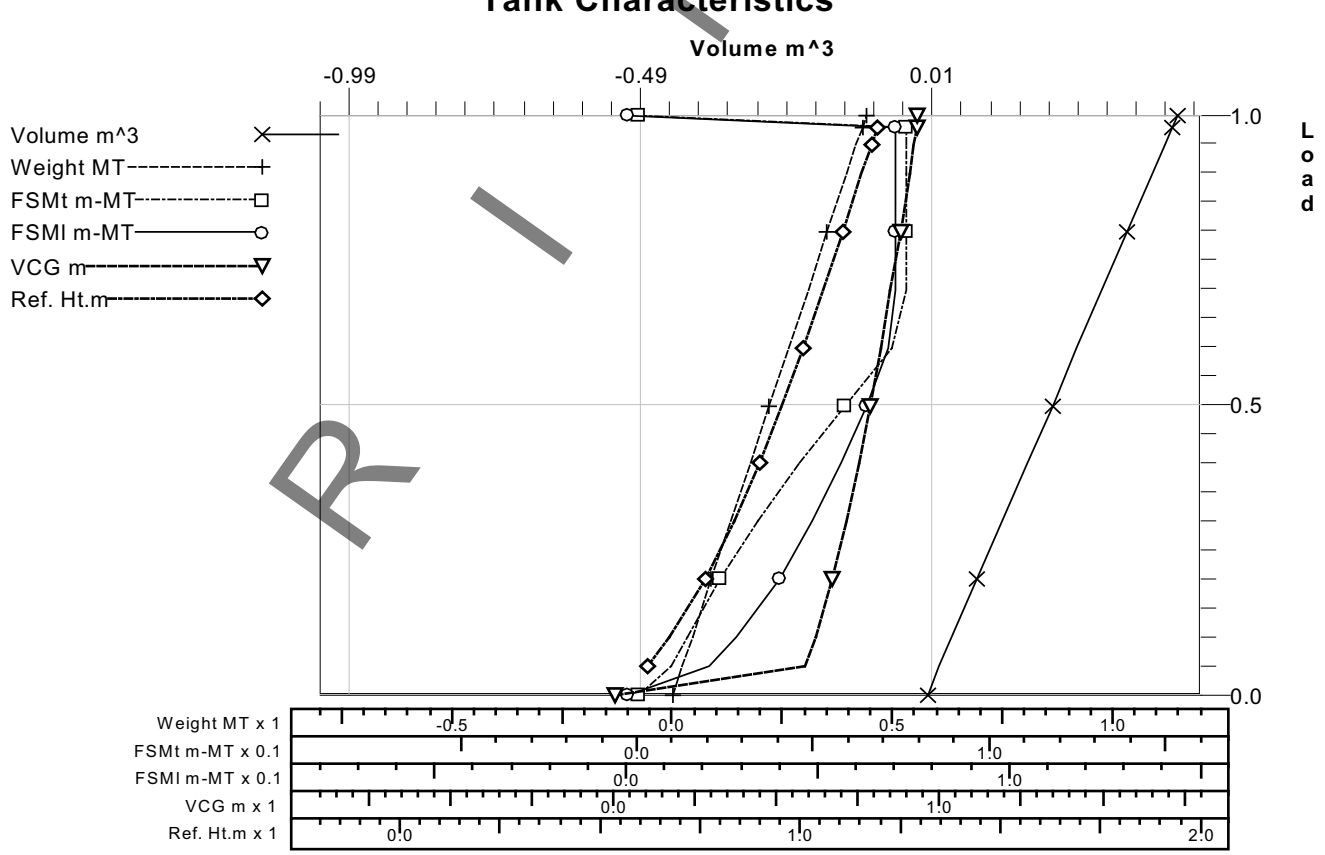
Tank Capacities for BW containing SEWAGE (1.025)

No Trim, No Heel

Ref Ht (m)	Load (%)	Volume (m^3)	Weight (MT)	Lcg (m)	Tcg (m)	Vcg (m)	FSMt (MT-m)	FSMl (MT-m)
	0.00%	0.00	0.00					
0.62	5.00%	0.02	0.02	13.634f	0.409p	0.586	0.01	0.02
0.67	10.00%	0.04	0.04	13.618f	0.435p	0.616	0.01	0.03
0.76	20.00%	0.09	0.09	13.599f	0.476p	0.667	0.02	0.04
0.83	30.00%	0.13	0.13	13.587f	0.510p	0.711	0.03	0.05
0.90	40.00%	0.17	0.18	13.578f	0.539p	0.750	0.05	0.06
0.95	50.00%	0.21	0.22	13.571f	0.565p	0.785	0.06	0.06
1.01	60.00%	0.26	0.26	13.566f	0.589p	0.817	0.07	0.07
1.05	70.00%	0.30	0.31	13.561f	0.609p	0.848	0.08	0.07
1.10	80.00%	0.34	0.35	13.558f	0.625p	0.876	0.08	0.07
1.15	90.00%	0.39	0.39	13.555f	0.637p	0.904	0.08	0.07
1.18	95.00%	0.41	0.42	13.554f	0.642p	0.918	0.08	0.07
1.19	98.00%	0.42	0.43	13.554f	0.645p	0.926	0.08	0.07
	100.00%	0.43	0.44	13.553f	0.647p	0.931		

Reference Point

Part	Long.(m)	Trans.(m)	Vert.(m)
BW	0.000	0.000	0.000



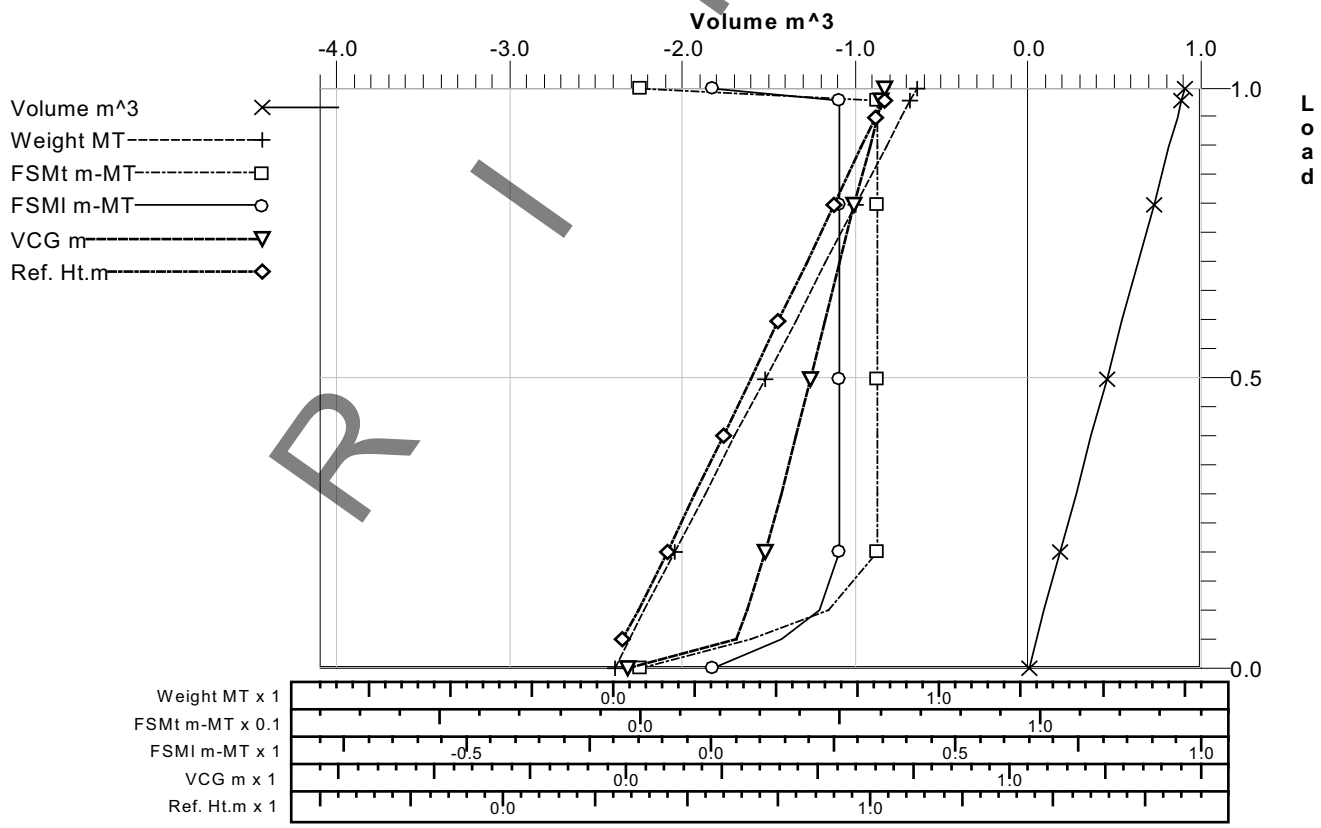
Tank Capacities for GW_2 containing SEWAGE (1.025)

No Trim, No Heel

Ref Ht (m)	Load (%)	Volume (m^3)	Weight (MT)	Lcg (m)	Tcg (m)	Vcg (m)	FSMt (MT-m)	FSMl (MT-m)
	0.00%	0.00	0.00					
0.32	5.00%	0.05	0.05	8.733f	0.000	0.283	0.03	0.14
0.37	10.00%	0.09	0.09	8.621f	0.000	0.315	0.05	0.22
0.45	20.00%	0.18	0.19	8.518f	0.000	0.362	0.06	0.26
0.52	30.00%	0.27	0.28	8.478f	0.000	0.402	0.06	0.26
0.60	40.00%	0.36	0.37	8.459f	0.000	0.442	0.06	0.26
0.67	50.00%	0.45	0.46	8.447f	0.000	0.480	0.06	0.26
0.75	60.00%	0.54	0.56	8.439f	0.000	0.519	0.06	0.26
0.82	70.00%	0.63	0.65	8.434f	0.000	0.557	0.06	0.26
0.90	80.00%	0.72	0.74	8.429f	0.000	0.595	0.06	0.26
0.97	90.00%	0.81	0.83	8.426f	0.000	0.633	0.06	0.26
1.01	95.00%	0.86	0.88	8.425f	0.000	0.652	0.06	0.26
1.03	98.00%	0.89	0.91	8.424f	0.000	0.663	0.06	0.26
	100.00%	0.90	0.93	8.424f	0.000	0.671		

Reference Point

Part	Long.(m)	Trans.(m)	Vert.(m)
GW_2	0.000	0.000	0.000



Tank Capacities for FO_1 containing FUEL OIL (0.840)

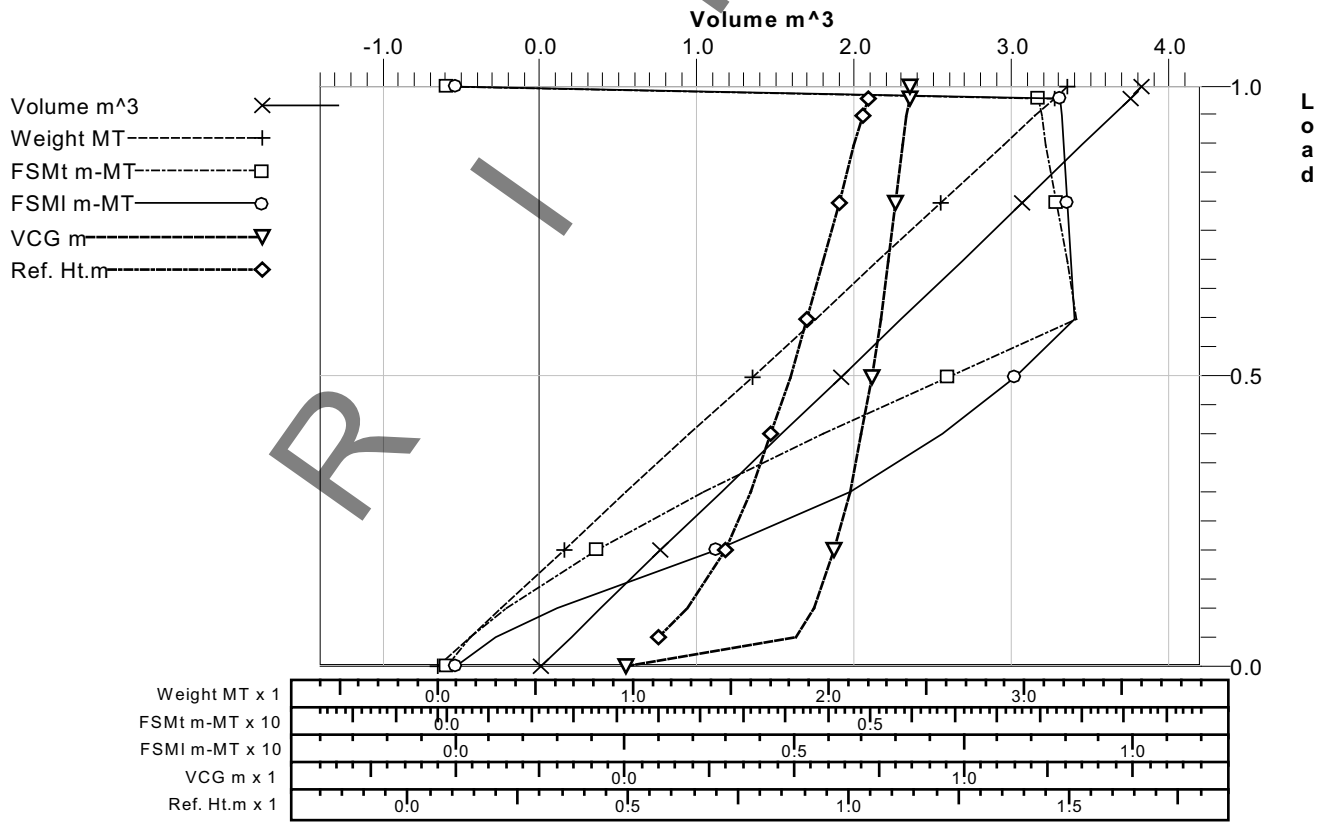
No Trim, No Heel

Ref Ht (m)	Load (%)	Volume (m^3)	Weight (MT)	Lcg (m)	Tcg (m)	Vcg (m)	FSMt (MT-m)	FSMl (MT-m)
	0.00%	0.00	0.00					
0.57	5.00%	0.19	0.16	6.976f	0.000	0.506	0.27	0.58
0.63	10.00%	0.38	0.32	6.810f	0.000	0.555	0.69	1.50
0.72	20.00%	0.76	0.64	6.599f	0.000	0.618	1.76	3.83
0.78	30.00%	1.15	0.96	6.455f	0.000	0.661	3.03	5.82
0.82	40.00%	1.53	1.28	6.357f	0.000	0.696	4.43	7.19
0.87	50.00%	1.91	1.61	6.286f	0.000	0.726	5.90	8.25
0.90	60.00%	2.29	1.93	6.233f	0.000	0.752	7.42	9.12
0.94	70.00%	2.68	2.25	6.193f	0.000	0.776	7.32	9.08
0.98	80.00%	3.06	2.57	6.163f	0.000	0.799	7.19	9.02
1.01	90.00%	3.44	2.89	6.140f	0.000	0.821	7.07	8.96
1.03	95.00%	3.63	3.05	6.130f	0.000	0.831	7.01	8.94
1.04	98.00%	3.75	3.15	6.125f	0.000	0.838	6.97	8.92
	100.00%	3.82	3.21	6.121f	0.000	0.842		

Reference Point

Part	Long.(m)	Trans.(m)	Vert.(m)
FO_1	0.000	0.000	0.000

Tank Characteristics



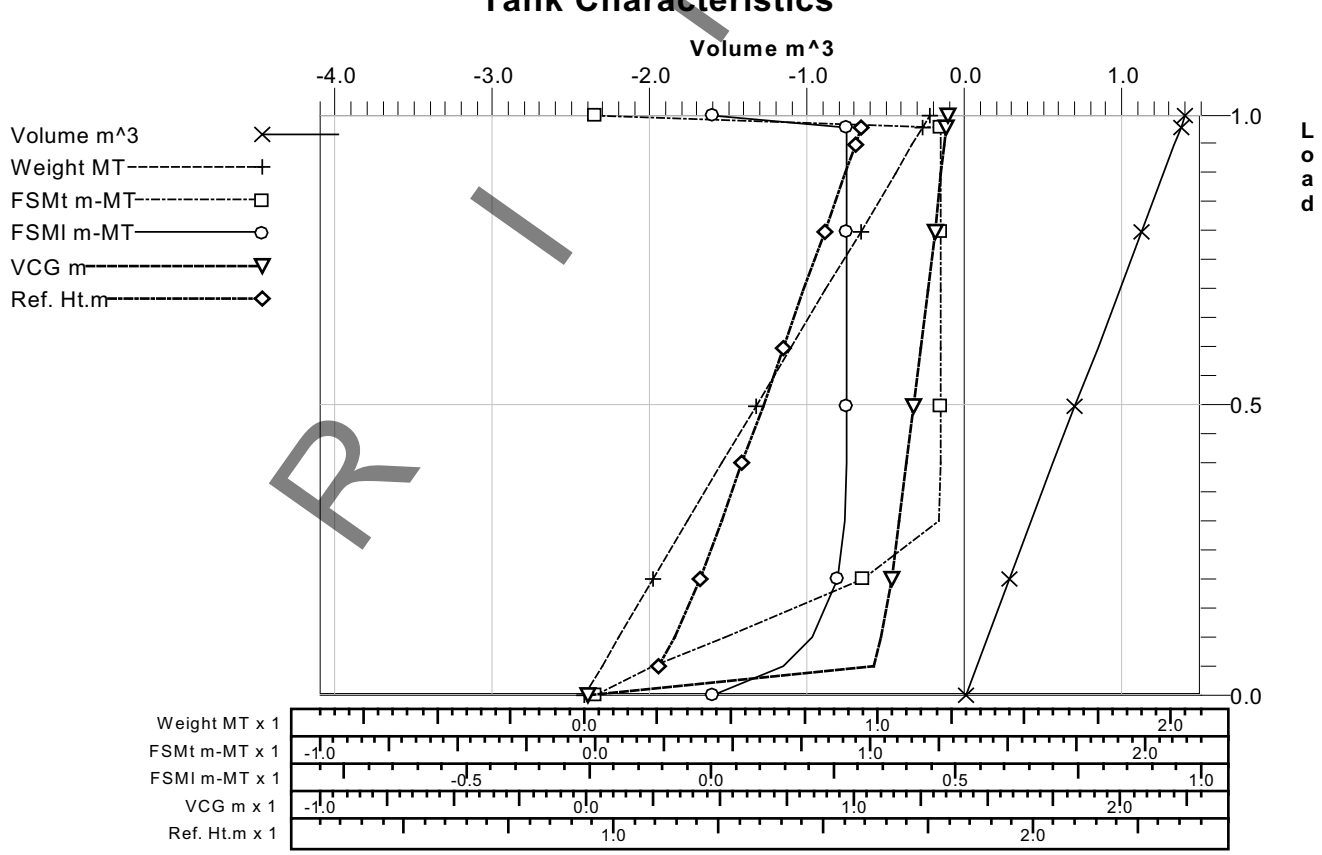
Tank Capacities for FO_2 containing FUEL OIL (0.840)

No Trim, No Heel

Ref Ht (m)	Load (%)	Volume (m^3)	Weight (MT)	Lcg (m)	Tcg (m)	Vcg (m)	FSMt (MT-m)	FSMl (MT-m)
	0.00%	0.00	0.00					
1.11	5.00%	0.07	0.06	0.788f	0.000	1.075	0.21	0.15
1.15	10.00%	0.14	0.12	0.723f	0.000	1.101	0.47	0.21
1.21	20.00%	0.28	0.23	0.681f	0.000	1.139	0.97	0.26
1.26	30.00%	0.42	0.35	0.664f	0.000	1.170	1.25	0.27
1.31	40.00%	0.56	0.47	0.653f	0.000	1.198	1.25	0.27
1.35	50.00%	0.70	0.59	0.646f	0.000	1.224	1.25	0.27
1.40	60.00%	0.84	0.70	0.642f	0.000	1.250	1.25	0.27
1.45	70.00%	0.98	0.82	0.639f	0.000	1.275	1.25	0.27
1.50	80.00%	1.12	0.94	0.637f	0.000	1.301	1.25	0.27
1.55	90.00%	1.26	1.06	0.635f	0.000	1.326	1.25	0.27
1.58	95.00%	1.33	1.11	0.634f	0.000	1.338	1.25	0.27
1.59	98.00%	1.37	1.15	0.634f	0.000	1.346	1.25	0.27
	100.00%	1.40	1.17	0.634f	0.000	1.351		

Reference Point

Part	Long.(m)	Trans.(m)	Vert.(m)
FO_2	0.000	0.000	0.000



APPENDIX I. WORKSHEET FOR CALCULATING LOADING CONDITION

TABLE 1. TOTAL WEIGHT AND CoG CALCULATION							
ITEM	Load %	WT ton	LCG m	LMT ton.m	VCG m	VMT ton.m	FSM ton.m
Passengers and effects							
Stores and spare parts							
Toys							
TANKS							
TOTAL DEADWEIGHT							
LIGHTSHIP WEIGHT							
FIXED BALLAST							
BOUYANCY CORRECTION							
TOTAL DISPLACEMENT							

TABLE 1. CALCULATING THE DISPLACEMENT AND CENTRES OF GRAVITY

1. Fill in the weights in column 3 (WT) [unit: metric tons]
2. Fill in the longitudinal and vertical centers of gravity in columns 4 (LCG) and columns 6 (VCG)[unit:m]
3. Multiply the weight of each item by its center to get the longitudinal and vertical moments and enter the moment in column 5 (LMT) and 7 (VMT)
4. From the tank capacity plan and tank capacities Appendix I-2 enter the tank weights into column 3 (WT), LCG's into column 4 (LCG), VCG's in column 6 (VCG) and FSM's in column 8 (FSC) [units: metric tons, meters and metric ton-meters]
5. Multiply the weight of the tanks by its center to get the longitudinal an vertical moments and enter these moments in column 5 (LMT) and 7 (VMT)
6. Sum up columns 3, 5 and 7 and enter the total in the "dead weight" row.
7. Add dead weight mass to light ship mass and enter the new total in the "total displacement" row, column 3.
8. Add dead weight LMT to light ship LMT and enter the new total in the "total displacement" row, column 5
9. Add dead weight VMT to light ship VMT and enter the new total in the "total displacement" row, column 6
10. Divide total displacement LMT by the total displacement WT, to calculate the estimate overall LCG for this loading condition. Fill in the result in column 4 (LCG)
11. Divide total displacement VMT by the total displacement WT, to calculate the estimate overall VCG for this loading condition. Fill in the result in column 6 (VCG)
12. Sum up column 8 (FSM) and enter the total into "total displacement" row, column 8

TABLE 2. STABILITY CALCULATION		
Displacement		tons
VCG		m
Estimated Fwd draught		m
Estimated Aft draught		m
Estimated Trim		m
Draught (amidships)		m
KM_T		m
GM_T (Solid)		m
FS-corr		m
GM_T (Fluid)		m

TABLE 2. CALCULATING THE STABILITY

13. Transfer the value of the overall displacement and VCG from table 1 to table 2.
    Calculate the total frees surface correction by dividing total FSM by overall displacement and enter in table 2 under FS-corr.
14. Estimate fwd and aft draught, and enter values table 2
15. Subtract fwd draught from aft draught and enter trim value in table (note that trim bow down is negative, bow up is positive)
16. From the tables with hydrostatic data (chapter 5 in the intact stability booklet), select the table with trim closest to the estimated trim. At the calculated displacement determine the value of Draught (at 26.32m), KM_T, LCB and MT-cm (Moment to change trim by 1 cm) and enter these in tables 2 and 3.Note that the draught at 26.32m is the draught amidships
17. Subtract the overall VCG value in table 2 from KM_T to obtain GM_T (solid) and enter the result in table 2.
18. Subtract the overall FS-corr value from table 1 from GM_T (solid) to obtain GM_T (fluid), and enter the value in table 2

TABLE 3. TRIM CALCULATION		
LCG		m
LCB		m
Trim lever		m
Trim moment		ton-m
MTcm		ton.m/cm
Trim correction		cm
Trim		cm
Draught at amidships		m
Draught aft		m
Draught fwd		m

TABLE 3. CALCULATING THE TRIM

19. Subtract the LCG from the LCB to obtain the trim lever
20. Transfer the value of the overall LCG from table 1 to table 3
21. Multiply the displacement by the trim lever to obtain trim moment.
22. Divide trim moment by MT-cm to obtain the trim correction.
23. Calculate trim by adding trim correction to estimated trim.
24. Divide the trim by 2, and add this to the draught amidships to obtain the draught aft
25. Divide the trim by 2, and subtract this from the draught amidships to obtain the draught forward

If the trim correction in step 22 is more than 20cm an additional calculation is recommended departing from step 15 and using an estimated trim being that found in step 23.

APPENDIX II. ABBREVIATION LIST AND CONVERSION TABLE

EXPLANATION ABBREVIATIONS		
ABBR.	**EXPLANATION**	**UNIT**
(m)	Metres	m
(MT)	Metric tons	MT
BW	Black water	-
DFA	Down flooding angle	deg
Disp	Displacement	MT
DLO	Dirty lubrication oil	-
Draft AP	Draft at aft perpendicular	m
Draft FP	Draft at forward perpendicular relative to baseline	m
Draft MS	Draft at forward perpendicular relative to baseline	m
Draught aft	Draught at aft perpendicular relative to baseline	m
Draught fore	Draught at forward perpendicular relative to baseline	m
F/S Corr	Free surface correction	m
FO	Fuel oil	-
FSM	Free surface moment	MTm
FW	Fresh water	-
G'M	Initial stability, metacentric height: distance from KG to metacenter corrected for free surface moment, identical to: GM (fluid)	m
GM	Initial stability, metacentric height: distance from KG to metacenter	m
GM (fluid)	Initial stability, metacentric height: distance from KG to metacenter corrected for free surface moment	m
GML	Longitudinal metacentric height	m
GW	Grey water	-
GZ	Same as righting arm (RA)	m
KMT	Distance from baseline to metacenter	m
LCB	Longitudinal centre of buoyancy relative to aft perpendicular	m
LCF	Longitudinal centre of floatation relative to aft perpendicular	m
LCG	Longitudinal centre of gravity (relative to aft perpendicular)	m
Length o.a.	Length overall	m
Length w.l.	Length waterline	m
LO	(Clean) lubrication oil	-
MaxRA	Maximum righting arm	m
mld	Moulded	m
MTcm	Required trim moment to obtain a trim change of 1 cm	MT-m/cm
Perm	Permeability	-
R. area	Righting area under righting arm curve	mrad
TCB	Transverse centre of buoyancy relative to centreline plane	m
TCG	Transverse centre of gravity relative to centre line plane	m
TPcm	Required weight to obtain a draft change of 1 cm	MT/cm
VCB	Vertical centre of buoyancy relative to baseline	m
VCG	Vertical centre of gravity (relative to baseline)	m
WT	Watertight	-

All units as used in this report are in the SI-units (Systeme Internationale). The use of SI-units is strongly recommended. Below a conversion table is shown:

Multiply by	To convert from	To obtain	-
0.03937	Millimetres	Inches	25.400
0.3937	Centimetres	Inches	2.540
3.2808	Metres	Feet	0.3048
2.2046	Kilograms	Pounds	0.45359
0.0009842	Kilograms	Tons (2240 lbs)	1016.047
0.9842	Metric tons (i.e. tons of 1000 kilos)	Tons (2240 lbs)	1.016
2.4998	Metric tons per centrimetre	Tons per inch (immersion)	0.400
8.2014	Moment to change trim one centrimetre	Moment to change trim one inch	0.122
187.9767	Metre radians	Feet degrees	0.0053
0.26417	Litre	US Gallon	3.7854
0.21997	Litre	Gallon	4.5461
-	To obtain	To convert from	Multiply by the above

APPENDIX III. INCLINING TEST REPORT

* See remarks in red on 7, 11 and 12

RI 61055

RINA | Korea Plan Approval Centre

Approvato
Approved
In conformità ai vigenti Regolamenti del RINA
(In compliance with RINA Rules in force)

Con Note
With Remarks

N. PUDP0000004034

23 JUL 2019
Busan

RINA
Kyungtak Joo

See letter: PUDP/2019/00113/KYUJO

DE VOOGT NAVAL ARCHITECTS
RESULTS INCLINING TEST
YN 586, MOTOR YACHT CARAVELLE
DECEMBER 2018

RINA | ☑ Witnessed ☑ Reviewed

Date 14/01/2019

Marine Surveyor
Davide Di Biasi
RINA Belgium BVBA

PRINCIPAL DIMENSIONS

Length OA	23.95	[m]
Length WL	21.38	[m]
Beam (moulded)	5.10	[m]
Depth (moulded)	3.25	[m]
Draft (moulded)	1.45	[m]
Distance between ord 0 and fr 0	0.00	[m]

(RELATIVE TO BASELINE)
(NEGATIVE VALUE: ORD 0 IS AFT OF FR 0)

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Revisions		Description	Author	Checked
H				
G				
F				
E				
D				
C				
B				
A				
O	08-12-2018	Original issue	JS	

YARD NO.	YARD	Dwg/Calc No	TITLE
586	De Vries Aalsmeer	457000226.0	INCLINING TEST HULL
CLASS/REGULATION	DESCRIPTION		
Rina	23.95 m TS Motor yacht		

Total 12 sheets with a cover

1. GENERAL DATA

INTRODUCTION

Motoryacht Caravelle was refitted in 2018. After the refit an inclining test was performed. The resulting Light Ship Weight will be input for the stability booklet.

1.1 MAIN DIMENSIONS

Length overall	23.95 [m]
Length waterline	21.38 [m]
Beam	5.10 [m]
Depth (mld)	3.25 [m]

1.2 REFERENCES

LCG	Relative to frame 0
TCG	Relative to CL, starboard is positive
VCG	Relative to baseline

1.3 ENVIRONMENTAL CONDITIONS:

Date:	3rd December 2018
Location:	Makkum, the Netherlands
Weather and wind:	Gentle breeze on bow

1.4 WITNESSES OF INCLINING TEST:

Classification society or delegated authority:	Rina, Mr. Davide Di Biasi
Shipyard:	De Vries Makkum
Owner's representative:	Huber Koschade

1.5 INCLINING TEST PERFORMED BY:

De Voogt naval architects:	Jeroen Swierstra Marcus May
Shipyard	Otto van Dijk

1.6 PENDULUMS:

Location pendulum 1:	Crew escape	
Length of pendulum 1:	2047	[mm]
Location pendulum 2:	Aft peak	
Length of pendulum 2:	3183	[mm]

1.7 DENSITY WATER:

Reading hydrometer:	999	[kg/m³]

1.8 GENERAL REMARKS:

- At the inclining test the yacht was floating freely with all mooring lines slack.

1.9 LOADING CONDITION DURING INCLINING TEST

- Yacht almost finished afte refit, ready to sail
- Fresh water tanks full, all other tanks empty

2. WEIGHTS

Location: Main deck, in gangways PS and SB

	WEIGHT	
WEIGHT 1:	250	[kg]
WEIGHT 2:	250	[kg]
WEIGHT 3:	250	[kg]
WEIGHT 4:	250	[kg]
WEIGHT 5:		[kg]
WEIGHT 6:		[kg]
WEIGHT 7:		[kg]
WEIGHT 8:		[kg]
WEIGHT 9:		[kg]
WEIGHT 10:		[kg]
TOTAL WEIGHT	1000	

WEIGHT SHIFTS

SHIFT 0	DISTANCE OFF CL [mm]	MOMENT [tonm]
WEIGHT 1:	-2150	-0.54
WEIGHT 2:	2150	0.54
WEIGHT 3:	-2150	-0.54
WEIGHT 4:	2150	0.54
WEIGHT 5:		
WEIGHT 6:		
WEIGHT 7:		
WEIGHT 8:		
WEIGHT 9:		
WEIGHT 10:		
	TOTAL	0.00

SHIFT 1	DISTANCE OFF CL [mm]	MOMENT [tonm]
WEIGHT 1:	2150	0.54
WEIGHT 2:	2150	0.54
WEIGHT 3:	-2150	-0.54
WEIGHT 4:	2150	0.54
WEIGHT 5:		
WEIGHT 6:		
WEIGHT 7:		
WEIGHT 8:		
WEIGHT 9:		
WEIGHT 10:		
	TOTAL	1.08

SHIFT 2	DISTANCE OFF CL [mm]	MOMENT [tonm]
WEIGHT 1:	2150	0.54
WEIGHT 2:	2150	0.54
WEIGHT 3:	2150	0.54
WEIGHT 4:	2150	0.54
WEIGHT 5:		
WEIGHT 6:		
WEIGHT 7:		
WEIGHT 8:		
WEIGHT 9:		
WEIGHT 10:		
	TOTAL	2.15

SHIFT 3	DISTANCE OFF CL [mm]	MOMENT [tonm]
WEIGHT 1:	2150	0.54
WEIGHT 2:	2150	0.54
WEIGHT 3:	-2150	-0.54
WEIGHT 4:	2150	0.54
WEIGHT 5:		
WEIGHT 6:		
WEIGHT 7:		
WEIGHT 8:		
WEIGHT 9:		
WEIGHT 10:		
	TOTAL	1.08

SHIFT 4	DISTANCE OFF CL [mm]	MOMENT [tonm]
WEIGHT 1:	-2150	-0.54
WEIGHT 2:	2150	0.54
WEIGHT 3:	-2150	-0.54
WEIGHT 4:	2150	0.54
WEIGHT 5:		
WEIGHT 6:		
WEIGHT 7:		
WEIGHT 8:		
WEIGHT 9:		
WEIGHT 10:		
	TOTAL	0.00

SHIFT 5	DISTANCE OFF CL [mm]	MOMENT [tonm]
WEIGHT 1:	-2150	-0.54
WEIGHT 2:	-2150	-0.54
WEIGHT 3:	-2150	-0.54
WEIGHT 4:	2150	0.54
WEIGHT 5:		
WEIGHT 6:		
WEIGHT 7:		
WEIGHT 8:		
WEIGHT 9:		
WEIGHT 10:		
	TOTAL	-1.08

2. WEIGHTS

SHIFT 6		
	DISTANCE OFF CL [mm]	MOMENT [tonm]
WEIGHT 1:	-2150	-0.54
WEIGHT 2:	-2150	-0.54
WEIGHT 3:	-2150	-0.54
WEIGHT 4:	-2150	-0.54
WEIGHT 5:		
WEIGHT 6:		
WEIGHT 7:		
WEIGHT 8:		
WEIGHT 9:		
WEIGHT 10:		
	TOTAL	-2.15

SHIFT 7		
	DISTANCE OFF CL [mm]	MOMENT [tonm]
WEIGHT 1:	-2150	-0.54
WEIGHT 2:	-2150	-0.54
WEIGHT 3:	-2150	-0.54
WEIGHT 4:	2150	0.54
WEIGHT 5:		
WEIGHT 6:		
WEIGHT 7:		
WEIGHT 8:		
WEIGHT 9:		
WEIGHT 10:		
	TOTAL	-1.08

SHIFT 8		
	DISTANCE OFF CL [mm]	MOMENT [tonm]
WEIGHT 1:	-2150	-0.54
WEIGHT 2:	2150	0.54
WEIGHT 3:	-2150	-0.54
WEIGHT 4:	2150	0.54
WEIGHT 5:		
WEIGHT 6:		
WEIGHT 7:		
WEIGHT 8:		
WEIGHT 9:		
WEIGHT 10:		
	TOTAL	0.00

3. PENDULUMS

PENDULUM 1

Location: Crew escape
Length 2047 [mm]

DEFLECTIONS PENDULUM 1

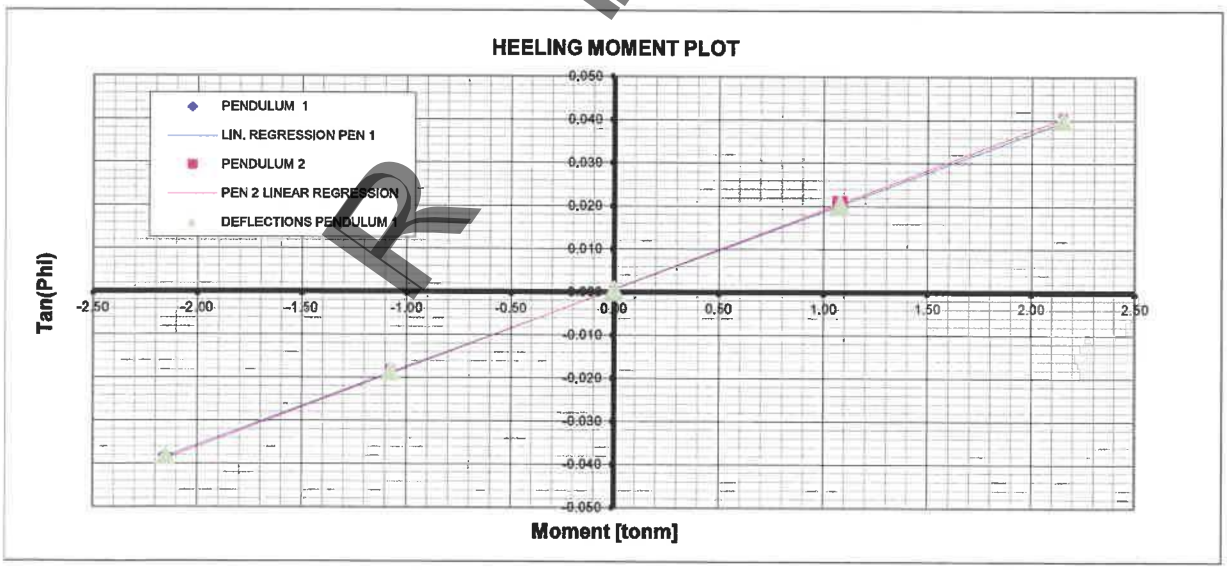
	Defl. rt shift 0 [mm]	Defl. rt last shift [mm]	Tot. deflection [mm]	Tan (Phi) [-]	Moment [tonm]
SHIFT 0	0		0	0.000	0.000
SHIFT 1	42		42	0.021	1.075
SHIFT 2	82		82	0.040	2.150
SHIFT 3	41		41	0.020	1.075
SHIFT 4	1		1	0.000	0.000
SHIFT 5	-38		-38	-0.019	-1.075
SHIFT 6	-78		-78	-0.038	-2.150
SHIFT 7	-38		-38	-0.019	-1.075
SHIFT 8	1		1	0.000	0.000

PENDULUM 2

Location: Aft peak
Length 3183 [mm]

DEFLECTIONS PENDULUM 2

	Defl. rt shift 0 [mm]	Defl. rt last shift [mm]	Tot. deflection [mm]	Tan (Phi) [-]	Moment [tonm]
SHIFT 0	0		0	0.000	0.000
SHIFT 1	66		66	0.021	1.075
SHIFT 2	131		131	0.041	2.150
SHIFT 3	67		67	0.021	1.075
SHIFT 4	1		1	0.000	0.000
SHIFT 5	-58		-58	-0.018	-1.075
SHIFT 6	-122		-122	-0.038	-2.150
SHIFT 7	-61		-61	-0.019	-1.075
SHIFT 8	-1		-1	0.000	0.000



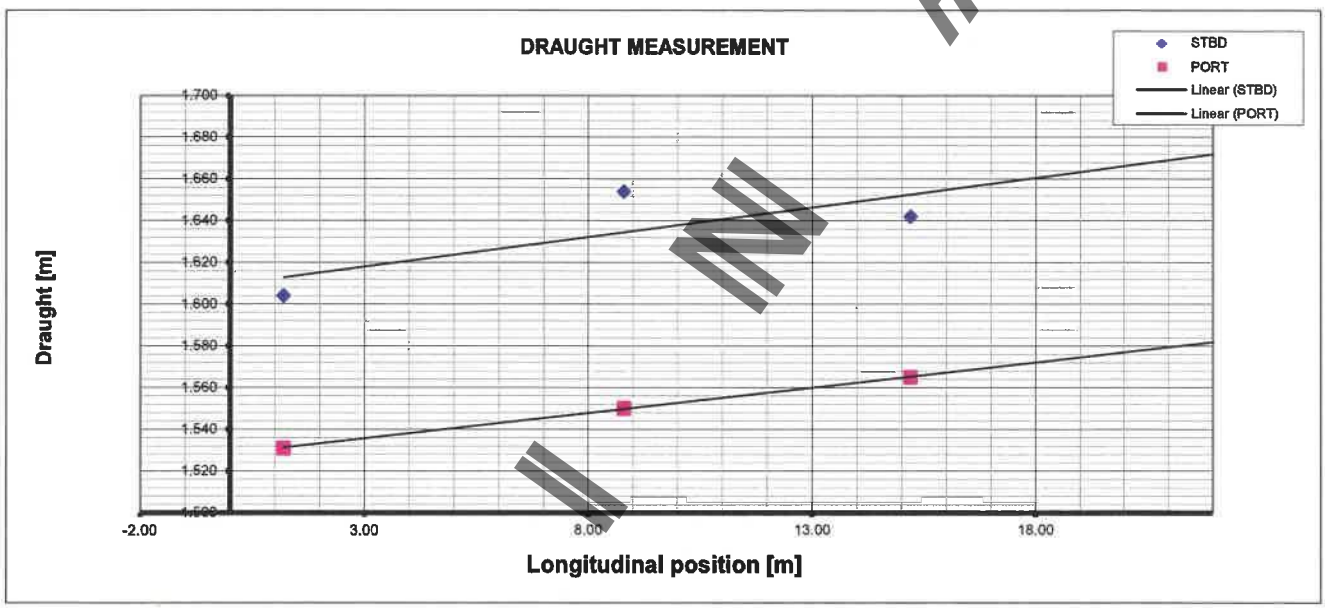
4. DRAUGHT MEASUREMENT

STARBOARDSIDE DRAUGHTS

	Description	Location rt. Fr 0 [m]	Distance to WL [mm]	Height mark AB [mm]	Draught [m]
STBD aft	Aft peak bulkhead fr. 3	1.200	1645	3249	1.604
STBD mid	Front side porthole aft, fr. 22	8.800	1754	3408	1.654
STBD fore	Fr. 38	15.200	2007	3649	1.642

PORTSIDE DRAUGHTS

	Description	Location rt. Fr 0 [m]	Distance to WL [mm]	Height mark AB [mm]	Draught [m]
PORT aft	Aft peak bulkhead fr. 3	1.200	1718	3249	1.531
PORT mid	Front side porthole aft, fr. 22	8.800	1858	3408	1.550
PORT fore	Fr. 38	15.200	2084	3649	1.565



CALCULATED (AVERAGED) DRAUGHTS FOR DETERMINING DISPLACEMENT

Draught fr. 3	1.572	[m]
Draught fr. 22	1.592	[m]
Draught fr. 38	1.609	[m]
HEEL ANGLE	0.95	[deg] HEEL ANGLE IS TO STARBOARD

DEVIATIONS TO MEASURED DRAUGHTS

	AVER. MEASURED (STBD & PORT) [m]	AVER. CALC. (STBD & PORT) [m]	DEVIATION [m]
Fr. 3	1.568	1.572	0.005
Fr. 22	1.602	1.592	-0.010
Fr. 38	1.604	1.609	0.005

5. INCLINED SHIP CONDITION

5.1 DATA USED FOR DERIVING DISPLACEMENT

DENSITY WATER	999 [kg/m3]	
Draught fr. 3	1.57 [m]	
Draught fr. 22	1.59 [m]	
Draught fr. 38	1.61 [m]	
HEEL ANGLE	0.95 [deg]	HEEL ANGLE IS TO STARBOARD

5.2 DATA DERIVED FROM HYDROSTATICS

DISPLACEMENT	60.0	[tons]
LCG	9.04	[m]
KM	3.228 ~~3.23~~	[m]

5.3 METACENTRIC HEIGHT AND VERTICAL CENTRE OF GRAVITY OF INCLINED SHIP

Based on the deflections of the pendulums and the displacement the following GM values are derived

GM based on pendulum 1	0.919 [m]	Including free surface moments
GM based on pendulum 2	0.903 [m]	Including free surface moments
GM averaged	0.911 [m]	Including free surface moments
KG inclined ship	2.317 [m]	KG including free surface effects
TCG	0.015 [m]	
LCG	**9.037 m**	**LCG = LCB + (VCG-VCB) * TRIM / LBP**

6. TANKS

	VOLUME [ltrs]	DENSITY [ton/m3]	WEIGHT [kg]	LCG [m]	TCG [m]	VCG [m]	FSM [tonm]
FRESH WATER 1 FWD	210	1.000	210	16.97	0	1.085	0
FRESH WATER 2 SB	200	1.000	200	15.58	0.73	1.117	0
FRESH WATER 3 PS	200	1.000	200	15.58	-0.73	1.117	0
GREY WATER 1	0						
BLACK WATER	0						
GREY WATER 2	0						
FUEL OIL 1	0						
FUEL OIL 2	0						
TOTAL			610	16.06	0.00	1.11	0.00

Fuel oil tanks were completely emptied during refit and not yet filled.

7. INCLINING CREW & WEIGHTS

7.1 INCLINING CREW/PERSONS ON BOARD

Description	WEIGHT [kg]	LCG [m]	TCG [m]	VCG [m]
1 person at pendulum 1 crew escape	80.00	17.35	0.00	2.25
1 person at pendulum 2 aft peak	80.00	0.80	0.00	2.25
TOTAL	160	9.08	0.00	2.25

7.2 INCLINING WEIGHTS

Description	WEIGHT [kg]	LCG [m]	TCG [m]	VCG [m]
INCLINING WEIGHT 1	250	9.40	-2.15	3.42
INCLINING WEIGHT 2	250	10.30	2.15	3.45
INCLINING WEIGHT 3	250	11.20	-2.15	3.47
INCLINING WEIGHT 4	250	12.10	2.15	3.50
TOTAL	1000	10.75	0.00	3.46

8. TO BE SUBTRACTED

Description	WEIGHT [kg]	LCG [m]	TCG [m]	VCG [m]
TOTAL	0	0.00	0.00	0.00

9. TO BE ADDED

Description	WEIGHT [kg]	LCG [m]	TCG [m]	VCG [m]
LOWER DECK				
Matrasses and upholstery guest cabins	50	5.50	0.00	1.80
ER door	25	12.80	0.00	2.10
Matrasses and upholstery crew cabins	40	16.50	0.00	2.00
MAIN DECK				
Upholstery saloon aft	40	4.50	0.00	3.70
Upholstery main saloon	20	11.5 ~~11..5~~	0.00	3.70
TOTAL	175	~~6.20~~ 9.514	0.00	2.54

10. SUMMARY

Description	WEIGHT [kg]	LCG [m]	TCG [m]	VCG [m]
Inclined ship	60000	9.037 ~~9.041~~	0.015	2.317
Tanks	-610	16.059	0.000	1.106
Subtotal uncorrected for FSM	*59390*	*8.969*	*0.015*	*2.330*
Free Surface Moment tanks				0.000
Subtotal corrected for FSM	*59390*	*8.969*	*0.015*	*2.330*
Total weight TO BE ADDED	175	8.200	0.000	2.540
Total weight TO BE SUBTRACTED	0	0.000	0.000	0.000
Inclining weights	-1000	10.750	0.000	3.460
Inclining crew	-160	9.075	0.000	2.250
LSW FROM INCLINING TEST	58405	8.936	0.016	2.311

RINA

RINA | ☑ Witnessed ☑ Reviewed

Date 14/01/2019

Marine Surveyor
Davide Di Biasi
RINA Belgium BVBA