COCHIN SHIPYARD - CT3240
40 T BOLLARD PULL ASD TUG -
PRELIMINARY STABILITY REPORT

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Revision No.	Date	Description	Sign
Rev. I	15 Sep 2021	For publishing on IPA website	ABK/HUR

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1. INTRODUCTION

This document summarizes the preliminary assessment of Intact Stability of 40 T Bollard Pull Tug variant for in-principle approval from Class. The stability of the vessel is checked against the requirement as per Intact Stability Code 2008.

Stability of the vessel during towing operation is checked as per amendment to part B of IS Code 2008, vide MSC Resolution 415(97), Section 2.8 – Ships Engaged in Towing Operations.

Stability of the vessel during FiFi operation is checked as per DNV RU-Ship, Part 5, Chapter 10, Section 9. Overturning moment is calculated assuming that all the fire monitors are operated at their full capacity in transverse direction.

Only most onerous conditions are described in this stability report. Detailed stability booklet including all the necessary loading conditions, hydrostatics, cross curves etc. to the satisfaction of Class and regulatory authorities shall be submitted to class for approval by the builder during the time of vessel construction.

Stability calculations are performed in NAPA 2020.2-1 software.

2. VESSEL INFORMATION

The vessel shall be primarily tasked for ship handling and towing operations including berthing/unberthing, push pull, etc. within harbor.

The vessel shall operate within 12 nm from the shoreline.

The vessel shall have a static bollard pull of at least 40 tonnes at 100 % MCR of the engine in ahead condition.

Main Particulars

Length overall	abt. 32.0 m
Length between perpendiculars	abt. 30.8 m
Breadth moulded	abt.10.50 m
Depth midships	abt. 5.0 m
Hull Draught	abt. 3.7 m
Max. Draught	abt. 4.3 m
Gross tonnage	<500 GT
Complement	10 Nos.
Class Notation	卐 SUL, 卐 IY, TUG, INDIAN RIVER SEA VESSEL TYPE-4

3. INTACT STABILITY CRITERIA

3.1. GENERAL CRITERIA (as per IS Code 2008 Ch. 2, 2.2)

- The area under the righting lever curve (GZ curve) shall not be less than 0.055 m-rad up to = 30°
- Area under GZ Curve shall not be less than 0.09 m-rad up to 40° or the angle of down-flooding, whichever is lesser.
- Area under GZ Curve between the angles of heel of 30° and lesser of 40° or the angle of down-flooding shall not be less than 0.03 m-rad.
- The righting lever GZ shall be at least 0.2 m at an angle of heel equal to or greater than 30°
- The initial metacentric height GM_0 shall not be less than 0.15 m.
- The maximum righting lever shall occur at an angle of heel not less than 25°.

3.2. SEVERE WIND AND ROLLING CRITERIA (as per IS Code 2008 Ch. 2, 2.3)

Ability of the ship to withstand combined effects of beam wind and rolling shall be demonstrated as follows, when subjected to wind loads as per IS Code Ch. 2, 2.3:

- Area b shall be equal to or greater than area a
- The angle of heel under action of steady wind should not exceed 16° or 80% of the angle of deck edge immersion, whichever is less.

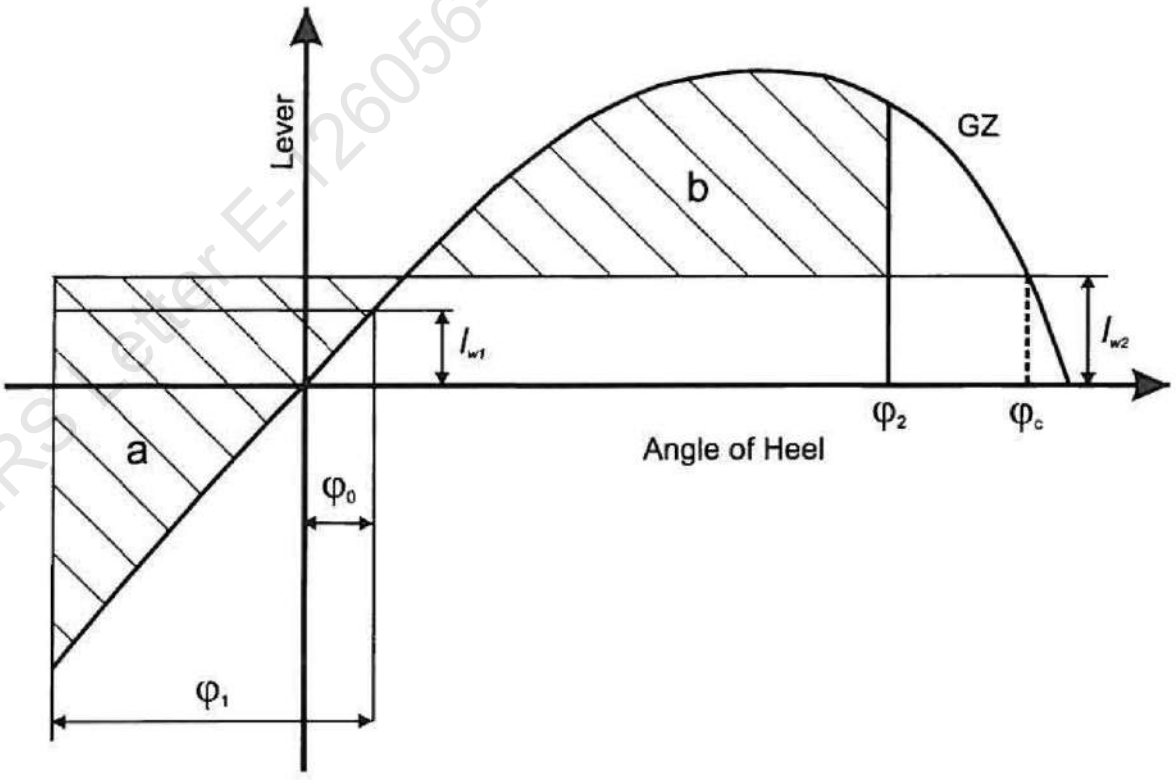


Figure 1 Severe Wind & Rolling Criteria

3.3. STABILITY CRITERIA FOR TOWING (as per IS Code 2008, Ch.2, 2.8)

Stability of the vessel during towing operation has been checked iaw IS Code 2008, Ch. 2, 2.8.

- The area A between the righting lever curve and the heeling lever curve for self-tripping calculated iaw. 2.8.2.1 of IS Code, measured from equilibrium heel angle, (ϕ_e) to the angle of the second intersection, (ϕ_c) or the angle of down-flooding, (ϕ_f) whichever is less, should be greater than the area B contained between the heeling lever curve and the righting lever curve, measured from the heel angle ϕ= 0 to equilibrium heel angle (ϕ_e).
- The first intersection between the righting lever curve and the heeling lever curve for tow-tripping calculated iaw 2.8.2.2 should occur at an angle of heel less than the angle of down-flooding (ϕ_f).

Moment Calculation:

The location of propulsion units and towing point used for moment calculation are as indicated in Chapter 5-Tow Point.

a. Self-Tripping Heeling Lever

$$HL_{\varphi} = \frac{BP \times C_T \times (h \times \cos\varphi - r \times \sin\varphi)}{g \times \Delta}$$

Where:

BP	bollard pull of the vessel in (kN) – 392.27 kN
C_T	0.5, for ships with conventional, non-azimuth propulsion units; $0.90/(1 + l/L_{LL})$ for ships with azimuth propulsion units installed at a single point along the length. C_T should not be less than 0.7 for ships with azimuth stern drive towing over the stern or tractor tugs towing over the bow, and not less than 0.5 for ships with azimuth stern drive towing over the bow or tractor tugs towing over the stern;
Δ	displacement, in (t);
l	longitudinal distance, in (m), between the towing point and the vertical centreline of the propulsion unit(s) relevant to the towing situation considered;
h	vertical distance, in (m), between the towing point and the horizontal centreline of the propulsion unit(s) as relevant for the towing situation considered; gravitational acceleration, in (m/s^2), to be taken as 9.81;
r	transverse distance, in (m), between the centre line and the towing point, to be taken as zero when the towing point is at the centre line.
L_{LL}	length (L) as defined in the International Convention on Load Lines in force.

b. Tow Tripping Heeling Lever

$$HL_{\varphi} = \frac{C_1 \times C_2 \times \gamma \times V^2 \times A_p \times (h \times \cos\varphi - r \times \sin\varphi + C_3 \times d)}{2 \times g \times \Delta}$$

Where:

C_1	Lateral traction coefficient- $2.8\,\frac{L_S}{L_{PP}} - 0.1$	$0.10 \le C_1 \le 1.00$
C_2	Correction of C_1 for angle of heel = $\frac{\varphi}{3\,\varphi_D} + 0.5$	$C_2 \ge 1.00$

φ_D	Angle to deck edge	$= \tan^{-1}\frac{2f}{B}$
C_3	Distance from the center of A_P to the waterline as fraction of the draught related to the heeling angle= $\frac{\varphi}{\varphi_D} \times 0.26 + 0.30$, $0.50 \leq C_3 \leq 0.83$	
γ	Specific gravity of water, in (t/m^3);	
V	Lateral velocity, in (m/s), to be taken as 2.57 (5 knots);	
A_P	Lateral projected area, in (m^2), of the underwater hull;	
r	the transverse distance, in (m), between the center line and the towing point, to be taken as zero when the towing point is at the center line;	
L_S	The longitudinal distance, in (m), from the aft perpendicular to the towing point;	
L_{PP}	Length between perpendiculars, in (m);	
φ	Angle of heel;	
f	Freeboard amidship, in (m);	
B	Moulded breadth, in (m);	
h	Vertical distance, in (m), from the waterline to the towing point;	
d	Actual mean draught, in (m);	

3.4. STABILITY CRITERIA FOR CRANE OPERATION (as per IS Code 2008, Ch.2, 2.9)

Stability of the vessel has been checked for a heeling moment calculated iaw IS Code 2.9.6, the vessel has to meet the below stability criteria, as per IS Code 2.9.7.

- The residual righting area below the righting lever and above the heeling lever curve between ϕ_e and the lesser of 40° or the angle of the maximum residual righting lever should not be less than 0.080 m rad.
- The equilibrium angle is to be limited to 10 degrees or the angle of immersion of the highest continuous deck enclosing the watertight hull.

The heeling lever should be calculated using the following formulae:

$$HL_\varphi = \frac{P_L \times y \times \cos\varphi}{\Delta}$$

where:

P_L	vertical load, in (t), of the lift, 1.5 t
y	transverse distance, in (m), of the lift, 10.3 m.
φ	angle of heel;
HL_φ	the heeling lever, in (m) due to the lift at φ; and
Δ	the displacement, in (t) of the ship with the load of the lift.

3.5. STABILITY CRITERIA DURING EXTERNAL FIFI OPERATIONS (as per DNV GL, Rules for Fire Fighters)

Stability of the vessel during FiFi operation is checked as per DNV Part 5 Ch.10. Section 9, 9.1.3.

The monitor heeling lever (F), shall be less 0.5 times the maximum GZ corresponding to maximum allowable VCG. If the maximum GZ occurs after 30°, the GZ at 30° shall be used instead of the maximum GZ.

Heeling moment is calculated with all the fire monitors operating at their full capacity in transverse direction. The calculation is as below:

$$\mathrm{HL} = \frac{F \times \mathrm{a}}{\Delta}$$

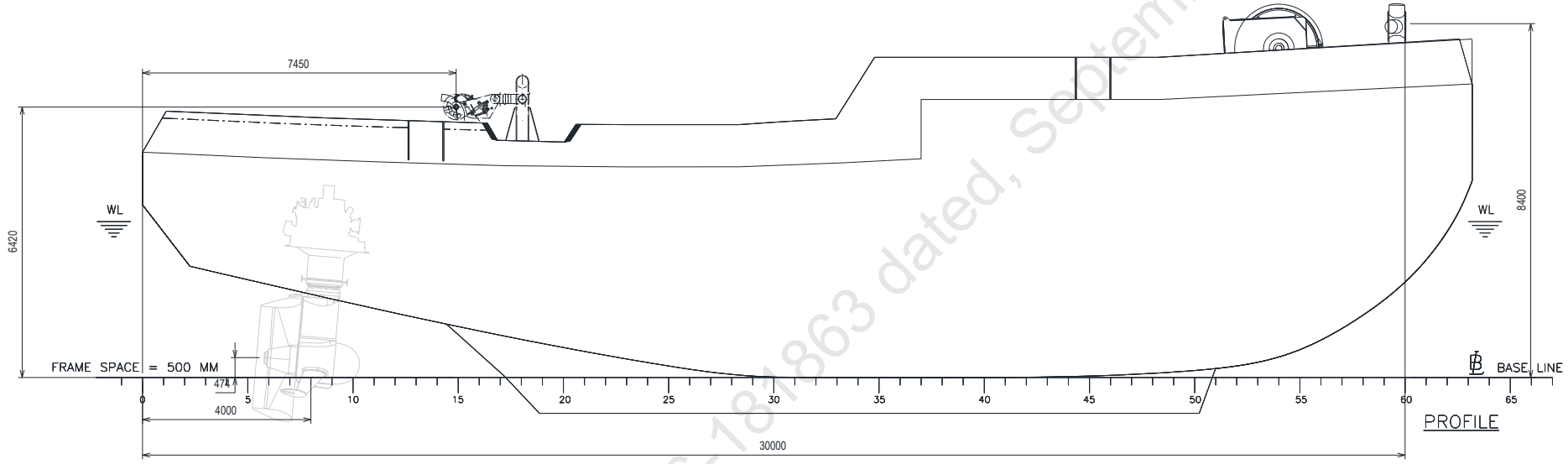
F	heeling force, assumed in transverse direction based on the full capacity of the fire monitors, *n x R*
n	Number of monitors, *2 Nos.*
R	Reaction force from one monitor, when operating in transverse direction, *9.2 kN**
a	Monitor heeling arm, taken as the vertical distance between the centre of the thruster and the centreline of the monitor, *10.385 m*

** Indicative Reaction force from monitor - Estimated based available data at this point. The builder/designer to estimate actual reaction based on binding data from OEMs during construction stage.*

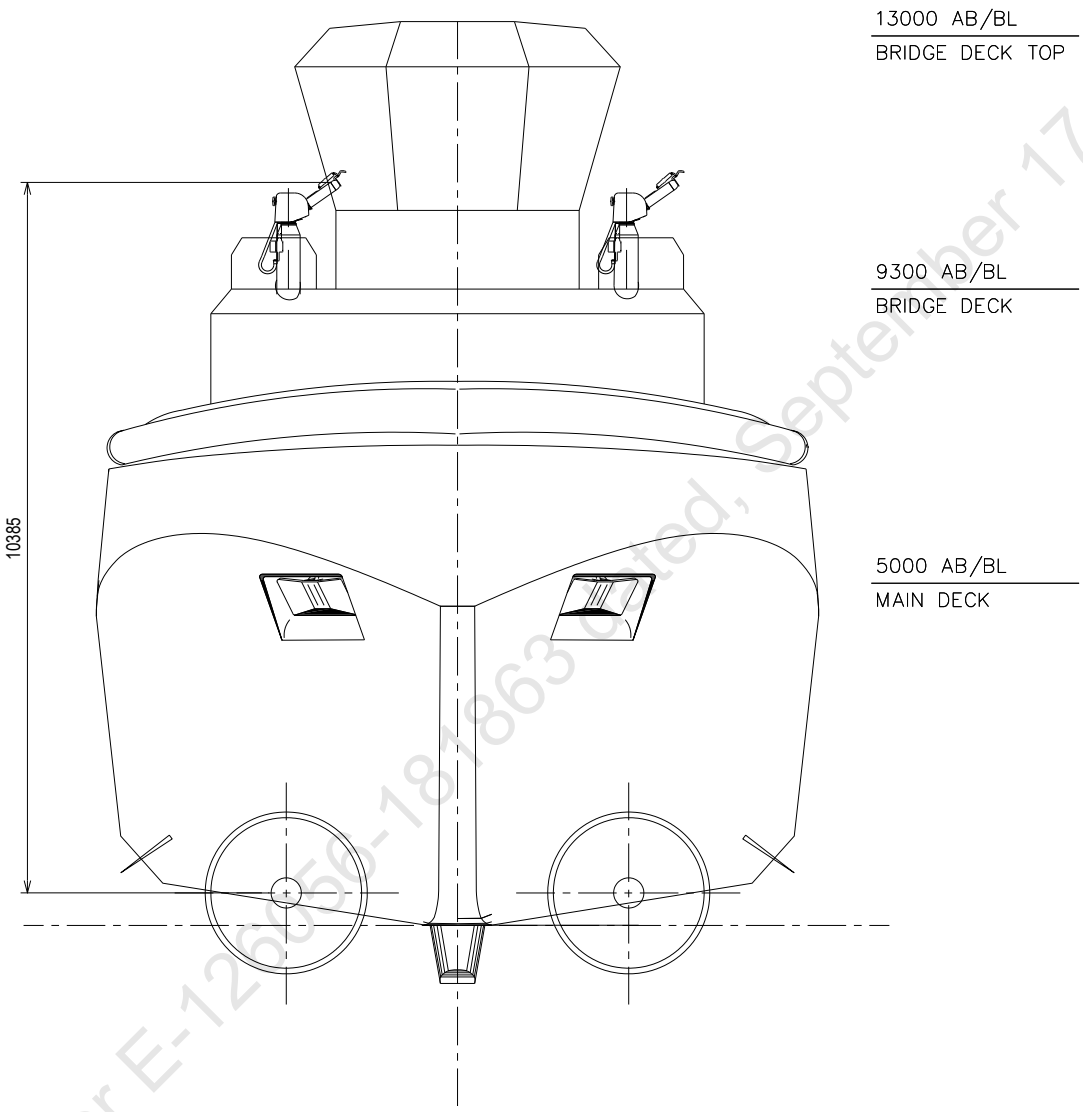
4. GENERAL ARRANGEMENT

Ref. drawing number CT3240-101-001 General Arrangement.

5. TOW POINT LOCATIONS



6. EXTERNAL FIFI ARRANGEMENT



7. OPENINGS

The position of the lower corner farthest from the centreline of the ER ventilation are as below:

Name	Length to Fr. 0 [m]	Dist. From C.L [m]	Height from Baseline [m]	Opening Type
ER – Supply "PS/SB"	12.75	2.3	5.9	Unprotected
ER – Out "PS/SB"	14.0	2.3	7.9	Unprotected

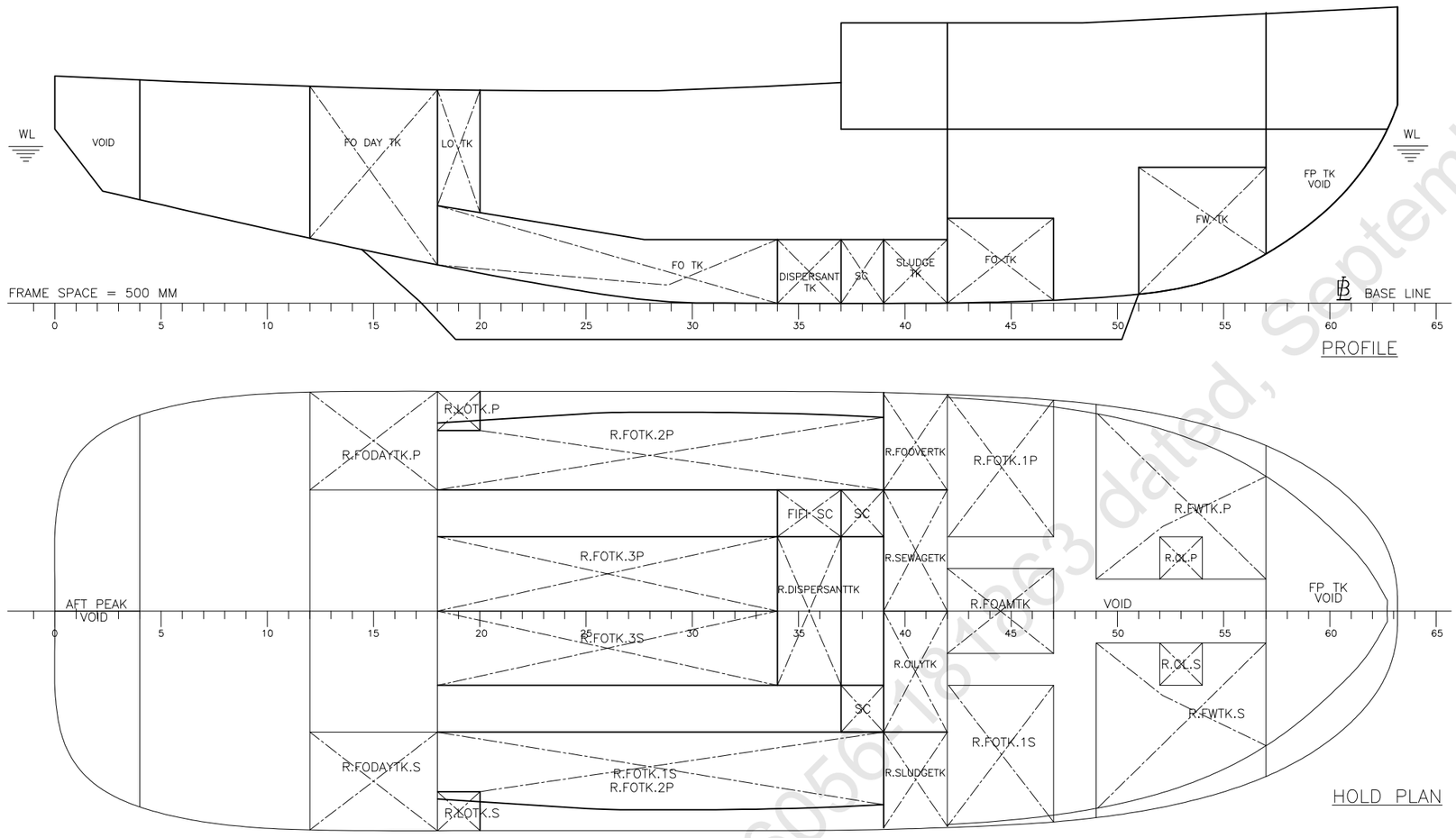
Note:

Openings required for continuous supply to Engine room which are not conforming to ICLL Reg. 17(3) may be accepted subject to provision of alternate arrangements below and concurrence of flag.

a. Shall be considered as unprotected openings in the stability calculation.
b. Suitable weathertight closing arrangements shall be provided for the ventilators.
c. Louvre shall have a coaming height of not less than 900 mm above main deck.
d. Suitable drain shall be provided in way of the ventilators.

It shall be the responsibility of the respective builder/designer to get approval from Class/Flag for the alternate arrangements for lower coaming heights.

8. TANK PLAN



PROFILE

HOLD PLAN

NAME	PURPOSE	DESCRIPTION	VNET (m3)	CGX (m)	CGY (m)	CGZ (m)	FSM (t-m)
DIESEL OIL TANKS							
R.FOTK.1P	DO	FUEL OIL	7.3	22.2	2.9	1.4	3.8
R.FOTK.1S	DO	FUEL OIL	7.3	22.2	-2.9	1.4	3.8
R.FOTK.2P	DO	FUEL OIL	15.8	14.2	3.8	1.2	4.2
R.FOTK.2S	DO	FUEL OIL	15.8	14.2	-3.8	1.2	4.2
R.FOTK.3P	DO	FUEL OIL	14.9	13.1	0.8	0.9	3.0
R.FOTK.3S	DO	FUEL OIL	14.9	13.1	-0.8	0.9	3.0
R.FODAYTK.S	DO	FUEL OIL	22.2	7.5	-3.9	3.6	3.0
R.FODAYTK.P	DO	FUEL OIL	22.2	7.5	3.9	3.6	3.0
TOTAL : 120.5 m³							
FRESH WATER TANKS							
R.FWTK.P	FW	FRESH WATER	16.0	26.0	2.1	2.3	8.8
R.FWTK.S	FW	FRESH WATER	16.0	26.0	-2.1	2.3	8.8
TOTAL : 31.1 m³							
MISC. TANKS							
R.FOOVERTK	SLU	FO OVERFLOW	1.6	20.2	3.6	1.1	1.1
R.LOTK.P	LO	LUB OIL	2.5	9.5	4.7	3.8	0.1
R.LOTK.S	LO	LUB OIL	2.5	9.5	-4.7	3.8	0.1
R.SLUDGETK	SLU	SLUDGE	1.6	20.2	-3.6	1.1	1.1
R.OILTK	SLU	WASTE OIL	4.2	20.2	-1.3	0.7	6.9
R.DISPERSANTTK	DISPERSANT	OIL DISPERSANT	5.8	17.8	0.0	0.6	5.3
R.FOAMTK	FOAM	FIFI FOAM	9.4	22.2	0.0	1.0	1.6
R.SEWAGETK	GWT	GREY WATER	4.1	20.2	1.3	0.7	2.8

MAIN PARTICULARS

LENGTH O.A	.....	abt 32.00 [m]
LENGTH B.P	.....	abt 30.80 [m]
BREADTH (MLD)	.....	abt 10.50 [m]
DEPTH (MLD)	.....	abt 5.00 [m]
DRAFT (HULL)	.....	abt 3.70 [m]
COMPLEMENT	.....	10 PERSONS
BOLLARD PULL	.....	40 T @100% MCR
INSTALLED POWER	.....	abt 2600 [kW]
CLASS NOTATION	.....	SWASTIKA SUL, SWASTIKA IY, TUG, INDIAN RIVER SEA VESSEL TYPE – 4

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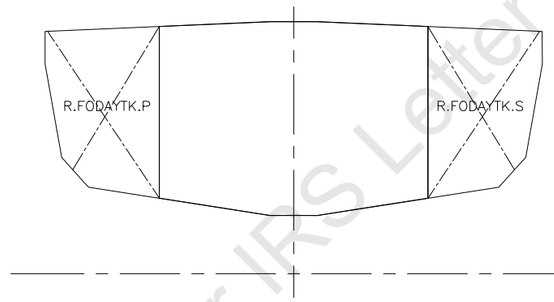

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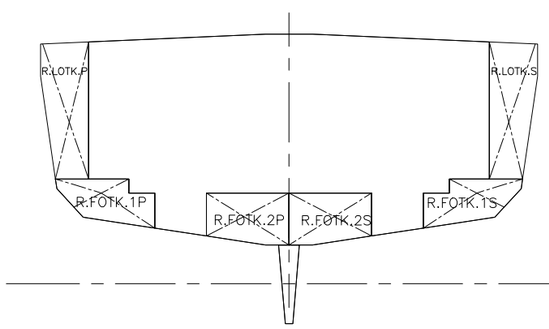


Rev. I	15 Sep 2021	For Publishing on IPA Website	VKM	ABK	HUR
No:	Date	Description	Drawn	Checked	Approved

ASTDS	40T BP TUG			
DESIGN NO : CT3240	TITLE: **TANK PLAN**			
COCHIN SHIPYARD LIMITED P.O. Bag 1653, COCHIN-682015, INDIA	1:120 (Scale)	A3 (Format)	CT3240 (Project No.)	CT3240-101-007 (Dwg. no.)

9 HYDROSTATIC DATA

MAIN CHARACTERISTICS OF THE VESSEL:

Length between perpendiculars	30.84	m
Breadth (moulded)	10.50	m
Design draught (moulded)	3.70	m
X-coordinate of aft perpendicular	0.31	m
X-coordinate of reference point (XREF)	15.73	m
X-coordinate of midship section (XMID)	16.19	m
Thickness of keelplate	0.012	m
Mean thickness of shell plating	0.010	m
Seawater density	1.025	ton/m3

Calculations are based on STABHULL date 2021-08-17 time 13:39

Shell thickness used in the calculation	10.0	mm
X-coord. of aft end of DWL	0.31	m
X-coord. of fore end of DWL	31.15	m
Calc. sections	58	
Plate thickness	10.0	mm

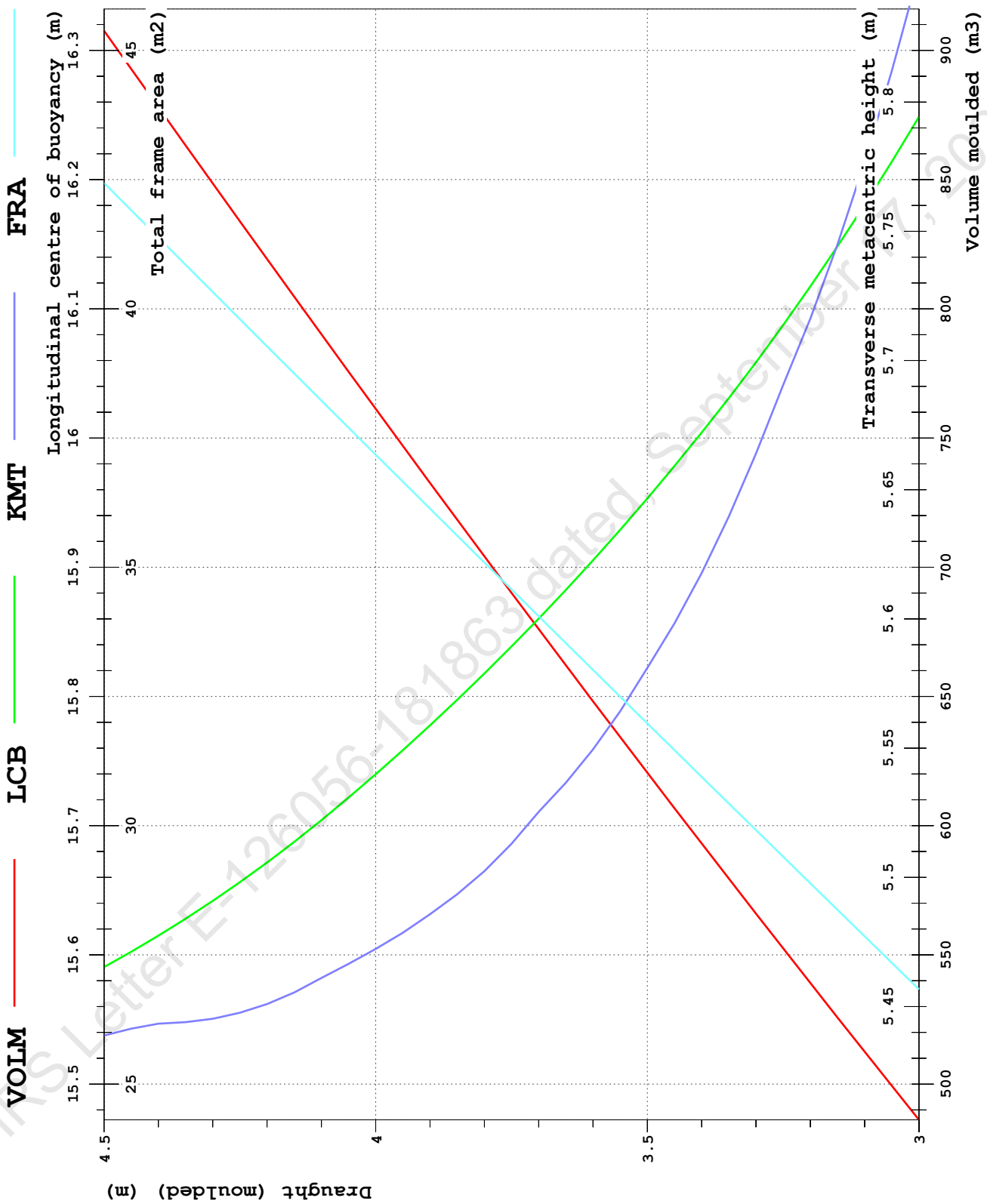
EXPLANATION OF SYMBOLS:

T	Draught (moulded)	m
TK	Draught below keel	m
DISP	Total displacement	t
LCB	longitudinal centre of buoyancy	m
VCB	Vertical center of buoyancy	m
LCF	Longitudinal centre of flotation	m
KMT	Transverse metacentric height	m
MCT	Moment to change trim	tm/cm
TPC	change of displacement/change of draught	t/cm

Trim by BOW : +ve
X = 0 at TRANSOM

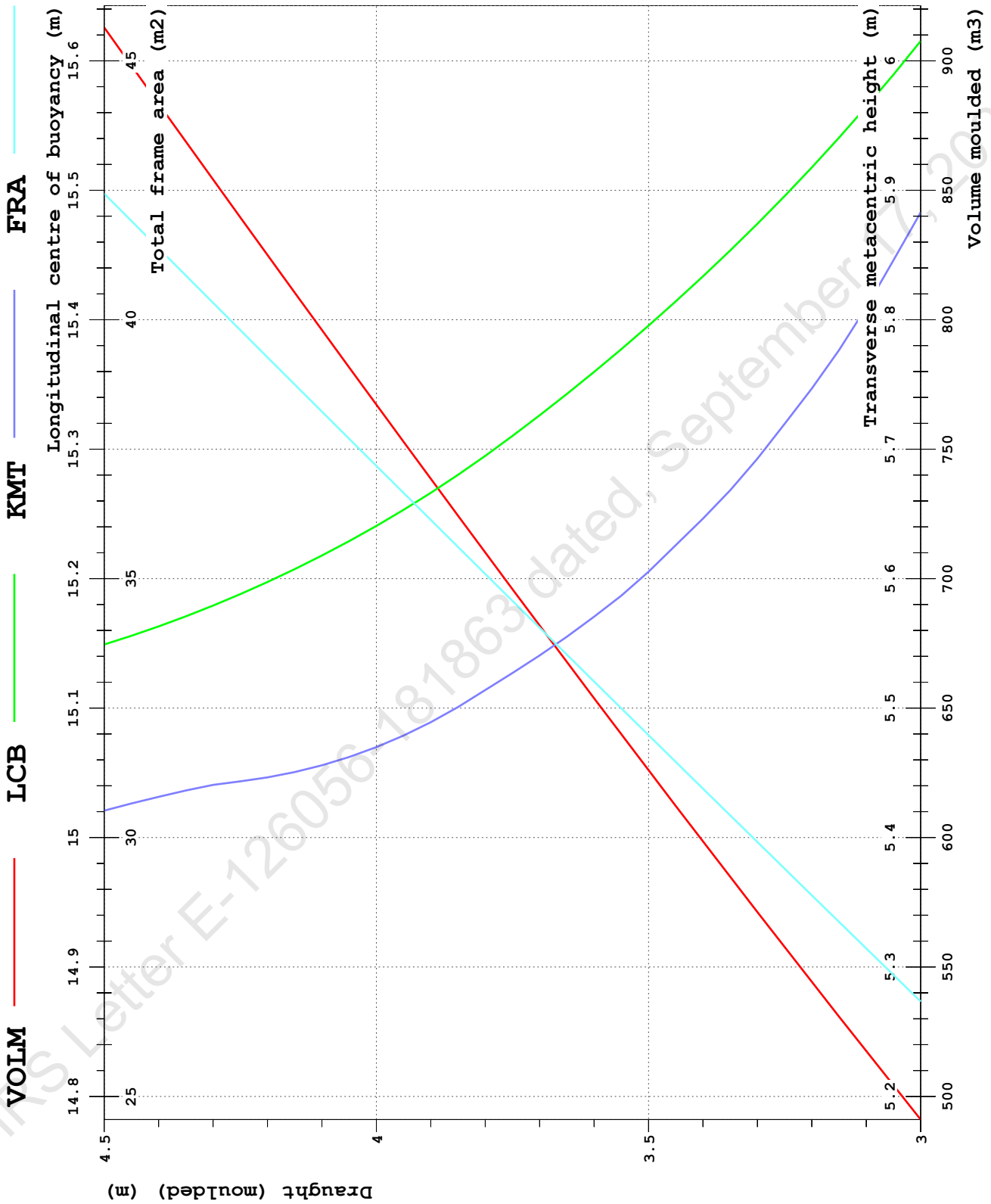
Trim: 0 m

T m	TK m	DISP t	LCB m	VCB m	LCF m	KMT m	MCT tm/cm	TPC t/cm
3.000	3.012	502.0	16.249	1.862	14.925	5.851	5.2	2.7
3.050	3.062	515.5	16.214	1.892	14.913	5.812	5.3	2.7
3.100	3.112	529.0	16.181	1.923	14.905	5.777	5.3	2.7
3.150	3.162	542.7	16.148	1.953	14.896	5.745	5.4	2.7
3.200	3.212	556.4	16.117	1.983	14.892	5.716	5.5	2.7
3.250	3.262	570.1	16.087	2.013	14.884	5.691	5.5	2.8
3.300	3.312	584.0	16.059	2.043	14.872	5.664	5.6	2.8
3.350	3.362	597.9	16.031	2.073	14.863	5.640	5.7	2.8
3.400	3.412	611.8	16.004	2.102	14.853	5.618	5.7	2.8
3.450	3.462	625.9	15.978	2.132	14.845	5.598	5.8	2.8
3.500	3.512	640.0	15.953	2.162	14.837	5.581	5.8	2.8
3.550	3.562	654.2	15.929	2.191	14.832	5.564	5.9	2.8
3.600	3.612	668.4	15.905	2.221	14.819	5.550	6.0	2.9
3.650	3.662	682.7	15.882	2.250	14.811	5.537	6.0	2.9
3.700	3.712	697.1	15.860	2.280	14.800	5.525	6.1	2.9
3.750	3.762	711.5	15.839	2.309	14.793	5.513	6.2	2.9
3.800	3.812	726.0	15.818	2.338	14.788	5.502	6.2	2.9
3.850	3.862	740.6	15.797	2.367	14.781	5.493	6.3	2.9
3.900	3.912	755.2	15.778	2.397	14.775	5.486	6.4	2.9
3.950	3.962	769.9	15.758	2.426	14.769	5.479	6.4	2.9
4.000	4.012	784.7	15.740	2.455	14.766	5.472	6.5	3.0
4.050	4.062	799.5	15.722	2.484	14.763	5.467	6.5	3.0
4.100	4.112	814.4	15.704	2.513	14.764	5.461	6.6	3.0
4.150	4.162	829.3	15.687	2.542	14.779	5.455	6.6	3.0
4.200	4.212	844.3	15.671	2.571	14.794	5.451	6.7	3.0
4.250	4.262	859.3	15.656	2.600	14.808	5.448	6.7	3.0
4.300	4.312	874.4	15.642	2.629	14.823	5.445	6.8	3.0
4.350	4.362	889.5	15.628	2.658	14.838	5.444	6.8	3.0
4.400	4.412	904.6	15.615	2.686	14.853	5.443	6.8	3.0
4.450	4.462	919.8	15.602	2.715	14.869	5.441	6.9	3.0
4.500	4.512	935.0	15.591	2.744	14.885	5.439	6.9	3.1



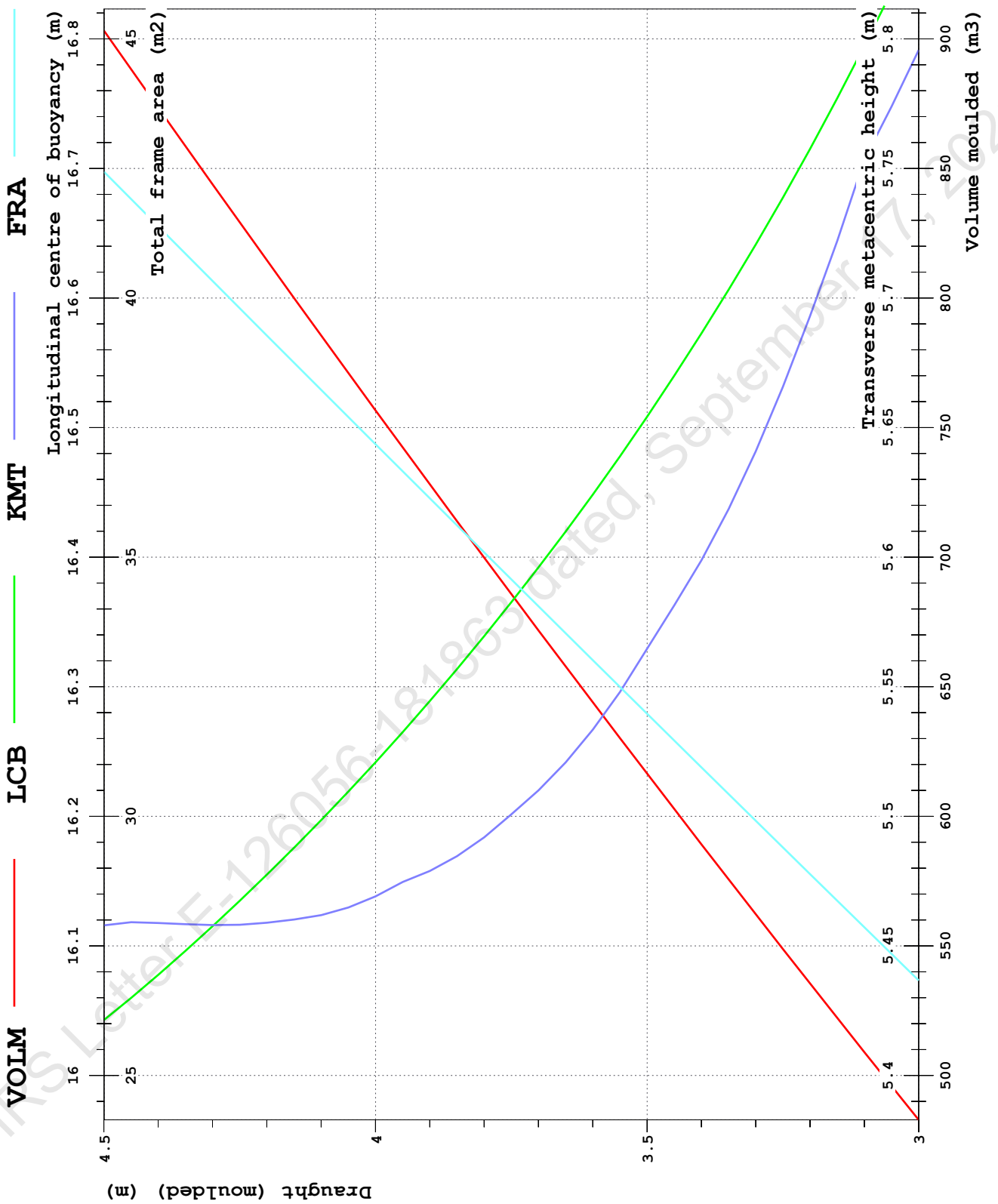
Trim: -0.6 m

T m	TK m	DISP t	LCB m	VCB m	LCF m	KMT m	MCT tm/cm	TPC t/cm
3.000	3.012	507.0	15.615	1.879	14.615	5.883	5.2	2.7
3.050	3.062	520.6	15.589	1.910	14.607	5.846	5.3	2.7
3.100	3.112	534.2	15.565	1.940	14.602	5.810	5.4	2.7
3.150	3.162	547.9	15.541	1.970	14.604	5.777	5.5	2.7
3.200	3.212	561.6	15.518	2.000	14.602	5.747	5.5	2.8
3.250	3.262	575.5	15.495	2.030	14.596	5.720	5.6	2.8
3.300	3.312	589.4	15.474	2.060	14.585	5.693	5.7	2.8
3.350	3.362	603.4	15.453	2.090	14.577	5.668	5.7	2.8
3.400	3.412	617.4	15.434	2.120	14.568	5.646	5.8	2.8
3.450	3.462	631.5	15.414	2.149	14.560	5.626	5.9	2.8
3.500	3.512	645.7	15.395	2.179	14.558	5.605	5.9	2.8
3.550	3.562	659.9	15.377	2.209	14.553	5.587	6.0	2.9
3.600	3.612	674.2	15.360	2.238	14.548	5.571	6.0	2.9
3.650	3.662	688.6	15.343	2.267	14.543	5.555	6.1	2.9
3.700	3.712	703.0	15.326	2.297	14.538	5.541	6.2	2.9
3.750	3.762	717.5	15.310	2.326	14.535	5.527	6.2	2.9
3.800	3.812	732.1	15.295	2.355	14.537	5.514	6.3	2.9
3.850	3.862	746.7	15.280	2.385	14.552	5.501	6.3	2.9
3.900	3.912	761.4	15.266	2.414	14.565	5.489	6.4	2.9
3.950	3.962	776.0	15.253	2.443	14.579	5.479	6.4	2.9
4.000	4.012	790.8	15.241	2.472	14.593	5.470	6.4	3.0
4.050	4.062	805.6	15.229	2.501	14.607	5.462	6.5	3.0
4.100	4.112	820.4	15.218	2.529	14.620	5.456	6.5	3.0
4.150	4.162	835.2	15.207	2.558	14.634	5.451	6.5	3.0
4.200	4.212	850.1	15.197	2.587	14.648	5.446	6.6	3.0
4.250	4.262	865.1	15.188	2.616	14.662	5.443	6.6	3.0
4.300	4.312	880.1	15.179	2.644	14.676	5.441	6.7	3.0
4.350	4.362	895.1	15.171	2.673	14.692	5.436	6.7	3.0
4.400	4.412	910.2	15.163	2.701	14.710	5.431	6.7	3.0
4.450	4.462	925.3	15.156	2.730	14.729	5.426	6.8	3.0
4.500	4.512	940.4	15.149	2.758	14.749	5.421	6.8	3.0



Trim: 0.6 m

T m	TK m	DISP t	LCB m	VCB m	LCF m	KMT m	MCT tm/cm	TPC t/cm
3.000	3.012	498.6	16.879	1.860	15.292	5.796	5.1	2.7
3.050	3.062	512.0	16.836	1.890	15.233	5.774	5.2	2.7
3.100	3.112	525.4	16.795	1.921	15.188	5.753	5.3	2.7
3.150	3.162	539.0	16.754	1.951	15.175	5.722	5.4	2.7
3.200	3.212	552.6	16.715	1.981	15.167	5.693	5.4	2.7
3.250	3.262	566.3	16.677	2.010	15.161	5.666	5.5	2.7
3.300	3.312	580.1	16.641	2.040	15.151	5.641	5.5	2.8
3.350	3.362	593.9	16.606	2.070	15.140	5.619	5.6	2.8
3.400	3.412	607.8	16.573	2.099	15.130	5.599	5.7	2.8
3.450	3.462	621.8	16.540	2.129	15.120	5.581	5.7	2.8
3.500	3.512	635.8	16.508	2.158	15.111	5.565	5.8	2.8
3.550	3.562	650.0	16.478	2.188	15.105	5.548	5.8	2.8
3.600	3.612	664.1	16.448	2.217	15.091	5.533	5.9	2.8
3.650	3.662	678.4	16.420	2.246	15.081	5.521	6.0	2.9
3.700	3.712	692.7	16.392	2.276	15.071	5.510	6.0	2.9
3.750	3.762	707.0	16.365	2.305	15.063	5.501	6.1	2.9
3.800	3.812	721.5	16.339	2.334	15.058	5.492	6.2	2.9
3.850	3.862	736.0	16.314	2.363	15.050	5.485	6.2	2.9
3.900	3.912	750.5	16.289	2.392	15.041	5.479	6.3	2.9
3.950	3.962	765.2	16.265	2.421	15.034	5.475	6.4	2.9
4.000	4.012	779.9	16.242	2.450	15.028	5.469	6.4	2.9
4.050	4.062	794.7	16.219	2.479	15.023	5.465	6.5	3.0
4.100	4.112	809.5	16.197	2.508	15.018	5.462	6.6	3.0
4.150	4.162	824.4	16.176	2.537	15.013	5.460	6.6	3.0
4.200	4.212	839.4	16.155	2.566	15.009	5.459	6.7	3.0
4.250	4.262	854.4	16.135	2.595	15.006	5.458	6.8	3.0
4.300	4.312	869.5	16.115	2.624	15.004	5.458	6.8	3.0
4.350	4.362	884.7	16.096	2.653	15.003	5.458	6.9	3.0
4.400	4.412	899.9	16.078	2.682	15.004	5.459	6.9	3.0
4.450	4.462	915.1	16.060	2.711	15.018	5.459	7.0	3.1
4.500	4.512	930.4	16.043	2.740	15.032	5.458	7.0	3.1

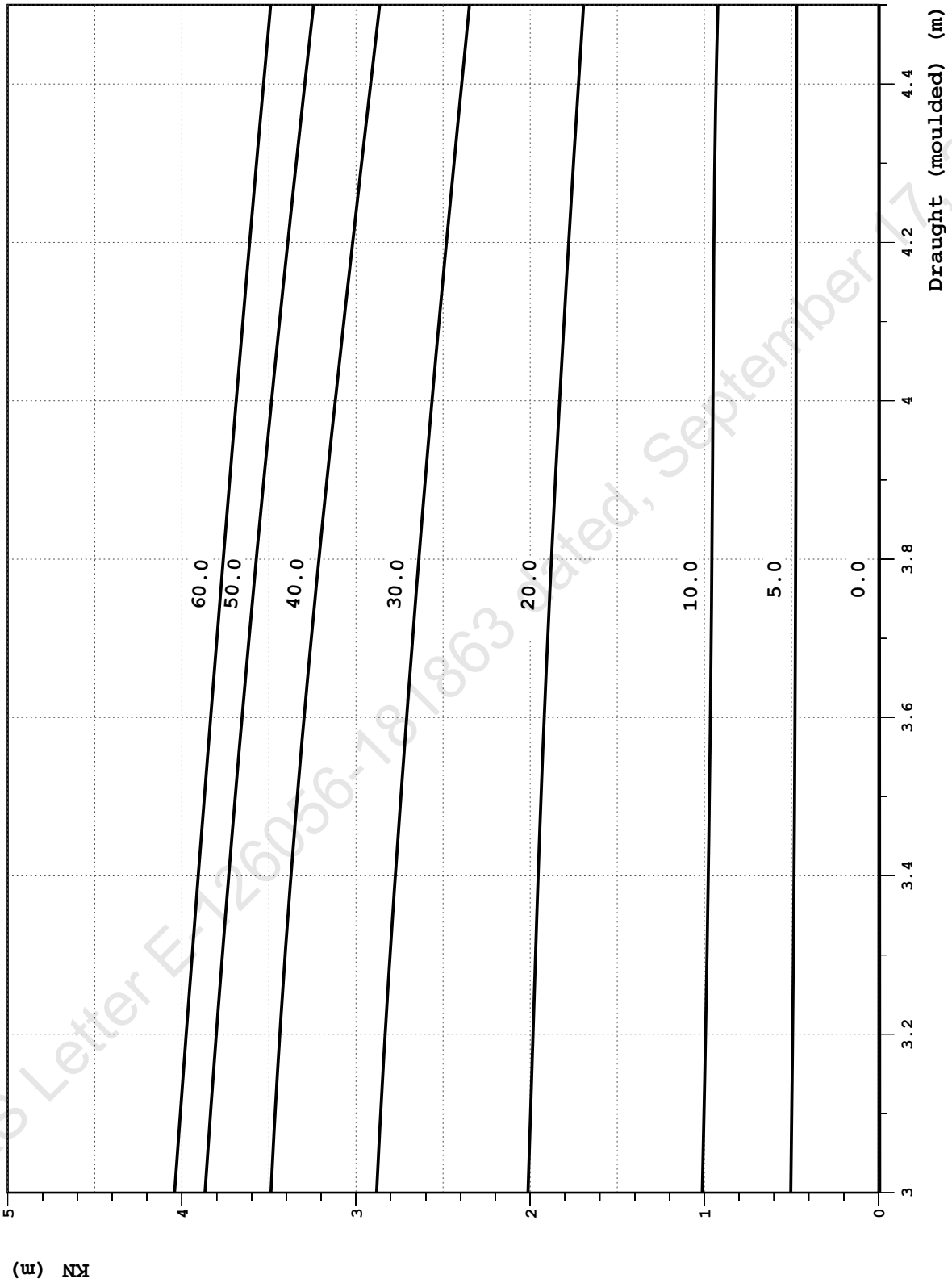


10 CROSS CURVES

Trim: 0 m

	KN (For Diff Heel Angles)							
draught	0.0	5.0	10.0	20.0	30.0	40.0	50.0	60.0
3.000	-0.007	0.504	1.012	2.012	2.882	3.489	3.867	4.042
3.050	-0.007	0.501	1.007	2.005	2.871	3.477	3.852	4.026
3.100	-0.006	0.498	1.002	1.998	2.859	3.465	3.836	4.009
3.150	-0.006	0.496	0.997	1.990	2.846	3.452	3.819	3.992
3.200	-0.006	0.493	0.993	1.983	2.833	3.438	3.802	3.975
3.250	-0.006	0.491	0.989	1.977	2.819	3.423	3.785	3.958
3.300	-0.006	0.489	0.985	1.969	2.805	3.407	3.767	3.941
3.350	-0.006	0.487	0.981	1.962	2.790	3.391	3.749	3.924
3.400	-0.006	0.485	0.977	1.954	2.774	3.374	3.731	3.906
3.450	-0.005	0.483	0.974	1.946	2.759	3.356	3.713	3.888
3.500	-0.005	0.482	0.971	1.938	2.743	3.337	3.694	3.871
3.550	-0.005	0.481	0.968	1.929	2.726	3.318	3.674	3.853
3.600	-0.005	0.479	0.965	1.919	2.709	3.298	3.655	3.835
3.650	-0.005	0.478	0.963	1.910	2.692	3.278	3.635	3.817
3.700	-0.005	0.477	0.961	1.900	2.675	3.257	3.614	3.799
3.750	-0.005	0.476	0.959	1.889	2.658	3.235	3.594	3.780
3.800	-0.005	0.476	0.957	1.878	2.640	3.213	3.573	3.762
3.850	-0.005	0.475	0.955	1.867	2.621	3.191	3.551	3.744
3.900	-0.005	0.474	0.953	1.855	2.603	3.167	3.530	3.725
3.950	-0.004	0.474	0.952	1.844	2.584	3.144	3.508	3.707
4.000	-0.004	0.473	0.950	1.831	2.564	3.120	3.485	3.688
4.050	-0.004	0.473	0.949	1.819	2.544	3.095	3.463	3.669
4.100	-0.004	0.472	0.948	1.806	2.523	3.070	3.439	3.650
4.150	-0.004	0.472	0.947	1.792	2.502	3.045	3.416	3.631
4.200	-0.004	0.472	0.945	1.779	2.481	3.019	3.392	3.611
4.250	-0.004	0.471	0.943	1.765	2.459	2.994	3.368	3.591
4.300	-0.004	0.471	0.940	1.751	2.438	2.968	3.344	3.572
4.350	-0.004	0.471	0.937	1.737	2.416	2.942	3.319	3.552
4.400	-0.004	0.470	0.933	1.723	2.394	2.916	3.294	3.531
4.450	-0.004	0.470	0.928	1.708	2.371	2.890	3.269	3.511
4.500	-0.004	0.470	0.922	1.693	2.349	2.864	3.244	3.490

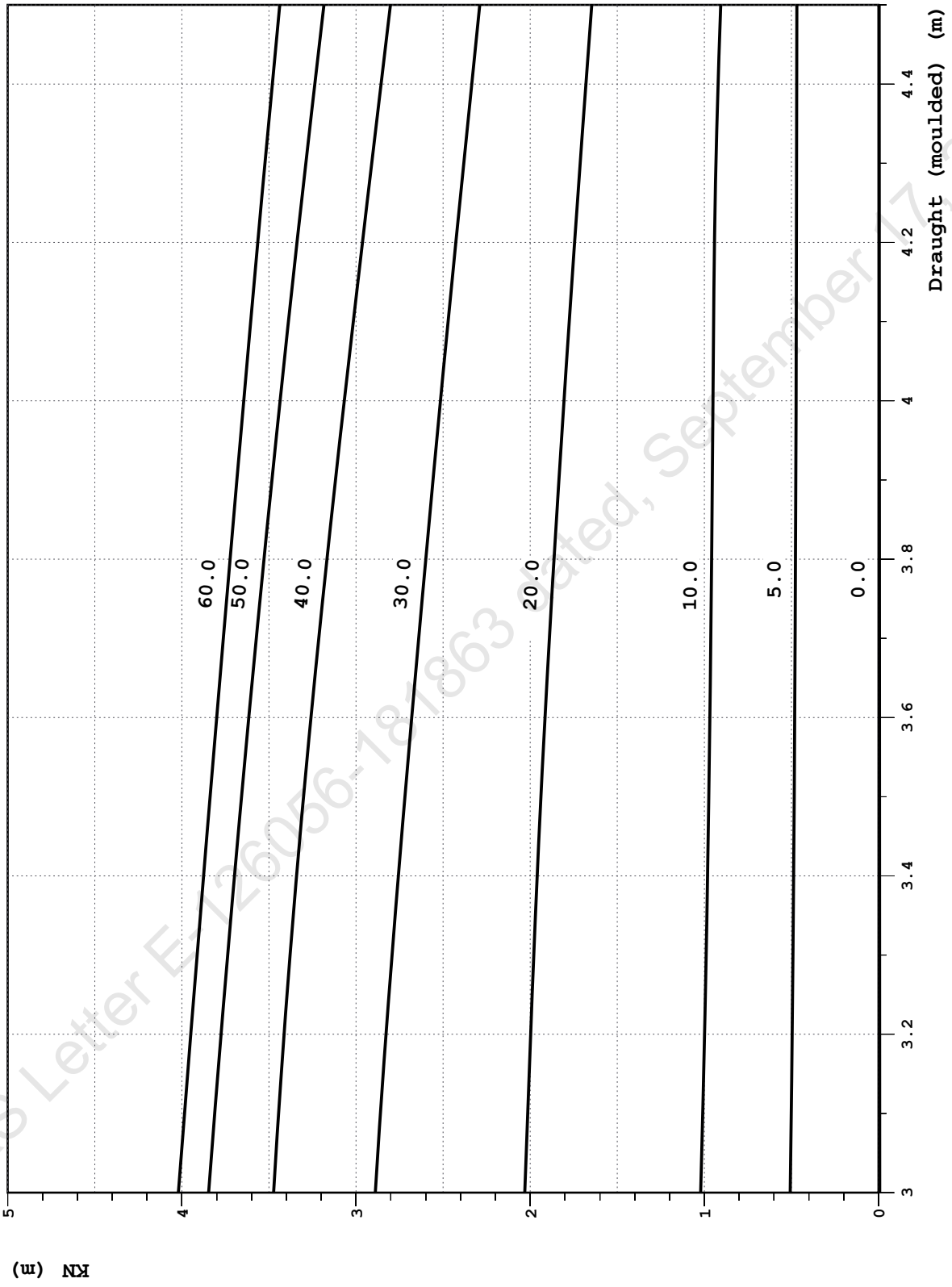
Trim: 0 m



Trim: -0.6 m

	KN (For Diff Heel Angles)							
draught	0.0	5.0	10.0	20.0	30.0	40.0	50.0	60.0
3.000	-0.007	0.507	1.021	2.031	2.889	3.473	3.846	4.020
3.050	-0.007	0.504	1.015	2.022	2.875	3.459	3.829	4.003
3.100	-0.006	0.501	1.009	2.014	2.860	3.445	3.812	3.985
3.150	-0.006	0.498	1.004	2.006	2.844	3.429	3.794	3.967
3.200	-0.006	0.496	0.999	1.997	2.828	3.413	3.775	3.949
3.250	-0.006	0.493	0.994	1.989	2.811	3.396	3.756	3.931
3.300	-0.006	0.491	0.989	1.980	2.793	3.379	3.737	3.912
3.350	-0.006	0.489	0.985	1.970	2.775	3.360	3.718	3.894
3.400	-0.006	0.487	0.981	1.960	2.757	3.341	3.698	3.875
3.450	-0.005	0.486	0.978	1.950	2.738	3.322	3.678	3.857
3.500	-0.005	0.484	0.974	1.938	2.719	3.301	3.657	3.838
3.550	-0.005	0.482	0.971	1.927	2.700	3.281	3.637	3.819
3.600	-0.005	0.481	0.968	1.915	2.680	3.259	3.616	3.800
3.650	-0.005	0.480	0.965	1.903	2.660	3.237	3.594	3.781
3.700	-0.005	0.479	0.963	1.890	2.640	3.214	3.573	3.762
3.750	-0.005	0.478	0.960	1.877	2.620	3.191	3.551	3.743
3.800	-0.005	0.477	0.958	1.863	2.600	3.167	3.529	3.723
3.850	-0.005	0.476	0.956	1.849	2.579	3.143	3.506	3.704
3.900	-0.004	0.475	0.954	1.835	2.558	3.118	3.483	3.684
3.950	-0.004	0.474	0.952	1.821	2.537	3.093	3.460	3.665
4.000	-0.004	0.473	0.950	1.806	2.515	3.068	3.436	3.645
4.050	-0.004	0.473	0.949	1.791	2.494	3.042	3.412	3.625
4.100	-0.004	0.472	0.947	1.776	2.472	3.016	3.388	3.605
4.150	-0.004	0.471	0.945	1.761	2.449	2.990	3.364	3.585
4.200	-0.004	0.471	0.942	1.745	2.427	2.963	3.339	3.564
4.250	-0.004	0.470	0.938	1.729	2.405	2.937	3.314	3.544
4.300	-0.004	0.470	0.934	1.713	2.382	2.910	3.288	3.523
4.350	-0.004	0.470	0.928	1.697	2.359	2.883	3.263	3.502
4.400	-0.004	0.469	0.921	1.680	2.336	2.856	3.237	3.481
4.450	-0.004	0.469	0.914	1.663	2.313	2.829	3.210	3.460
4.500	-0.004	0.469	0.906	1.646	2.290	2.802	3.184	3.438

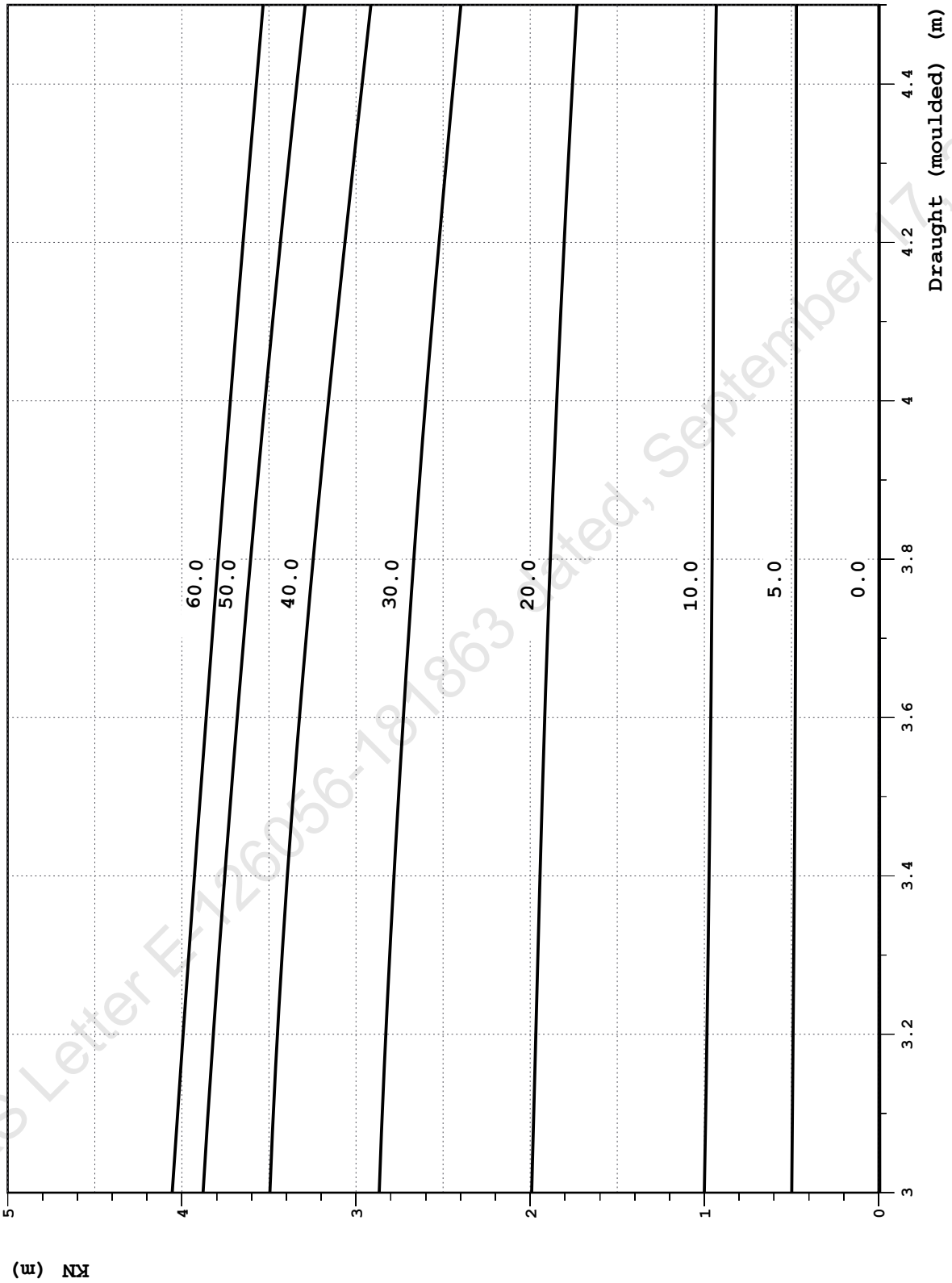
Trim: -0.6 m



Trim: 0.6 m

draught	KN (For Diff Heel Angles) 0.0	5.0	10.0	20.0	30.0	40.0	50.0	60.0
3.000	-0.007	0.498	1.000	1.991	2.867	3.495	3.878	4.056
3.050	-0.007	0.496	0.996	1.985	2.859	3.485	3.864	4.040
3.100	-0.006	0.494	0.992	1.979	2.850	3.475	3.850	4.024
3.150	-0.006	0.492	0.989	1.973	2.840	3.464	3.835	4.009
3.200	-0.006	0.490	0.985	1.967	2.829	3.451	3.819	3.993
3.250	-0.006	0.488	0.982	1.961	2.818	3.438	3.803	3.977
3.300	-0.006	0.487	0.979	1.956	2.807	3.424	3.787	3.961
3.350	-0.006	0.485	0.976	1.950	2.795	3.410	3.771	3.944
3.400	-0.006	0.483	0.973	1.944	2.782	3.394	3.754	3.928
3.450	-0.005	0.482	0.970	1.937	2.769	3.378	3.736	3.911
3.500	-0.005	0.480	0.967	1.931	2.756	3.361	3.719	3.895
3.550	-0.005	0.479	0.965	1.924	2.742	3.344	3.701	3.878
3.600	-0.005	0.478	0.963	1.917	2.728	3.325	3.682	3.861
3.650	-0.005	0.477	0.961	1.909	2.714	3.306	3.664	3.844
3.700	-0.005	0.476	0.959	1.901	2.699	3.287	3.645	3.827
3.750	-0.005	0.475	0.957	1.893	2.684	3.267	3.625	3.809
3.800	-0.005	0.475	0.956	1.885	2.669	3.246	3.605	3.792
3.850	-0.005	0.474	0.954	1.876	2.652	3.225	3.585	3.775
3.900	-0.005	0.474	0.953	1.867	2.636	3.203	3.565	3.757
3.950	-0.004	0.473	0.951	1.857	2.618	3.181	3.544	3.740
4.000	-0.004	0.473	0.950	1.848	2.600	3.158	3.523	3.722
4.050	-0.004	0.473	0.949	1.837	2.582	3.135	3.501	3.704
4.100	-0.004	0.473	0.949	1.827	2.563	3.112	3.479	3.686
4.150	-0.004	0.472	0.948	1.816	2.543	3.088	3.457	3.667
4.200	-0.004	0.472	0.947	1.805	2.523	3.064	3.434	3.649
4.250	-0.004	0.472	0.945	1.794	2.503	3.040	3.411	3.630
4.300	-0.004	0.472	0.944	1.782	2.483	3.015	3.388	3.611
4.350	-0.004	0.472	0.941	1.770	2.462	2.990	3.364	3.592
4.400	-0.004	0.472	0.938	1.757	2.441	2.965	3.341	3.573
4.450	-0.004	0.472	0.935	1.745	2.419	2.940	3.316	3.553
4.500	-0.004	0.472	0.931	1.732	2.398	2.914	3.292	3.533

Trim: 0.6 m



11. LOADING CONDITIONS

LOADING CONDITIONS SUMMARY TABLE

LOADING CONDITION	T m	TR m	HEEL deg	GM m	DISP t	KG m
LIGHTSHIP - Not sailing condition	3.142	-0.566	1.0	1.245	545.4	4.441
DRY DOCKING - Not sailing condition	3.309	-0.007	0.4	1.359	586.6	4.214
LC01 - DEPARTURE (100% CONSUMABLES)	3.702	-0.152	0.8	1.540	699.1	3.914
LC02 - ARRIVAL (10% CONSUMABLES)	3.275	-0.355	0.4	1.348	580.2	4.256
LC03 - LC01+CRANE OPERATION(1.5T load)	3.706	-0.167	0.8	1.526	700.6	3.928
LC04 - LC02+CRANE OPERATION(1.5T load)	3.280	-0.372	0.3	1.391	581.7	4.270

LIGHTSHIP - Not sailing condition

Floating Position - Intact condition

Draught at AP (moulded)	3.425 m
Draught at FP (moulded)	2.859 m
Mean Draught (moulded)	3.142 m
Trim (+ by Bow)	-0.566 m
Heel (+ PS)	1.0 deg
KM above moulded BL	5.780 m
KG above moulded BL	4.441 m
GM0 (solid)	1.339 m
Free Surface Correction	0.094 m
GM (liquid)	1.245 m
Density of Water	1.025 t/m3

LCB	:	15.579 m Fwd of AP
LCF	:	14.621 m Fwd of AP
MCT	:	5.441 tm/cm
TPC	:	2.744 t/cm

LOAD SUMMARY TABLE

NAME	LOAD	MASS t	LCG m	TCG m	VCG m
Oil Spill Dispersant	DISPERSANT	0.0	0.000	0.000	0.000
Diesel Oil	DO	0.0	0.000	0.000	0.000
Fire fighting Foam	FOAM	0.0	0.000	0.000	0.000
Fresh Water	FW	0.0	0.000	0.000	0.000
Grey Water	GWT	0.0	0.000	0.000	0.000
Lubricating Oil	LO	0.0	0.000	0.000	0.000
Sludge	SLU	0.0	0.000	0.000	0.000
Deadweight		0.0	0.000	0.000	0.000
Lightweight		545.4	15.624	0.015	4.441
Deadweight		0.0	0.000	0.000	0.000
Total weight		545.4	15.624	0.015	4.441

LOADING COMPONENTS

Diesel Oil (Density 0.860 t/m3)

NAME	PURP	FILL %	MASS t	VOL m3	LCG m	TCG m	VCG m	FRSM tm
R.FODAYTK.S	DO	0.0	0.0	0.0	7.543	-3.941	3.561	2.99
R.FODAYTK.P	DO	0.0	0.0	0.0	7.543	3.941	3.561	2.99
R.FOTK.2P	DO	0.0	0.0	0.0	14.194	3.792	1.209	4.23
R.FOTK.2S	DO	0.0	0.0	0.0	14.194	-3.792	1.209	4.23
R.FOTK.3P	DO	0.0	0.0	0.0	13.051	0.844	0.893	0.00
R.FOTK.3S	DO	0.0	0.0	0.0	13.051	-0.844	0.893	0.00
R.FOTK.1P	DO	0.0	0.0	0.0	22.155	2.887	1.394	0.00
R.FOTK.1S	DO	0.0	0.0	0.0	22.155	-2.887	1.394	0.00
TOTAL			0.0	0.0				14.44

Fresh Water (Density 1.0 t/m3)

NAME	PURP	FILL %	MASS t	VOL m3	LCG m	TCG m	VCG m	FRSM tm
R.FWTK.P	FW	0.0	0.0	0.0	26.041	2.086	2.297	8.80
R.FWTK.S	FW	0.0	0.0	0.0	26.041	-2.086	2.297	8.80
TOTAL			0.0	0.0				17.60

Lub Oil (Density 0.860 t/m3)

NAME	PURP	FILL %	MASS t	VOL m3	LCG m	TCG m	VCG m	FRSM tm
R.LOTK.P	LO	0.0	0.0	0.0	9.504	4.706	3.754	0.08
R.LOTK.S	LO	0.0	0.0	0.0	9.504	-4.706	3.754	0.08
TOTAL			0.0	0.0				0.16

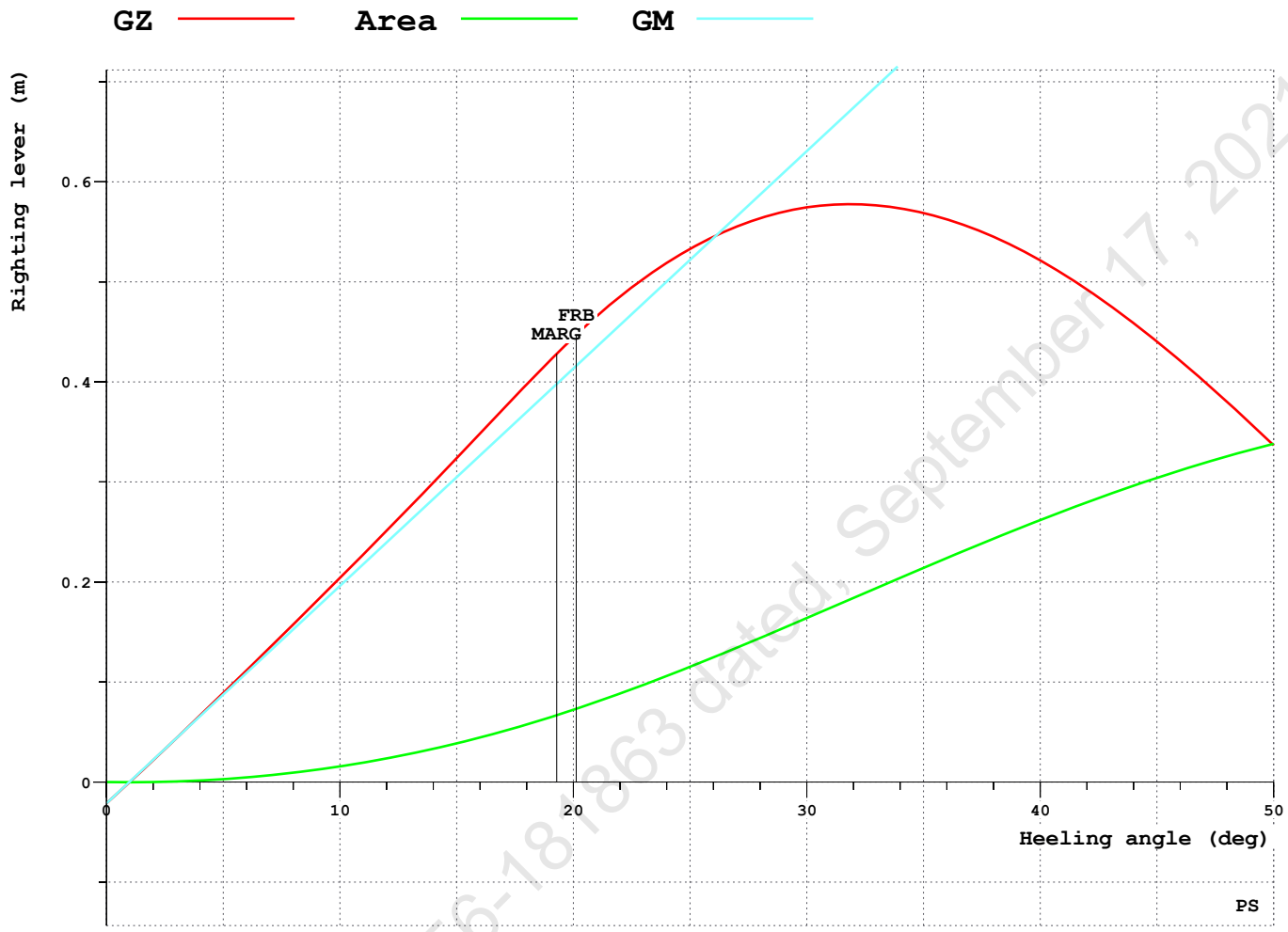
FOAM (Density 1.0 t/m3)

NAME	PURP	FILL %	MASS t	VOL m3	LCG m	TCG m	VCG m	FRSM tm
R.FOAMTK	FOAM	0.0	0.0	0.0	22.239	0.000	1.043	1.63
TOTAL			0.0	0.0				1.63

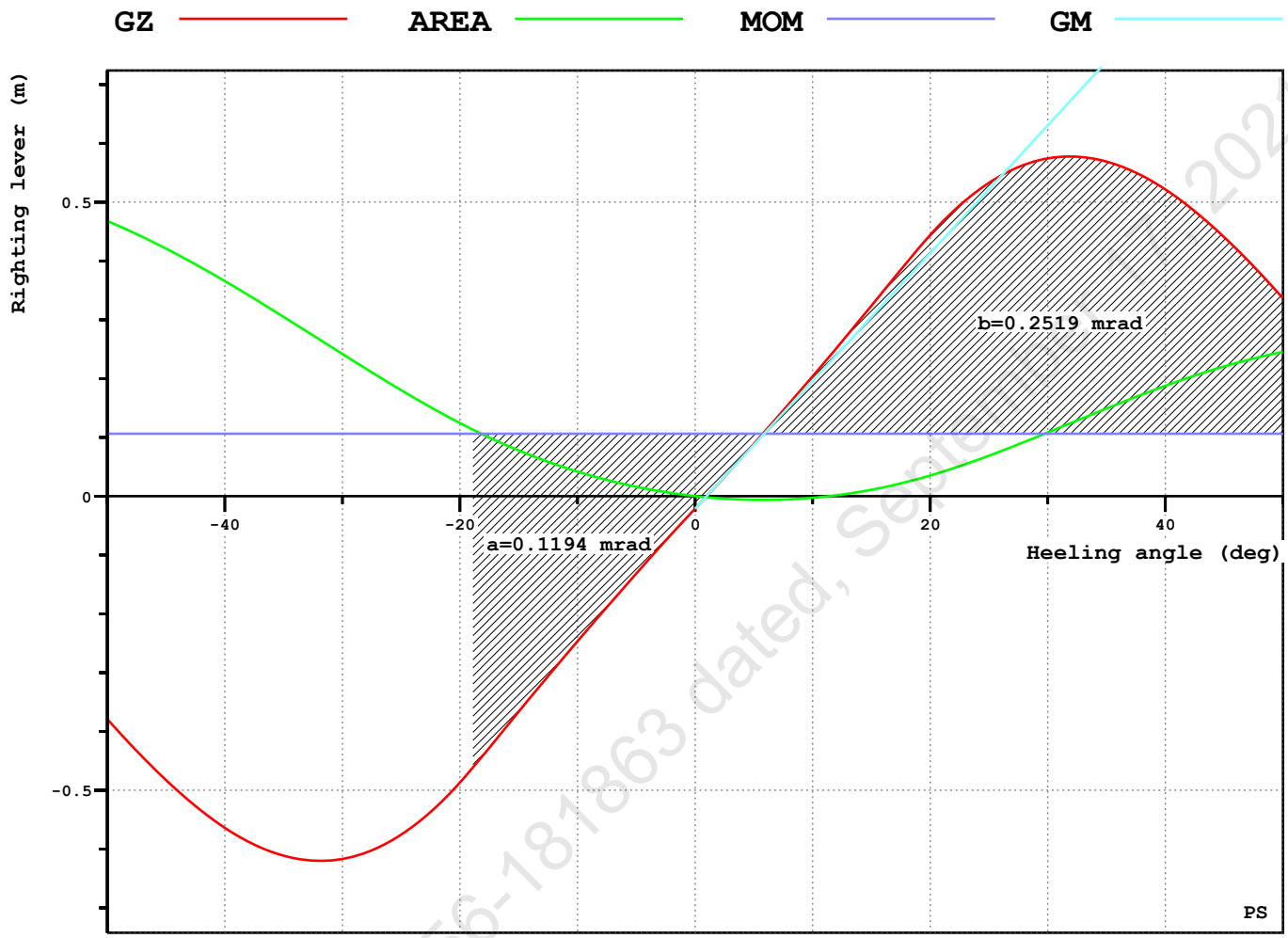
DISPERSANT (Density 1.0 t/m3)

NAME	PURP	FILL %	MASS t	VOL m3	LCG m	TCG m	VCG m	FRSM tm
R.DISPERSANTTK	DISPERSANT	0.0	0.0	0.0	17.750	0.000	0.636	5.25
TOTAL			0.0	0.0				5.25

INTACT STABILITY CHECK PLOT



IMO WEATHER CRITERIA



INTACT STABILITY CRITERIA

RCR	TEXT	REQ	ATTV	UNIT	STAT
AREA30	Area under GZ curve up to 30 deg.	0.055	0.164	mrad	OK
AREA40	Area under GZ curve up to 40 deg.	0.090	0.262	mrad	OK
AREA3040	Area under GZ curve btw. 30-40 deg.	0.030	0.098	mrad	OK
GZ0.2	Max GZ > 0.2	0.200	0.578	m	OK
MAXGZ25	Max. GZ at an angle > 25 deg.	25.000	31.843	deg	OK
GM0.15	GM > 0.15 m	0.150	1.245	m	OK
V.IMOWEATHER	IMO weather criterion	1.000	2.109		OK
IMO.WIND_HEEL	Wind Heel <16 or <=80% of dk imm.	16.000	4.201	deg	OK
2020IS-B2.9.7.1.2	Eq. angle less than 10 deg. or dk. imm.	20.121	2.296	deg	OK
2020IS-B2.9.7.1.1	Resid. righting area > 0.08 mrad	0.080	0.168	mrad	OK

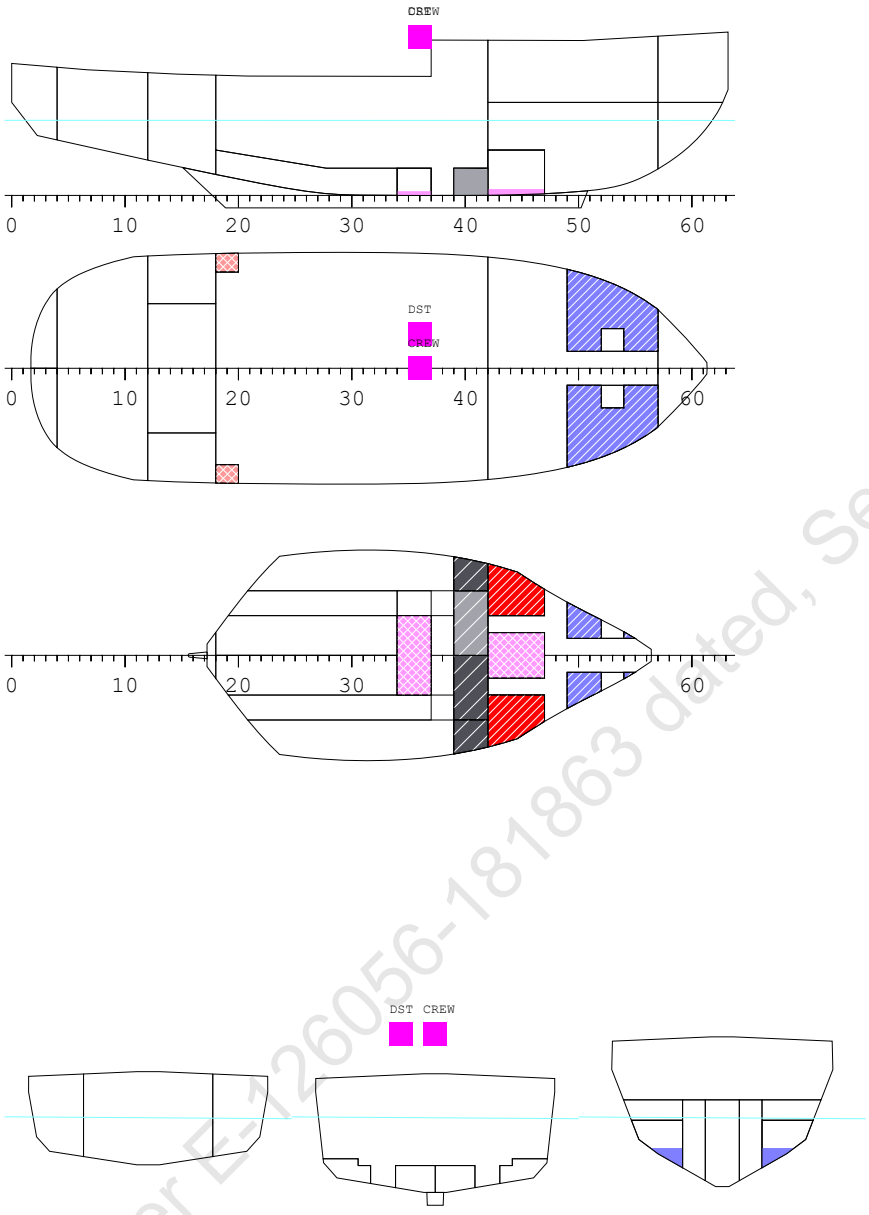
GZ CURVE DATA

HEEL deg	T m	TR m	GZ m	AREA mrad
0.0	3.142	-0.566	-0.021	0.000
1.0	3.142	-0.566	0.000	0.000
5.0	3.126	-0.557	0.089	0.003
10.0	3.075	-0.529	0.204	0.016
15.0	2.989	-0.476	0.324	0.039
20.0	2.865	-0.401	0.444	0.072
30.0	2.528	-0.294	0.574	0.164
40.0	2.081	-0.398	0.522	0.262
50.0	1.558	-0.611	0.337	0.338

RELEVANT OPENINGS

NAME	TEXT	WT	X m	Y m	Z m	IMMA deg	IMMR m
ER_V_P	ER_INLET_P	UNPROTECTED	12.757	2.300	5.750	-	2.512
ER_V_S	ER_INLET_S	UNPROTECTED	12.757	-2.300	5.750	-	2.592
ER_O_P	ER_OUT_P	UNPROTECTED	14.000	2.300	7.900	-	4.685
ER_O_S	ER_OUT_S	UNPROTECTED	14.000	-2.300	7.900	-	4.765

DRY DOCKING - Not sailing condition



DRY DOCKING - Not sailing condition

Floating Position - Intact condition

Draught at AP (moulded)	3.312 m
Draught at FP (moulded)	3.306 m
Mean Draught (moulded)	3.309 m
Trim (+ by Bow)	-0.006 m
Heel (+ PS)	0.4 deg
KM above moulded BL	5.659 m
KG above moulded BL	4.214 m
GM0 (solid)	1.446 m
Free Surface Correction	0.087 m
GM (liquid)	1.359 m
Density of Water	1.025 t/m3

LCB	:	16.047 m Fwd of AP
LCF	:	14.867 m Fwd of AP
MCT	:	5.605 tm/cm
TPC	:	2.777 t/cm

LOAD SUMMARY TABLE

NAME	LOAD	MASS t	LCG m	TCG m	VCG m
Crew	CREW	1.0	18.000	0.000	7.000
Oil Spill Dispersant	DISPERSANT	0.6	17.747	0.000	0.111
Diesel Oil	DO	7.9	22.121	0.000	1.153
Deck Store	DST	0.2	18.000	1.500	7.000
Fire fighting Foam	FOAM	0.9	22.139	0.000	0.173
Fresh Water	FW	9.4	25.668	0.000	1.499
Grey Water	GWT	3.9	20.242	1.279	0.668
Lubricating Oil	LO	0.5	9.540	0.000	2.395
Sludge	SLU	16.8	20.225	-0.724	0.833
Deadweight		41.2	21.657	-0.167	1.203
Lightweight		545.4	15.624	0.015	4.441
Deadweight		41.2	21.657	-0.167	1.203
Total weight		586.6	16.047	0.002	4.214

LOADING COMPONENTS

Diesel Oil (Density 0.860 t/m3)

NAME	PURP	FILL %	MASS t	VOL m3	LCG m	TCG m	VCG m	FRSM tm
R.FODAYTK.S	DO	0.0	0.0	0.0	7.543	-3.941	3.561	2.99
R.FODAYTK.P	DO	0.0	0.0	0.0	7.543	3.941	3.561	2.99
R.FOTK.2P	DO	0.0	0.0	0.0	14.194	3.792	1.209	4.23
R.FOTK.2S	DO	0.0	0.0	0.0	14.194	-3.792	1.209	4.23
R.FOTK.3P	DO	0.0	0.0	0.0	13.051	0.844	0.893	0.00
R.FOTK.3S	DO	0.0	0.0	0.0	13.051	-0.844	0.893	0.00
R.FOTK.1P	DO	62.4	3.9	4.6	22.155	2.887	1.394	0.00
R.FOTK.1S	DO	62.4	3.9	4.6	22.155	-2.887	1.394	0.00
TOTAL			7.9	9.2				14.44

Fresh Water (Density 1.0 t/m3)

NAME	PURP	FILL %	MASS t	VOL m3	LCG m	TCG m	VCG m	FRSM tm
R.FWTK.P	FW	29.3	4.7	4.7	26.041	2.086	2.297	8.80
R.FWTK.S	FW	29.3	4.7	4.7	26.041	-2.086	2.297	8.80
TOTAL			9.4	9.4				17.60

Lub Oil (Density 0.860 t/m3)

NAME	PURP	FILL %	MASS t	VOL m3	LCG m	TCG m	VCG m	FRSM tm
R.LOTK.P	LO	10.0	0.2	0.3	9.504	4.706	3.754	0.08
R.LOTK.S	LO	10.0	0.2	0.3	9.504	-4.706	3.754	0.08
TOTAL			0.5	0.5				0.16

FOAM (Density 1.0 t/m3)

NAME	PURP	FILL %	MASS t	VOL m3	LCG m	TCG m	VCG m	FRSM tm
R.FOAMTK	FOAM	10.0	0.9	0.9	22.239	0.000	1.043	1.63
TOTAL			0.9	0.9				1.63

DISPERSANT (Density 1.0 t/m3)

NAME	PURP	FILL %	MASS t	VOL m3	LCG m	TCG m	VCG m	FRSM tm
R.DISPERSANTTK	DISPERSANT	10.0	0.6	0.6	17.750	0.000	0.636	5.25
TOTAL			0.6	0.6				5.25

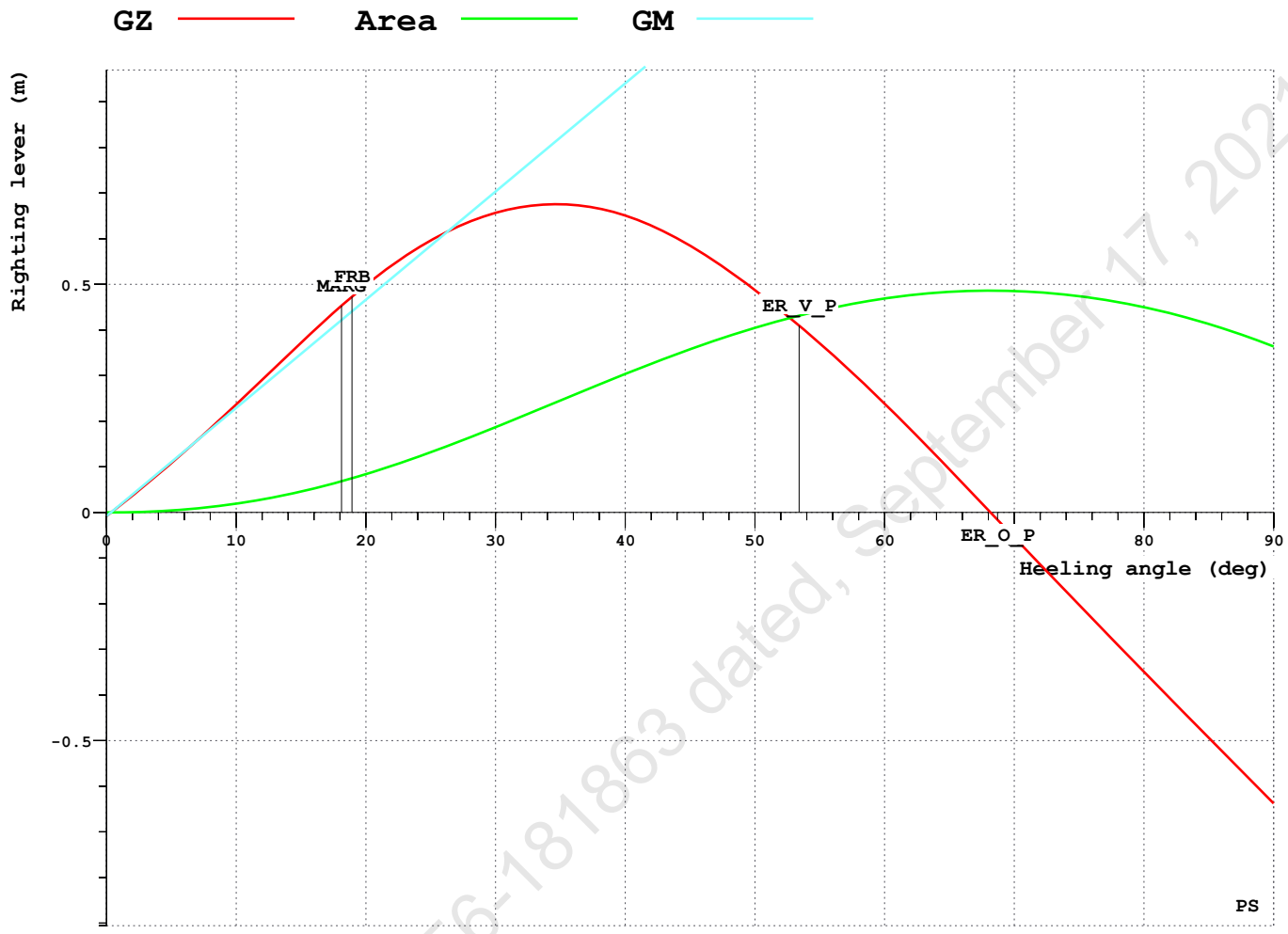
STORES

NAME	PURP	MASS t	LCG m	TCG m	VCG m
STORES	MASS	0.2	18.000	1.500	7.000
TOTAL		0.2	18.000	1.500	7.000

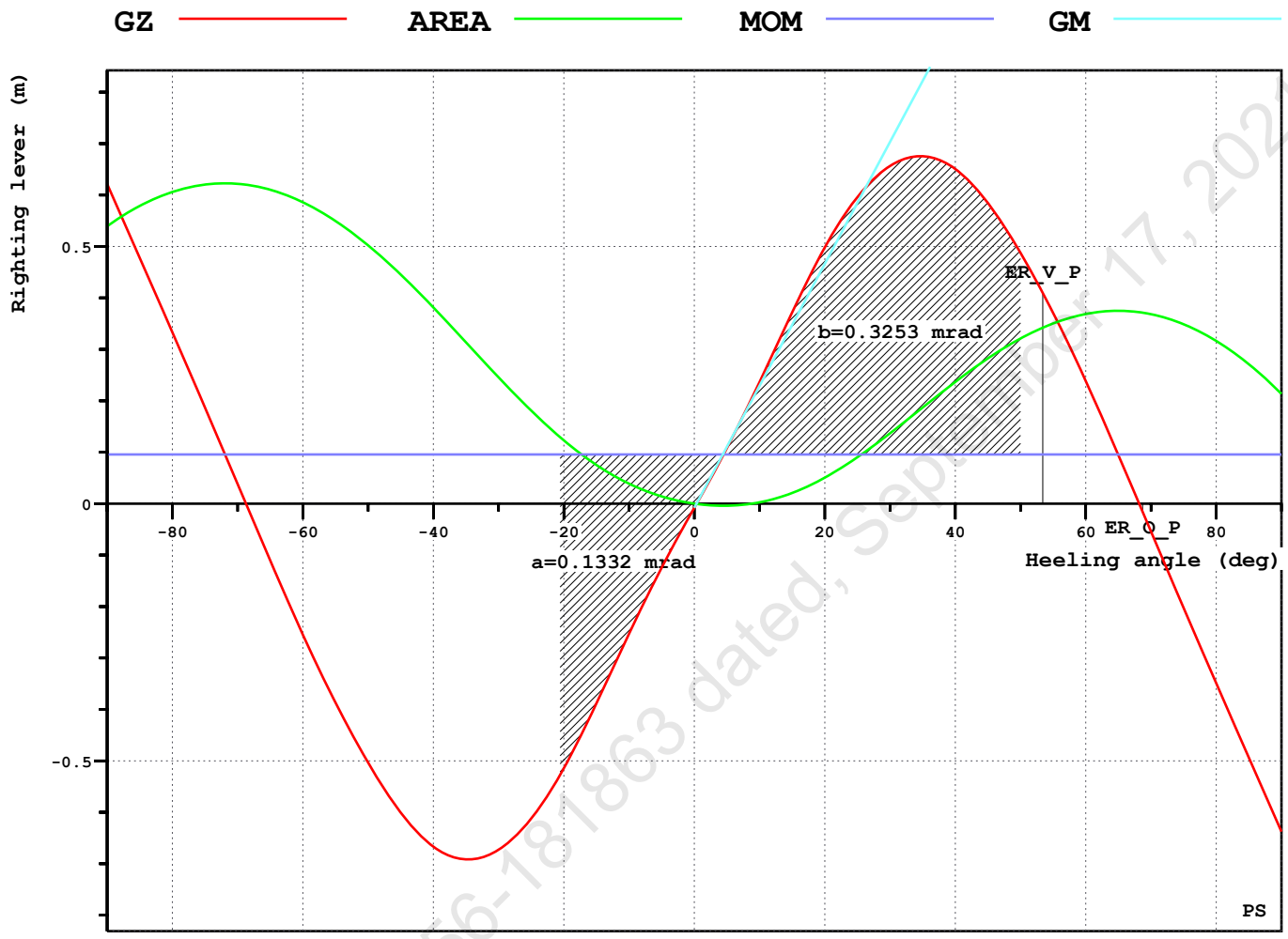
CREW

NAME	PURP	MASS t	LCG m	TCG m	VCG m
CREW	MASS	1.0	18.000	0.000	7.000
TOTAL		1.0	18.000	0.000	7.000

INTACT STABILITY CHECK PLOT



IMO WEATHER CRITERIA



INTACT STABILITY CRITERIA

RCR	TEXT	REQ	ATTV	UNIT	STAT
AREA30	Area under GZ curve up to 30 deg.	0.055	0.187	mrad	OK
AREA40	Area under GZ curve up to 40 deg.	0.090	0.304	mrad	OK
AREA3040	Area under GZ curve btw. 30-40 deg.	0.030	0.117	mrad	OK
GZ0.2	Max GZ > 0.2	0.200	0.676	m	OK
MAXGZ25	Max. GZ at an angle > 25 deg.	25.000	34.674	deg	OK
GM0.15	GM > 0.15 m	0.150	1.359	m	OK
V.IMOWEATHER	IMO weather criterion	1.000	2.441		OK
IMO.WIND_HEEL	Wind Heel <16 or <=80% of dk imm.	15.140	3.152	deg	OK

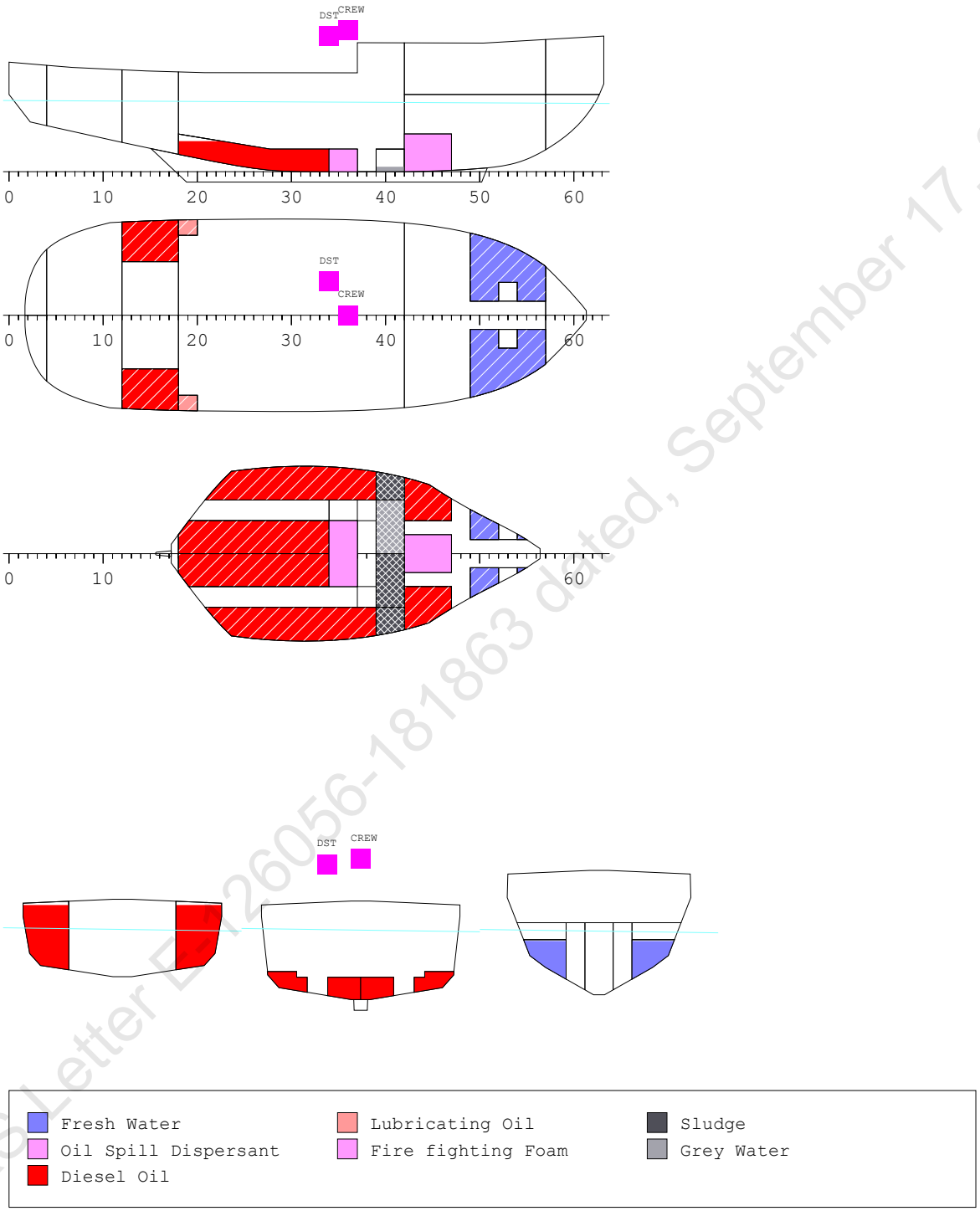
GZ CURVE DATA

HEEL deg	T m	TR m	GZ m	AREA mrad
0.0	3.309	-0.007	-0.008	0.000
0.4	3.309	-0.007	0.000	0.000
10.0	3.239	0.023	0.237	0.019
20.0	3.024	0.136	0.498	0.084
30.0	2.691	0.215	0.657	0.187
40.0	2.255	0.097	0.651	0.304
50.0	1.748	-0.094	0.488	0.405
60.0	1.201	-0.285	0.239	0.469
70.0	0.626	-0.463	-0.054	0.485
80.0	0.053	-0.624	-0.349	0.450
90.0	-0.513	-0.825	-0.638	0.364

RELEVANT OPENINGS

NAME	TEXT	WT	X m	Y m	Z m	IMMA deg	IMMR m
ER_V_P	ER_INLET_P	UNPROTECTED	12.757	2.300	5.750	53.4	2.426
ER_V_S	ER_INLET_S	UNPROTECTED	12.757	-2.300	5.750	-	2.455
ER_O_P	ER_OUT_P	UNPROTECTED	14.000	2.300	7.900	68.7	4.576
ER_O_S	ER_OUT_S	UNPROTECTED	14.000	-2.300	7.900	-	4.605

LC01 - DEPARTURE (100% CONSUMABLES)



LC01 - DEPARTURE (100% CONSUMABLES)

Floating Position - Intact condition

Draught at AP (moulded)	3.777 m
Draught at FP (moulded)	3.626 m
Mean Draught (moulded)	3.701 m
Trim (+ by Bow)	-0.152 m
Heel (+ PS)	0.8 deg
KM above moulded BL	5.528 m
KG above moulded BL	3.914 m
GM0 (solid)	1.613 m
Free Surface Correction	0.073 m
GM (liquid)	1.540 m
Density of Water	1.025 t/m3

LCB	:	15.724 m Fwd of AP
LCF	:	14.734 m Fwd of AP
MCT	:	6.125 tm/cm
TPC	:	2.885 t/cm

LOAD SUMMARY TABLE

NAME	LOAD	MASS t	LCG m	TCG m	VCG m
Crew	CREW	1.0	18.000	0.000	7.500
Oil Spill Dispersant	DISPERSANT	5.8	17.750	0.000	0.636
Diesel Oil	DO	98.5	12.536	0.000	1.965
Deck Store	DST	2.0	17.000	1.800	7.200
Fire fighting Foam	FOAM	9.4	22.239	0.000	1.043
Fresh Water	FW	30.5	26.028	0.000	2.251
Grey Water	GWT	0.4	20.224	0.598	0.155
Lubricating Oil	LO	4.4	9.505	0.000	3.686
Sludge	SLU	1.8	20.165	-0.338	0.372
Deadweight		153.6	16.117	0.021	2.045
Lightweight		545.4	15.624	0.015	4.441
Deadweight		153.6	16.117	0.021	2.045
Total weight		699.1	15.732	0.016	3.914

LOADING COMPONENTS

Diesel Oil (Density 0.860 t/m3)

NAME	PURP	FILL %	MASS t	VOL m3	LCG m	TCG m	VCG m	FRSM tm
R.FODAYTK.S	DO	95.0	18.2	21.1	7.543	-3.941	3.561	2.99
R.FODAYTK.P	DO	95.0	18.2	21.1	7.543	3.941	3.561	2.99
R.FOTK.2P	DO	95.0	12.9	15.0	14.194	3.792	1.209	4.23
R.FOTK.2S	DO	95.0	12.9	15.0	14.194	-3.792	1.209	4.23
R.FOTK.3P	DO	95.0	12.2	14.1	13.051	0.844	0.893	0.00
R.FOTK.3S	DO	95.0	12.2	14.1	13.051	-0.844	0.893	0.00
R.FOTK.1P	DO	95.0	6.0	7.0	22.155	2.887	1.394	0.00
R.FOTK.1S	DO	95.0	6.0	7.0	22.155	-2.887	1.394	0.00
TOTAL			98.5	114.5				14.44

Fresh Water (Density 1.0 t/m3)

NAME	PURP	FILL %	MASS t	VOL m3	LCG m	TCG m	VCG m	FRSM tm
R.FWTK.P	FW	95.0	15.2	15.2	26.041	2.086	2.297	8.80
R.FWTK.S	FW	95.0	15.2	15.2	26.041	-2.086	2.297	8.80
TOTAL			30.5	30.5				17.60

Lub Oil (Density 0.860 t/m3)

NAME	PURP	FILL %	MASS t	VOL m3	LCG m	TCG m	VCG m	FRSM tm
R.LOTK.P	LO	95.0	2.2	2.4	9.504	4.706	3.754	0.08
R.LOTK.S	LO	95.0	2.2	2.4	9.504	-4.706	3.754	0.08
TOTAL			4.4	4.8				0.16

FOAM (Density 1.0 t/m3)

NAME	PURP	FILL %	MASS t	VOL m3	LCG m	TCG m	VCG m	FRSM tm
R.FOAMTK	FOAM	100.0	9.4	9.4	22.239	0.000	1.043	1.63
TOTAL			9.4	9.4				1.63

DISPERSANT (Density 1.0 t/m3)

NAME	PURP	FILL %	MASS t	VOL m3	LCG m	TCG m	VCG m	FRSM tm
R.DISPERSANTTK	DISPERSANT	100.0	5.8	5.8	17.750	0.000	0.636	5.25
TOTAL			5.8	5.8				5.25

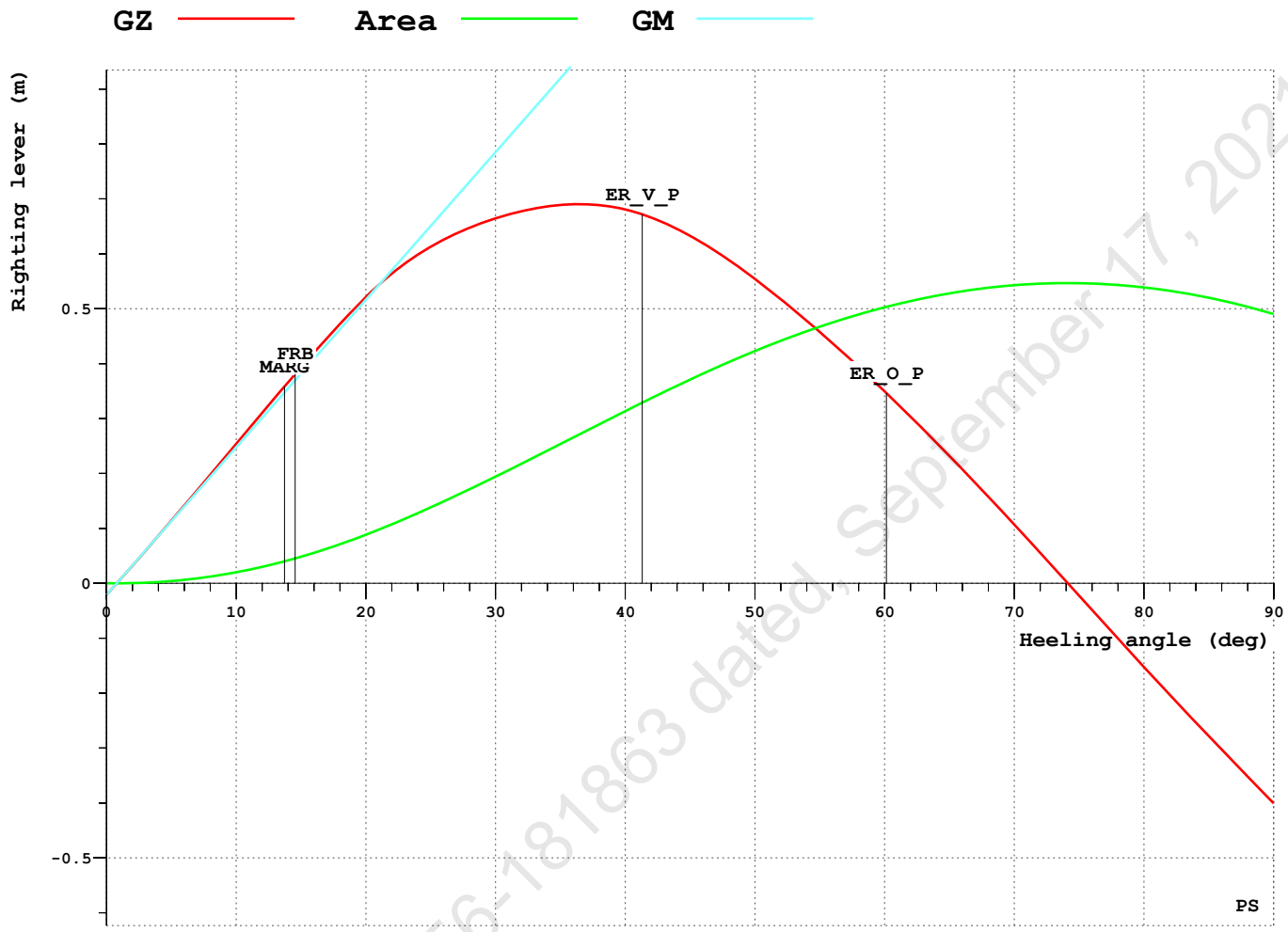
STORES

NAME	PURP	MASS t	LCG m	TCG m	VCG m
STORES	MASS	2.0	17.000	1.800	7.200
TOTAL		2.0	17.000	1.800	7.200

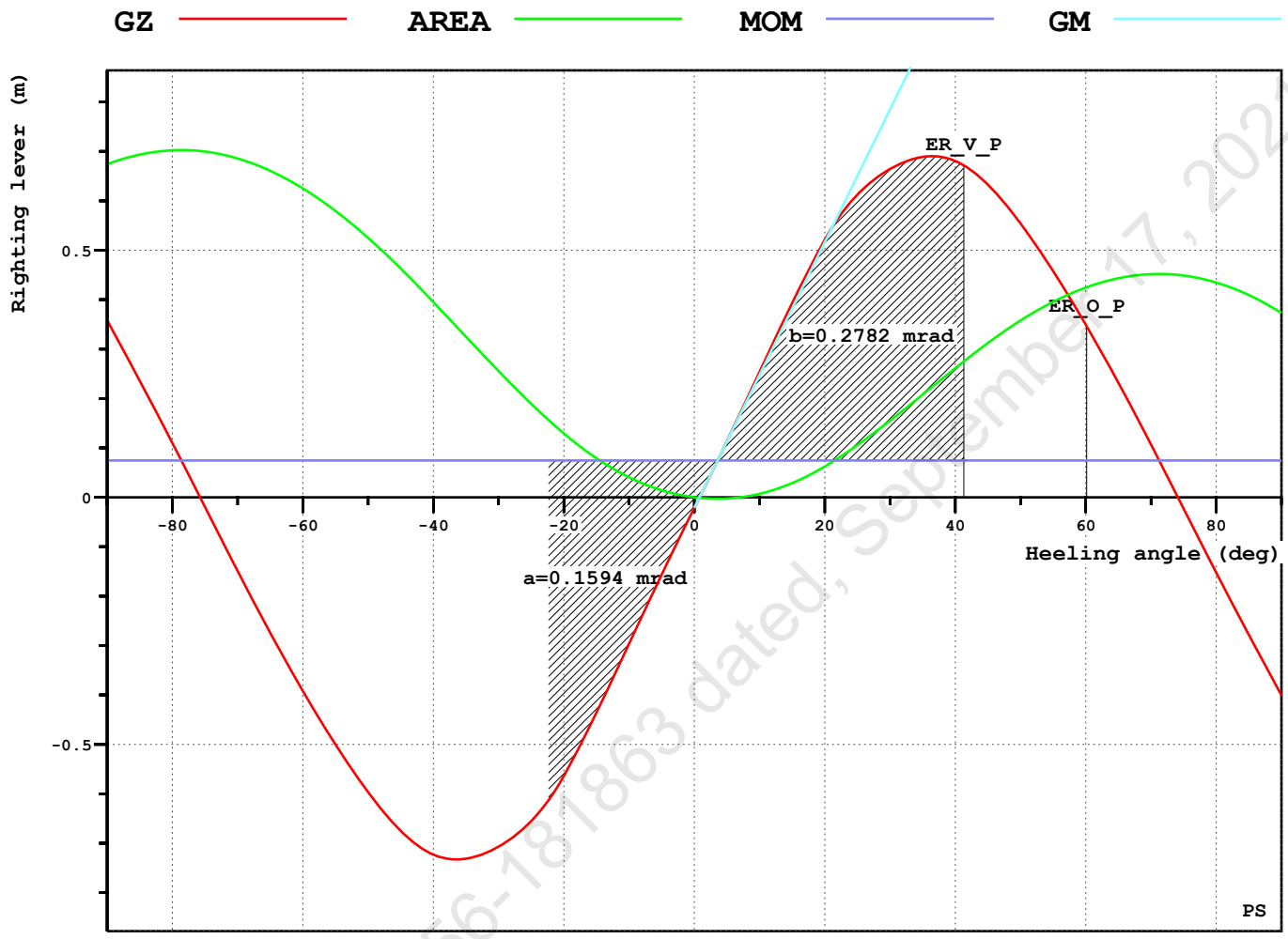
CREW

NAME	PURP	MASS t	LCG m	TCG m	VCG m
CREW	MASS	1.0	18.000	0.000	7.500
TOTAL		1.0	18.000	0.000	7.500

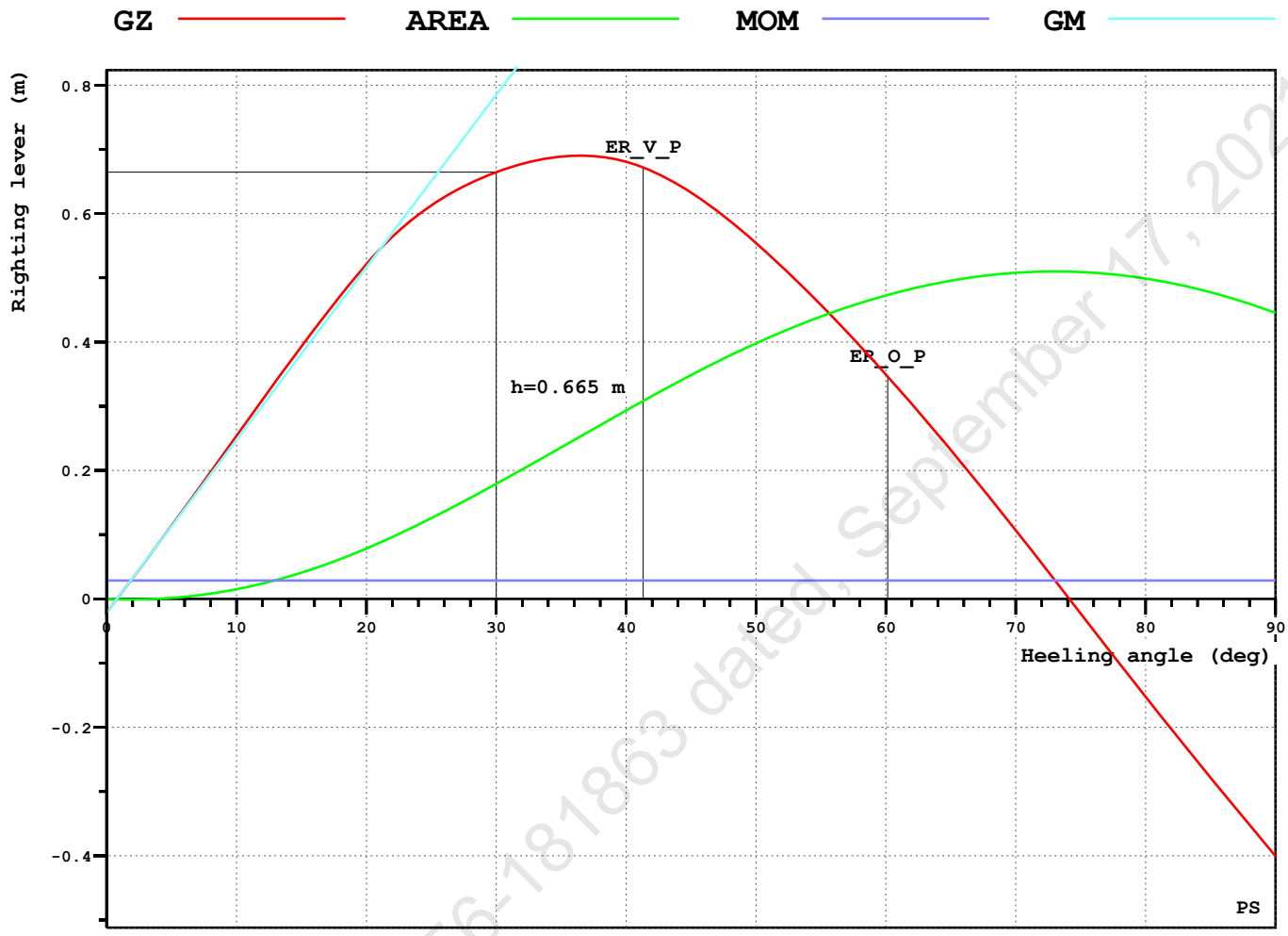
INTACT STABILITY CHECK PLOT



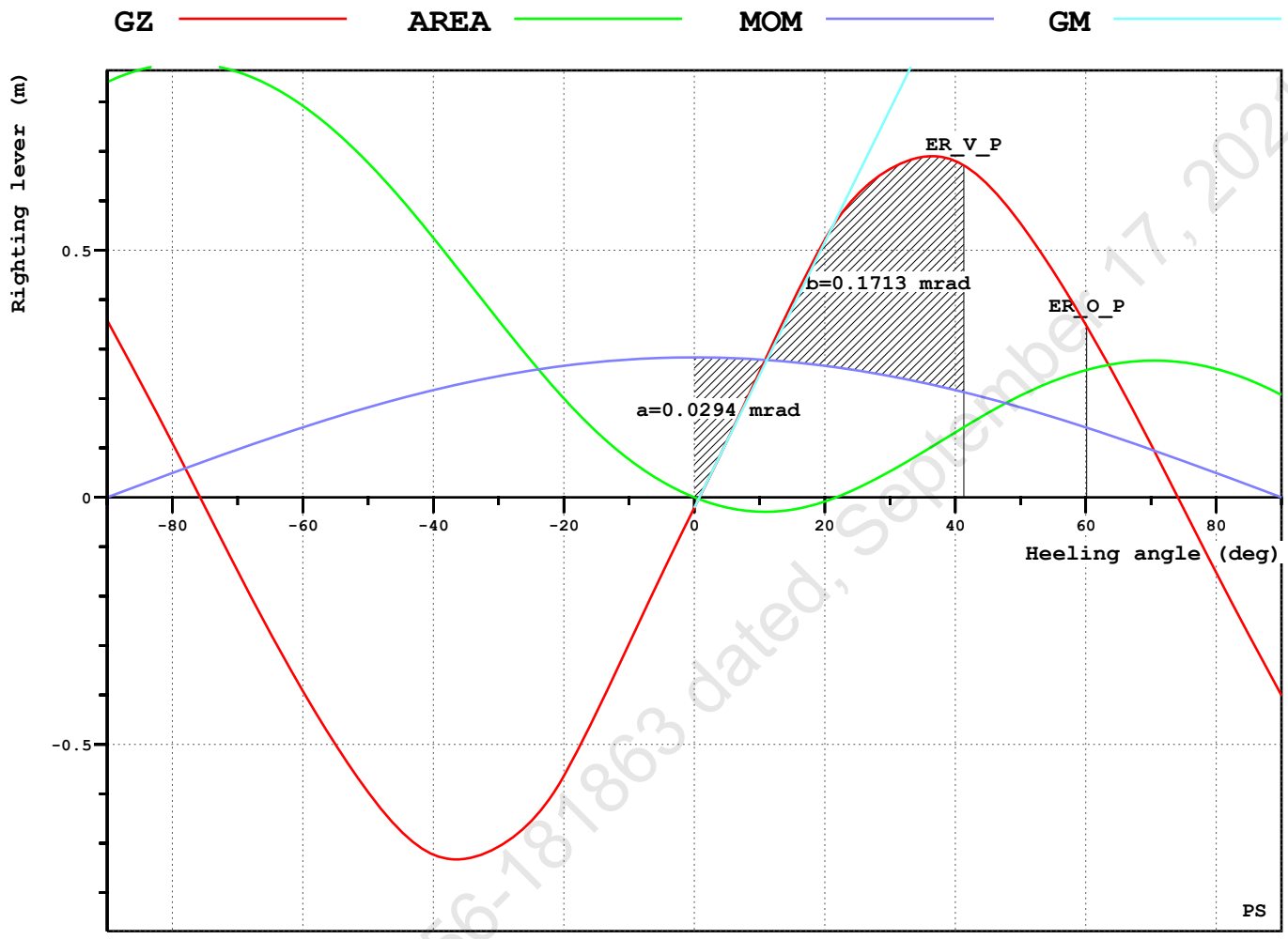
IMO WEATHER CRITERIA



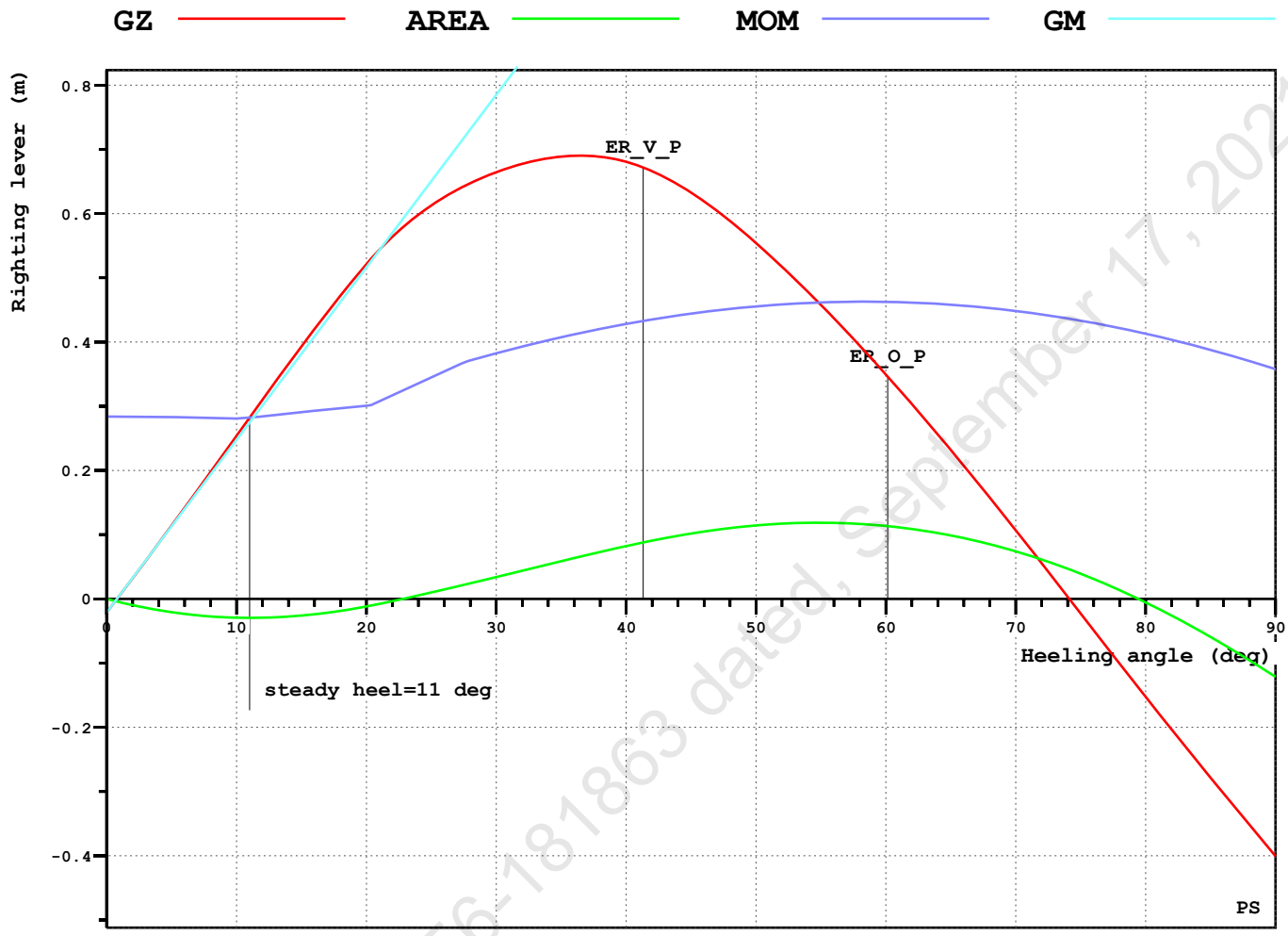
EXTERNAL FI-FI



IS CODE TOWING - Self Tripping



IS CODE TOWING - Tow Tripping



INTACT STABILITY CRITERIA

RCR	TEXT	REQ	ATTV	UNIT	STAT
AREA30	Area under GZ curve up to 30 deg.	0.055	0.194	mrad	OK
AREA40	Area under GZ curve up to 40 deg.	0.090	0.314	mrad	OK
AREA3040	Area under GZ curve btw. 30-40 deg.	0.030	0.119	mrad	OK
GZ0.2	Max GZ > 0.2	0.200	0.690	m	OK
MAXGZ25	Max. GZ at an angle > 25 deg.	25.000	36.461	deg	OK
GM0.15	GM > 0.15 m	0.150	1.540	m	OK
V.IMOWEATHER	IMO weather criterion	1.000	1.745		OK
IMO.WIND_HEEL	Wind Heel <16 or <=80% of dk imm.	11.636	2.657	deg	OK
FIFI_GZ	Min. GZ for Fire fighter Ships	0.057	0.665	m	OK
2020IS-B2.8.4.2	AreaA>=AreaB	1.000	5.836		OK
2020IS-B2.8.4.3	Max. heel, tow-tr.	41.313	11.006	deg	OK

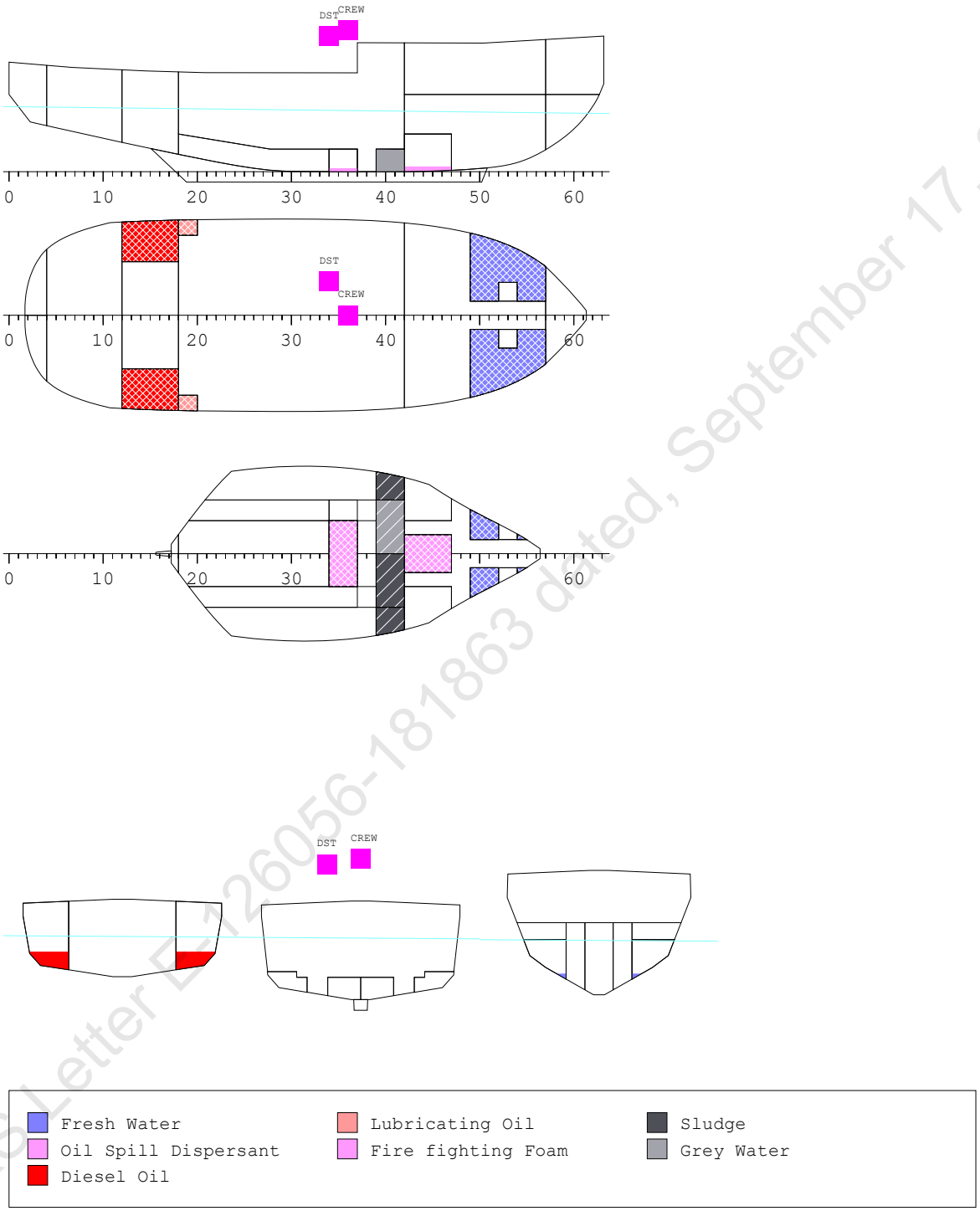
GZ CURVE DATA

HEEL deg	T m	TR m	GZ m	AREA mrad
0.0	3.702	-0.152	-0.021	0.000
0.8	3.702	-0.152	0.000	0.000
10.0	3.628	-0.134	0.254	0.020
20.0	3.422	-0.110	0.521	0.088
30.0	3.147	-0.266	0.665	0.194
40.0	2.791	-0.592	0.681	0.313
50.0	2.364	-0.941	0.554	0.423
60.0	1.875	-1.267	0.350	0.503
70.0	1.341	-1.545	0.107	0.543
80.0	0.776	-1.763	-0.153	0.539
90.0	0.203	-1.908	-0.401	0.490

RELEVANT OPENINGS

NAME	TEXT	WT	X m	Y m	Z m	IMMA deg	IMMR m
ER_V_P	ER_INLET_P	UNPROTECTED	12.757	2.300	5.750	41.3	2.001
ER_V_S	ER_INLET_S	UNPROTECTED	12.757	-2.300	5.750	-	2.066
ER_O_P	ER_OUT_P	UNPROTECTED	14.000	2.300	7.900	60.1	4.157
ER_O_S	ER_OUT_S	UNPROTECTED	14.000	-2.300	7.900	-	4.221

LC02 - ARRIVAL (10% CONSUMABLES)



LC02 - ARRIVAL (10% CONSUMABLES)

Floating Position - Intact condition

Draught at AP (moulded)	3.453 m
Draught at FP (moulded)	3.098 m
Mean Draught (moulded)	3.275 m
Trim (+ by Bow)	-0.355 m
Heel (+ PS)	0.4 deg
KM above moulded BL	5.691 m
KG above moulded BL	4.256 m
GM0 (solid)	1.436 m
Free Surface Correction	0.088 m
GM (liquid)	1.348 m
Density of Water	1.025 t/m3

LCB	:	15.725 m Fwd of AP
LCF	:	14.704 m Fwd of AP
MCT	:	5.591 tm/cm
TPC	:	2.775 t/cm

LOAD SUMMARY TABLE

NAME	LOAD	MASS t	LCG m	TCG m	VCG m
Crew	CREW	1.0	18.000	0.000	7.500
Oil Spill Dispersant	DISPERSANT	0.6	17.747	0.000	0.111
Diesel Oil	DO	7.6	7.730	0.000	2.142
Deck Store	DST	0.2	17.000	1.800	7.200
Fire fighting Foam	FOAM	0.9	22.139	0.000	0.173
Fresh Water	FW	3.2	25.334	0.000	1.081
Grey Water	GWT	3.9	20.242	1.279	0.668
Lubricating Oil	LO	0.5	9.540	0.000	2.395
Sludge	SLU	16.8	20.225	-0.724	0.833
Deadweight		34.7	17.736	-0.196	1.345
Lightweight		545.4	15.624	0.015	4.441
Deadweight		34.7	17.736	-0.196	1.345
Total weight		580.2	15.750	0.002	4.256

LOADING COMPONENTS

Diesel Oil (Density 0.860 t/m3)

NAME	PURP	FILL %	MASS t	VOL m3	LCG m	TCG m	VCG m	FRSM tm
R.FODAYTK.S	DO	20.0	3.8	4.4	7.543	-3.941	3.561	2.99
R.FODAYTK.P	DO	20.0	3.8	4.4	7.543	3.941	3.561	2.99
R.FOTK.2P	DO	0.0	0.0	0.0	14.194	3.792	1.209	4.23
R.FOTK.2S	DO	0.0	0.0	0.0	14.194	-3.792	1.209	4.23
R.FOTK.3P	DO	0.0	0.0	0.0	13.051	0.844	0.893	0.00
R.FOTK.3S	DO	0.0	0.0	0.0	13.051	-0.844	0.893	0.00
R.FOTK.1P	DO	0.0	0.0	0.0	22.155	2.887	1.394	0.00
R.FOTK.1S	DO	0.0	0.0	0.0	22.155	-2.887	1.394	0.00
TOTAL			7.6	8.9				14.44

Fresh Water (Density 1.0 t/m3)

NAME	PURP	FILL %	MASS t	VOL m3	LCG m	TCG m	VCG m	FRSM tm
R.FWTK.P	FW	10.0	1.6	1.6	26.041	2.086	2.297	8.80
R.FWTK.S	FW	10.0	1.6	1.6	26.041	-2.086	2.297	8.80
TOTAL			3.2	3.2				17.60

Lub Oil (Density 0.860 t/m3)

NAME	PURP	FILL %	MASS t	VOL m3	LCG m	TCG m	VCG m	FRSM tm
R.LOTK.P	LO	10.0	0.2	0.3	9.504	4.706	3.754	0.08
R.LOTK.S	LO	10.0	0.2	0.3	9.504	-4.706	3.754	0.08
TOTAL			0.5	0.5				0.16

FOAM (Density 1.0 t/m3)

NAME	PURP	FILL %	MASS t	VOL m3	LCG m	TCG m	VCG m	FRSM tm
R.FOAMTK	FOAM	10.0	0.9	0.9	22.239	0.000	1.043	1.63
TOTAL			0.9	0.9				1.63

DISPERSANT (Density 1.0 t/m3)

NAME	PURP	FILL %	MASS t	VOL m3	LCG m	TCG m	VCG m	FRSM tm
R.DISPERSANTTK	DISPERSANT	10.0	0.6	0.6	17.750	0.000	0.636	5.25
TOTAL			0.6	0.6				5.25

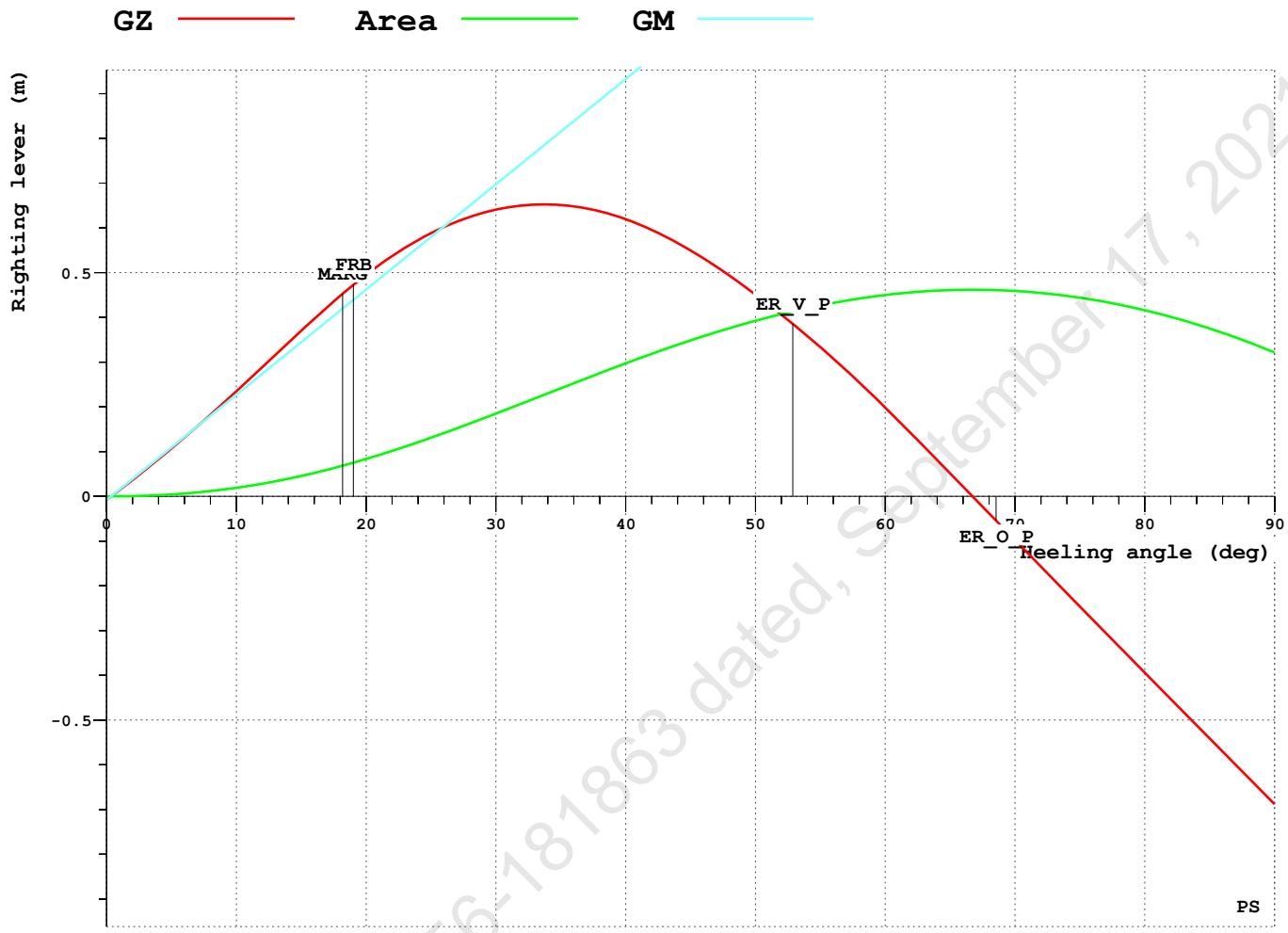
STORES

NAME	PURP	MASS t	LCG m	TCG m	VCG m
STORES	MASS	0.2	17.000	1.800	7.200
TOTAL		0.2	17.000	1.800	7.200

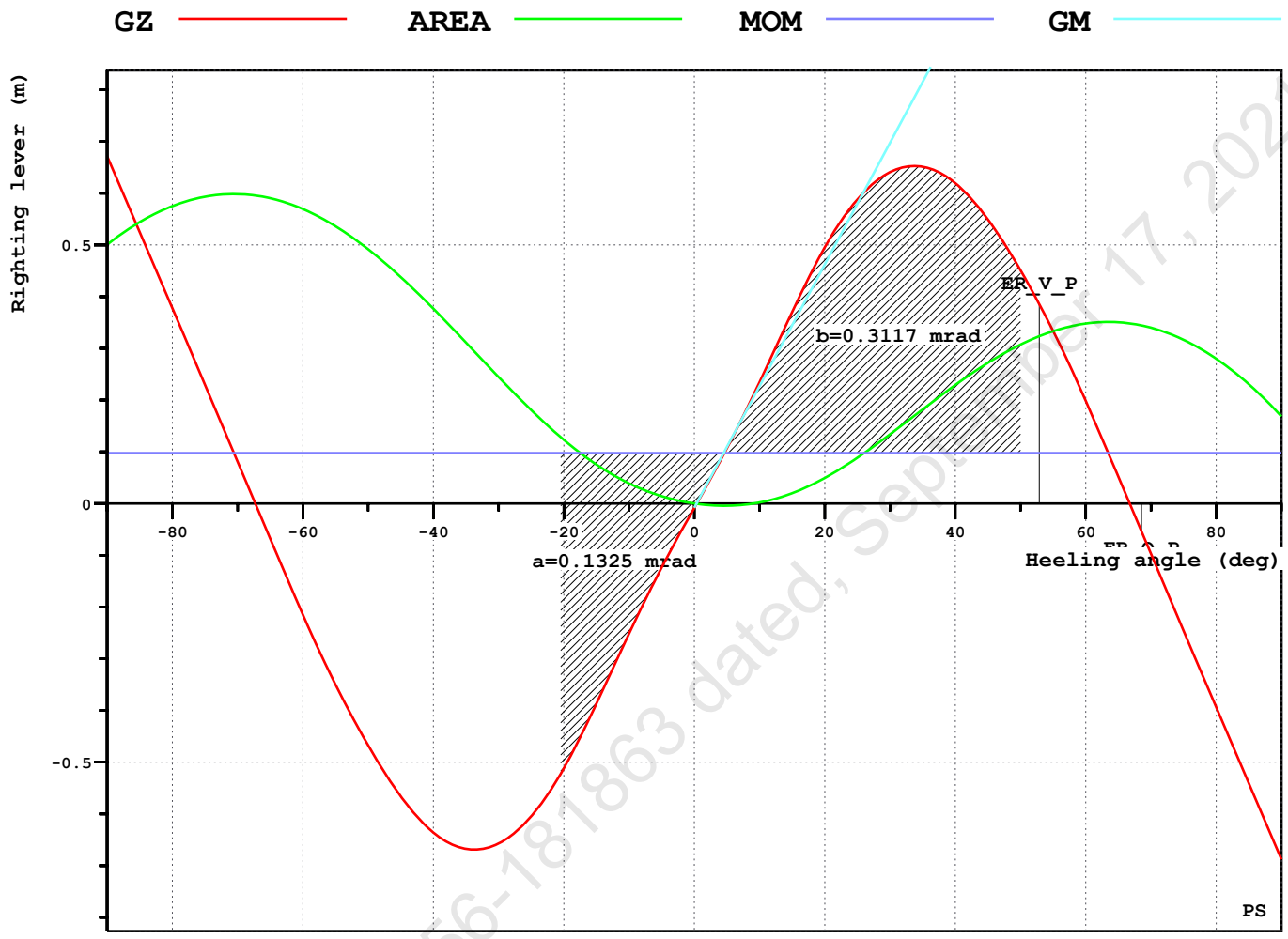
CREW

NAME	PURP	MASS t	LCG m	TCG m	VCG m
CREW	MASS	1.0	18.000	0.000	7.500
TOTAL		1.0	18.000	0.000	7.500

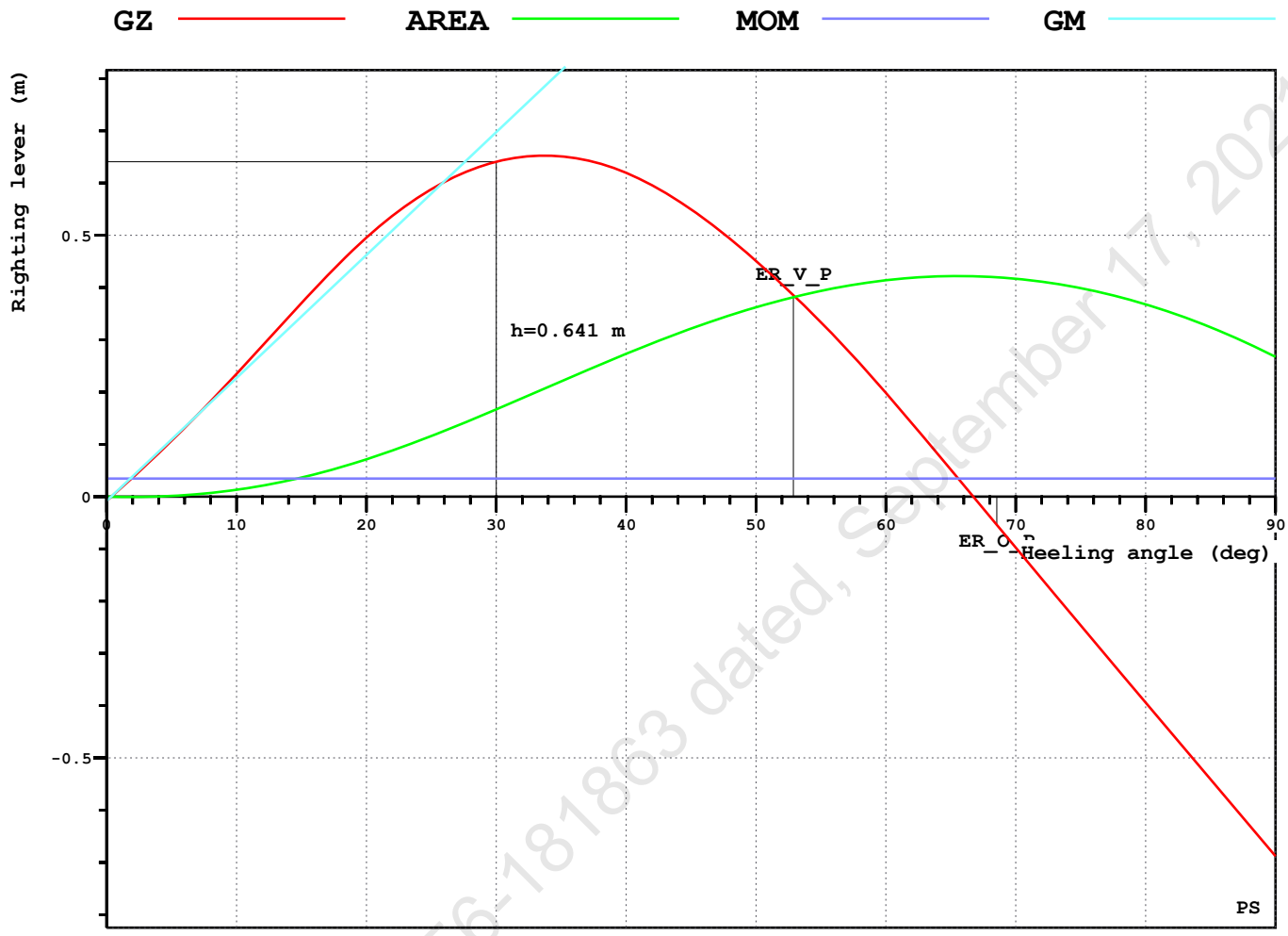
INTACT STABILITY CHECK PLOT



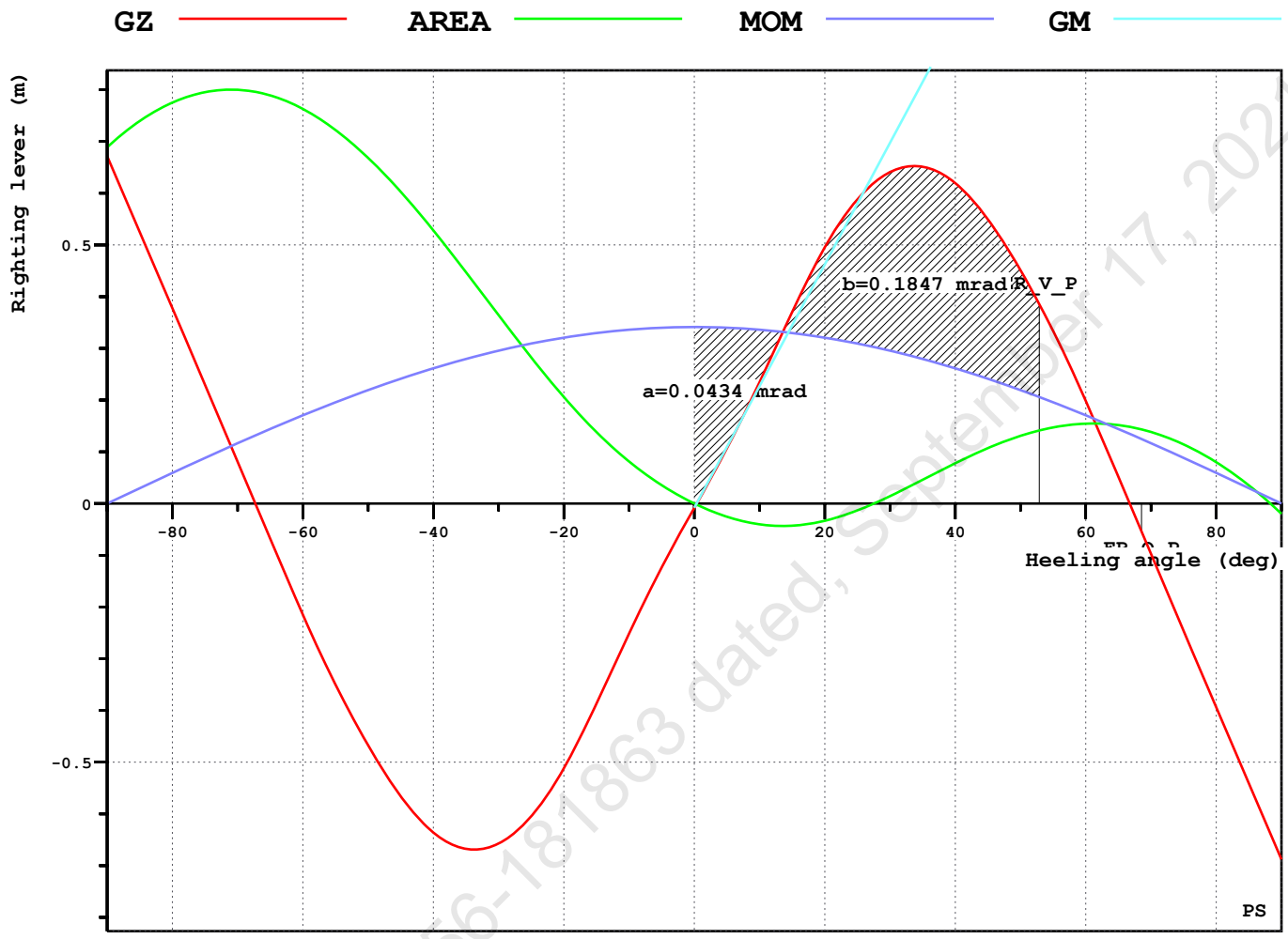
IMO WEATHER CRITERIA



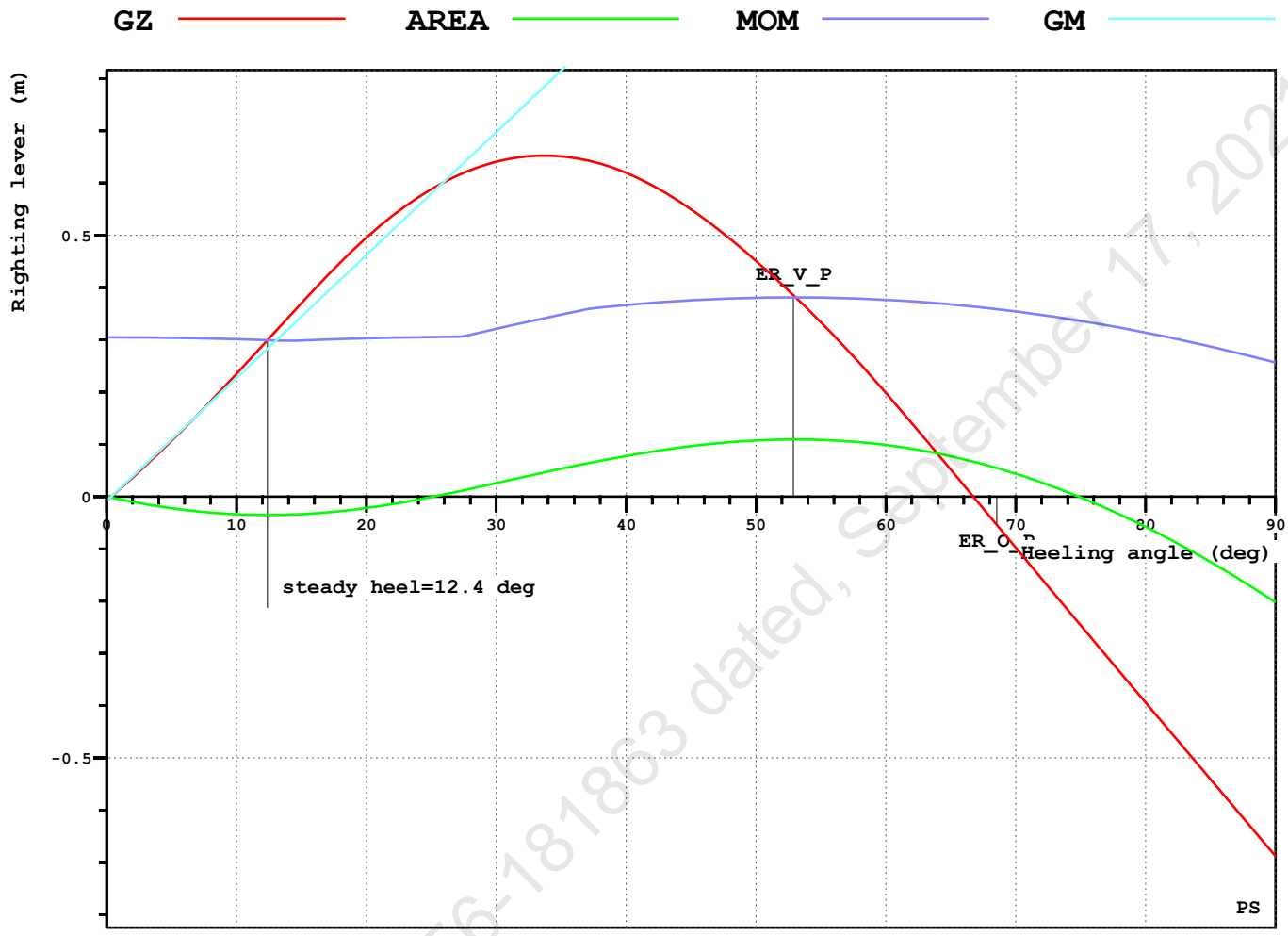
EXTERNAL FI-FI



IS CODE TOWING - Self Tripping



IS CODE TOWING - Tow Tripping



INTACT STABILITY CRITERIA

RCR	TEXT	REQ	ATTV	UNIT	STAT
AREA30	Area under GZ curve up to 30 deg.	0.055	0.185	mrad	OK
AREA40	Area under GZ curve up to 40 deg.	0.090	0.297	mrad	OK
AREA3040	Area under GZ curve btw. 30-40 deg.	0.030	0.112	mrad	OK
GZ0.2	Max GZ > 0.2	0.200	0.653	m	OK
MAXGZ25	Max. GZ at an angle > 25 deg.	25.000	33.713	deg	OK
GM0.15	GM > 0.15 m	0.150	1.348	m	OK
V.IMOWEATHER	IMO weather criterion	1.000	2.352		OK
IMO.WIND_HEEL	Wind Heel <16 or <=80% of dk imm.	15.210	3.238	deg	OK
FIFI_GZ	Min. GZ for Fire fighter Ships	0.069	0.641	m	OK
2020IS-B2.8.4.2	AreaA>=AreaB	1.000	4.256		OK
2020IS-B2.8.4.3	Max. heel, tow-tr.	52.876	12.377	deg	OK

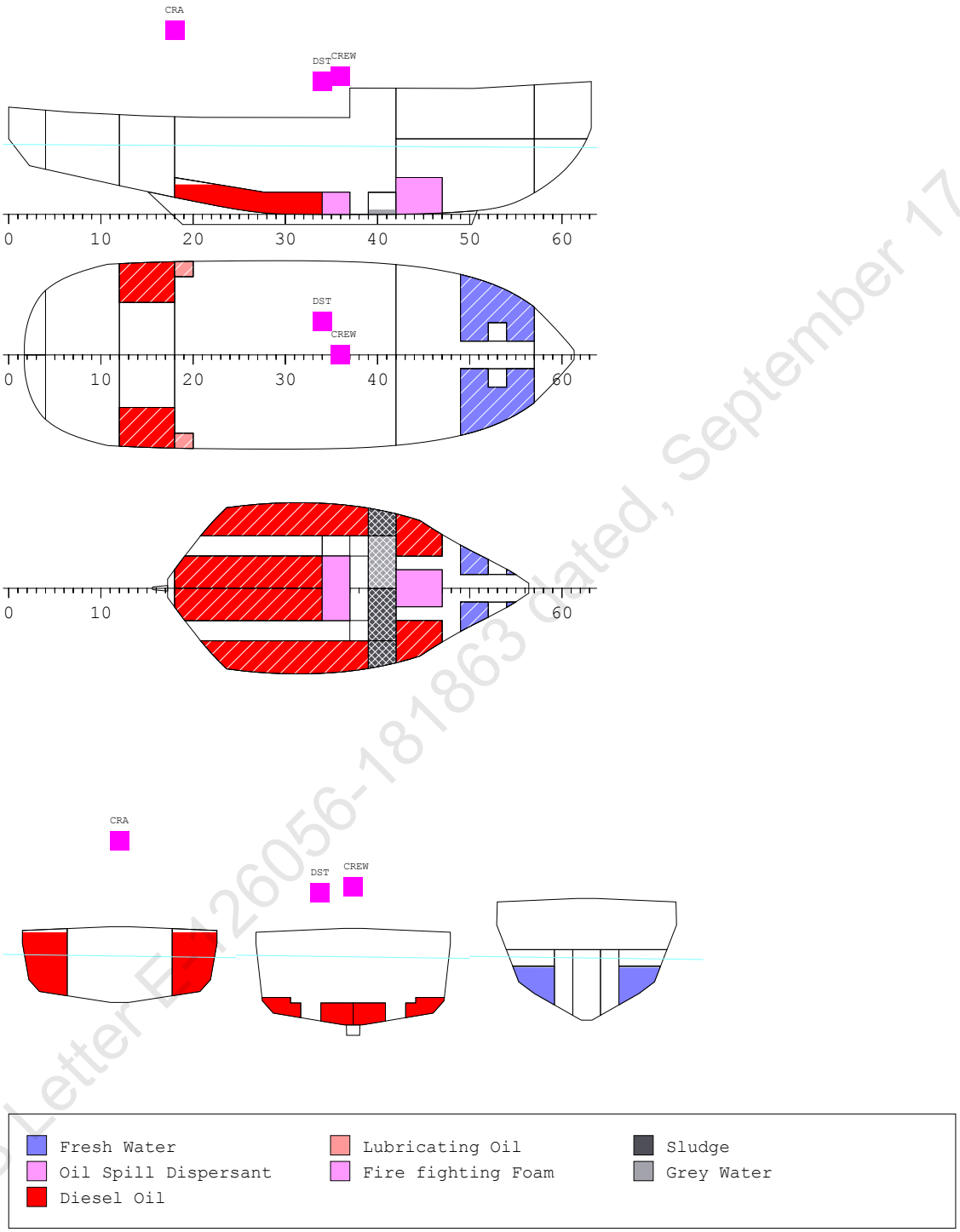
GZ CURVE DATA

HEEL deg	T m	TR m	GZ m	AREA mrad
0.0	3.276	-0.355	-0.008	0.000
0.4	3.275	-0.355	0.000	0.000
10.0	3.206	-0.322	0.235	0.019
20.0	2.994	-0.212	0.496	0.083
30.0	2.669	-0.152	0.641	0.185
40.0	2.238	-0.299	0.620	0.297
50.0	1.733	-0.531	0.451	0.392
60.0	1.187	-0.757	0.199	0.450
70.0	0.613	-0.963	-0.098	0.459
80.0	0.040	-1.133	-0.394	0.416
90.0	-0.529	-1.358	-0.688	0.322

RELEVANT OPENINGS

NAME	TEXT	WT	X m	Y m	Z m	IMMA deg	IMMR m
ER_V_P	ER_INLET_P	UNPROTECTED	12.757	2.300	5.750	52.9	2.425
ER_V_S	ER_INLET_S	UNPROTECTED	12.757	-2.300	5.750	-	2.455
ER_O_P	ER_OUT_P	UNPROTECTED	14.000	2.300	7.900	68.5	4.589
ER_O_S	ER_OUT_S	UNPROTECTED	14.000	-2.300	7.900	-	4.620

LC03 - LC01+CRANE OPERATION(1.5T load)



LC03 - LC01+CRANE OPERATION(1.5T load)

Floating Position - Intact condition

Draught at AP (moulded)	3.789 m
Draught at FP (moulded)	3.623 m
Mean Draught (moulded)	3.706 m
Trim (+ by Bow)	-0.167 m
Heel (+ PS)	0.8 deg
KM above moulded BL	5.527 m
KG above moulded BL	3.928 m
GM0 (solid)	1.599 m
Free Surface Correction	0.073 m
GM (liquid)	1.526 m
Density of Water	1.025 t/m3

LCB	:	15.709 m Fwd of AP
LCF	:	14.727 m Fwd of AP
MCT	:	6.132 tm/cm
TPC	:	2.887 t/cm

LOAD SUMMARY TABLE

NAME	LOAD	MASS t	LCG m	TCG m	VCG m
Crane	CRA	1.5	9.000	0.000	10.000
Crew	CREW	1.0	18.000	0.000	7.500
Oil Spill Dispersant	DISPERSANT	5.8	17.750	0.000	0.636
Diesel Oil	DO	98.5	12.536	0.000	1.965
Deck Store	DST	2.0	17.000	1.800	7.200
Fire fighting Foam	FOAM	9.4	22.239	0.000	1.043
Fresh Water	FW	30.5	26.028	0.000	2.251
Grey Water	GWT	0.4	20.224	0.598	0.155
Lubricating Oil	LO	4.4	9.505	0.000	3.686
Sludge	SLU	1.8	20.165	-0.338	0.372
Deadweight		155.1	16.049	0.021	2.122
Lightweight		545.4	15.624	0.015	4.441
Deadweight		155.1	16.049	0.021	2.122
Total weight		700.6	15.718	0.016	3.928

LOADING COMPONENTS

Diesel Oil (Density 0.860 t/m3)

NAME	PURP	FILL %	MASS t	VOL m3	LCG m	TCG m	VCG m	FRSM tm
R.FODAYTK.S	DO	95.0	18.2	21.1	7.543	-3.941	3.561	2.99
R.FODAYTK.P	DO	95.0	18.2	21.1	7.543	3.941	3.561	2.99
R.FOTK.2P	DO	95.0	12.9	15.0	14.194	3.792	1.209	4.23
R.FOTK.2S	DO	95.0	12.9	15.0	14.194	-3.792	1.209	4.23
R.FOTK.3P	DO	95.0	12.2	14.1	13.051	0.844	0.893	0.00
R.FOTK.3S	DO	95.0	12.2	14.1	13.051	-0.844	0.893	0.00
R.FOTK.1P	DO	95.0	6.0	7.0	22.155	2.887	1.394	0.00
R.FOTK.1S	DO	95.0	6.0	7.0	22.155	-2.887	1.394	0.00
TOTAL			98.5	114.5				14.44

Fresh Water (Density 1.0 t/m3)

NAME	PURP	FILL %	MASS t	VOL m3	LCG m	TCG m	VCG m	FRSM tm
R.FWTK.P	FW	95.0	15.2	15.2	26.041	2.086	2.297	8.80
R.FWTK.S	FW	95.0	15.2	15.2	26.041	-2.086	2.297	8.80
TOTAL			30.5	30.5				17.60

Lub Oil (Density 0.860 t/m3)

NAME	PURP	FILL %	MASS t	VOL m3	LCG m	TCG m	VCG m	FRSM tm
R.LOTK.P	LO	95.0	2.2	2.4	9.504	4.706	3.754	0.08
R.LOTK.S	LO	95.0	2.2	2.4	9.504	-4.706	3.754	0.08
TOTAL			4.4	4.8				0.16

FOAM (Density 1.0 t/m3)

NAME	PURP	FILL %	MASS t	VOL m3	LCG m	TCG m	VCG m	FRSM tm
R.FOAMTK	FOAM	100.0	9.4	9.4	22.239	0.000	1.043	1.63
TOTAL			9.4	9.4				1.63

DISPERSANT (Density 1.0 t/m3)

NAME	PURP	FILL %	MASS t	VOL m3	LCG m	TCG m	VCG m	FRSM tm
R.DISPERSANTTK	DISPERSANT	100.0	5.8	5.8	17.750	0.000	0.636	5.25
TOTAL			5.8	5.8				5.25

STORES

NAME	PURP	MASS t	LCG m	TCG m	VCG m
STORES	MASS	2.0	17.000	1.800	7.200
TOTAL		2.0	17.000	1.800	7.200

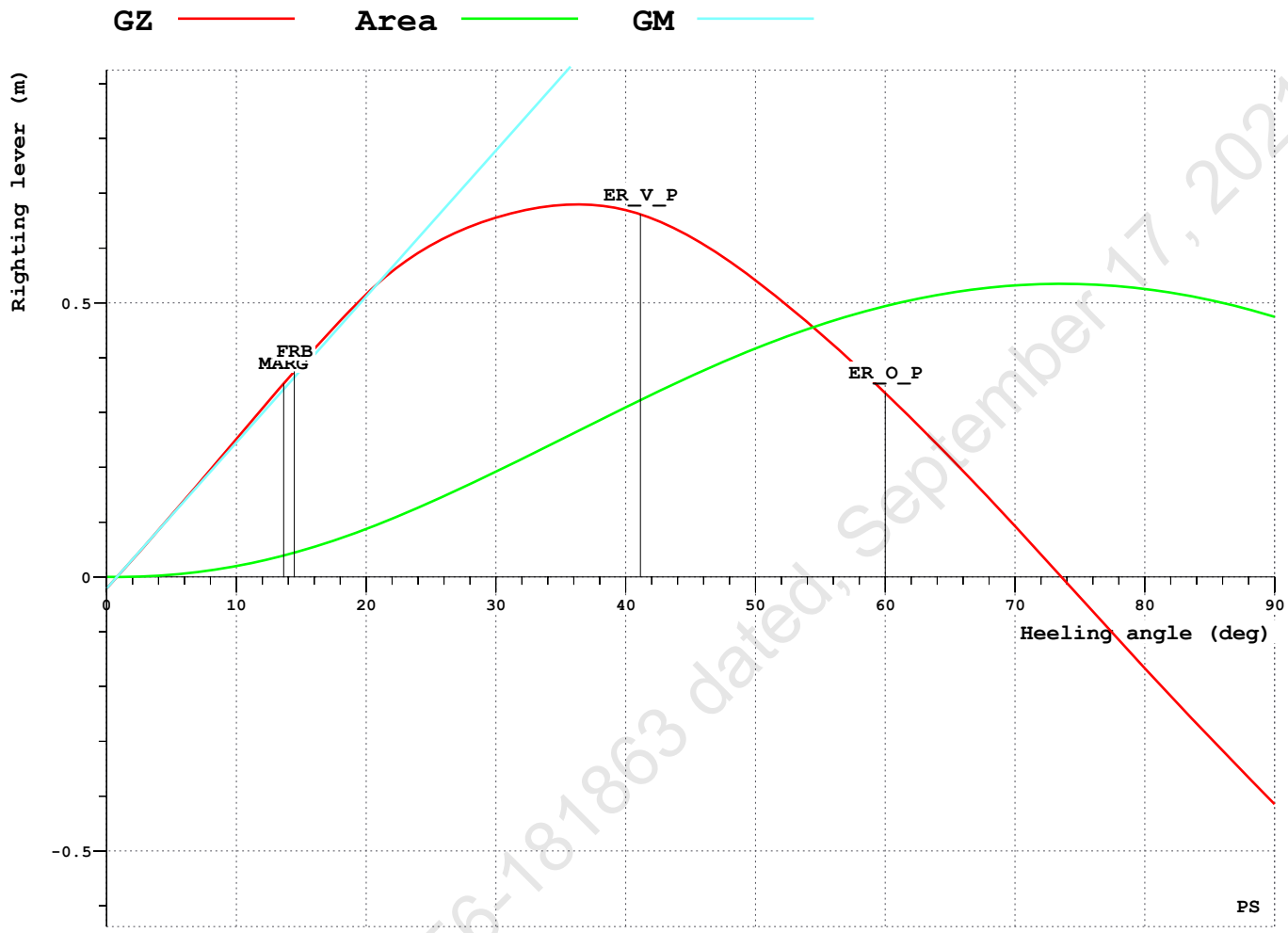
CREW

NAME	PURP	MASS t	LCG m	TCG m	VCG m
CREW	MASS	1.0	18.000	0.000	7.500
TOTAL		1.0	18.000	0.000	7.500

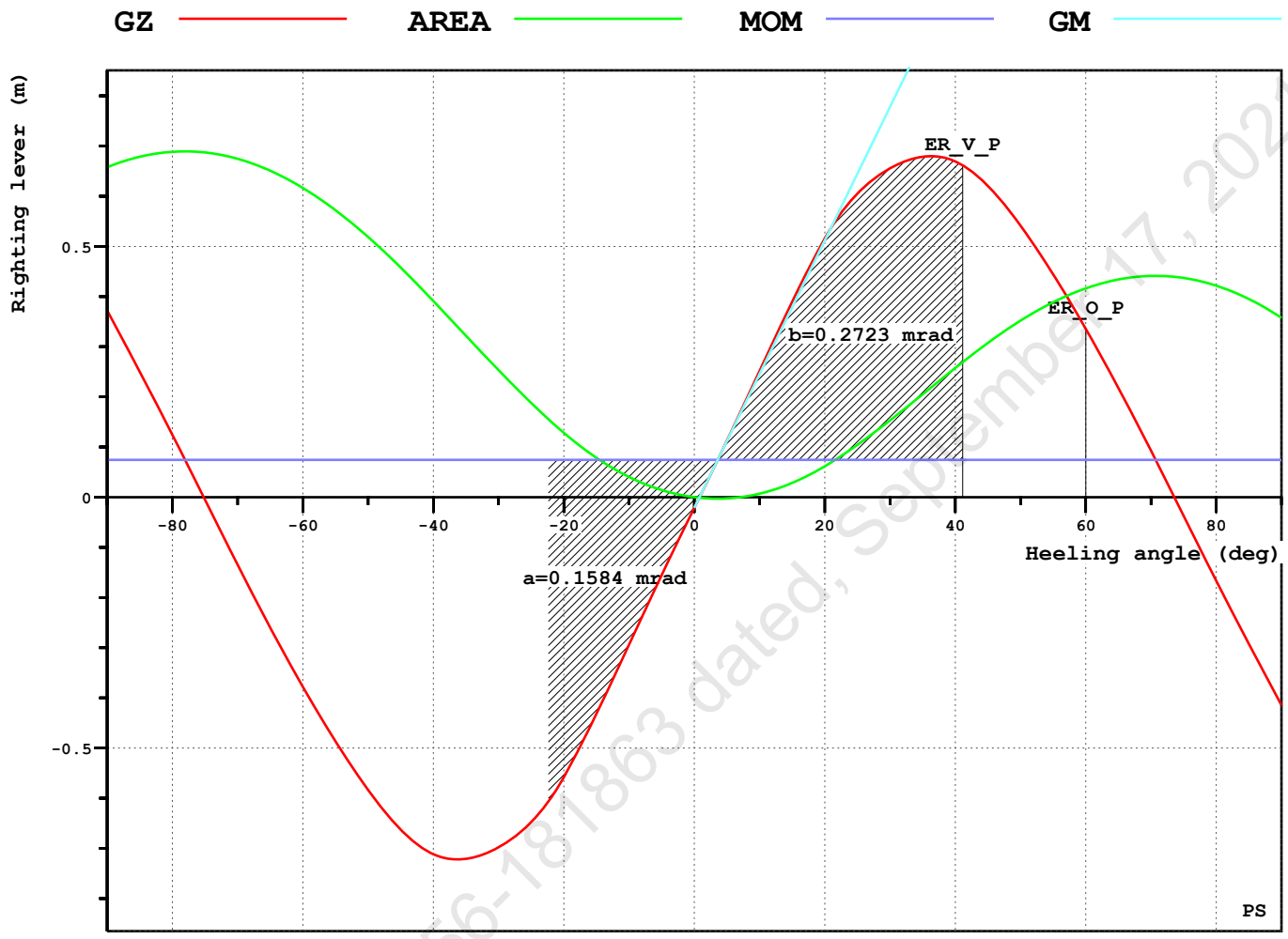
CRANE

NAME	PURP	MASS t	LCG m	TCG m	VCG m
CRANE-PAYLO.	MASS	1.5	9.000	0.000	10.000
TOTAL		1.5	9.000	0.000	10.000

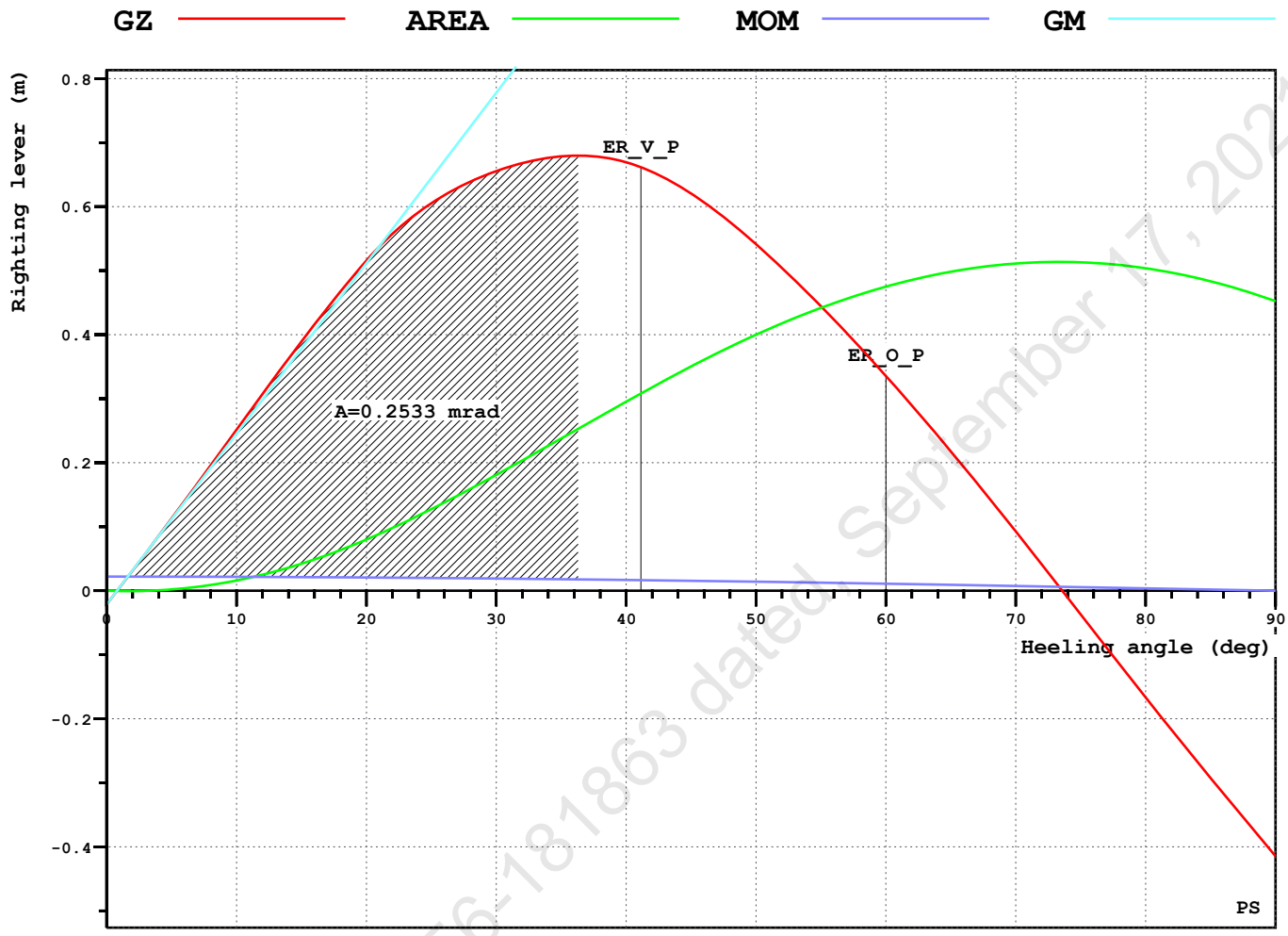
INTACT STABILITY CHECK PLOT



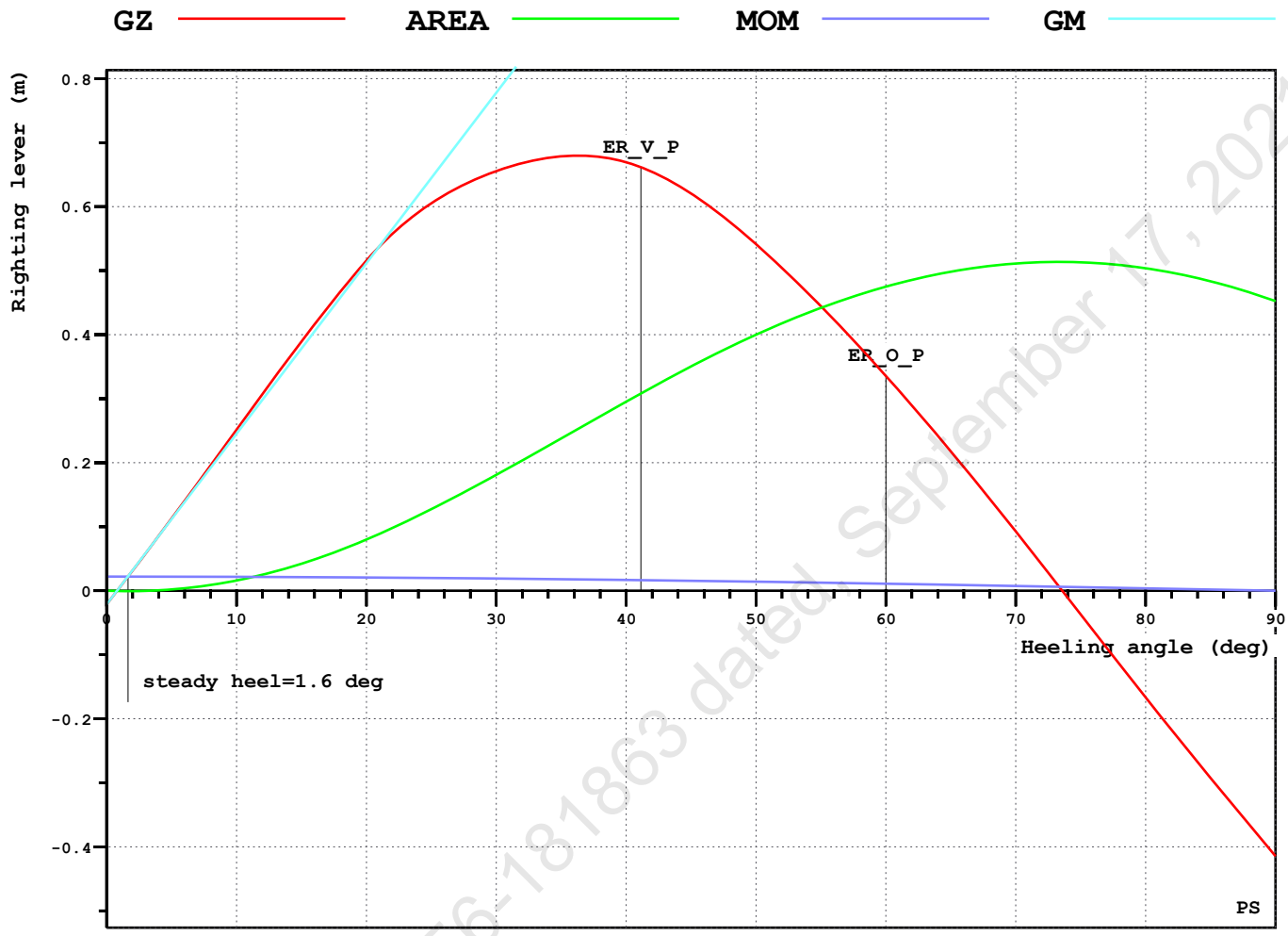
IMO WEATHER CRITERIA



IS CODE LIFTING - Residual Area



IS CODE LIFTING - Equilibrium angle



INTACT STABILITY CRITERIA

RCR	TEXT	REQ	ATTV	UNIT	STAT
AREA30	Area under GZ curve up to 30 deg.	0.055	0.192	mrad	OK
AREA40	Area under GZ curve up to 40 deg.	0.090	0.310	mrad	OK
AREA3040	Area under GZ curve btw. 30-40 deg.	0.030	0.118	mrad	OK
GZ0.2	Max GZ > 0.2	0.200	0.680	m	OK
MAXGZ25	Max. GZ at an angle > 25 deg.	25.000	36.296	deg	OK
GM0.15	GM > 0.15 m	0.150	1.526	m	OK
V.IMOWEATHER	IMO weather criterion	1.000	1.719		OK
IMO.WIND_HEEL	Wind Heel <16 or <=80% of dk imm.	11.568	2.673	deg	OK
2020IS-B2.9.7.1.2	Eq. angle less than 10 deg. or dk. imm.	14.460	1.642	deg	OK
2020IS-B2.9.7.1.1	Resid. righting area > 0.08 mrad	0.080	0.253	mrad	OK

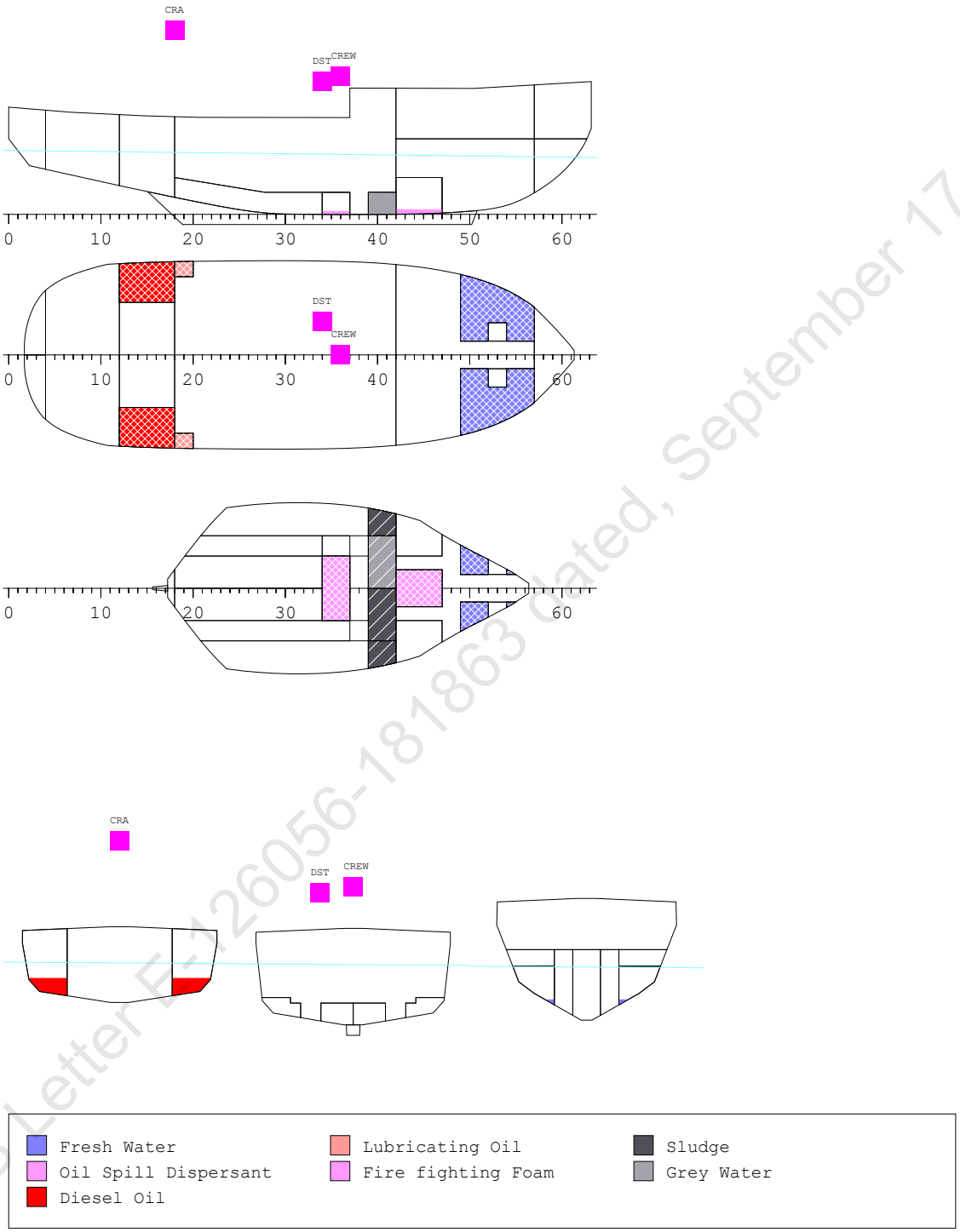
GZ CURVE DATA

HEEL deg	T m	TR m	GZ m	AREA mrad
0.0	3.707	-0.167	-0.021	0.000
0.8	3.706	-0.167	0.000	0.000
10.0	3.632	-0.149	0.252	0.020
20.0	3.428	-0.127	0.516	0.087
30.0	3.154	-0.288	0.656	0.192
40.0	2.799	-0.619	0.669	0.309
50.0	2.373	-0.973	0.541	0.417
60.0	1.885	-1.302	0.336	0.494
70.0	1.352	-1.583	0.093	0.532
80.0	0.787	-1.803	-0.167	0.525
90.0	0.214	-1.948	-0.415	0.475

RELEVANT OPENINGS

NAME	TEXT	WT	X m	Y m	Z m	IMMA deg	IMMR m
ER_V_P	ER_INLET_P	UNPROTECTED	12.757	2.300	5.750	41.1	1.995
ER_V_S	ER_INLET_S	UNPROTECTED	12.757	-2.300	5.750	-	2.060
ER_O_P	ER_OUT_P	UNPROTECTED	14.000	2.300	7.900	60.0	4.151
ER_O_S	ER_OUT_S	UNPROTECTED	14.000	-2.300	7.900	-	4.216

LC04 - LC02+CRANE OPERATION(1.5T load)



LC04 - LC02+CRANE OPERATION(1.5T load)

Floating Position - Intact condition

Draught at AP (moulded)	3.466 m
Draught at FP (moulded)	3.094 m
Mean Draught (moulded)	3.280 m
Trim (+ by Bow)	-0.371 m
Heel (+ PS)	0.4 deg
KM above moulded BL	5.690 m
KG above moulded BL	4.270 m
GM0 (solid)	1.419 m
Free Surface Correction	0.088 m
GM (liquid)	1.332 m
Density of Water	1.025 t/m3

LCB	:	15.706 m Fwd of AP
LCF	:	14.696 m Fwd of AP
MCT	:	5.598 tm/cm
TPC	:	2.777 t/cm

LOAD SUMMARY TABLE

NAME	LOAD	MASS t	LCG m	TCG m	VCG m
Crane	CRA	1.5	9.000	0.000	10.000
Crew	CREW	1.0	18.000	0.000	7.500
Oil Spill Dispersant	DISPERSANT	0.6	17.747	0.000	0.111
Diesel Oil	DO	7.6	7.730	0.000	2.142
Deck Store	DST	0.2	17.000	1.800	7.200
Fire fighting Foam	FOAM	0.9	22.139	0.000	0.173
Fresh Water	FW	3.2	25.334	0.000	1.081
Grey Water	GWT	3.9	20.242	1.279	0.668
Lubricating Oil	LO	0.5	9.540	0.000	2.395
Sludge	SLU	16.8	20.225	-0.724	0.833
Deadweight		36.2	17.375	-0.188	1.703
Lightweight		545.4	15.624	0.015	4.441
Deadweight		36.2	17.375	-0.188	1.703
Total weight		581.7	15.733	0.002	4.270

LOADING COMPONENTS

Diesel Oil (Density 0.860 t/m3)

NAME	PURP	FILL %	MASS t	VOL m3	LCG m	TCG m	VCG m	FRSM tm
R.FODAYTK.S	DO	20.0	3.8	4.4	7.543	-3.941	3.561	2.99
R.FODAYTK.P	DO	20.0	3.8	4.4	7.543	3.941	3.561	2.99
R.FOTK.2P	DO	0.0	0.0	0.0	14.194	3.792	1.209	4.23
R.FOTK.2S	DO	0.0	0.0	0.0	14.194	-3.792	1.209	4.23
R.FOTK.3P	DO	0.0	0.0	0.0	13.051	0.844	0.893	0.00
R.FOTK.3S	DO	0.0	0.0	0.0	13.051	-0.844	0.893	0.00
R.FOTK.1P	DO	0.0	0.0	0.0	22.155	2.887	1.394	0.00
R.FOTK.1S	DO	0.0	0.0	0.0	22.155	-2.887	1.394	0.00
TOTAL			7.6	8.9				14.44

Fresh Water (Density 1.0 t/m3)

NAME	PURP	FILL %	MASS t	VOL m3	LCG m	TCG m	VCG m	FRSM tm
R.FWTK.P	FW	10.0	1.6	1.6	26.041	2.086	2.297	8.80
R.FWTK.S	FW	10.0	1.6	1.6	26.041	-2.086	2.297	8.80
TOTAL			3.2	3.2				17.60

Lub Oil (Density 0.860 t/m3)

NAME	PURP	FILL %	MASS t	VOL m3	LCG m	TCG m	VCG m	FRSM tm
R.LOTK.P	LO	10.0	0.2	0.3	9.504	4.706	3.754	0.08
R.LOTK.S	LO	10.0	0.2	0.3	9.504	-4.706	3.754	0.08
TOTAL			0.5	0.5				0.16

FOAM (Density 1.0 t/m3)

NAME	PURP	FILL %	MASS t	VOL m3	LCG m	TCG m	VCG m	FRSM tm
R.FOAMTK	FOAM	10.0	0.9	0.9	22.239	0.000	1.043	1.63
TOTAL			0.9	0.9				1.63

DISPERSANT (Density 1.0 t/m3)

NAME	PURP	FILL %	MASS t	VOL m3	LCG m	TCG m	VCG m	FRSM tm
R.DISPERSANTTK	DISPERSANT	10.0	0.6	0.6	17.750	0.000	0.636	5.25
TOTAL			0.6	0.6				5.25

STORES

NAME	PURP	MASS t	LCG m	TCG m	VCG m
STORES	MASS	0.2	17.000	1.800	7.200
TOTAL		0.2	17.000	1.800	7.200

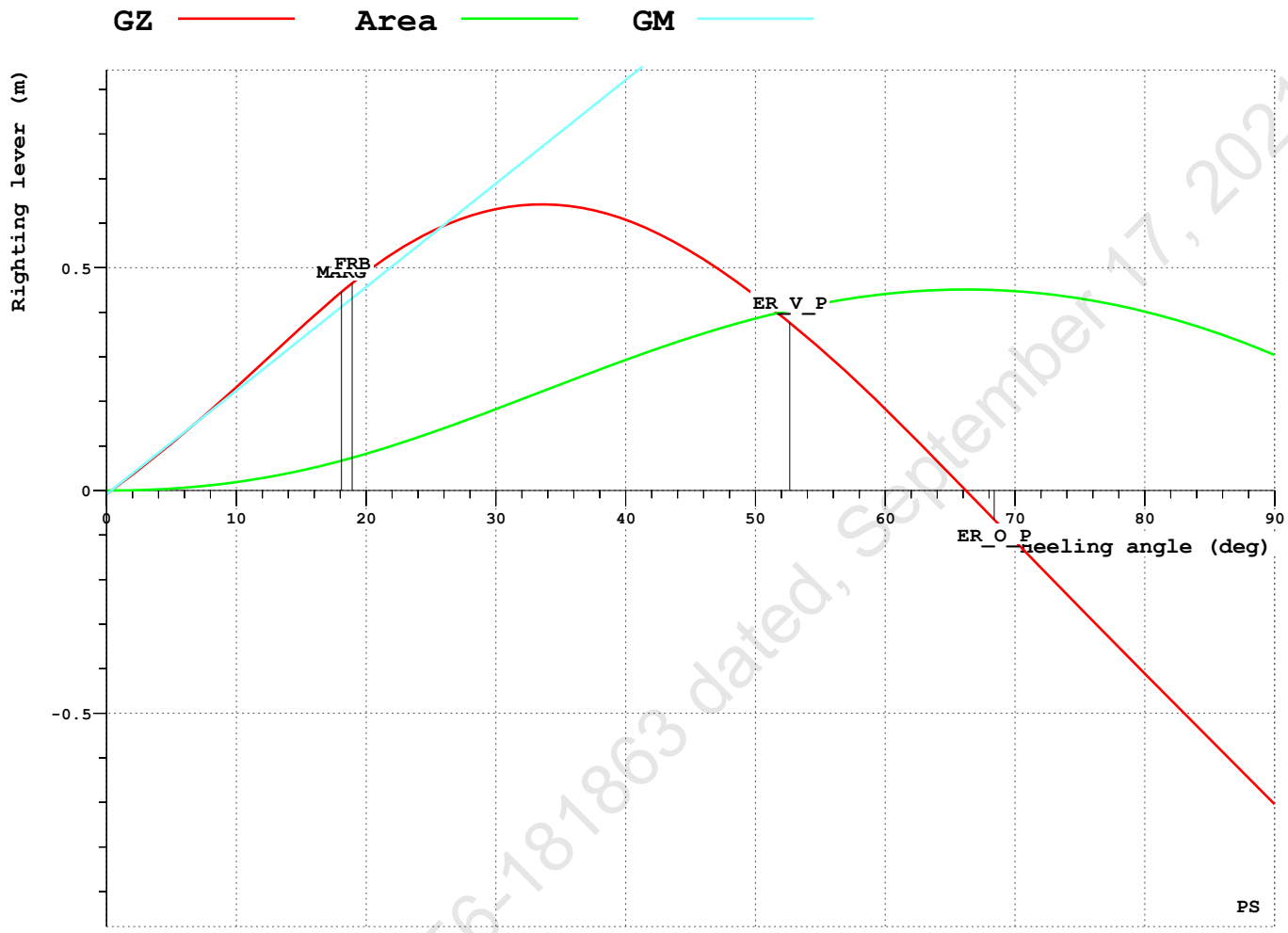
CREW

NAME	PURP	MASS t	LCG m	TCG m	VCG m
CREW	MASS	1.0	18.000	0.000	7.500
TOTAL		1.0	18.000	0.000	7.500

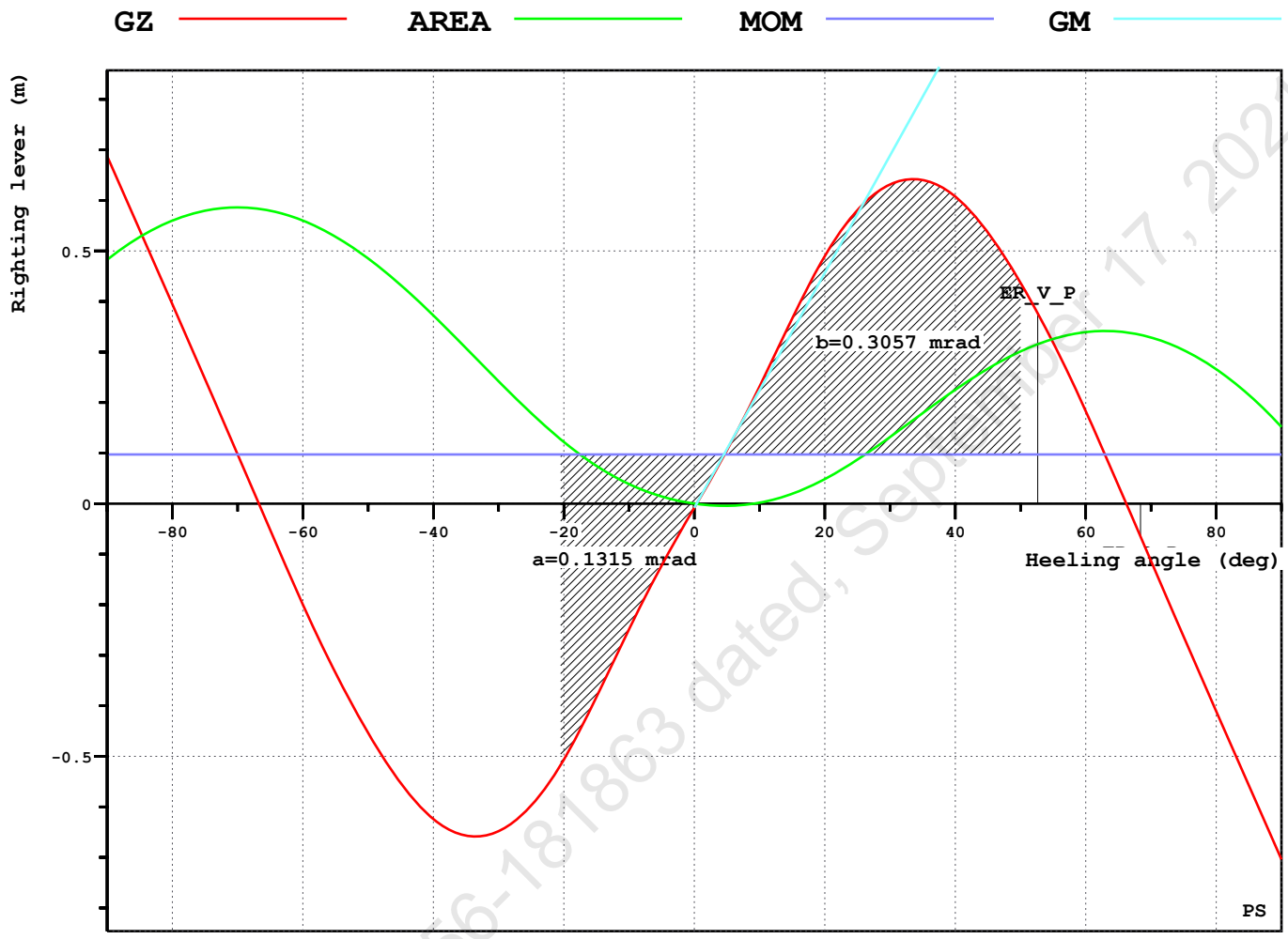
CRANE

NAME	PURP	MASS t	LCG m	TCG m	VCG m
CRANE	MASS	1.5	9.000	0.000	10.000
TOTAL		1.5	9.000	0.000	10.000

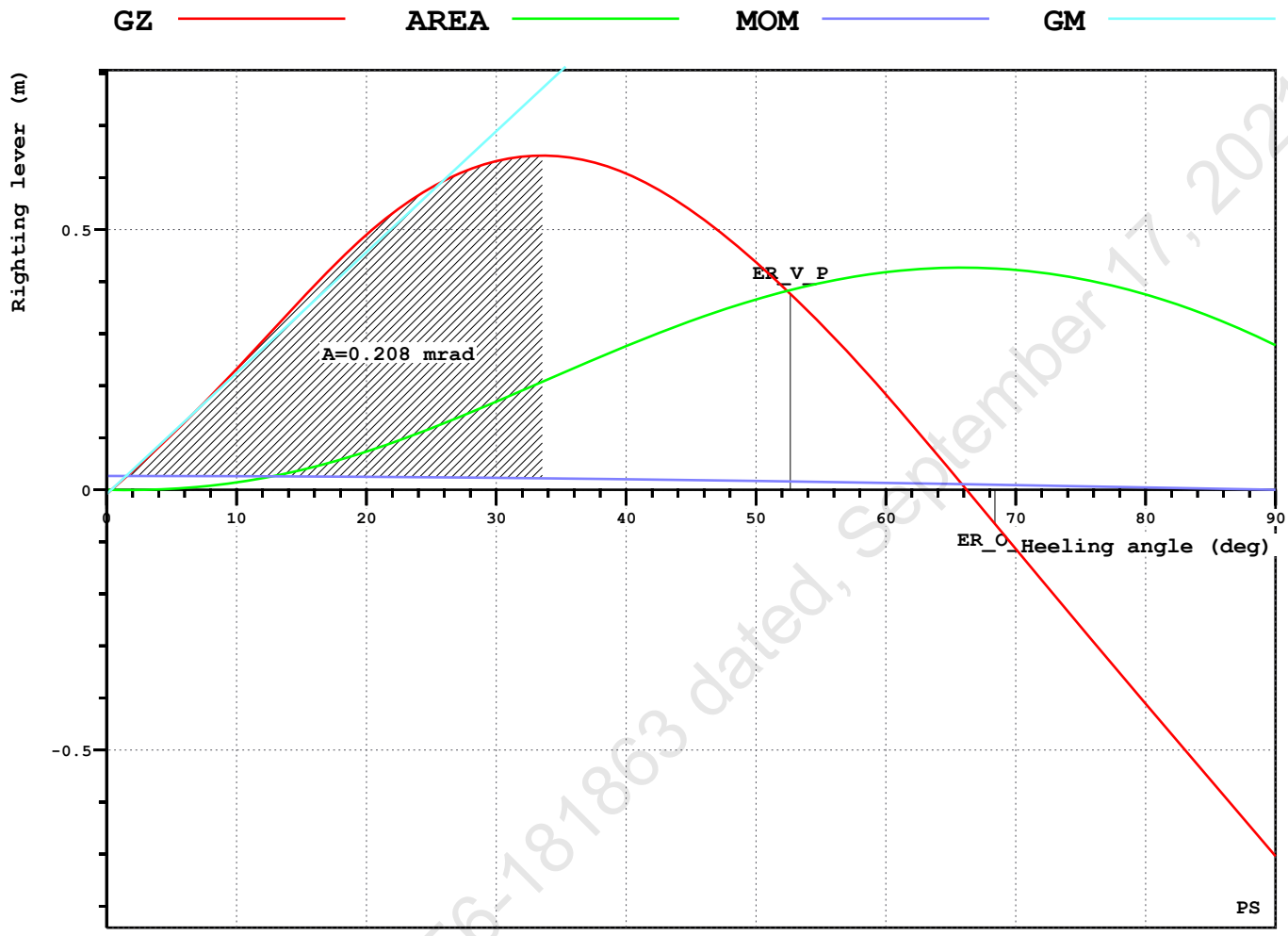
INTACT STABILITY CHECK PLOT



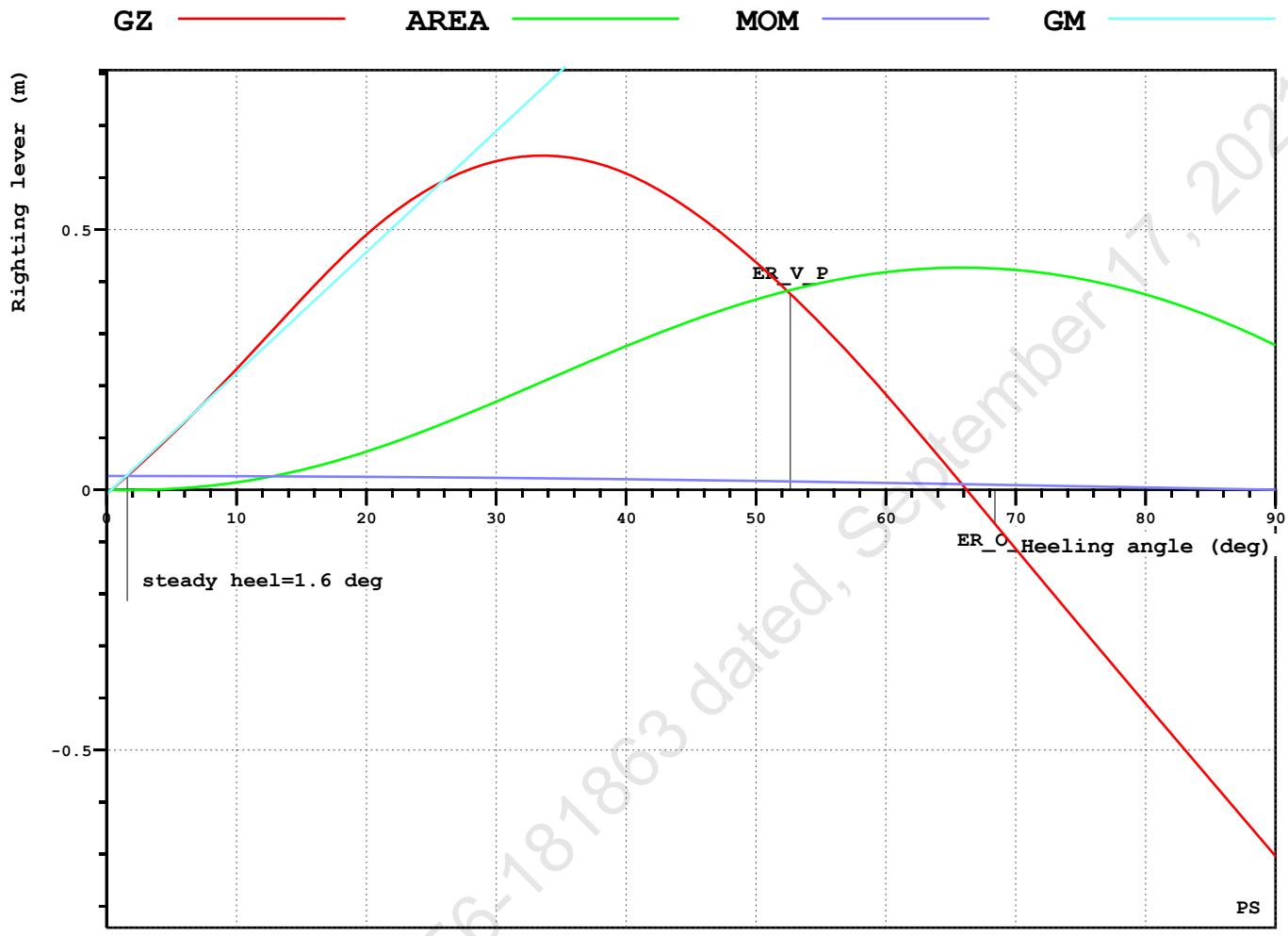
IMO WEATHER CRITERIA



IS CODE LIFTING - Residual Area



IS CODE LIFTING - Equilibrium angle



INTACT STABILITY CRITERIA

RCR	TEXT	REQ	ATTV	UNIT	STAT
AREA30	Area under GZ curve up to 30 deg.	0.055	0.183	mrad	OK
AREA40	Area under GZ curve up to 40 deg.	0.090	0.293	mrad	OK
AREA3040	Area under GZ curve btw. 30-40 deg.	0.030	0.111	mrad	OK
GZ0.2	Max GZ > 0.2	0.200	0.642	m	OK
MAXGZ25	Max. GZ at an angle > 25 deg.	25.000	33.545	deg	OK
GM0.15	GM > 0.15 m	0.150	1.332	m	OK
V.IMOWEATHER	IMO weather criterion	1.000	2.324		OK
IMO.WIND_HEEL	Wind Heel <16 or <=80% of dk imm.	15.137	3.266	deg	OK
2020IS-B2.9.7.1.2	Eq. angle less than 10 deg. or dk. imm.	18.921	1.583	deg	OK
2020IS-B2.9.7.1.1	Resid. righting area > 0.08 mrad	0.080	0.208	mrad	OK

GZ CURVE DATA

HEEL deg	T m	TR m	GZ m	AREA mrad
0.0	3.280	-0.372	-0.008	0.000
0.4	3.280	-0.372	0.000	0.000
10.0	3.211	-0.339	0.232	0.019
20.0	2.999	-0.230	0.490	0.082
30.0	2.675	-0.174	0.632	0.183
40.0	2.245	-0.327	0.608	0.293
50.0	1.741	-0.563	0.437	0.386
60.0	1.197	-0.793	0.183	0.441
70.0	0.623	-1.000	-0.114	0.447
80.0	0.050	-1.172	-0.411	0.402
90.0	-0.518	-1.397	-0.704	0.304

RELEVANT OPENINGS

NAME	TEXT	WT	X m	Y m	Z m	IMMA deg	IMMR m
ER_V_P	ER_INLET_P	UNPROTECTED	12.757	2.300	5.750	52.6	2.419
ER_V_S	ER_INLET_S	UNPROTECTED	12.757	-2.300	5.750	-	2.449
ER_O_P	ER_OUT_P	UNPROTECTED	14.000	2.300	7.900	68.4	4.583
ER_O_S	ER_OUT_S	UNPROTECTED	14.000	-2.300	7.900	-	4.614