PLAN ENDORSED FOR IN-PRINCIPAL APPROVAL

SEE LETTER
E-126232-181818

REVIEWED
17-09-2021

COCHIN SHIPYARD - CT3360
60 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 60 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, and 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 and in Coastal Area.

The vessel shall operate within 20 nm from the shoreline.

The vessel shall have a static bollard pull of at least 60 tonnes at 100 % MCR of the engine in ahead condition.

Main Particulars

Length overall	abt. 33.0 m
Length between perpendiculars	abt. 31.0 m
Breadth moulded	abt. 11.9 m
Depth midships	abt. 5.4 m
Hull Draught	abt. 3.9 m
Max. Draught	abt. 5.0 m
Gross tonnage	<500 GT
Complement	11 Nos.
Class Notation	卐 SUL, 卐 IY, TUG, AGNI 1 (2400 m^3/h)

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.

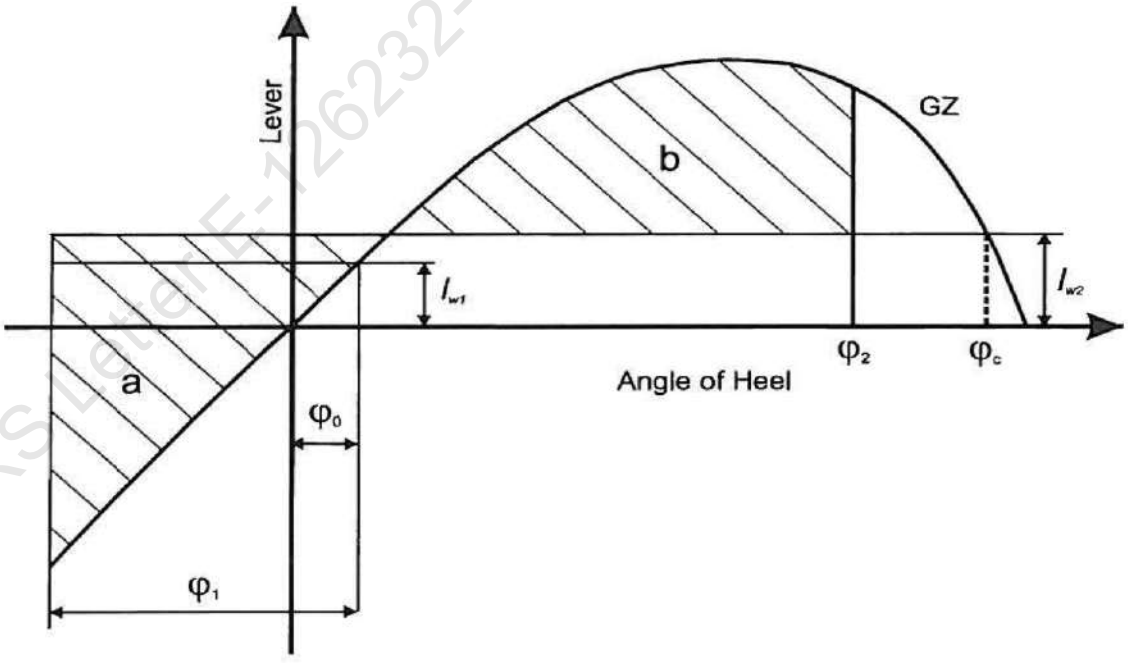


Figure 1 Severe Wind & Rolling Criteria

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 Locations.

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) – 588.4 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. CT 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- $2.8 \frac{L_S}{L_{PP}} - 0.1$	$0.10 \leq C_1 \leq 1.00$

C_2	Correction of C_1 for angle of heel = $\frac{\varphi}{3\,\varphi_D} + 0.5$	$C_2 \geq 1.00$
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:

$$\mathrm{HL}_{\varphi} = \frac{P_L \times \mathrm{y} \times \cos\varphi}{\Delta}$$

where:

P_L	vertical load, in (t), of the lift, 3 t
y	transverse distance, in (m), of the lift, 15.0 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, *16.5 kN**

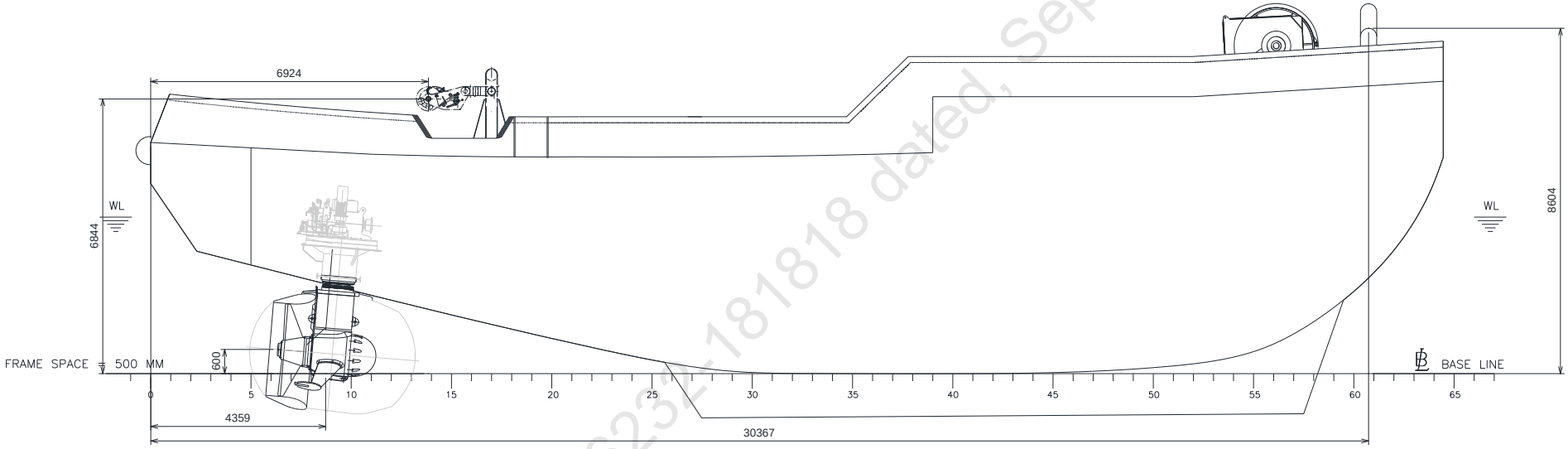
a Monitor heeling arm, taken as the vertical distance between the centre of the thruster and the centreline of the monitor, *10.221 m*

** 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.*

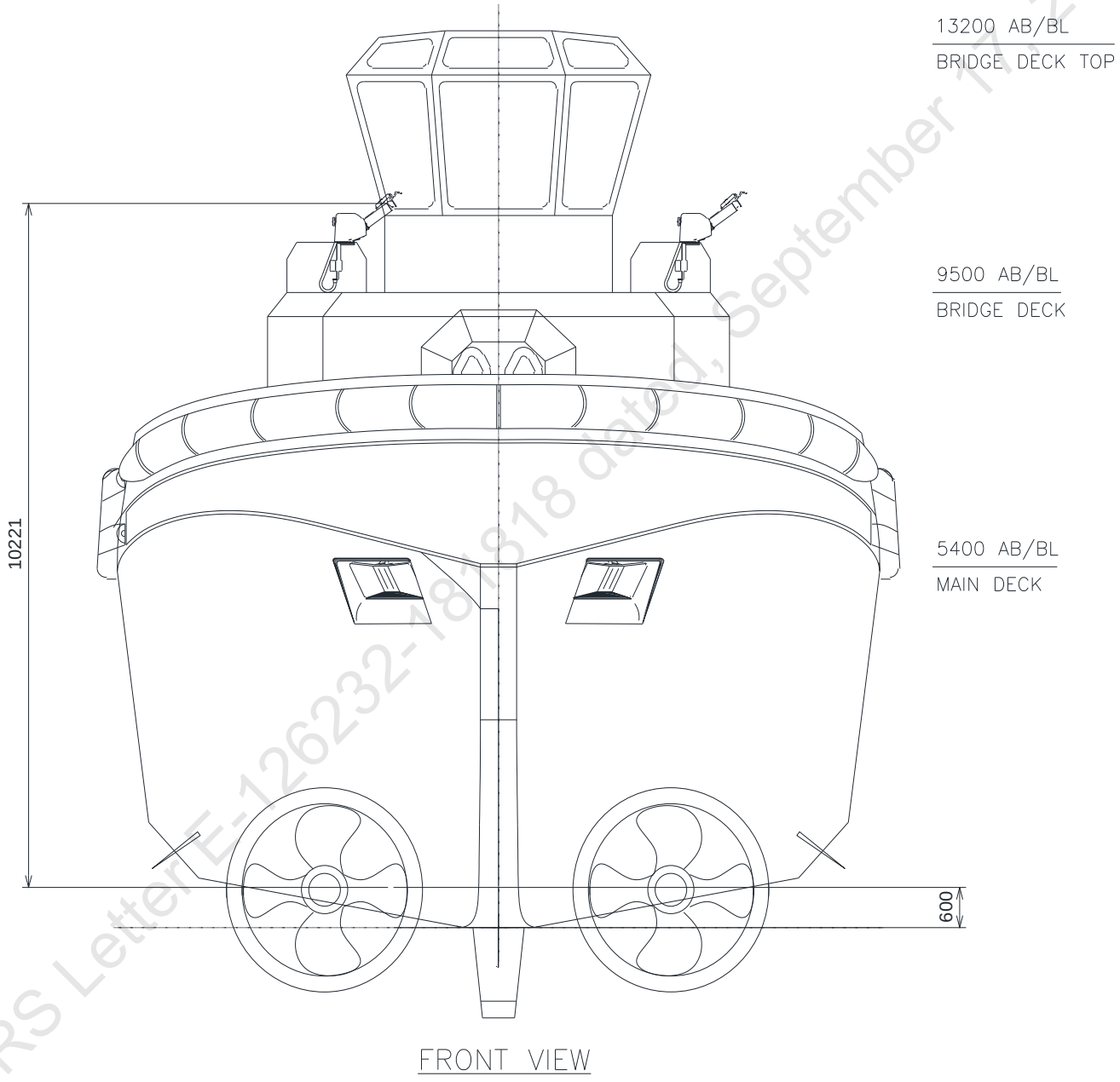
4. GENERAL ARRANGEMENT

Ref. drawing number CT3360-101-001 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"	13.37	1.7	6.3	Unprotected
ER – Out "PS/SB"	15.0	1.5	8.4	Unprotected

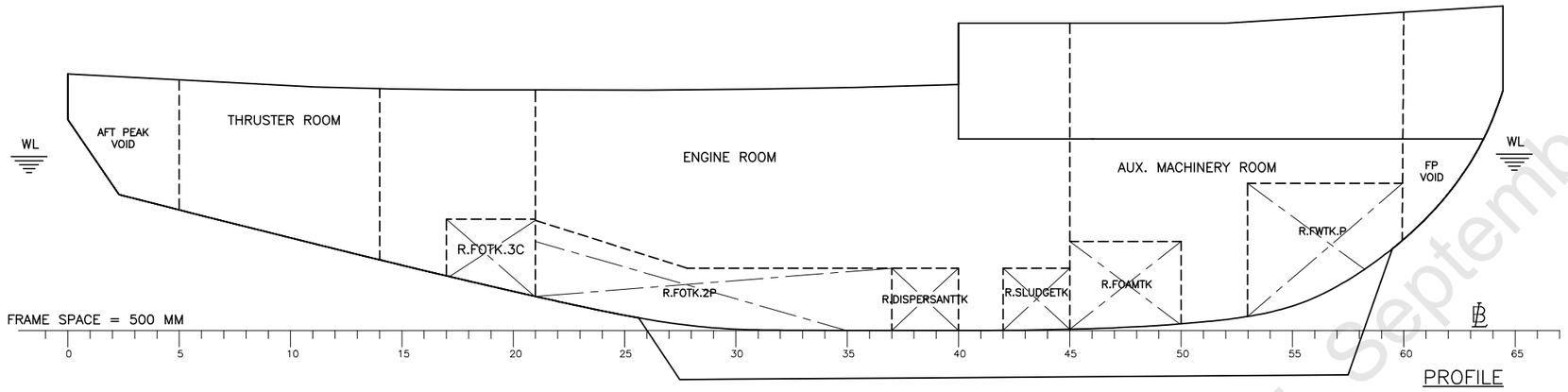
Note:

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.

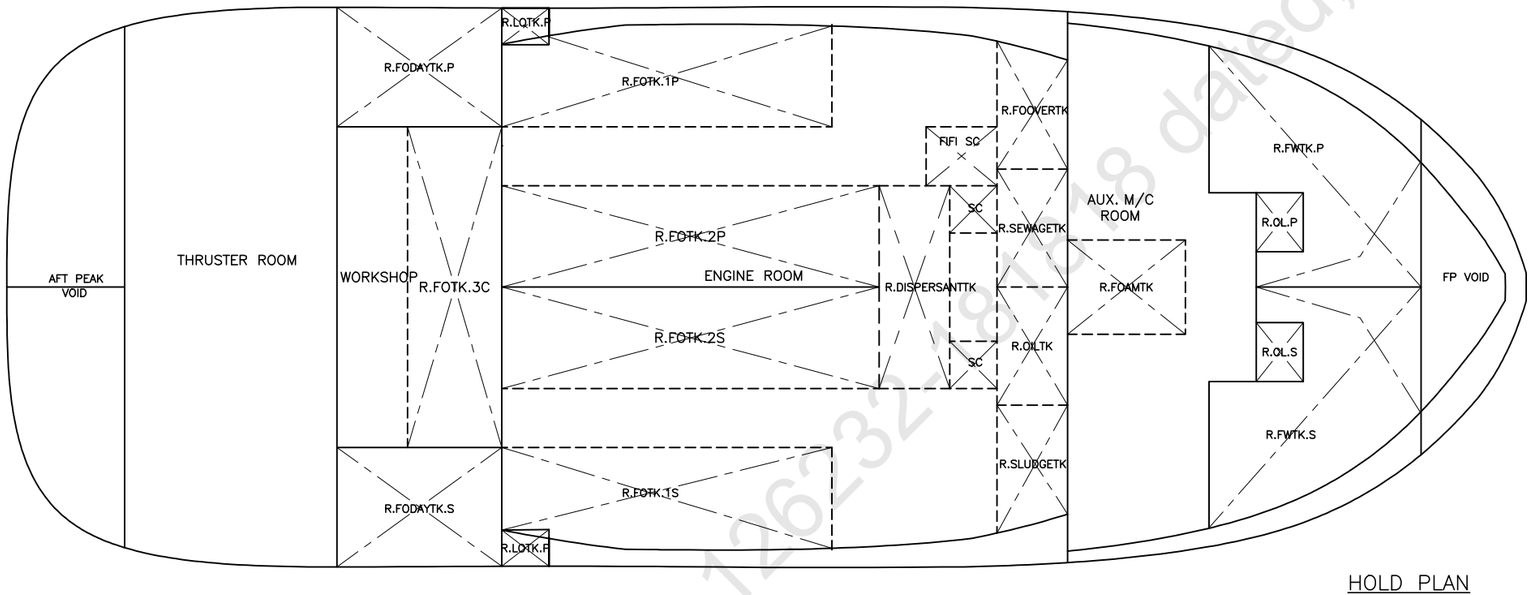
a. Shall be considered as unprotected openings in the stability calculation.
b. Suitable weathertight closing arrangements shall be provided for the ventilators.
c. Louvre shall have a coaming height of not less than 900 mm above main deck.
d. Suitable drain shall be provided in way of the ventilators.

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

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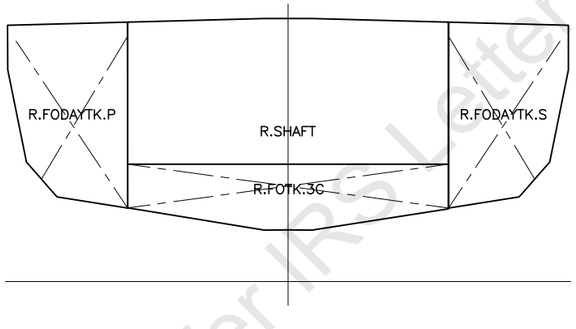

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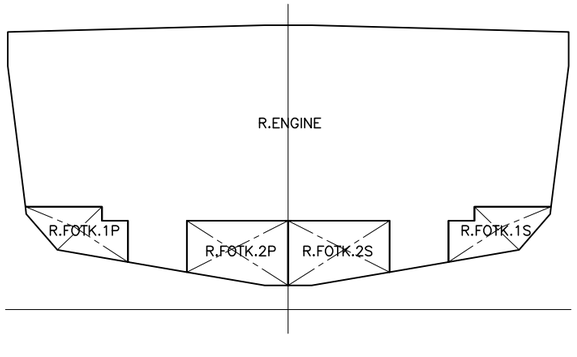


NAME	PURPOSE	DESCRIPITION	NET VOL. (m^3)	CGX (m)	CGY (m)	CGZ (m)	FSM (t-m)
DIESEL OIL TANKS							
R.FODAYTK.P	DO	Diesel Oil	29.1	8.8	4.5	3.7	4.1
R.FODAYTK.S	DO	Diesel Oil	29.1	8.8	-4.5	3.7	4.1
R.FOTK.1P	DO	Diesel Oil	12.4	14.0	4.4	1.4	3.5
R.FOTK.1S	DO	Diesel Oil	12.4	14.0	-4.4	1.4	3.5
R.FOTK.2P	DO	Diesel Oil	21.4	14.5	1.0	0.9	5.6
R.FOTK.2S	DO	Diesel Oil	21.4	14.5	-1.0	0.9	5.6
R.FOTK.3C	DO	Diesel Oil	17.6	9.6	0.0	1.8	44.2
		Total :	**143.6**	**m^3**			
FRESH WATER TANKS							
R.FWTK.P	FW	Fresh Water	16.8	27.6	1.7	2.4	19.2
R.FWTK.S	FW	Fresh Water	16.8	27.6	-1.7	2.4	19.2
		Total :	**33.67**	**m^3**			
MISC. TANKS							
R.LOTK.P	LO	Lubricating Oil	2.5	11.0	5.4	4.0	0.1
R.LOTK.S	LO	Lubricating Oil	2.5	11.0	-5.4	4.0	0.1
R.DISPERSANTTK	DISPERSANT	Oil Spill Dispersant	8.1	19.2	0.0	0.8	9.7
R.FOAMTK	FOAM	Fire fighting Foam	9.1	23.7	0.0	1.1	1.6
R.SLUDGETK	SLU	Sludge	2.3	21.7	-3.6	1.2	3.3
R.OILTK	SLU	Oily Water	4.4	21.7	-1.1	0.8	4.6
R.FOOVERTK	SLU	Fuel Oil Over Flow	2.3	21.7	3.6	1.2	3.3
R.SEWAGETK	GWT	Grey Water	4.3	21.7	1.1	0.8	1.9

MAIN PARTICULARS

LENGTH O.A	.....	abt 33.0 [m]
LENGTH B.P	.....	abt 31.0 [m]
BREADTH (MLD)	.....	abt 11.9 [m]
DEPTH (MLD)	.....	abt 5.4 [m]
DRAFT (HULL)	.....	abt 3.9 [m]
COMPLEMENT	.....	11 PERSONS
BOLLARD PULL	.....	60 T @100% MCR
INSTALLED POWER	.....	abt 3600 [kW]
CLASS NOTATION	.....	IRS –SWASTIKA SUL, TUG
		SWASTIKA IY, AGNI 1 (2400 m^3/hr)

Rev.	Date	Description	Drawn	Checked	Approved
I	15 Sep 2021	For Publishing on IPA Website	VKM	ABK	HUR

ASTDS

60T BP TUG

DESIGN NO : CT3360

TITLE

TANK PLAN

COCHIN SHIPYARD LIMITED
P.O. Bag 1653, COCHIN-682015, INDIA

Scale	Format	Project No.	Dwg. no.
1:120	A3	CT3360	CT3360-101-007

9 HYDROSTATIC DATA

MAIN CHARACTERISTICS OF THE VESSEL:

Length between perpendiculars	31.00	m
Breadth (moulded)	11.90	m
Design draught (moulded)	3.90	m
X-coordinate of aft perpendicular	0.57	m
X-coordinate of reference point (XREF)	16.07	m
X-coordinate of midship section (XMID)	16.52	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 18:29

Shell thickness used in the calculation	10.0	mm
X-coord. of aft end of DWL	0.57	m
X-coord. of fore end of DWL	31.57	m
Calc. sections	54	
Plate thickness	10.0	mm

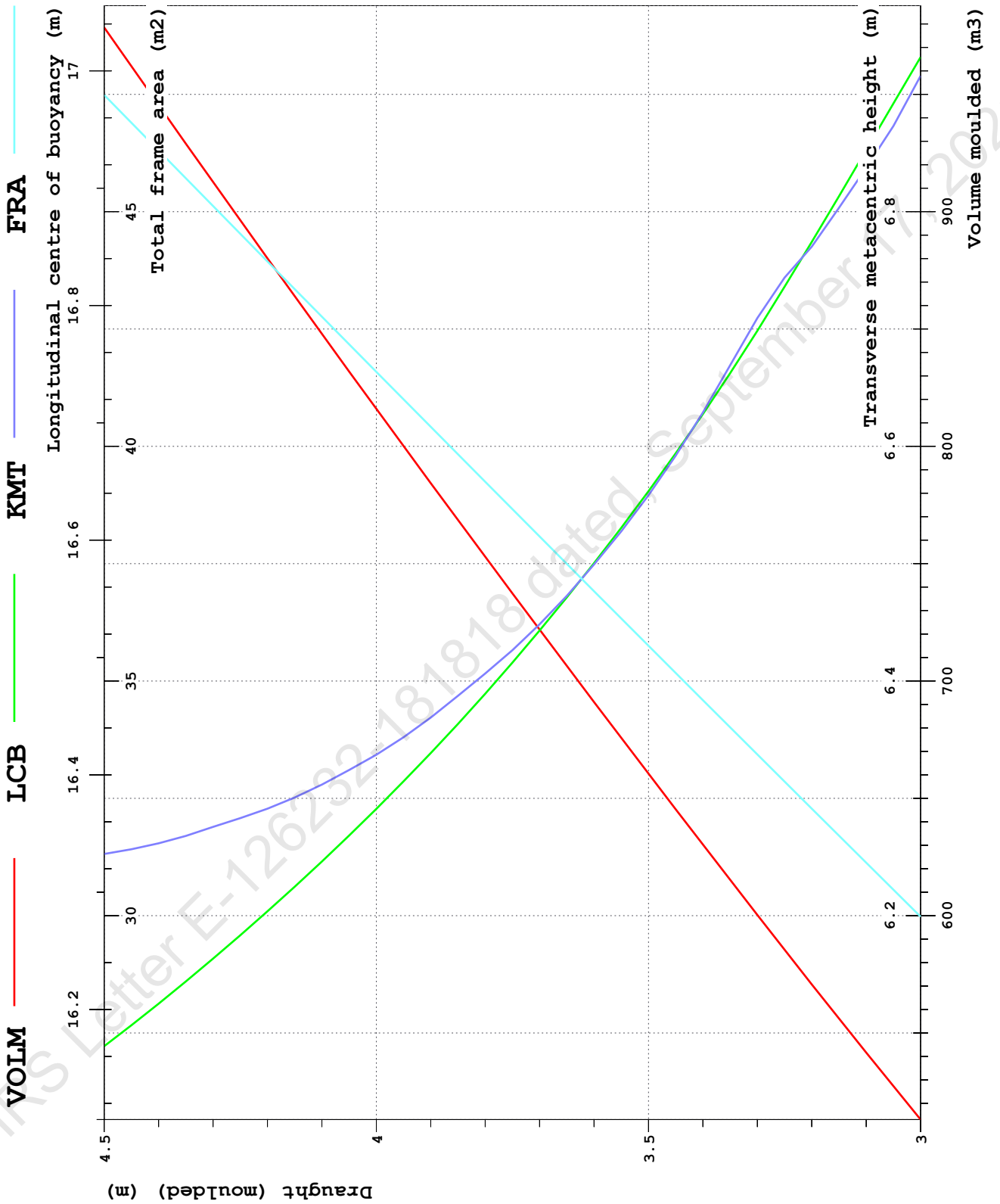
EXPLANATION OF SYMBOLS:

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	529.8	17.012	1.847	15.560	6.916	5.2	2.9
3.050	3.062	544.4	16.972	1.879	15.498	6.873	5.4	2.9
3.100	3.112	559.2	16.933	1.910	15.439	6.837	5.5	3.0
3.150	3.162	574.1	16.893	1.942	15.386	6.803	5.6	3.0
3.200	3.212	589.1	16.854	1.973	15.340	6.770	5.8	3.0
3.250	3.262	604.2	16.816	2.004	15.297	6.744	5.9	3.0
3.300	3.312	619.5	16.779	2.036	15.276	6.709	6.0	3.1
3.350	3.362	634.9	16.742	2.067	15.266	6.669	6.1	3.1
3.400	3.412	650.3	16.708	2.098	15.260	6.629	6.1	3.1
3.450	3.462	665.8	16.674	2.129	15.253	6.592	6.2	3.1
3.500	3.512	681.4	16.642	2.160	15.247	6.558	6.3	3.1
3.550	3.562	697.0	16.611	2.190	15.248	6.528	6.3	3.1
3.600	3.612	712.7	16.580	2.221	15.241	6.499	6.4	3.2
3.650	3.662	728.5	16.551	2.251	15.236	6.473	6.5	3.2
3.700	3.712	744.4	16.523	2.282	15.230	6.448	6.5	3.2
3.750	3.762	760.3	16.496	2.312	15.222	6.426	6.6	3.2
3.800	3.812	776.3	16.469	2.342	15.215	6.406	6.7	3.2
3.850	3.862	792.4	16.443	2.372	15.208	6.387	6.8	3.2
3.900	3.912	808.6	16.419	2.402	15.201	6.369	6.8	3.2
3.950	3.962	824.8	16.394	2.432	15.193	6.352	6.9	3.3
4.000	4.012	841.1	16.371	2.462	15.185	6.337	7.0	3.3
4.050	4.062	857.5	16.348	2.492	15.177	6.324	7.0	3.3
4.100	4.112	873.9	16.326	2.522	15.170	6.312	7.1	3.3
4.150	4.162	890.4	16.305	2.551	15.163	6.301	7.2	3.3
4.200	4.212	907.0	16.284	2.581	15.155	6.291	7.2	3.3
4.250	4.262	923.7	16.263	2.611	15.147	6.283	7.3	3.3
4.300	4.312	940.4	16.243	2.640	15.141	6.276	7.4	3.4
4.350	4.362	957.2	16.224	2.670	15.137	6.268	7.4	3.4
4.400	4.412	974.1	16.205	2.700	15.133	6.262	7.5	3.4
4.450	4.462	991.1	16.187	2.729	15.127	6.257	7.6	3.4
4.500	4.512	1008.1	16.169	2.758	15.119	6.253	7.7	3.4



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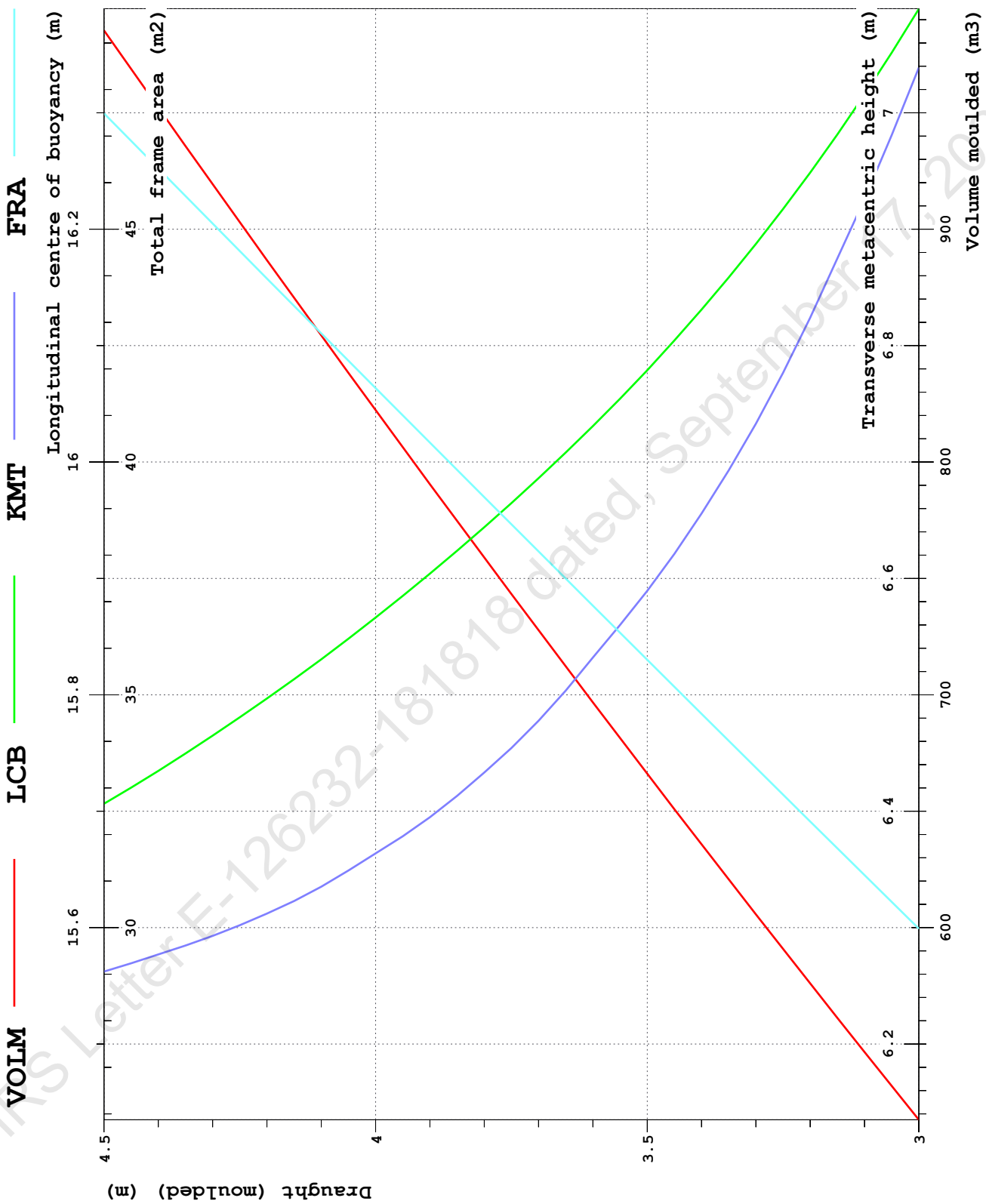
T m	TK m	DISP t	LCB m	VCB m	LCF m	KMT m	MCT tm/cm	TPC t/cm
3.000	3.012	534.4	16.389	1.863	15.000	7.039	5.6	3.0
3.050	3.062	549.3	16.352	1.895	14.994	6.981	5.6	3.0
3.100	3.112	564.3	16.316	1.927	14.997	6.926	5.7	3.0
3.150	3.162	579.4	16.281	1.958	14.996	6.875	5.8	3.0
3.200	3.212	594.5	16.249	1.990	14.995	6.824	5.9	3.0
3.250	3.262	609.7	16.217	2.021	14.992	6.777	5.9	3.1
3.300	3.312	625.0	16.187	2.053	14.990	6.733	6.0	3.1
3.350	3.362	640.4	16.159	2.084	14.987	6.693	6.1	3.1
3.400	3.412	655.9	16.131	2.115	14.984	6.656	6.2	3.1
3.450	3.462	671.5	16.104	2.145	14.982	6.621	6.2	3.1
3.500	3.512	687.1	16.079	2.176	14.979	6.589	6.3	3.1
3.550	3.562	702.8	16.054	2.207	14.975	6.560	6.4	3.1
3.600	3.612	718.6	16.031	2.237	14.966	6.532	6.5	3.2
3.650	3.662	734.5	16.008	2.268	14.959	6.504	6.5	3.2
3.700	3.712	750.4	15.986	2.298	14.952	6.478	6.6	3.2
3.750	3.762	766.4	15.965	2.328	14.946	6.454	6.7	3.2
3.800	3.812	782.5	15.944	2.359	14.940	6.433	6.7	3.2
3.850	3.862	798.7	15.924	2.389	14.942	6.413	6.8	3.2
3.900	3.912	814.9	15.904	2.419	14.936	6.395	6.9	3.3
3.950	3.962	831.2	15.885	2.449	14.931	6.378	7.0	3.3
4.000	4.012	847.6	15.866	2.479	14.925	6.364	7.0	3.3
4.050	4.062	864.0	15.848	2.508	14.921	6.349	7.1	3.3
4.100	4.112	880.5	15.831	2.538	14.917	6.335	7.2	3.3
4.150	4.162	897.1	15.813	2.568	14.912	6.323	7.2	3.3
4.200	4.212	913.8	15.797	2.598	14.905	6.312	7.3	3.3
4.250	4.262	930.5	15.781	2.627	14.897	6.302	7.4	3.4
4.300	4.312	947.3	15.765	2.657	14.892	6.293	7.5	3.4
4.350	4.362	964.1	15.750	2.687	14.889	6.285	7.5	3.4
4.400	4.412	981.1	15.735	2.716	14.886	6.277	7.6	3.4
4.450	4.462	998.1	15.720	2.746	14.892	6.269	7.6	3.4
4.500	4.512	1015.1	15.706	2.775	14.902	6.262	7.7	3.4



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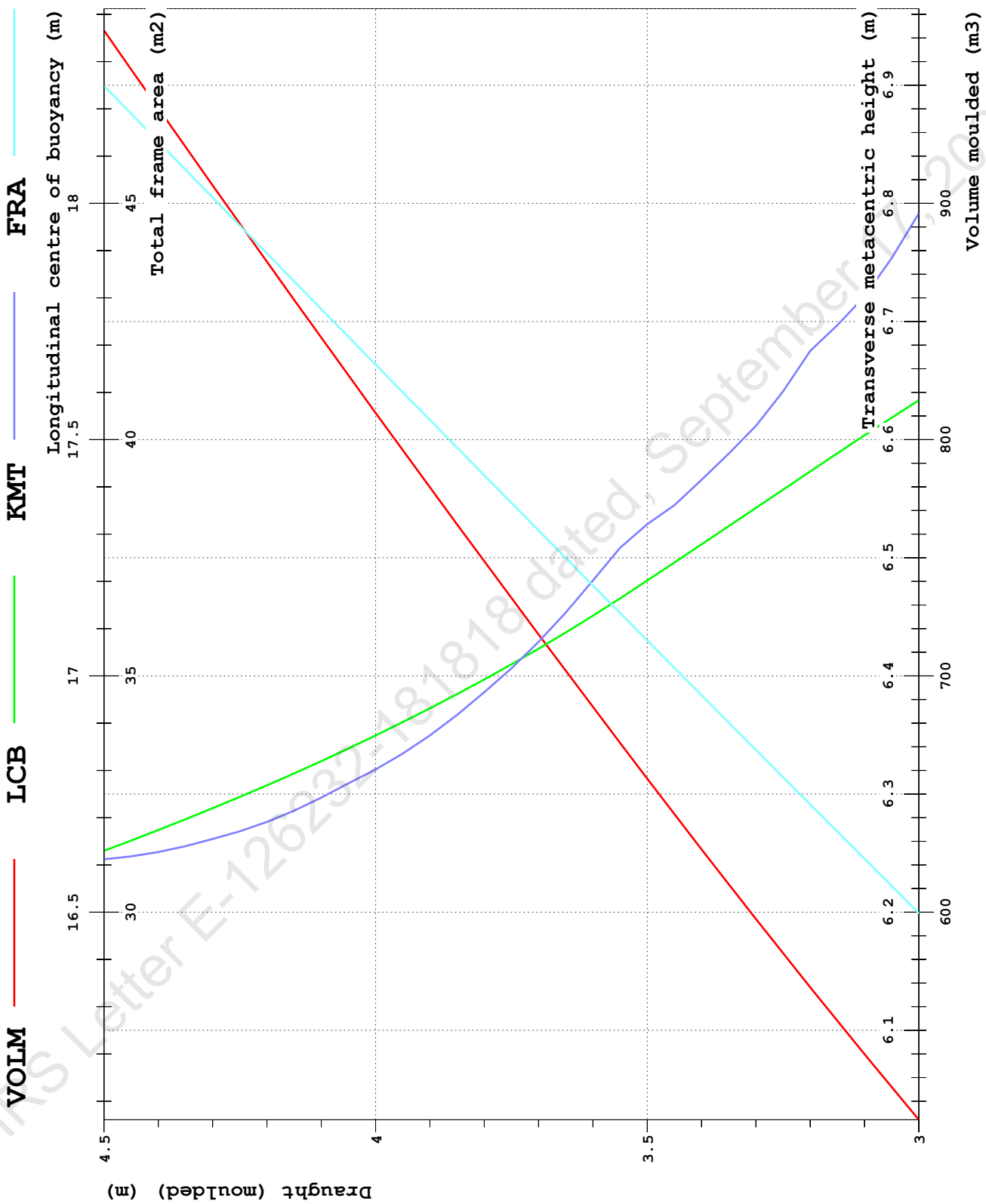
T m	TK m	DISP t	LCB m	VCB m	LCF m	KMT m	MCT tm/cm	TPC t/cm
3.000	3.012	528.8	17.583	1.850	16.168	6.792	4.8	2.8
3.050	3.062	543.0	17.546	1.881	16.106	6.754	5.0	2.9
3.100	3.112	557.3	17.509	1.912	16.035	6.721	5.1	2.9
3.150	3.162	571.8	17.471	1.942	15.959	6.697	5.2	2.9
3.200	3.212	586.5	17.433	1.973	15.885	6.675	5.4	2.9
3.250	3.262	601.3	17.394	2.004	15.831	6.641	5.5	3.0
3.300	3.312	616.2	17.356	2.034	15.767	6.612	5.7	3.0
3.350	3.362	631.3	17.317	2.065	15.706	6.588	5.8	3.0
3.400	3.412	646.5	17.278	2.096	15.650	6.566	5.9	3.1
3.450	3.462	661.8	17.240	2.126	15.600	6.544	6.1	3.1
3.500	3.512	677.2	17.202	2.157	15.551	6.528	6.2	3.1
3.550	3.562	692.8	17.164	2.187	15.517	6.508	6.3	3.1
3.600	3.612	708.4	17.127	2.218	15.503	6.481	6.4	3.1
3.650	3.662	724.2	17.092	2.248	15.496	6.454	6.4	3.2
3.700	3.712	740.0	17.058	2.278	15.488	6.429	6.5	3.2
3.750	3.762	755.8	17.024	2.308	15.480	6.406	6.6	3.2
3.800	3.812	771.8	16.992	2.338	15.472	6.386	6.6	3.2
3.850	3.862	787.8	16.961	2.368	15.464	6.367	6.7	3.2
3.900	3.912	803.9	16.931	2.398	15.456	6.350	6.8	3.2
3.950	3.962	820.1	16.902	2.428	15.448	6.334	6.8	3.2
4.000	4.012	836.3	16.874	2.458	15.439	6.321	6.9	3.3
4.050	4.062	852.6	16.846	2.488	15.431	6.309	7.0	3.3
4.100	4.112	869.0	16.820	2.517	15.425	6.297	7.0	3.3
4.150	4.162	885.5	16.794	2.547	15.418	6.286	7.1	3.3
4.200	4.212	902.0	16.768	2.577	15.410	6.276	7.2	3.3
4.250	4.262	918.6	16.744	2.606	15.401	6.268	7.2	3.3
4.300	4.312	935.2	16.720	2.636	15.393	6.262	7.3	3.3
4.350	4.362	952.0	16.697	2.665	15.387	6.256	7.4	3.4
4.400	4.412	968.8	16.674	2.695	15.380	6.251	7.4	3.4
4.450	4.462	985.7	16.652	2.724	15.373	6.247	7.5	3.4
4.500	4.512	1002.6	16.630	2.753	15.365	6.245	7.6	3.4

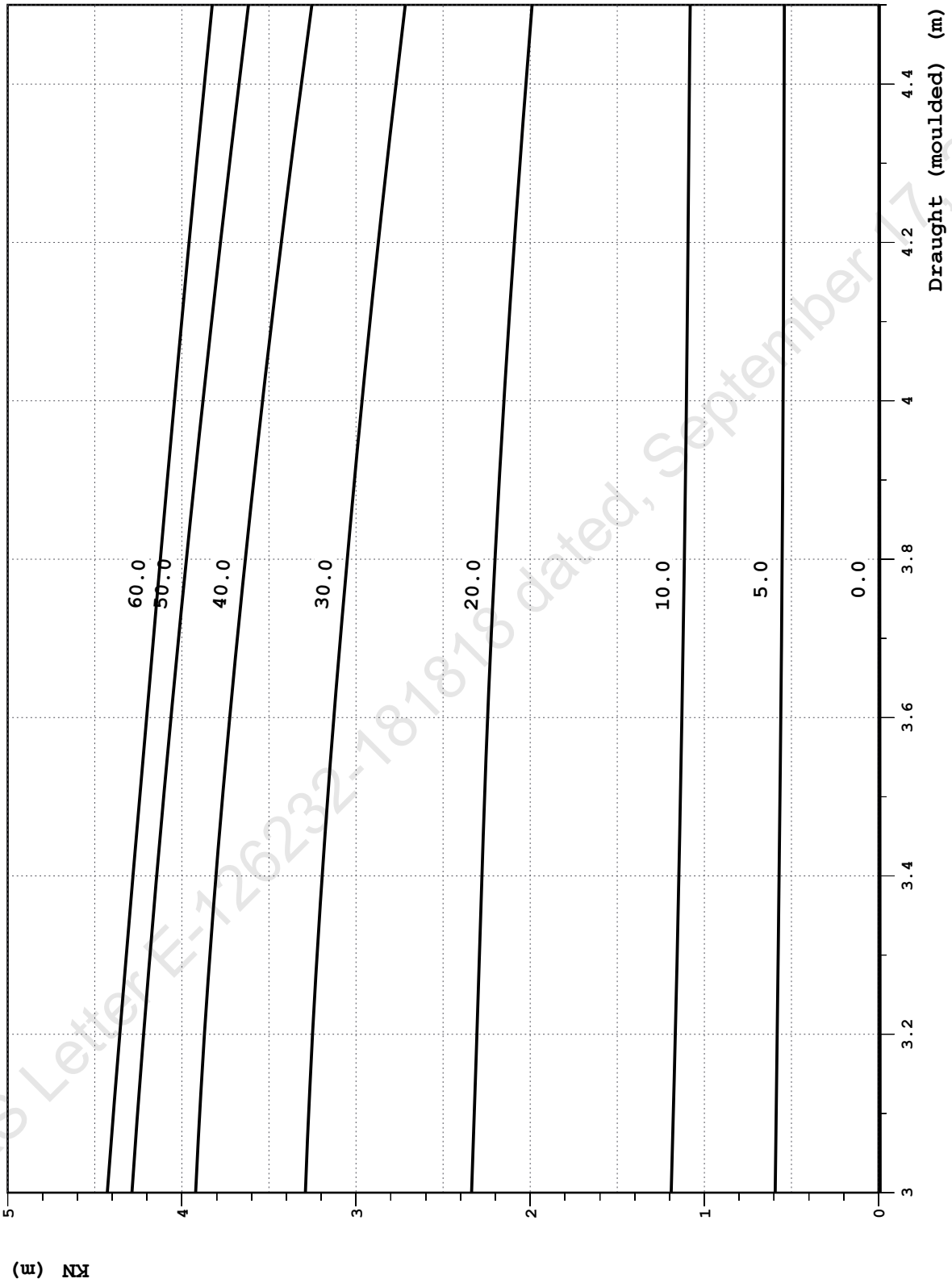


10 CROSS CURVES

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	-0.009	0.593	1.190	2.337	3.291	3.921	4.286	4.428
3.050	-0.009	0.590	1.184	2.329	3.282	3.910	4.271	4.411
3.100	-0.009	0.587	1.178	2.321	3.272	3.898	4.254	4.393
3.150	-0.008	0.584	1.172	2.313	3.261	3.885	4.237	4.375
3.200	-0.008	0.582	1.167	2.306	3.250	3.870	4.220	4.357
3.250	-0.008	0.579	1.161	2.298	3.237	3.855	4.202	4.338
3.300	-0.008	0.576	1.156	2.291	3.224	3.839	4.183	4.319
3.350	-0.008	0.573	1.151	2.284	3.210	3.822	4.164	4.300
3.400	-0.007	0.571	1.146	2.277	3.195	3.804	4.144	4.281
3.450	-0.007	0.568	1.142	2.270	3.179	3.786	4.125	4.261
3.500	-0.007	0.566	1.137	2.262	3.162	3.766	4.104	4.242
3.550	-0.007	0.563	1.133	2.253	3.145	3.746	4.084	4.222
3.600	-0.007	0.561	1.129	2.244	3.127	3.725	4.063	4.202
3.650	-0.007	0.559	1.125	2.235	3.109	3.704	4.041	4.183
3.700	-0.007	0.557	1.122	2.224	3.090	3.682	4.019	4.163
3.750	-0.006	0.555	1.118	2.214	3.070	3.659	3.997	4.143
3.800	-0.006	0.553	1.115	2.202	3.050	3.636	3.974	4.123
3.850	-0.006	0.552	1.112	2.190	3.030	3.612	3.951	4.103
3.900	-0.006	0.550	1.109	2.177	3.009	3.587	3.927	4.083
3.950	-0.006	0.549	1.106	2.164	2.988	3.562	3.903	4.063
4.000	-0.006	0.548	1.103	2.151	2.966	3.537	3.879	4.043
4.050	-0.006	0.547	1.100	2.136	2.943	3.511	3.854	4.022
4.100	-0.006	0.546	1.098	2.122	2.920	3.484	3.829	4.001
4.150	-0.005	0.545	1.096	2.107	2.896	3.457	3.804	3.980
4.200	-0.005	0.544	1.094	2.091	2.872	3.429	3.778	3.959
4.250	-0.005	0.543	1.092	2.075	2.848	3.401	3.752	3.937
4.300	-0.005	0.543	1.090	2.059	2.823	3.373	3.726	3.915
4.350	-0.005	0.542	1.088	2.042	2.797	3.344	3.699	3.893
4.400	-0.005	0.542	1.086	2.025	2.771	3.314	3.672	3.871
4.450	-0.005	0.541	1.084	2.007	2.744	3.284	3.645	3.848
4.500	-0.005	0.541	1.081	1.989	2.717	3.254	3.618	3.826

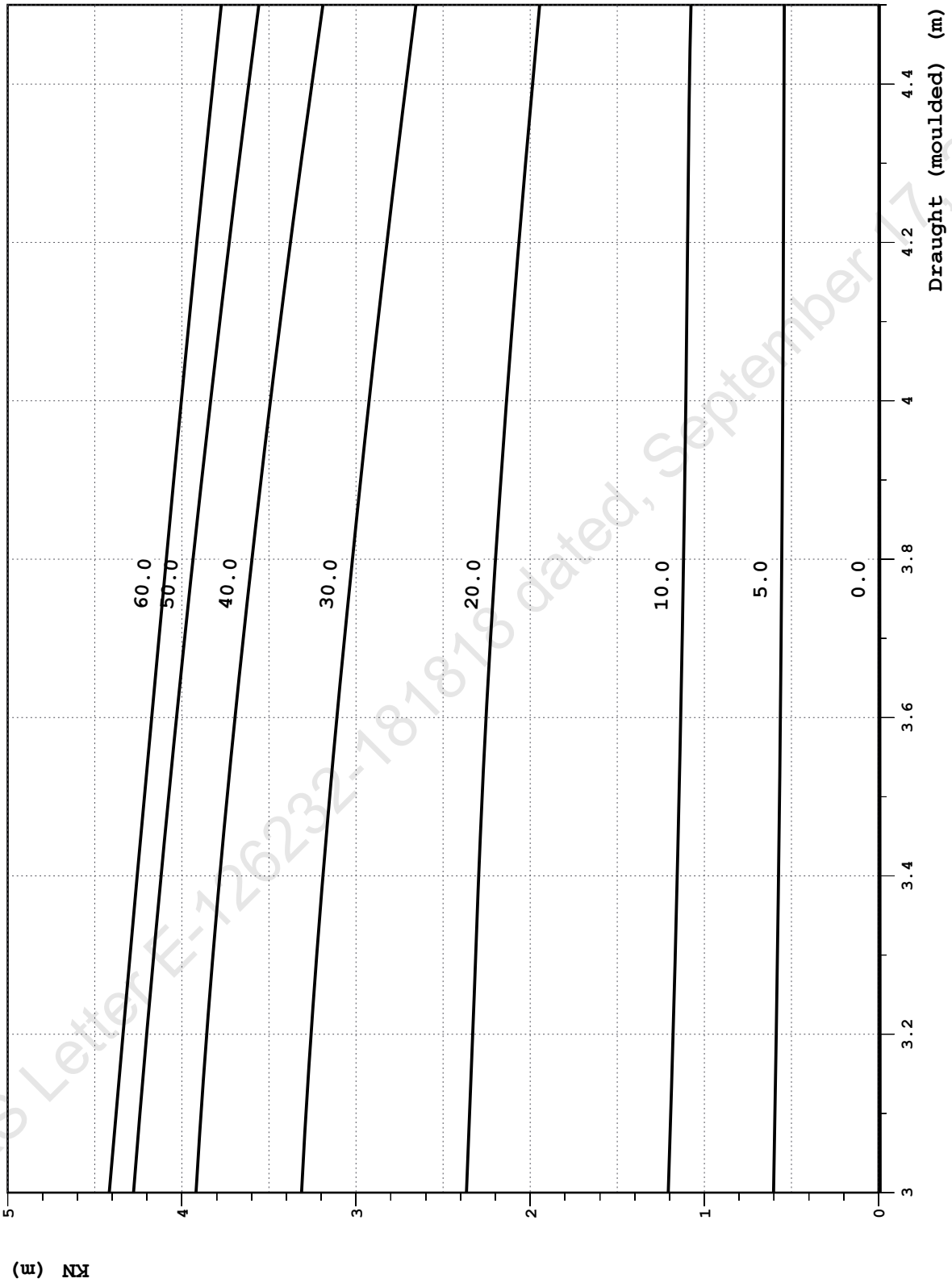
Trim: 0 m



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	-0.009	0.603	1.207	2.366	3.313	3.919	4.278	4.417
3.050	-0.009	0.599	1.200	2.357	3.301	3.905	4.259	4.397
3.100	-0.009	0.595	1.193	2.348	3.287	3.890	4.241	4.378
3.150	-0.008	0.591	1.186	2.339	3.273	3.874	4.222	4.358
3.200	-0.008	0.587	1.180	2.330	3.258	3.857	4.202	4.338
3.250	-0.008	0.584	1.173	2.321	3.242	3.840	4.182	4.318
3.300	-0.008	0.580	1.167	2.313	3.226	3.821	4.161	4.297
3.350	-0.008	0.577	1.161	2.304	3.208	3.802	4.141	4.277
3.400	-0.007	0.574	1.156	2.296	3.190	3.782	4.119	4.257
3.450	-0.007	0.571	1.150	2.286	3.171	3.761	4.098	4.236
3.500	-0.007	0.568	1.145	2.276	3.151	3.740	4.076	4.215
3.550	-0.007	0.566	1.140	2.265	3.131	3.718	4.053	4.194
3.600	-0.007	0.563	1.136	2.253	3.110	3.695	4.031	4.174
3.650	-0.007	0.561	1.131	2.241	3.088	3.672	4.008	4.153
3.700	-0.006	0.559	1.127	2.228	3.066	3.648	3.984	4.132
3.750	-0.006	0.557	1.123	2.214	3.044	3.623	3.960	4.111
3.800	-0.006	0.556	1.119	2.199	3.021	3.598	3.936	4.089
3.850	-0.006	0.554	1.116	2.184	2.997	3.572	3.911	4.068
3.900	-0.006	0.552	1.112	2.169	2.974	3.546	3.886	4.047
3.950	-0.006	0.551	1.109	2.153	2.950	3.519	3.861	4.025
4.000	-0.006	0.550	1.106	2.136	2.925	3.491	3.835	4.003
4.050	-0.006	0.549	1.103	2.119	2.900	3.464	3.809	3.981
4.100	-0.006	0.548	1.101	2.101	2.875	3.435	3.782	3.959
4.150	-0.005	0.547	1.098	2.083	2.849	3.406	3.756	3.937
4.200	-0.005	0.546	1.096	2.065	2.822	3.377	3.728	3.914
4.250	-0.005	0.545	1.093	2.046	2.796	3.347	3.701	3.891
4.300	-0.005	0.544	1.091	2.027	2.769	3.316	3.673	3.868
4.350	-0.005	0.543	1.089	2.007	2.741	3.285	3.645	3.845
4.400	-0.005	0.543	1.086	1.987	2.713	3.254	3.616	3.821
4.450	-0.005	0.542	1.082	1.966	2.685	3.222	3.587	3.797
4.500	-0.005	0.541	1.077	1.946	2.656	3.190	3.558	3.773

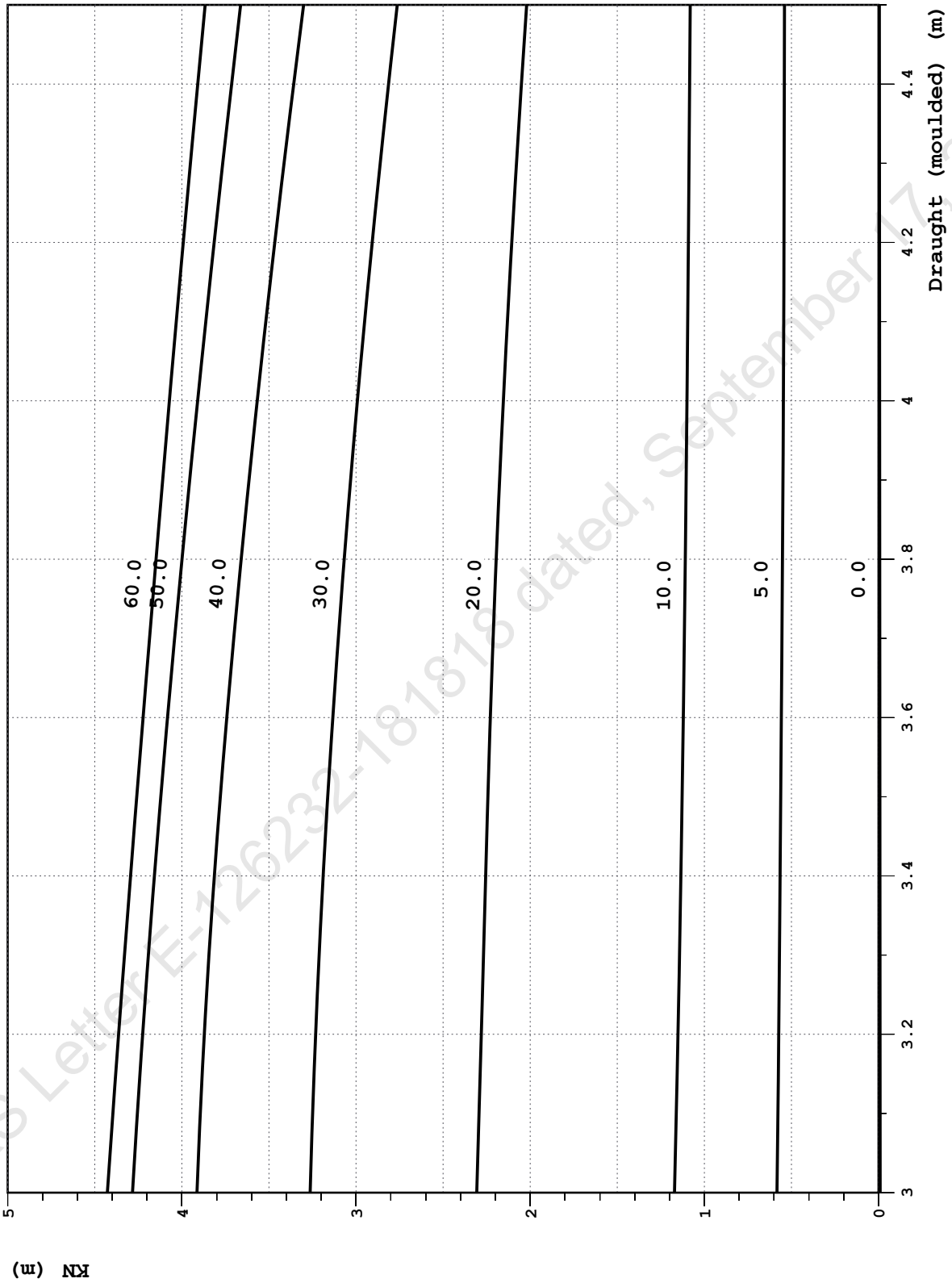
Trim: -0.6 m



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	-0.009	0.583	1.171	2.307	3.264	3.913	4.283	4.428
3.050	-0.009	0.580	1.166	2.300	3.257	3.904	4.270	4.412
3.100	-0.009	0.578	1.161	2.293	3.249	3.894	4.255	4.396
3.150	-0.008	0.575	1.156	2.287	3.241	3.883	4.241	4.380
3.200	-0.008	0.573	1.151	2.280	3.232	3.871	4.225	4.363
3.250	-0.008	0.571	1.147	2.274	3.223	3.858	4.209	4.347
3.300	-0.008	0.569	1.143	2.268	3.212	3.844	4.193	4.330
3.350	-0.008	0.567	1.138	2.262	3.201	3.830	4.176	4.312
3.400	-0.008	0.565	1.135	2.256	3.189	3.814	4.158	4.295
3.450	-0.007	0.563	1.131	2.250	3.176	3.797	4.140	4.277
3.500	-0.007	0.561	1.127	2.243	3.163	3.780	4.121	4.259
3.550	-0.007	0.560	1.124	2.236	3.148	3.761	4.102	4.241
3.600	-0.007	0.558	1.121	2.229	3.133	3.742	4.082	4.223
3.650	-0.007	0.556	1.118	2.221	3.118	3.722	4.062	4.204
3.700	-0.007	0.555	1.115	2.213	3.102	3.702	4.042	4.186
3.750	-0.006	0.553	1.112	2.204	3.085	3.681	4.021	4.167
3.800	-0.006	0.551	1.109	2.195	3.068	3.660	3.999	4.148
3.850	-0.006	0.550	1.107	2.186	3.050	3.637	3.977	4.129
3.900	-0.006	0.549	1.104	2.176	3.032	3.615	3.955	4.110
3.950	-0.006	0.547	1.102	2.165	3.012	3.591	3.933	4.091
4.000	-0.006	0.546	1.100	2.154	2.992	3.568	3.910	4.072
4.050	-0.006	0.545	1.097	2.143	2.972	3.543	3.886	4.052
4.100	-0.006	0.544	1.095	2.131	2.951	3.518	3.863	4.032
4.150	-0.005	0.543	1.093	2.119	2.929	3.493	3.839	4.012
4.200	-0.005	0.543	1.091	2.106	2.907	3.467	3.815	3.992
4.250	-0.005	0.542	1.090	2.093	2.885	3.440	3.790	3.972
4.300	-0.005	0.542	1.088	2.079	2.861	3.413	3.765	3.951
4.350	-0.005	0.541	1.087	2.065	2.838	3.386	3.740	3.930
4.400	-0.005	0.541	1.085	2.051	2.813	3.358	3.715	3.909
4.450	-0.005	0.540	1.083	2.036	2.789	3.330	3.689	3.888
4.500	-0.005	0.540	1.081	2.020	2.763	3.301	3.663	3.866

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	3.370	-0.163	0.5	1.834	642.3	4.645
DRY DOCKING - Not sailing condition	3.515	0.295	0.2	1.933	683.9	4.437
LC01 - DEPARTURE (100% CONSUMABLES)	3.930	-0.016	0.4	2.098	818.5	4.120
LC02 - ARRIVAL (10% CONSUMABLES)	3.509	0.097	0.2	1.928	683.3	4.452
LC03 - LC01+CRANE LOAD(3T load)	3.939	-0.045	0.4	2.076	821.5	4.141
LC04 - LC02+CRANE LOAD(3T load)	3.517	0.065	0.2	1.900	686.3	4.476

LIGHTSHIP - Not sailing condition

Floating Position - Intact condition

Draught at AP (moulded)	3.451 m
Draught at FP (moulded)	3.288 m
Mean Draught (moulded)	3.369 m
Trim (+ by Bow)	-0.163 m
Heel (+ PS)	0.5 deg
KM above moulded BL	6.659 m
KG above moulded BL	4.645 m
GM0 (solid)	2.014 m
Free Surface Correction	0.180 m
GM (liquid)	1.834 m
Density of Water	1.025 t/m3

LCB	:	16.571 m Fwd of AP
LCF	:	15.194 m Fwd of AP
MCT	:	6.088 tm/cm
TPC	:	3.084 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		642.3	16.584	0.008	4.645
Deadweight		0.0	0.000	0.000	0.000
Total weight		642.3	16.584	0.008	4.645

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.P	DO	0.0	0.0	0.0	8.814	4.541	3.732	4.08
R.FODAYTK.S	DO	0.0	0.0	0.0	8.814	-4.541	3.732	4.08
R.FOTK.1P	DO	0.0	0.0	0.0	13.965	4.376	1.368	0.00
R.FOTK.2P	DO	0.0	0.0	0.0	14.508	1.032	0.926	0.00
R.FOTK.2S	DO	0.0	0.0	0.0	14.508	-1.032	0.926	0.00
R.FOTK.1S	DO	0.0	0.0	0.0	13.965	-4.376	1.368	0.00
R.FOTK.3C	DO	0.0	0.0	0.0	9.558	0.000	1.826	44.17
TOTAL			0.0	0.0				52.32

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	27.555	1.652	2.434	19.25
R.FWTK.S	FW	0.0	0.0	0.0	27.555	-1.652	2.434	19.25
TOTAL			0.0	0.0				38.49

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	11.005	5.416	4.010	0.06
R.LOTK.S	LO	0.0	0.0	0.0	11.005	-5.416	4.010	0.06
TOTAL			0.0	0.0				0.13

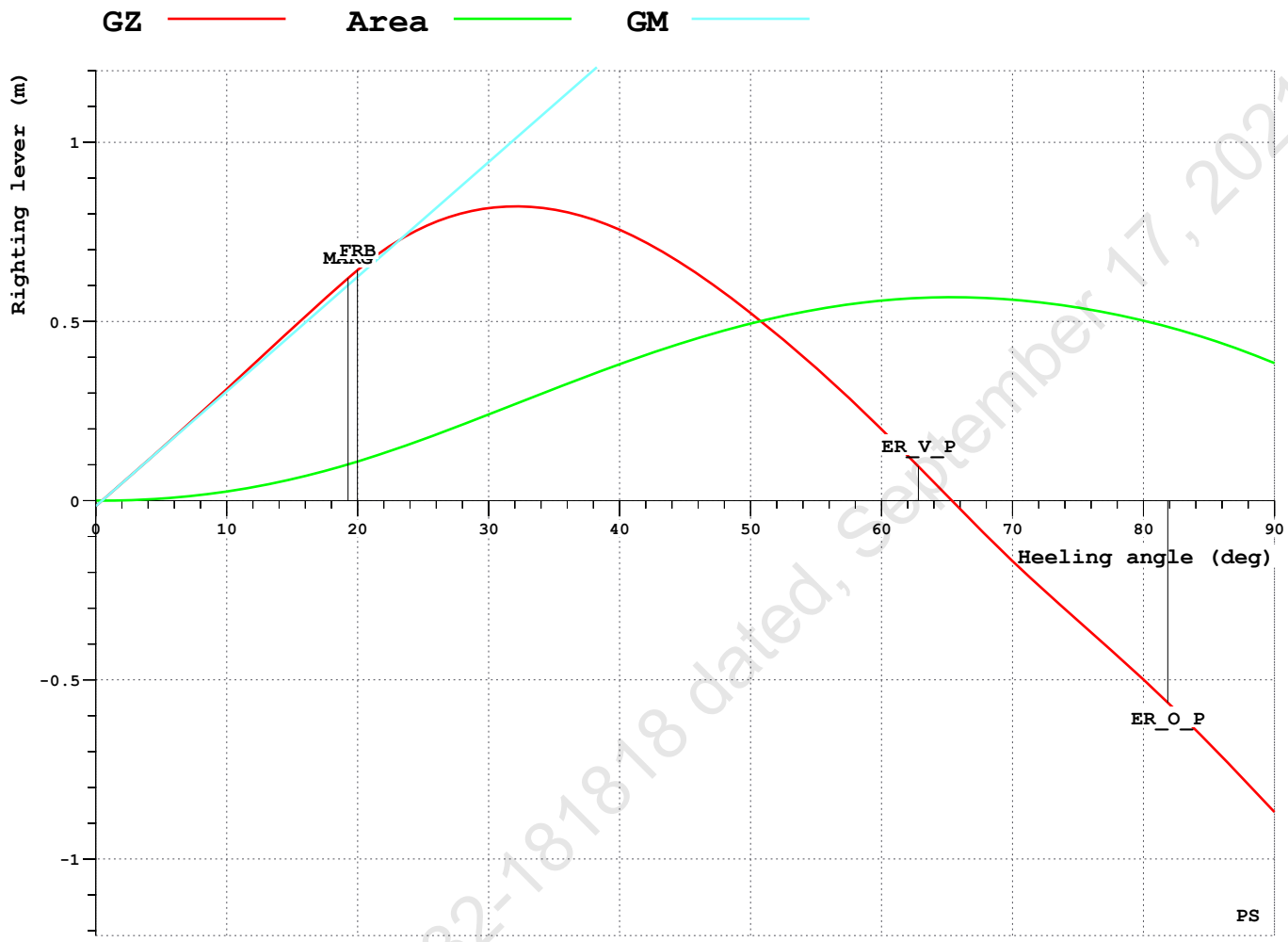
FOAM (Density 1.0 t/m3)

NAME	PURP	FILL %	MASS t	VOL m3	LCG m	TCG m	VCG m	FRSM tm
R.FOAMTK	FOAM	0.0	0.0	0.0	23.732	0.000	1.070	1.63
TOTAL			0.0	0.0				1.63

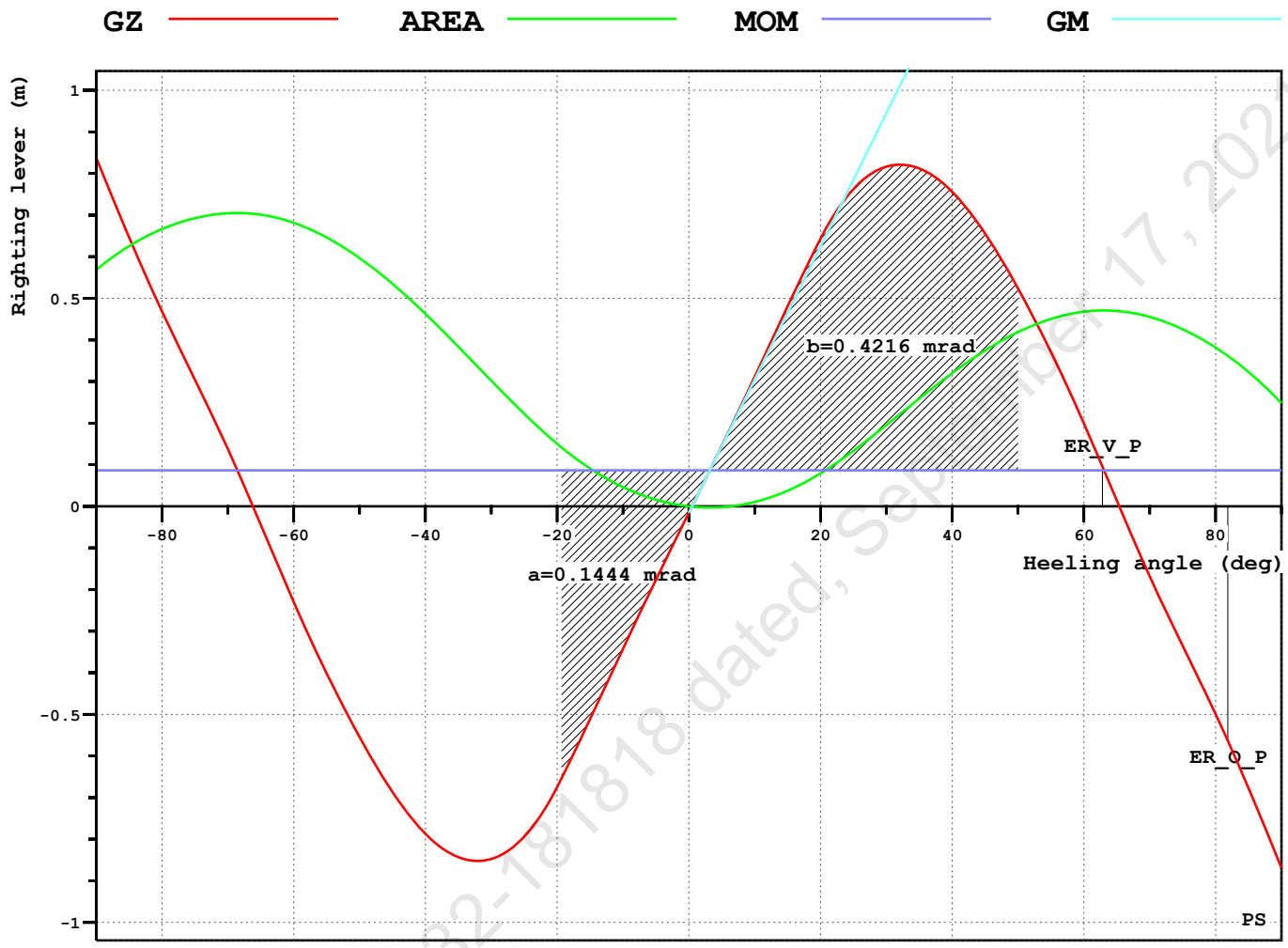
DISPERSANT (Density 1.0 t/m3)

NAME	PURP	FILL %	MASS t	VOL m3	LCG m	TCG m	VCG m	FRSM tm
R.DISPERSANTTK	DISPERSANT	0.0	0.0	0.0	19.248	0.000	0.755	9.74
TOTAL			0.0	0.0				9.74

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	0.240	mrad	OK
AREA40	Area under GZ curve up to 40 deg.	0.090	0.381	mrad	OK
AREA3040	Area under GZ curve btw. 30-40 deg.	0.030	0.140	mrad	OK
GZ0.2	Max GZ > 0.2	0.200	0.821	m	OK
MAXGZ25	Max. GZ at an angle > 25 deg.	25.000	32.078	deg	OK
GM0.15	GM > 0.15 m	0.150	1.834	m	OK
V.IMOWEATHER	IMO weather criterion	1.000	2.920		OK
IMO.WIND_HEEL	Wind Heel <16 or <=80% of dk imm.	15.986	2.290	deg	OK
2020IS-B2.9.7.1.2	Eq. angle less than 10 deg. or dk. imm.	19.982	2.674	deg	OK
2020IS-B2.9.7.1.1	Resid. righting area > 0.08 mrad	0.080	0.235	mrad	OK

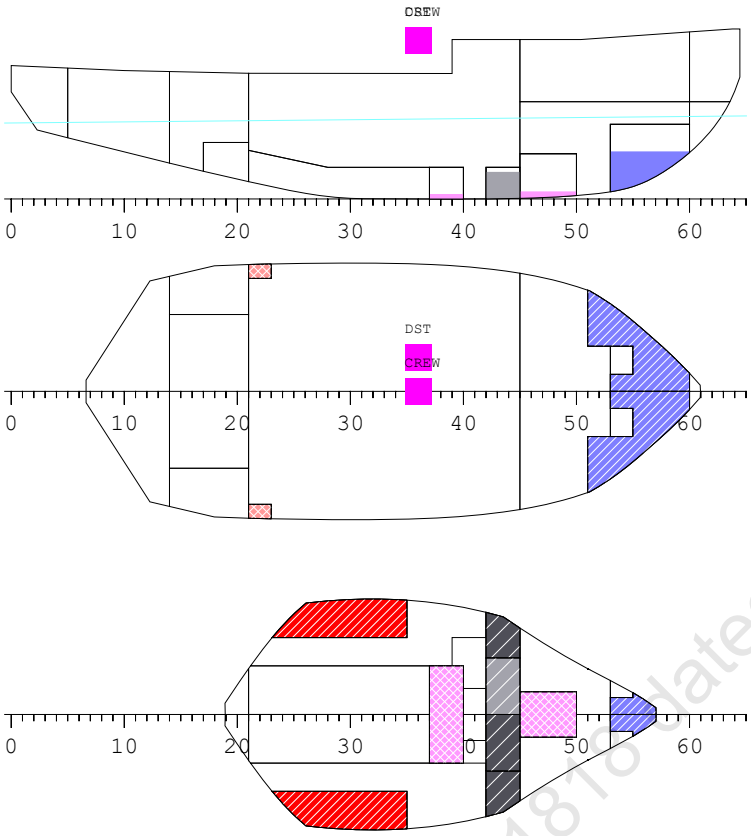
GZ CURVE DATA

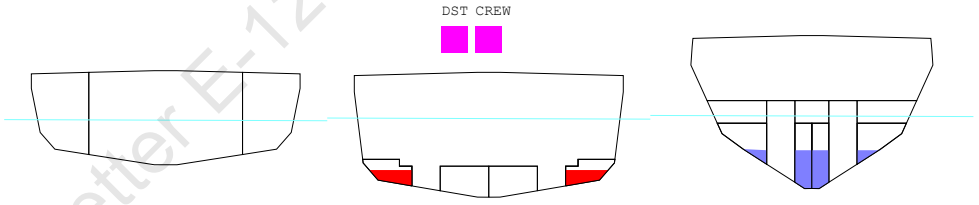
HEEL deg	T m	TR m	GZ m	AREA mrad
0.0	3.370	-0.163	-0.016	0.000
0.5	3.370	-0.163	0.000	0.000
10.0	3.291	-0.108	0.311	0.025
20.0	3.043	0.083	0.644	0.109
30.0	2.653	0.258	0.816	0.240
40.0	2.157	0.210	0.756	0.381
50.0	1.595	0.074	0.524	0.494
60.0	0.997	-0.078	0.199	0.558
70.0	0.380	-0.216	-0.169	0.561
80.0	-0.200	-0.259	-0.499	0.502
90.0	-0.807	-0.410	-0.869	0.384

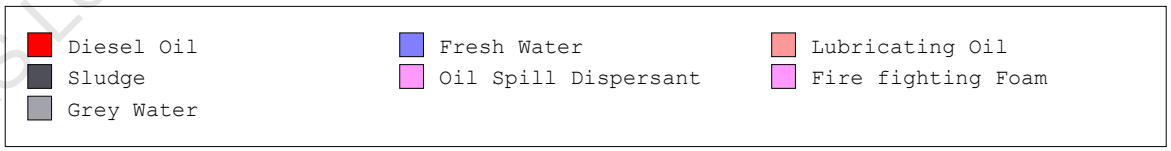
RELEVANT OPENINGS

NAME	TEXT	WT	X m	Y m	Z m	IMMA deg	IMMR m
ER_V_P	ER_INLET_P	UNPROTECTED	13.373	2.300	6.300	62.8	2.897
ER_V_S	ER_INLET_S	UNPROTECTED	13.373	-2.300	6.300	-	2.936
ER_O_P	ER_OUT_P	UNPROTECTED	14.000	1.500	8.400	81.9	5.007
ER_O_S	ER_OUT_S	UNPROTECTED	14.000	-1.500	8.400	-	5.032

DRY DOCKING - Not sailing condition







DRY DOCKING - Not sailing condition

Floating Position - Intact condition

Draught at AP (moulded)	3.367 m
Draught at FP (moulded)	3.663 m
Mean Draught (moulded)	3.515 m
Trim (+ by Bow)	0.295 m
Heel (+ PS)	0.2 deg
KM above moulded BL	6.539 m
KG above moulded BL	4.437 m
GM0 (solid)	2.102 m
Free Surface Correction	0.169 m
GM (liquid)	1.933 m
Density of Water	1.025 t/m3

LCB	:	16.908 m Fwd of AP
LCF	:	15.383 m Fwd of AP
MCT	:	6.264 tm/cm
TPC	:	3.12 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	19.241	0.000	0.113
Diesel Oil	DO	7.9	15.040	0.000	0.969
Deck Store	DST	0.2	18.000	1.500	7.000
Fire fighting Foam	FOAM	0.9	23.582	0.000	0.220
Fresh Water	FW	9.4	27.419	0.000	1.596
Grey Water	GWT	3.6	21.739	1.125	0.699
Lubricating Oil	LO	0.4	11.055	0.000	2.504
Sludge	SLU	17.7	21.717	-0.551	0.898
Deadweight		41.6	21.549	-0.130	1.216
Lightweight		642.3	16.584	0.008	4.645
Deadweight		41.6	21.549	-0.130	1.216
Total weight		683.9	16.886	0.000	4.437

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.P	DO	0.0	0.0	0.0	8.814	4.541	3.732	4.08
R.FODAYTK.S	DO	0.0	0.0	0.0	8.814	-4.541	3.732	4.08
R.FOTK.1P	DO	36.9	3.9	4.6	13.965	4.376	1.368	0.00
R.FOTK.2P	DO	0.0	0.0	0.0	14.508	1.032	0.926	0.00
R.FOTK.2S	DO	0.0	0.0	0.0	14.508	-1.032	0.926	0.00
R.FOTK.1S	DO	36.9	3.9	4.6	13.965	-4.376	1.368	0.00
R.FOTK.3C	DO	0.0	0.0	0.0	9.558	0.000	1.826	44.17
TOTAL			7.9	9.2				52.32

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	27.9	4.7	4.7	27.555	1.652	2.434	19.25
R.FWTK.S	FW	27.9	4.7	4.7	27.555	-1.652	2.434	19.25
TOTAL			9.4	9.4				38.49

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	8.2	0.2	0.2	11.005	5.416	4.010	0.06
R.LOTK.S	LO	8.2	0.2	0.2	11.005	-5.416	4.010	0.06
TOTAL			0.4	0.4				0.13

FOAM (Density 1.0 t/m3)

NAME	PURP	FILL %	MASS t	VOL m3	LCG m	TCG m	VCG m	FRSM tm
R.FOAMTK	FOAM	10.3	0.9	0.9	23.732	0.000	1.070	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	7.1	0.6	0.6	19.248	0.000	0.755	9.74
TOTAL			0.6	0.6				9.74

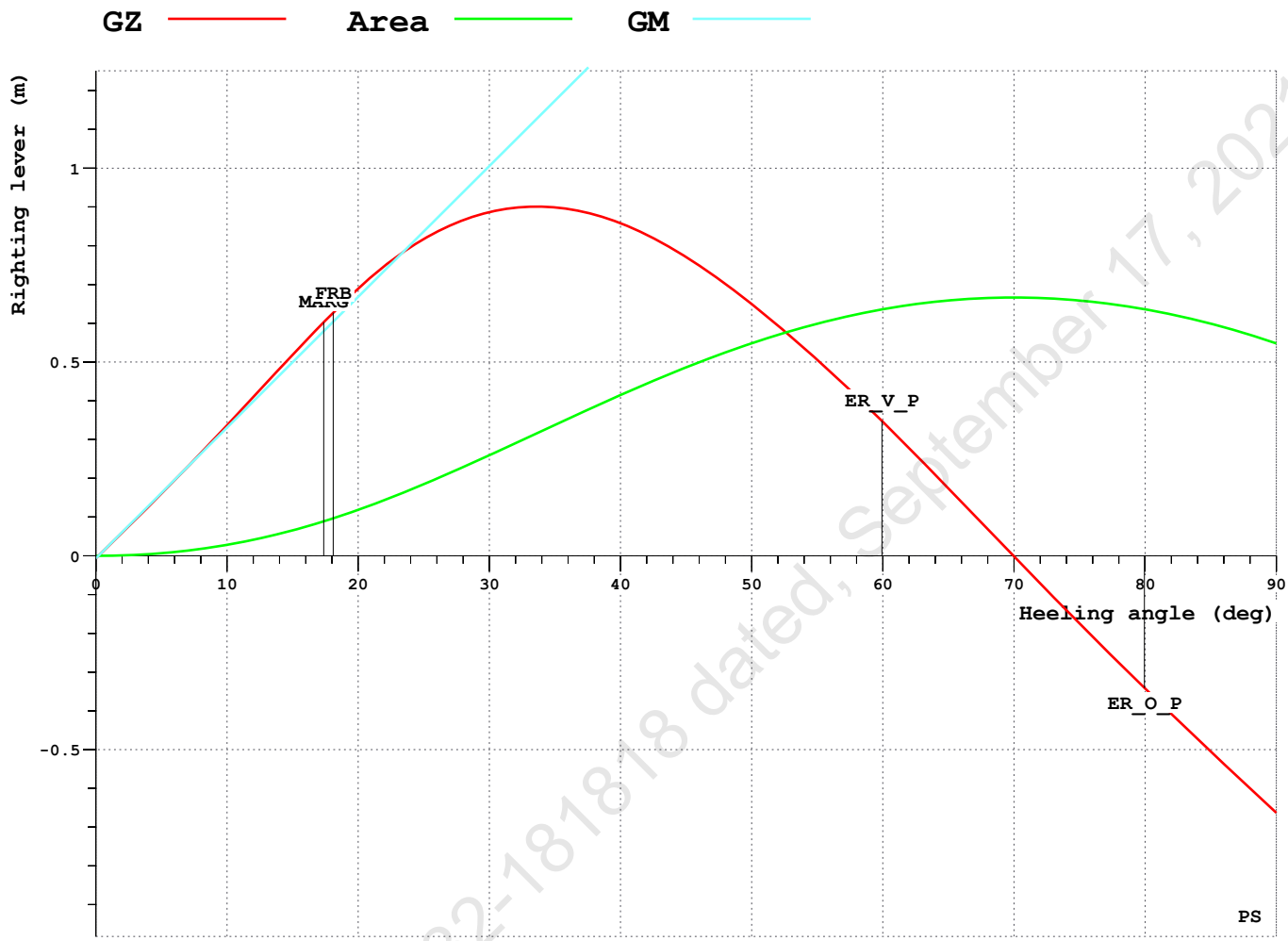
STORES

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

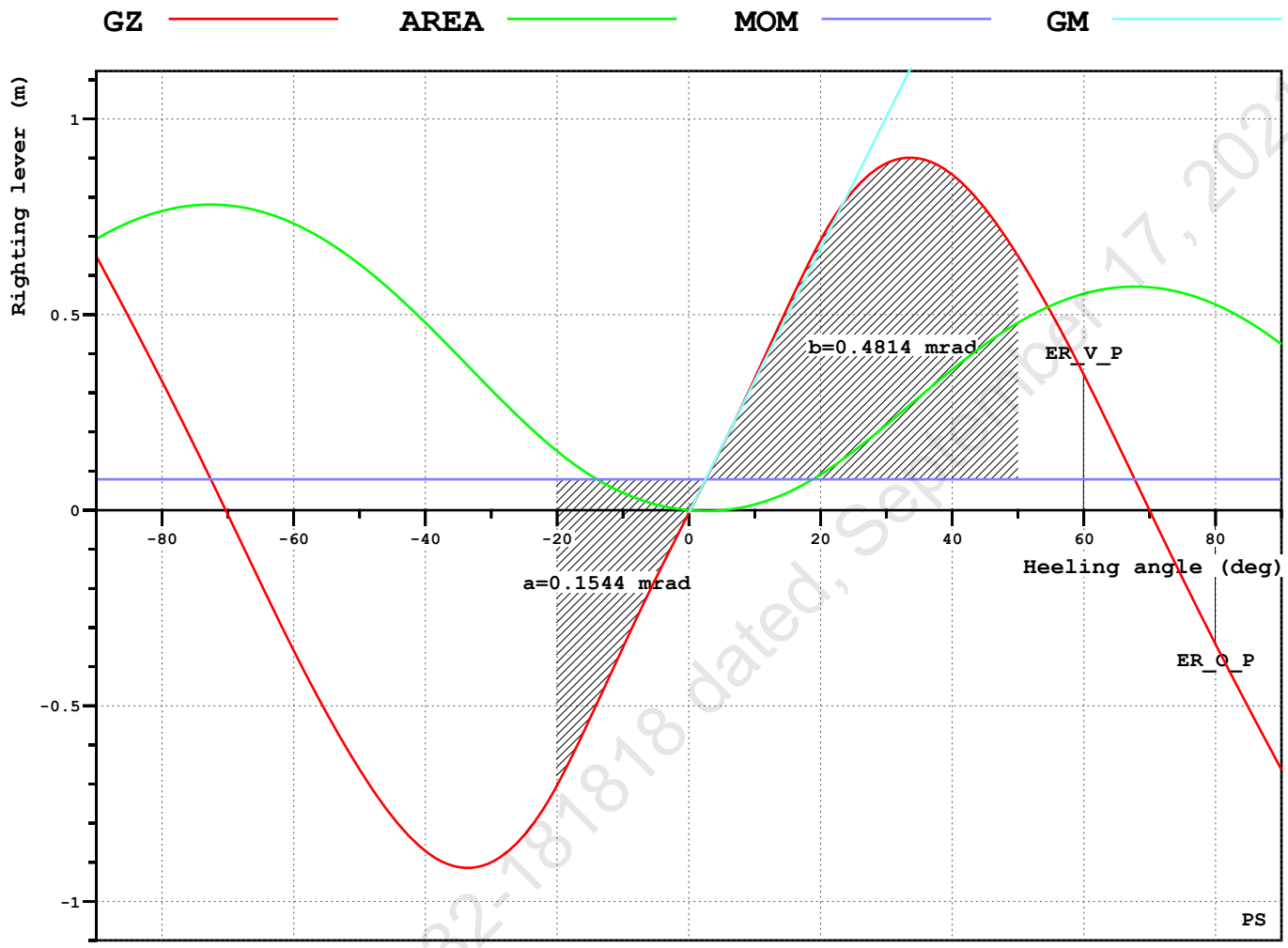
CREW

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	0.259	mrad	OK
AREA40	Area under GZ curve up to 40 deg.	0.090	0.415	mrad	OK
AREA3040	Area under GZ curve btw. 30-40 deg.	0.030	0.155	mrad	OK
GZ0.2	Max GZ > 0.2	0.200	0.901	m	OK
MAXGZ25	Max. GZ at an angle > 25 deg.	25.000	33.600	deg	OK
GM0.15	GM > 0.15 m	0.150	1.933	m	OK
V.IMOWEATHER	IMO weather criterion	1.000	3.118		OK
IMO.WIND_HEEL	Wind Heel <16 or <=80% of dk imm.	14.477	1.800	deg	OK

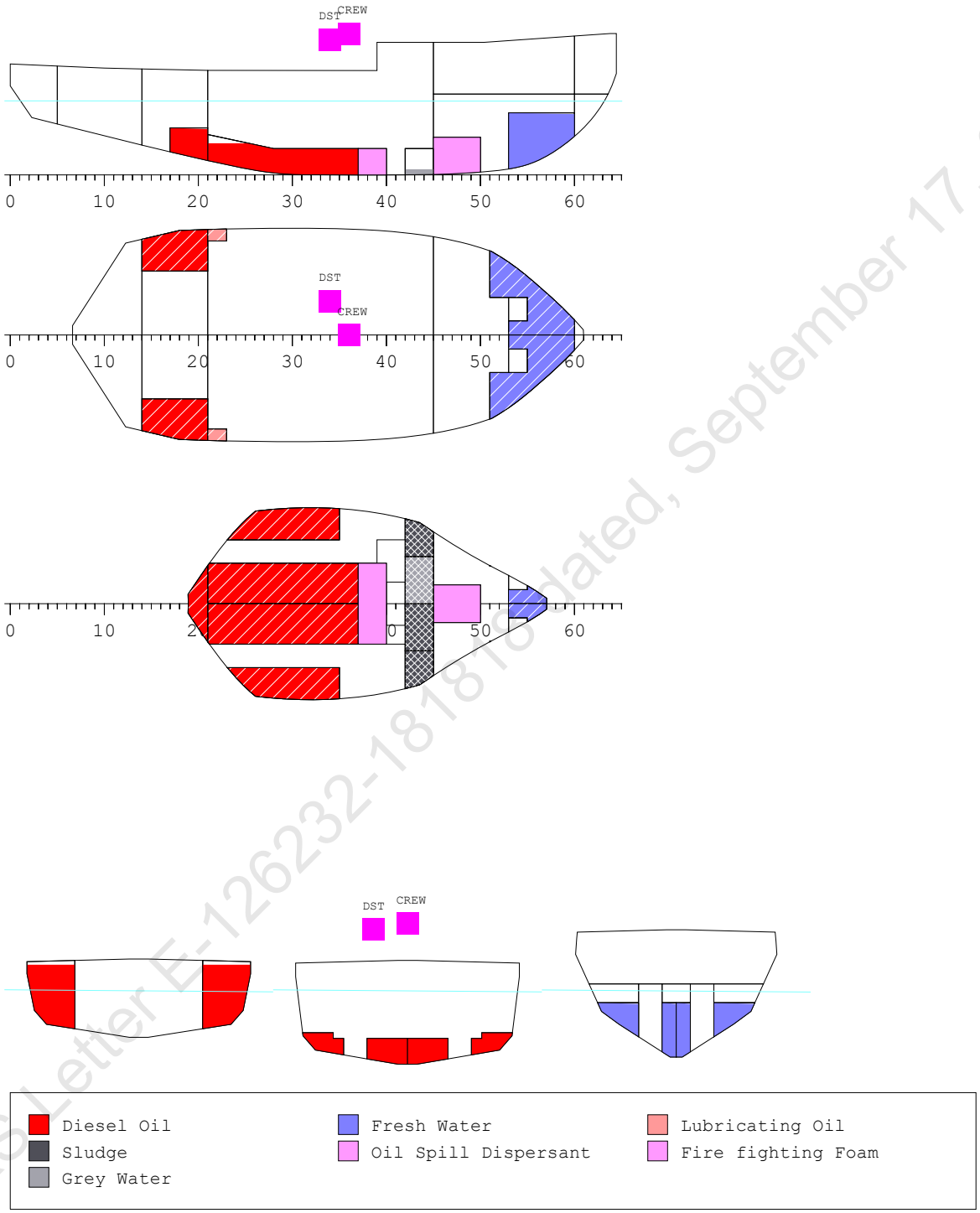
GZ CURVE DATA

HEEL deg	T m	TR m	GZ m	AREA mrad
0.0	3.515	0.295	-0.007	0.000
0.2	3.515	0.295	0.000	0.000
10.0	3.434	0.347	0.337	0.028
20.0	3.183	0.523	0.690	0.118
30.0	2.802	0.671	0.887	0.259
40.0	2.322	0.624	0.858	0.415
50.0	1.781	0.517	0.650	0.548
60.0	1.196	0.389	0.346	0.636
70.0	0.587	0.254	-0.002	0.666
80.0	-0.008	0.159	-0.343	0.636
90.0	-0.585	0.092	-0.663	0.548

RELEVANT OPENINGS

NAME	TEXT	WT	X m	Y m	Z m	IMMA deg	IMMR m
ER_V_P	ER_INLET_P	UNPROTECTED	13.373	2.300	6.300	59.9	2.802
ER_V_S	ER_INLET_S	UNPROTECTED	13.373	-2.300	6.300	-	2.819
ER_O_P	ER_OUT_P	UNPROTECTED	15.000	1.500	8.400	79.9	4.890
ER_O_S	ER_OUT_S	UNPROTECTED	15.000	-1.500	8.400	-	4.900

LC01 - DEPARTURE (100% CONSUMABLES)



LC01 - DEPARTURE (100% CONSUMABLES)

Floating Position - Intact condition

Draught at AP (moulded)	3.938 m
Draught at FP (moulded)	3.922 m
Mean Draught (moulded)	3.930 m
Trim (+ by Bow)	-0.016 m
Heel (+ PS)	0.4 deg
KM above moulded BL	6.359 m
KG above moulded BL	4.120 m
GM0 (solid)	2.239 m
Free Surface Correction	0.141 m
GM (liquid)	2.098 m
Density of Water	1.025 t/m3

LCB	:	16.390 m Fwd of AP
LCF	:	15.189 m Fwd of AP
MCT	:	6.867 tm/cm
TPC	:	3.249 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	8.1	19.248	0.000	0.755
Diesel Oil	DO	117.3	11.579	0.000	2.190
Deck Store	DST	2.0	17.000	1.800	7.200
Fire fighting Foam	FOAM	9.1	23.732	0.000	1.070
Fresh Water	FW	32.0	27.548	0.000	2.390
Grey Water	GWT	0.4	21.712	0.565	0.185
Lubricating Oil	LO	4.2	11.006	0.000	3.939
Sludge	SLU	2.1	21.649	-0.278	0.453
Deadweight		176.3	15.687	0.018	2.205
Lightweight		642.3	16.584	0.008	4.645
Deadweight		176.3	15.687	0.018	2.205
Total weight		818.5	16.391	0.010	4.120

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.P	DO	95.0	23.8	27.7	8.814	4.541	3.732	4.08
R.FODAYTK.S	DO	95.0	23.8	27.7	8.814	-4.541	3.732	4.08
R.FOTK.1P	DO	95.0	10.1	11.8	13.965	4.376	1.368	0.00
R.FOTK.2P	DO	95.0	17.5	20.4	14.508	1.032	0.926	0.00
R.FOTK.2S	DO	95.0	17.5	20.4	14.508	-1.032	0.926	0.00
R.FOTK.1S	DO	95.0	10.1	11.8	13.965	-4.376	1.368	0.00
R.FOTK.3C	DO	95.0	14.4	16.7	9.558	0.000	1.826	44.17
TOTAL			117.3	136.4				52.32

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	16.0	16.0	27.555	1.652	2.434	19.25
R.FWTK.S	FW	95.0	16.0	16.0	27.555	-1.652	2.434	19.25
TOTAL			32.0	32.0				38.49

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	2.1	2.3	11.005	5.416	4.010	0.06
R.LOTK.S	LO	95.0	2.1	2.3	11.005	-5.416	4.010	0.06
TOTAL			4.2	4.7				0.13

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	9.1	9.1	23.732	0.000	1.070	1.63
TOTAL			9.1	9.1				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	8.1	8.1	19.248	0.000	0.755	9.74
TOTAL			8.1	8.1				9.74

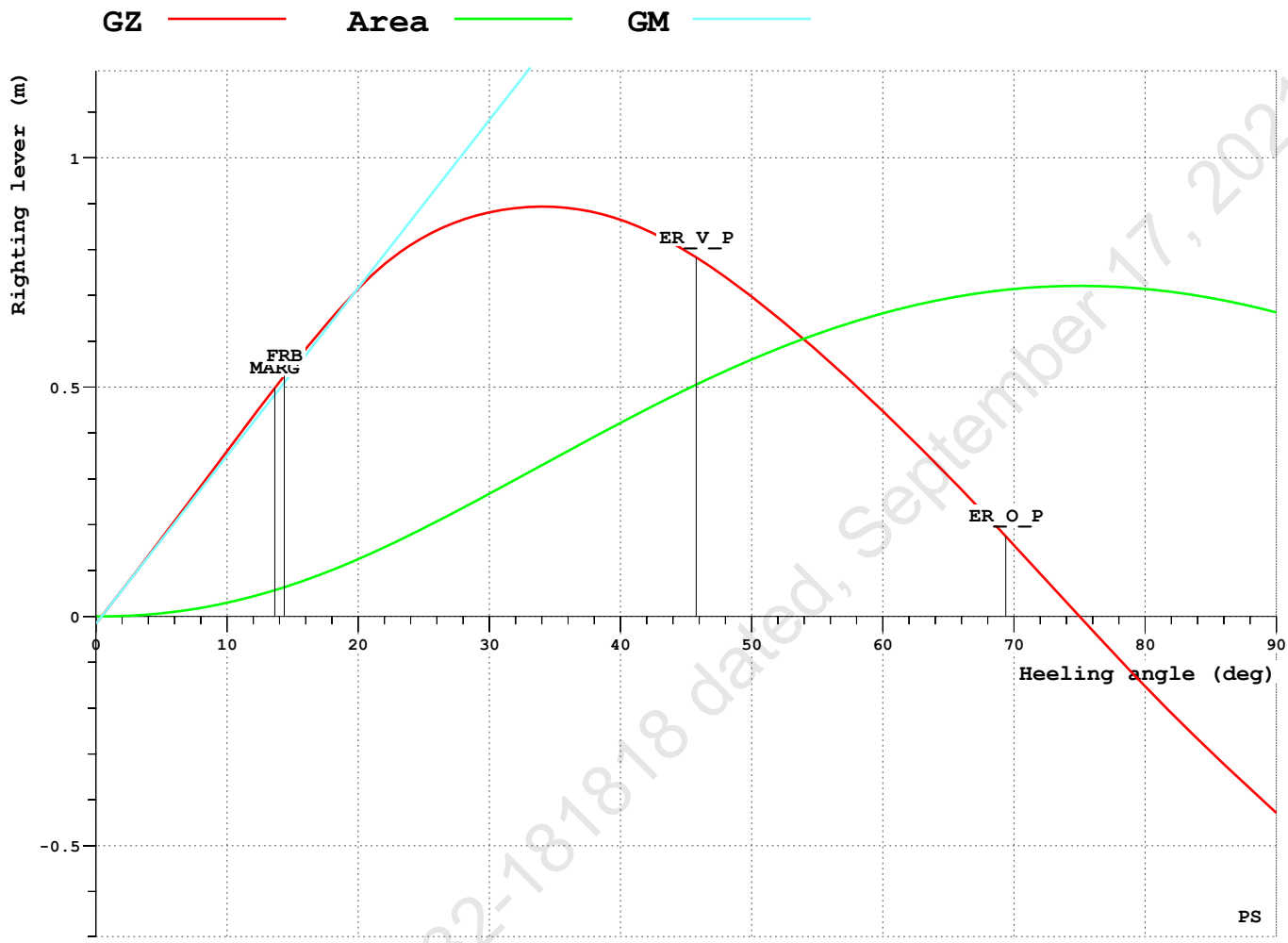
STORES

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

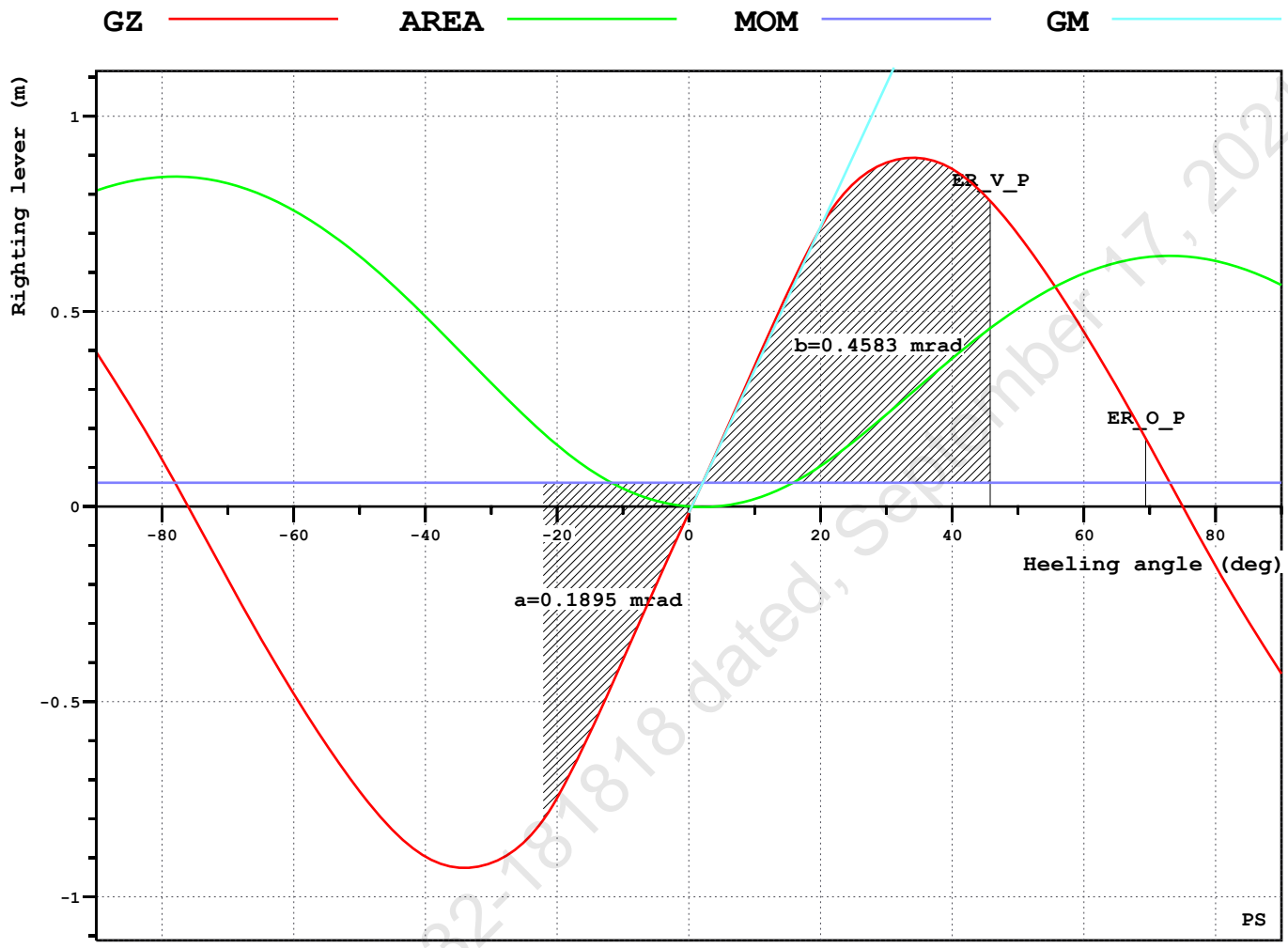
CREW

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

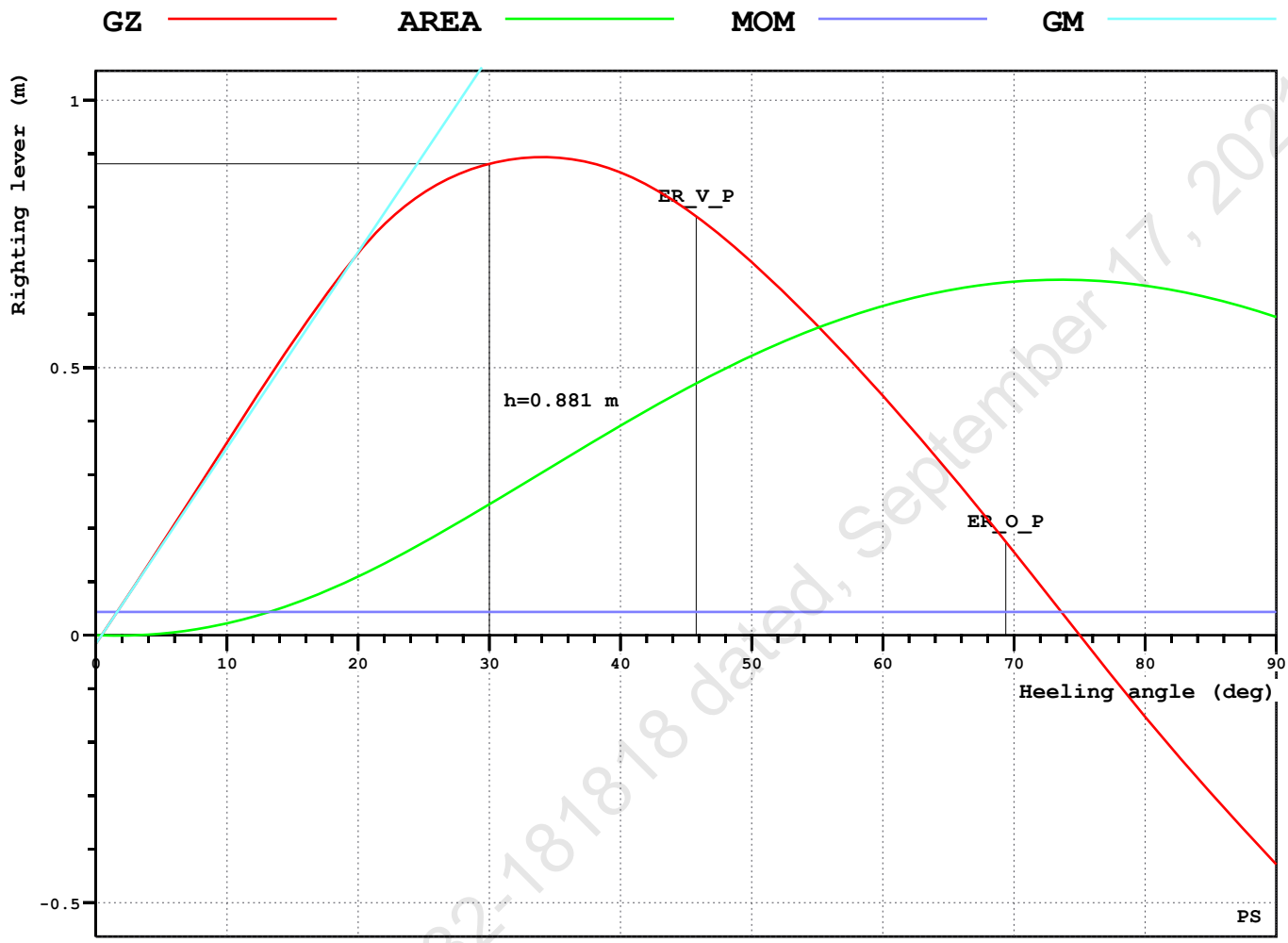
INTACT STABILITY CHECK PLOT



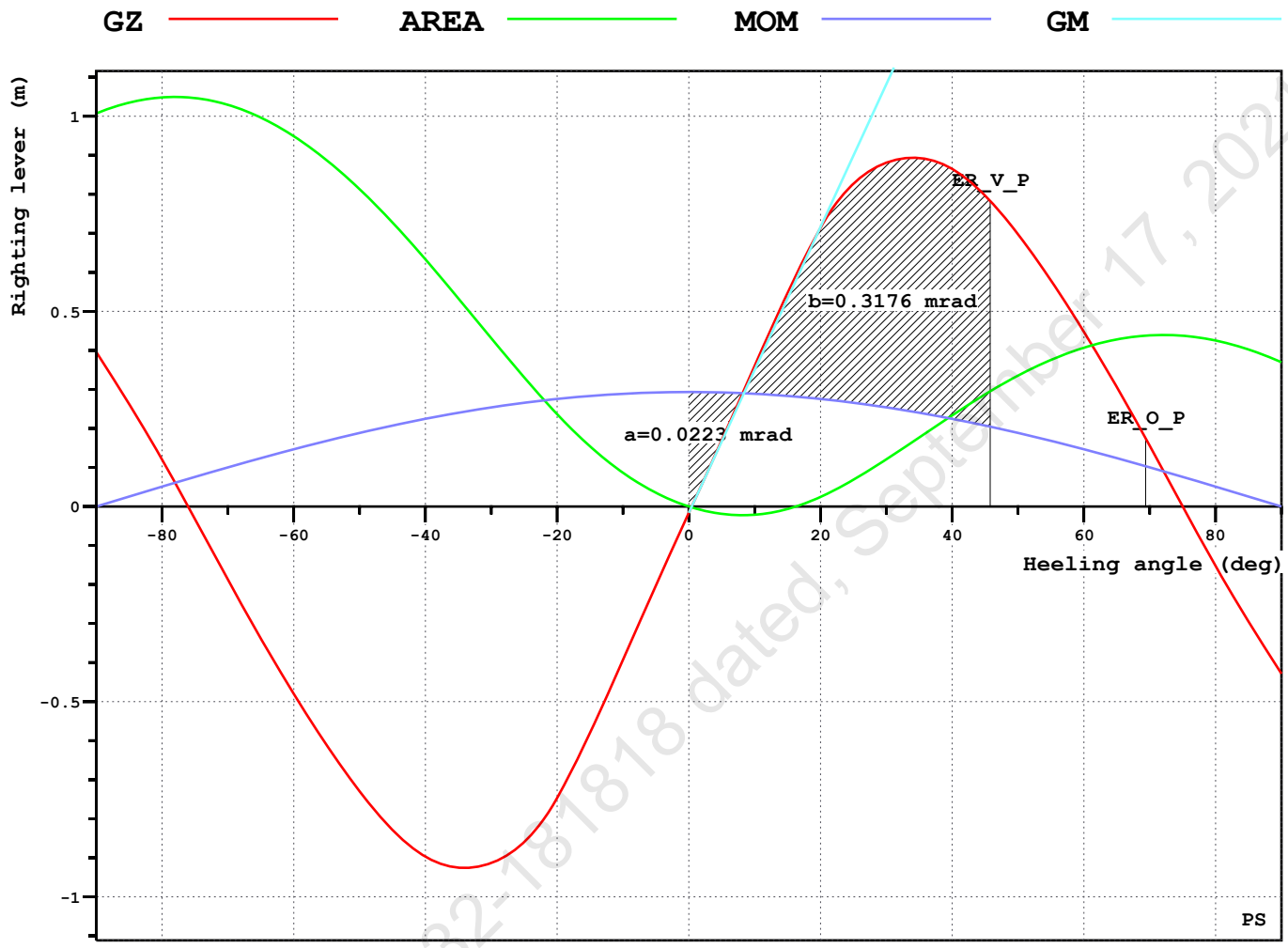
IMO WEATHER CRITERIA



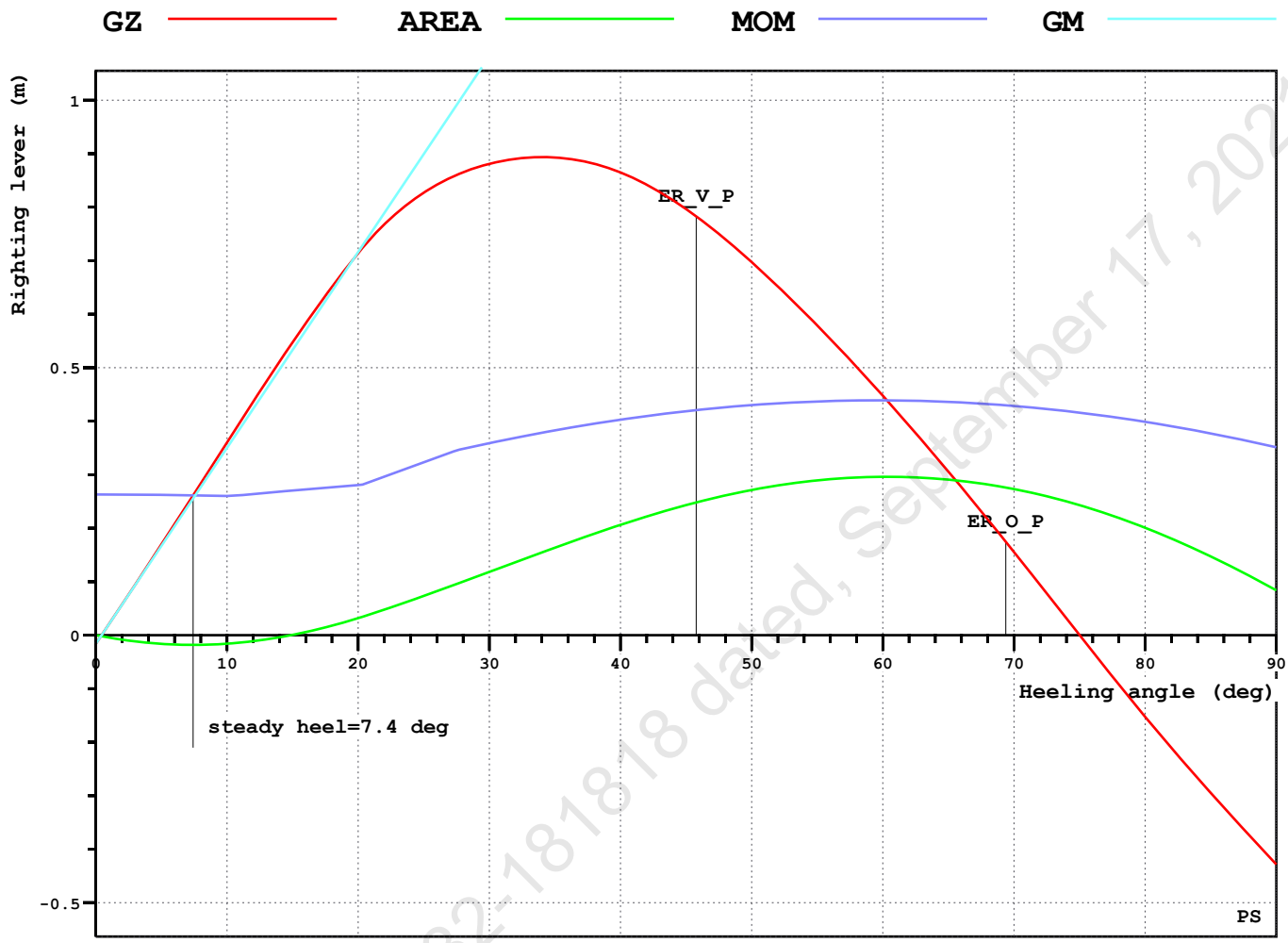
EXTERNAL FI-FI



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	0.267	mrad	OK
AREA40	Area under GZ curve up to 40 deg.	0.090	0.422	mrad	OK
AREA3040	Area under GZ curve btw. 30-40 deg.	0.030	0.155	mrad	OK
GZ0.2	Max GZ > 0.2	0.200	0.894	m	OK
MAXGZ25	Max. GZ at an angle > 25 deg.	25.000	34.048	deg	OK
GM0.15	GM > 0.15 m	0.150	2.098	m	OK
V.IMOWEATHER	IMO weather criterion	1.000	2.419		OK
IMO.WIND_HEEL	Wind Heel <16 or <=80% of dk imm.	11.494	1.549	deg	OK
FIFI_GZ	Min. GZ for Fire fighter Ships	0.087	0.881	m	OK
2020IS-B2.8.4.2	AreaA>=AreaB	1.000	14.236		OK
2020IS-B2.8.4.3	Max. heel, tow-tr.	45.772	7.414	deg	OK

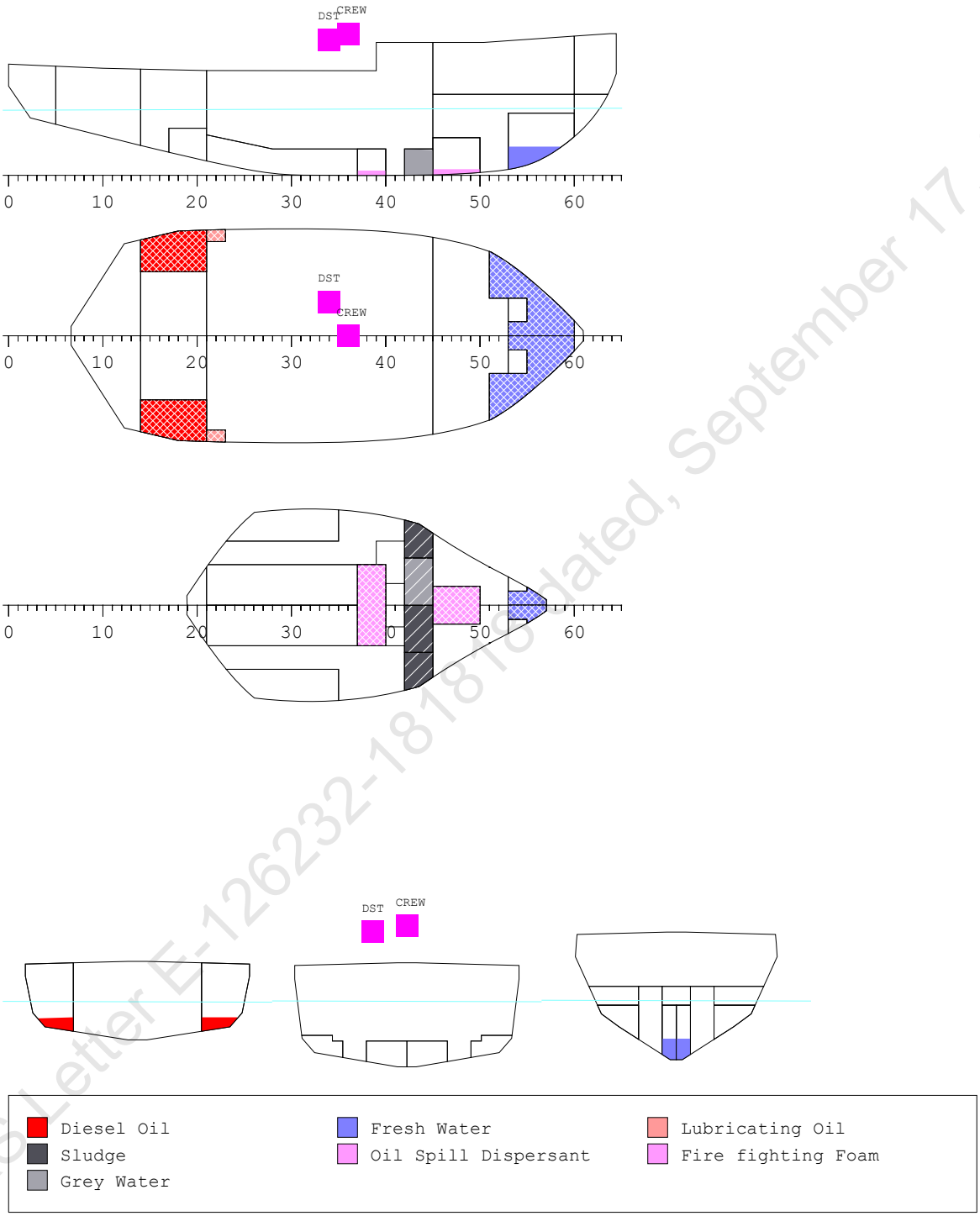
GZ CURVE DATA

HEEL deg	T m	TR m	GZ m	AREA mrad
0.0	3.930	-0.016	-0.016	0.000
0.4	3.930	-0.016	0.000	0.000
10.0	3.847	0.011	0.361	0.030
20.0	3.617	0.077	0.714	0.125
30.0	3.318	-0.070	0.881	0.267
40.0	2.945	-0.372	0.865	0.422
50.0	2.501	-0.700	0.697	0.560
60.0	1.992	-1.018	0.448	0.661
70.0	1.433	-1.300	0.156	0.714
80.0	0.844	-1.516	-0.153	0.714
90.0	0.266	-1.572	-0.429	0.663

RELEVANT OPENINGS

NAME	TEXT	WT	X m	Y m	Z m	IMMA deg	IMMR m
ER_V_P	ER_INLET_P	UNPROTECTED	13.373	2.300	6.300	45.8	2.351
ER_V_S	ER_INLET_S	UNPROTECTED	13.373	-2.300	6.300	-	2.386
ER_O_P	ER_OUT_P	UNPROTECTED	14.000	1.500	8.400	69.4	4.457
ER_O_S	ER_OUT_S	UNPROTECTED	14.000	-1.500	8.400	-	4.480

LC02 - ARRIVAL (10% CONSUMABLES)



LC02 - ARRIVAL (10% CONSUMABLES)

Floating Position - Intact condition

Draught at AP (moulded)	3.460 m
Draught at FP (moulded)	3.557 m
Mean Draught (moulded)	3.508 m
Trim (+ by Bow)	0.097 m
Heel (+ PS)	0.2 deg
KM above moulded BL	6.549 m
KG above moulded BL	4.452 m
GM0 (solid)	2.097 m
Free Surface Correction	0.169 m
GM (liquid)	1.928 m
Density of Water	1.025 t/m3

LCB	:	16.727 m Fwd of AP
LCF	:	15.298 m Fwd of AP
MCT	:	6.265 tm/cm
TPC	:	3.121 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	0.8	19.240	0.000	0.142
Diesel Oil	DO	10.0	9.059	0.000	2.192
Deck Store	DST	0.2	17.000	1.800	7.200
Fire fighting Foam	FOAM	0.9	23.578	0.000	0.217
Fresh Water	FW	3.4	27.363	0.000	1.144
Grey Water	GWT	4.1	21.741	1.141	0.772
Lubricating Oil	LO	0.4	11.046	0.000	2.541
Sludge	SLU	20.2	21.717	-0.562	0.960
Deadweight		41.0	18.851	-0.154	1.432
Lightweight		642.3	16.584	0.008	4.645
Deadweight		41.0	18.851	-0.154	1.432
Total weight		683.3	16.720	-0.002	4.452

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.P	DO	20.0	5.0	5.8	8.814	4.541	3.732	4.08
R.FODAYTK.S	DO	20.0	5.0	5.8	8.814	-4.541	3.732	4.08
R.FOTK.1P	DO	0.0	0.0	0.0	13.965	4.376	1.368	0.00
R.FOTK.2P	DO	0.0	0.0	0.0	14.508	1.032	0.926	0.00
R.FOTK.2S	DO	0.0	0.0	0.0	14.508	-1.032	0.926	0.00
R.FOTK.1S	DO	0.0	0.0	0.0	13.965	-4.376	1.368	0.00
R.FOTK.3C	DO	0.0	0.0	0.0	9.558	0.000	1.826	44.17
TOTAL			10.0	11.7				52.32

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	1.7	1.7	27.555	1.652	2.434	19.25
R.FWTK.S	FW	10.0	1.7	1.7	27.555	-1.652	2.434	19.25
TOTAL			3.4	3.4				38.49

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	0.2	11.005	5.416	4.010	0.06
R.LOTK.S	LO	10.0	0.2	0.2	11.005	-5.416	4.010	0.06
TOTAL			0.4	0.5				0.13

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	23.732	0.000	1.070	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	0.8	0.8	19.248	0.000	0.755	9.74
TOTAL			0.8	0.8				9.74

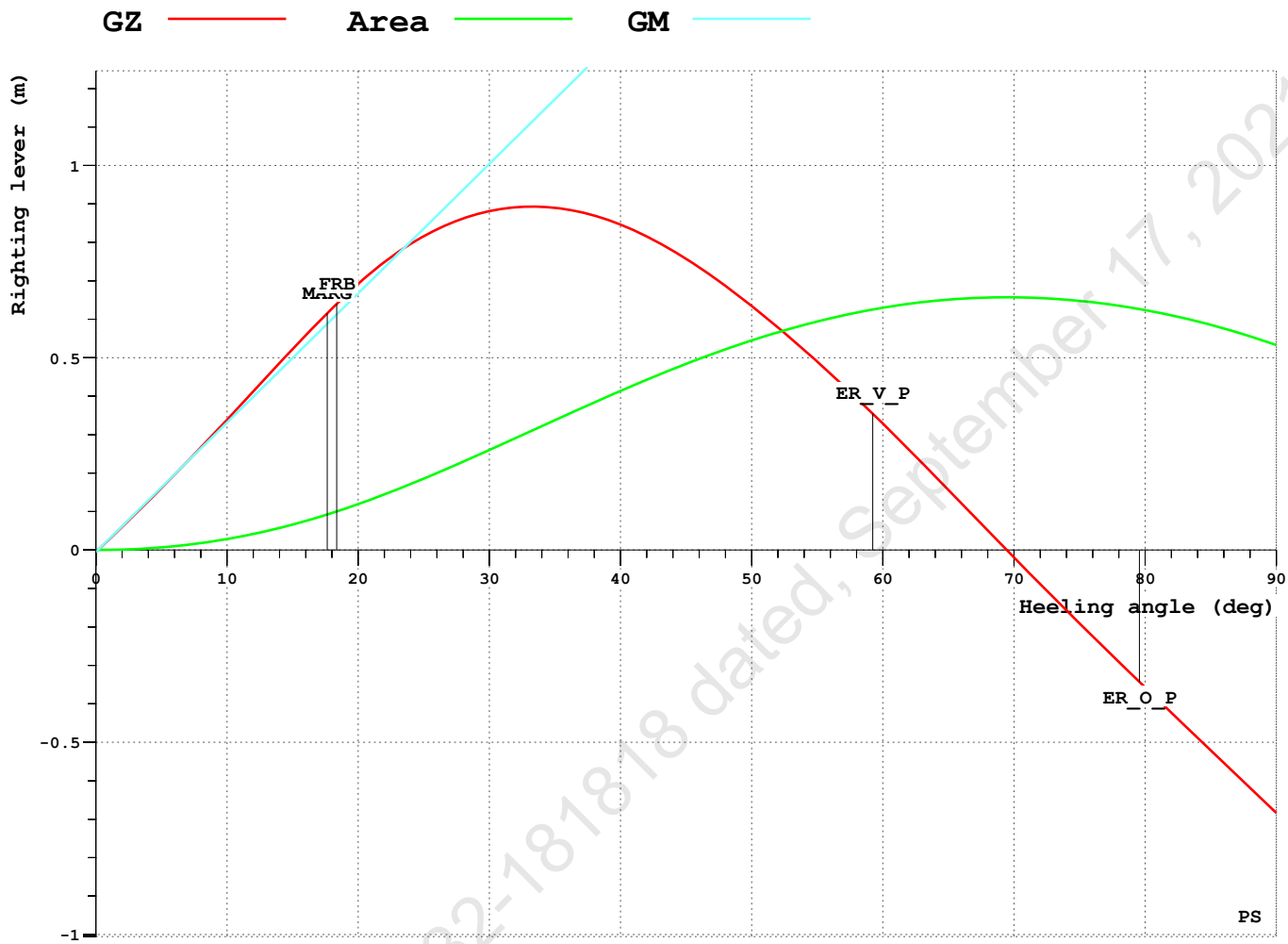
STORES

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

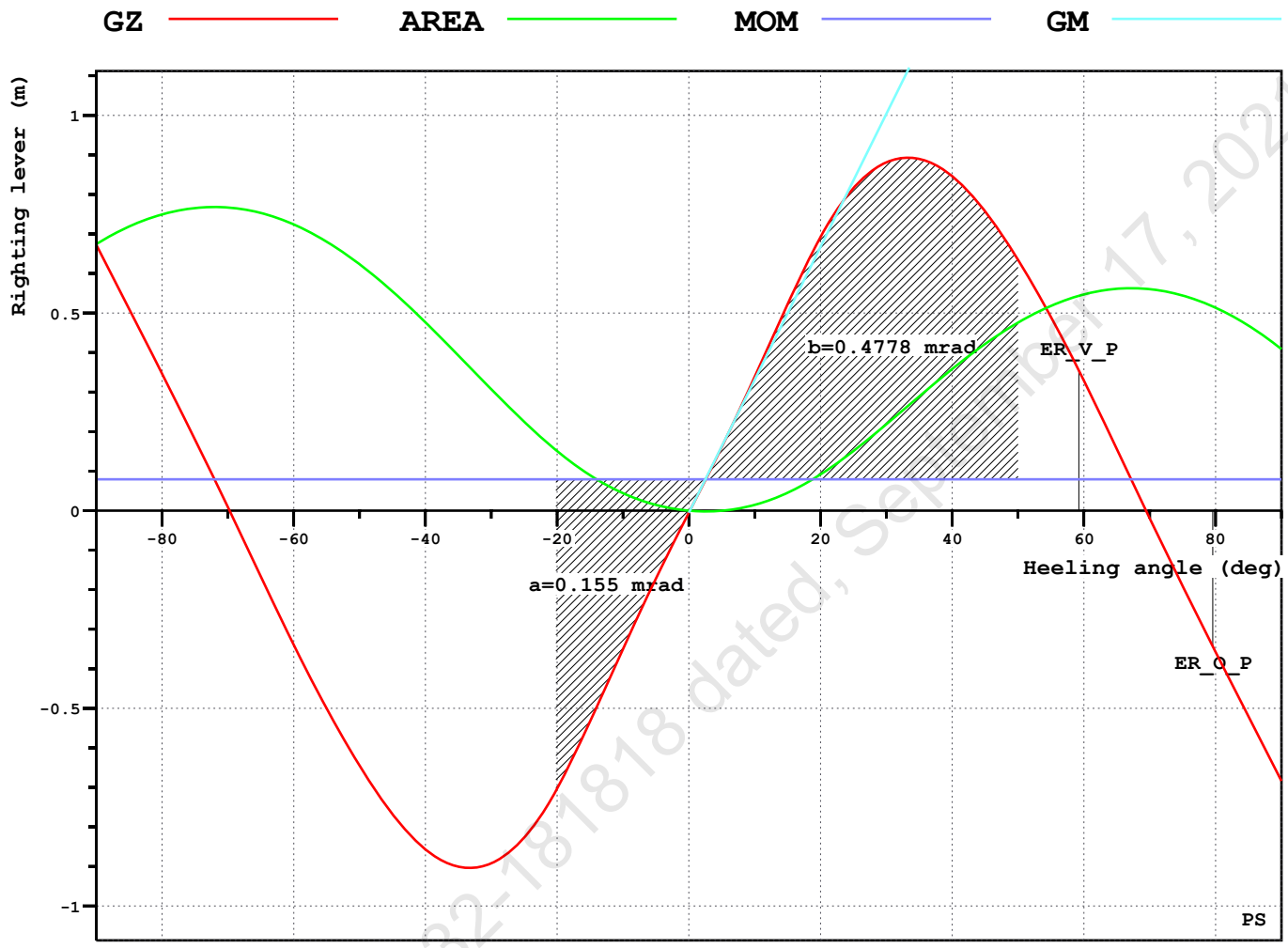
CREW

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

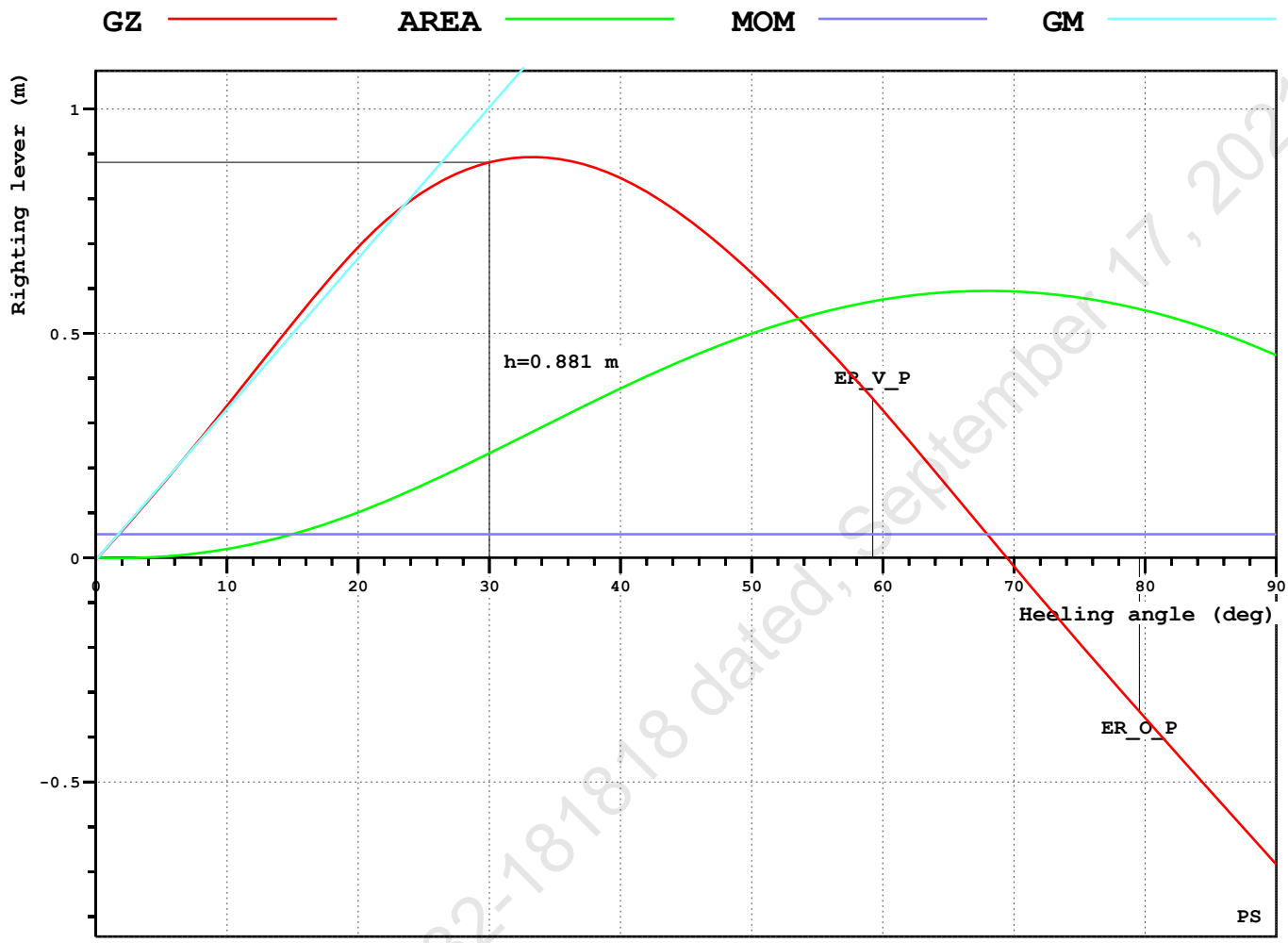
INTACT STABILITY CHECK PLOT



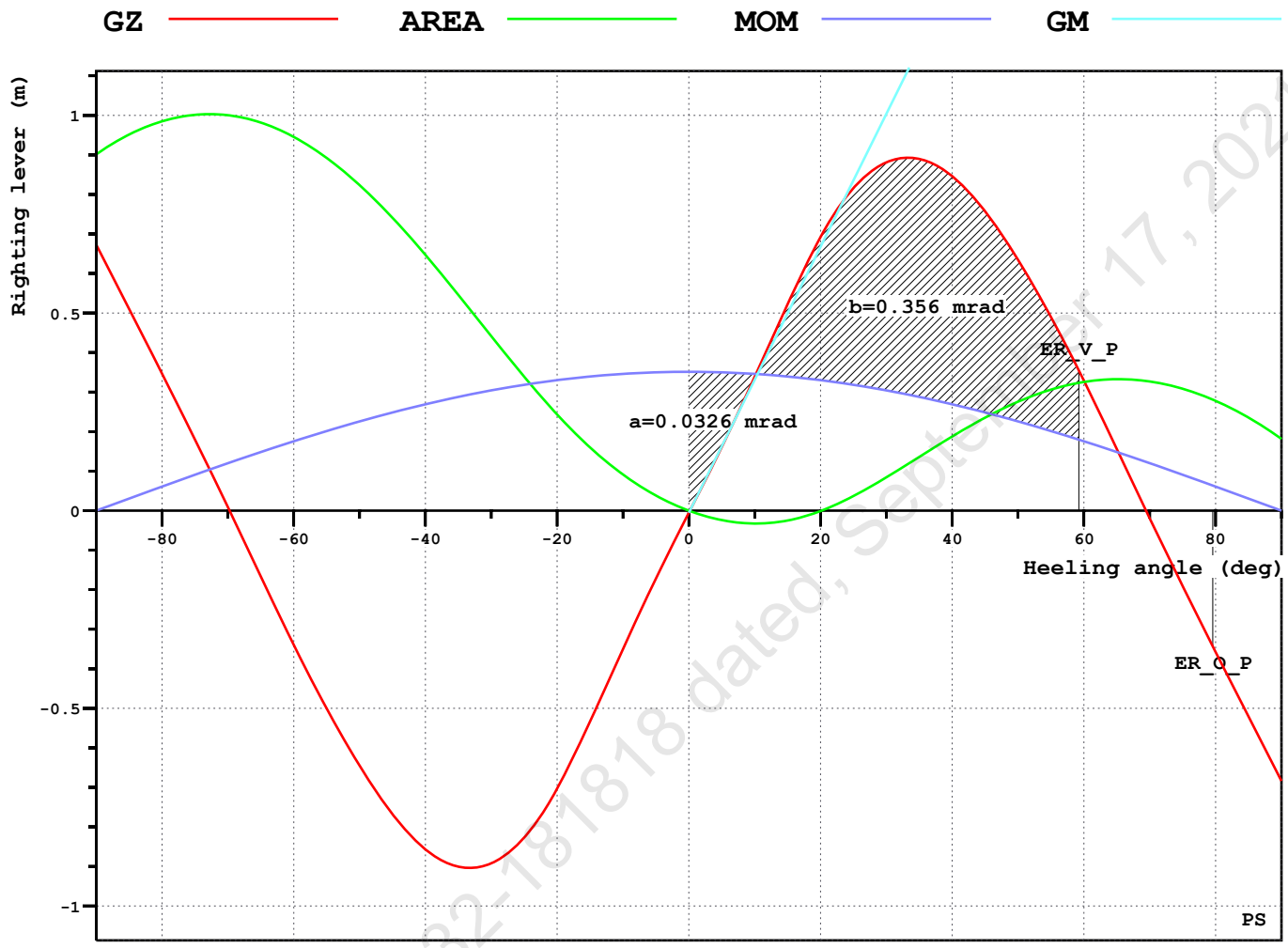
IMO WEATHER CRITERIA



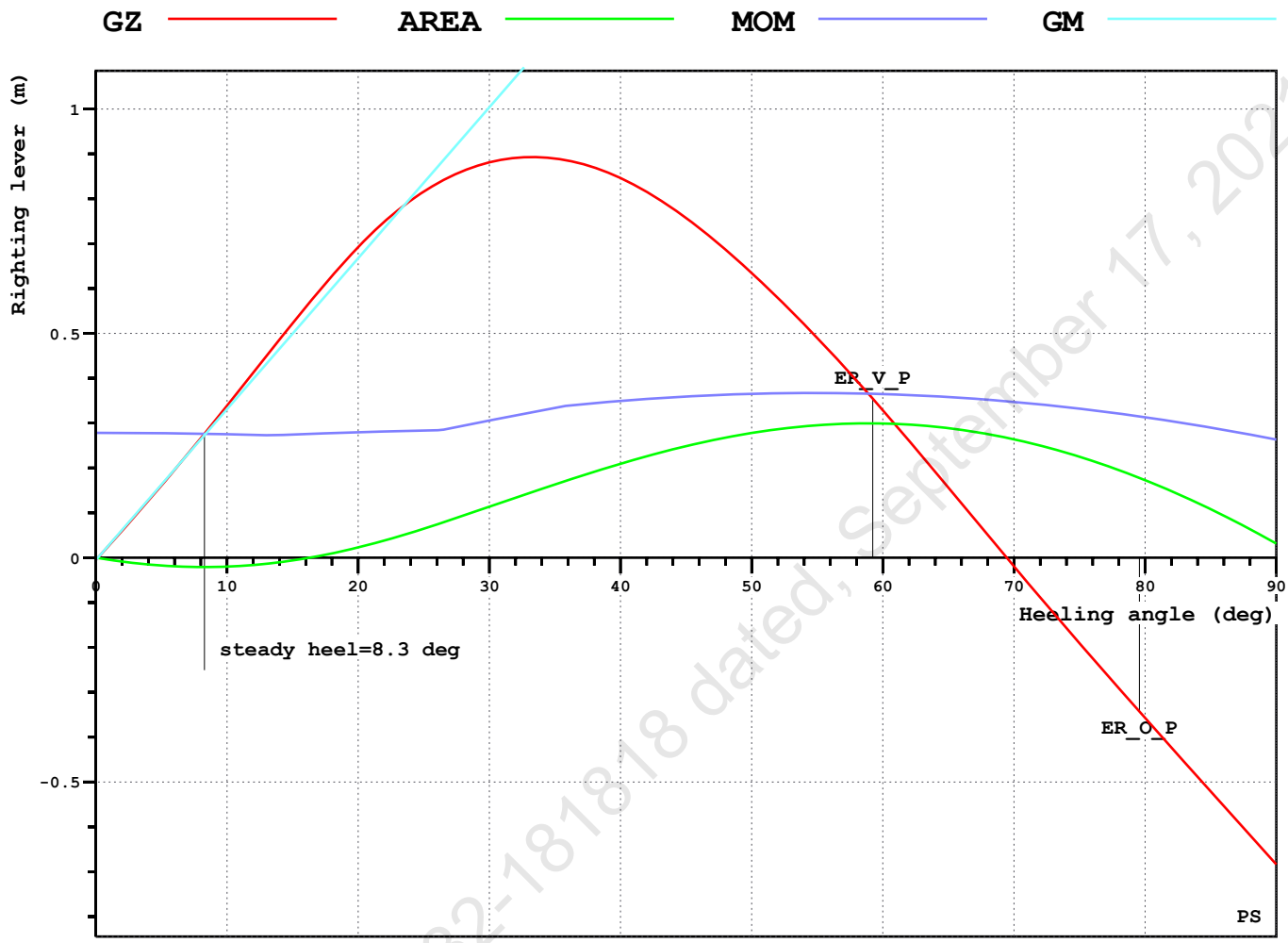
EXTERNAL FI-FI



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	0.260	mrad	OK
AREA40	Area under GZ curve up to 40 deg.	0.090	0.414	mrad	OK
AREA3040	Area under GZ curve btw. 30-40 deg.	0.030	0.154	mrad	OK
GZ0.2	Max GZ > 0.2	0.200	0.893	m	OK
MAXGZ25	Max. GZ at an angle > 25 deg.	25.000	33.275	deg	OK
GM0.15	GM > 0.15 m	0.150	1.928	m	OK
V.IMOWEATHER	IMO weather criterion	1.000	3.081		OK
IMO.WIND_HEEL	Wind Heel <16 or <=80% of dk imm.	14.689	1.784	deg	OK
FIFI_GZ	Min. GZ for Fire fighter Ships	0.104	0.881	m	OK
2020IS-B2.8.4.2	AreaA>=AreaB	1.000	10.917		OK
2020IS-B2.8.4.3	Max. heel, tow-tr.	59.231	8.280	deg	OK

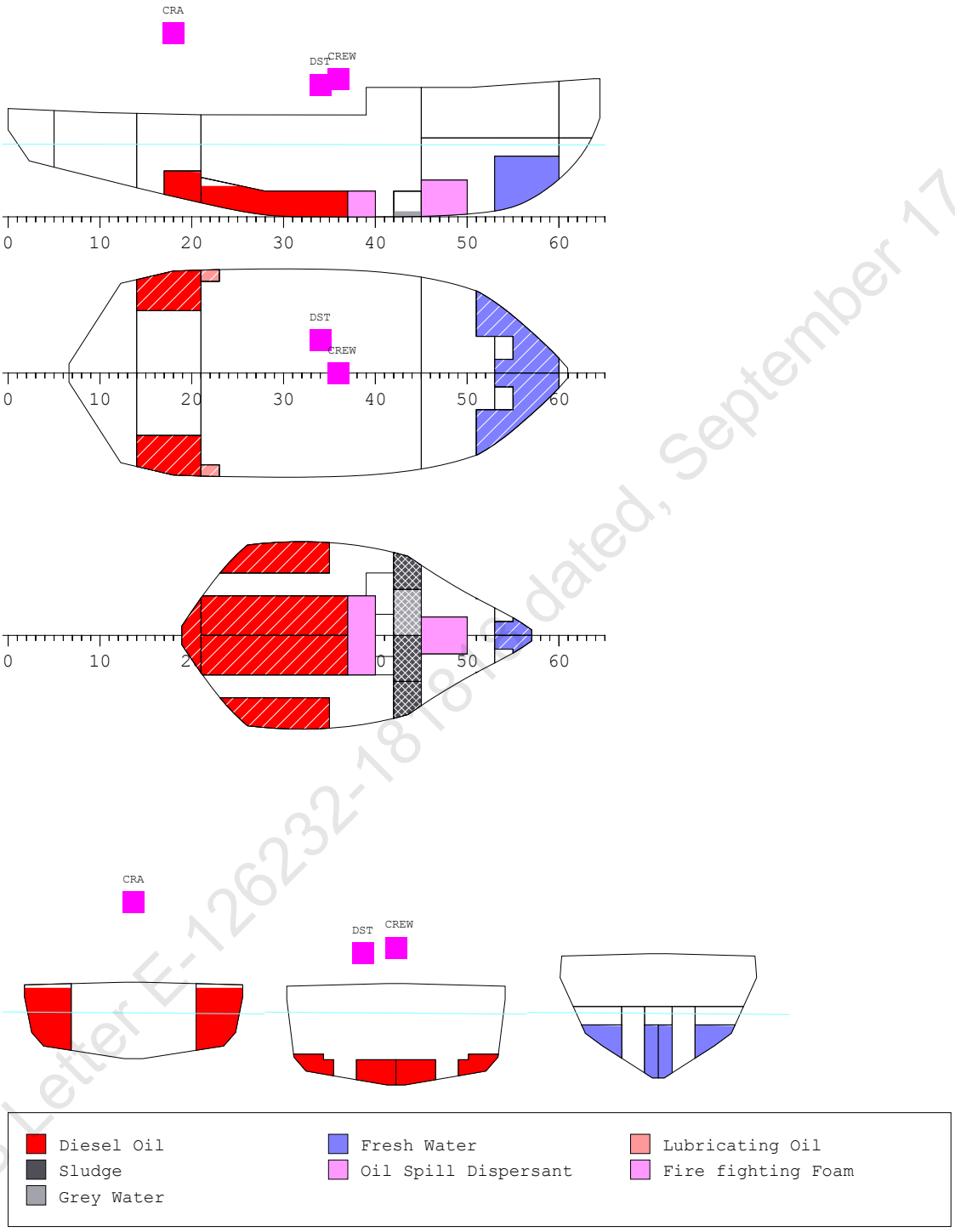
GZ CURVE DATA

HEEL deg	T m	TR m	GZ m	AREA mrad
0.0	3.509	0.097	-0.005	0.000
0.2	3.509	0.097	0.000	0.000
10.0	3.428	0.145	0.339	0.028
20.0	3.179	0.317	0.692	0.119
30.0	2.804	0.447	0.881	0.260
40.0	2.329	0.369	0.846	0.414
50.0	1.790	0.227	0.635	0.545
60.0	1.208	0.073	0.329	0.630
70.0	0.602	-0.082	-0.020	0.657
80.0	0.011	-0.165	-0.358	0.624
90.0	-0.569	-0.260	-0.684	0.533

RELEVANT OPENINGS

NAME	TEXT	WT	X m	Y m	Z m	IMMA deg	IMMR m
ER_V_P	ER_INLET_P	UNPROTECTED	13.373	2.300	6.300	59.2	2.793
ER_V_S	ER_INLET_S	UNPROTECTED	13.373	-2.300	6.300	-	2.807
ER_O_P	ER_OUT_P	UNPROTECTED	15.000	1.500	8.400	79.6	4.890
ER_O_S	ER_OUT_S	UNPROTECTED	15.000	-1.500	8.400	-	4.899

LC03 - LC01+CRANE LOAD(3T load)



LC03 - LC01+CRANE LOAD(3T load)

Floating Position - Intact condition

Draught at AP (moulded)	3.961 m
Draught at FP (moulded)	3.916 m
Mean Draught (moulded)	3.938 m
Trim (+ by Bow)	-0.045 m
Heel (+ PS)	0.4 deg
KM above moulded BL	6.357 m
KG above moulded BL	4.141 m
GM0 (solid)	2.216 m
Free Surface Correction	0.141 m
GM (liquid)	2.076 m
Density of Water	1.025 t/m3

LCB	:	16.361 m Fwd of AP
LCF	:	15.175 m Fwd of AP
MCT	:	6.883 tm/cm
TPC	:	3.252 t/cm

LOAD SUMMARY TABLE

NAME	LOAD	MASS t	LCG m	TCG m	VCG m
Crane	CRA	3.0	9.000	0.000	10.000
Crew	CREW	1.0	18.000	0.000	7.500
Oil Spill Dispersant	DISPERSANT	8.1	19.248	0.000	0.755
Diesel Oil	DO	117.3	11.579	0.000	2.190
Deck Store	DST	2.0	17.000	1.800	7.200
Fire fighting Foam	FOAM	9.1	23.732	0.000	1.070
Fresh Water	FW	32.0	27.548	0.000	2.390
Grey Water	GWT	0.4	21.712	0.565	0.185
Lubricating Oil	LO	4.2	11.006	0.000	3.939
Sludge	SLU	2.1	21.649	-0.278	0.453
Deadweight		179.3	15.575	0.018	2.336
Lightweight		642.3	16.584	0.008	4.645
Deadweight		179.3	15.575	0.018	2.336
Total weight		821.5	16.364	0.010	4.141

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.P	DO	95.0	23.8	27.7	8.814	4.541	3.732	4.08
R.FODAYTK.S	DO	95.0	23.8	27.7	8.814	-4.541	3.732	4.08
R.FOTK.1P	DO	95.0	10.1	11.8	13.965	4.376	1.368	0.00
R.FOTK.2P	DO	95.0	17.5	20.4	14.508	1.032	0.926	0.00
R.FOTK.2S	DO	95.0	17.5	20.4	14.508	-1.032	0.926	0.00
R.FOTK.1S	DO	95.0	10.1	11.8	13.965	-4.376	1.368	0.00
R.FOTK.3C	DO	95.0	14.4	16.7	9.558	0.000	1.826	44.17
TOTAL			117.3	136.4				52.32

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	16.0	16.0	27.555	1.652	2.434	19.25
R.FWTK.S	FW	95.0	16.0	16.0	27.555	-1.652	2.434	19.25
TOTAL			32.0	32.0				38.49

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	2.1	2.3	11.005	5.416	4.010	0.06
R.LOTK.S	LO	95.0	2.1	2.3	11.005	-5.416	4.010	0.06
TOTAL			4.2	4.7				0.13

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	9.1	9.1	23.732	0.000	1.070	1.63
TOTAL			9.1	9.1				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	8.1	8.1	19.248	0.000	0.755	9.74
TOTAL			8.1	8.1				9.74

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

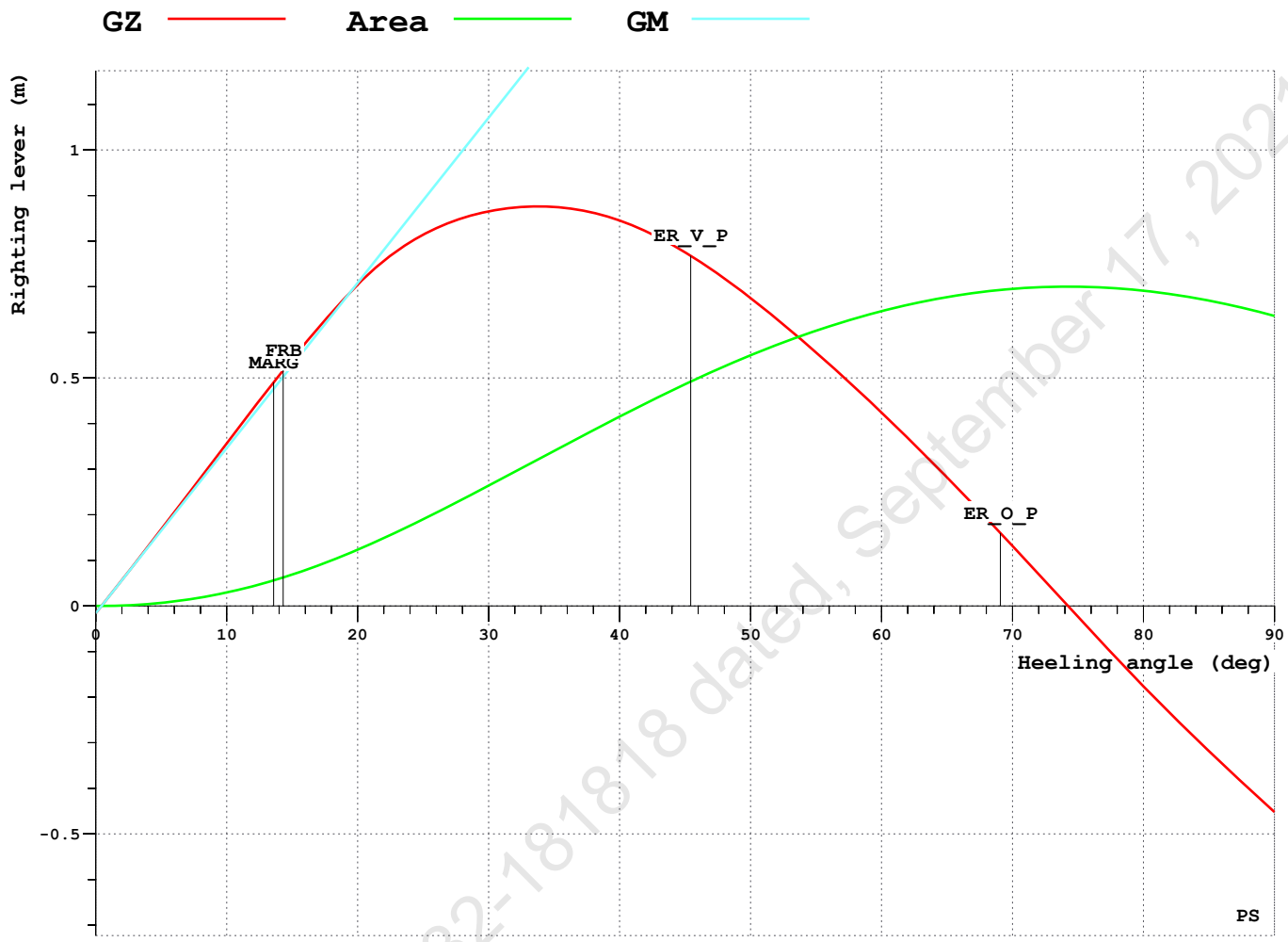
CREW

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

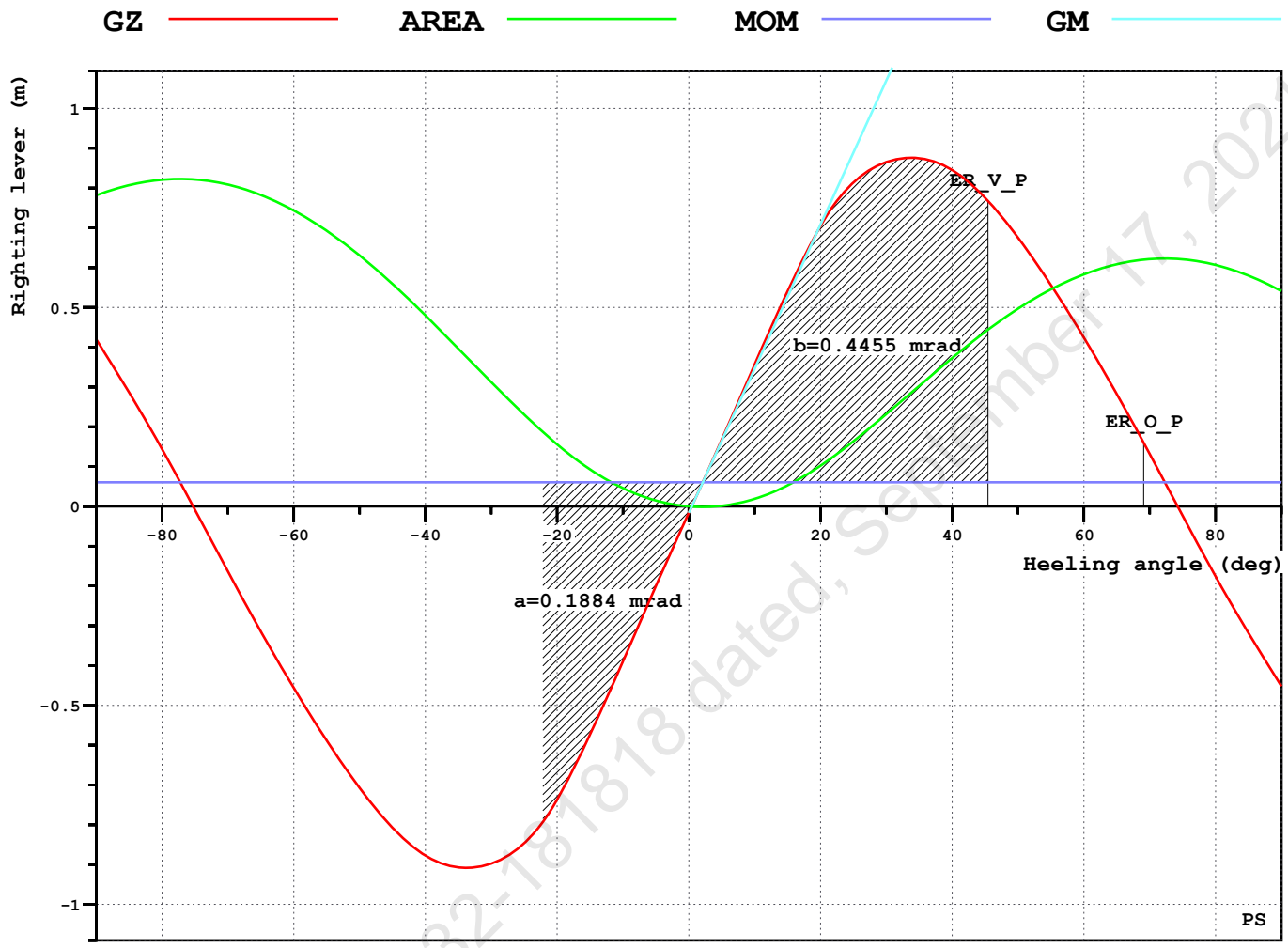
CRANE

NAME	PURP	MASS t	LCG m	TCG m	VCG m
CRANE-PAYLO.	MASS	3.0	9.000	0.000	10.000
TOTAL		3.0	9.000	0.000	10.000

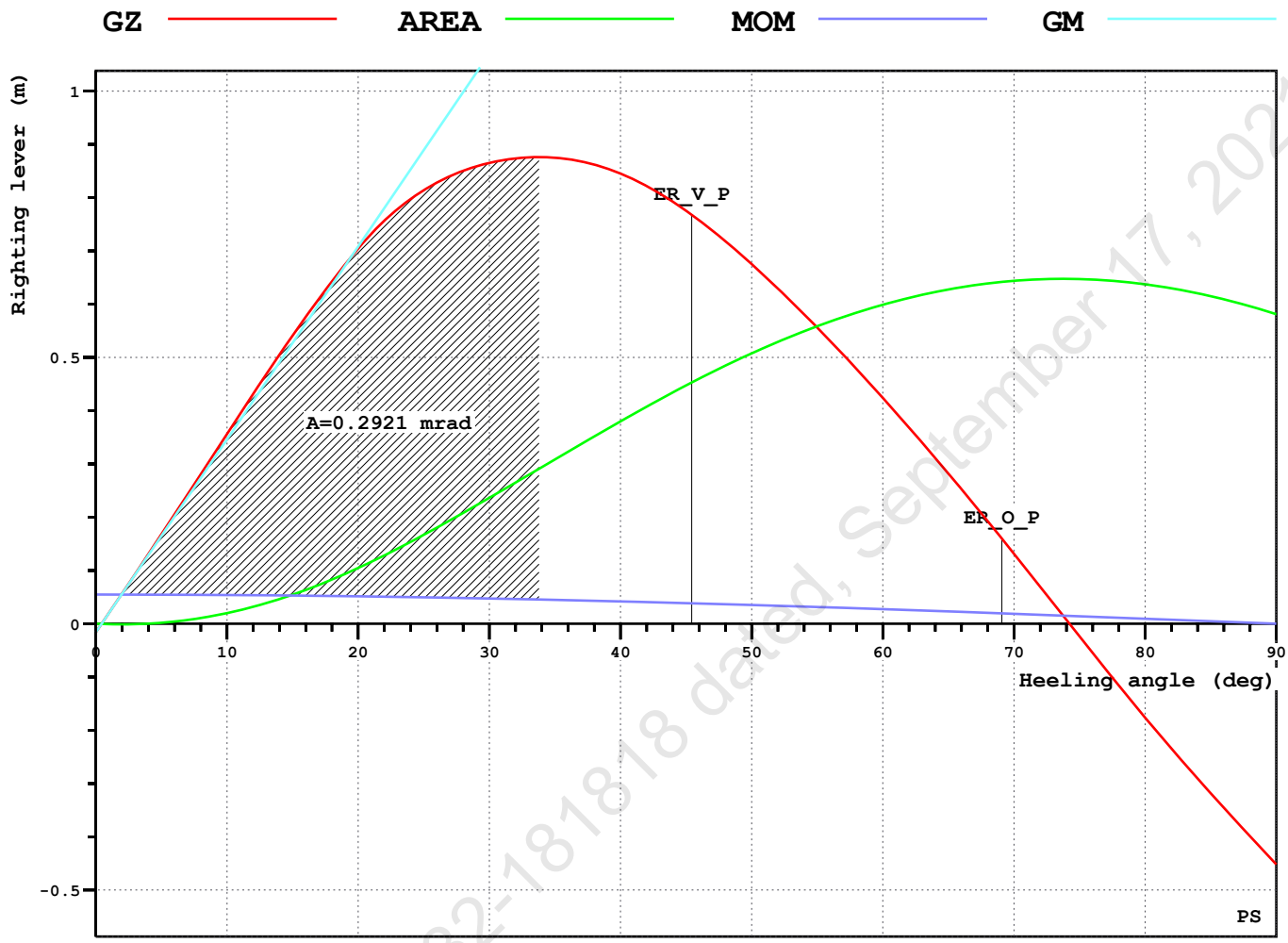
INTACT STABILITY CHECK PLOT



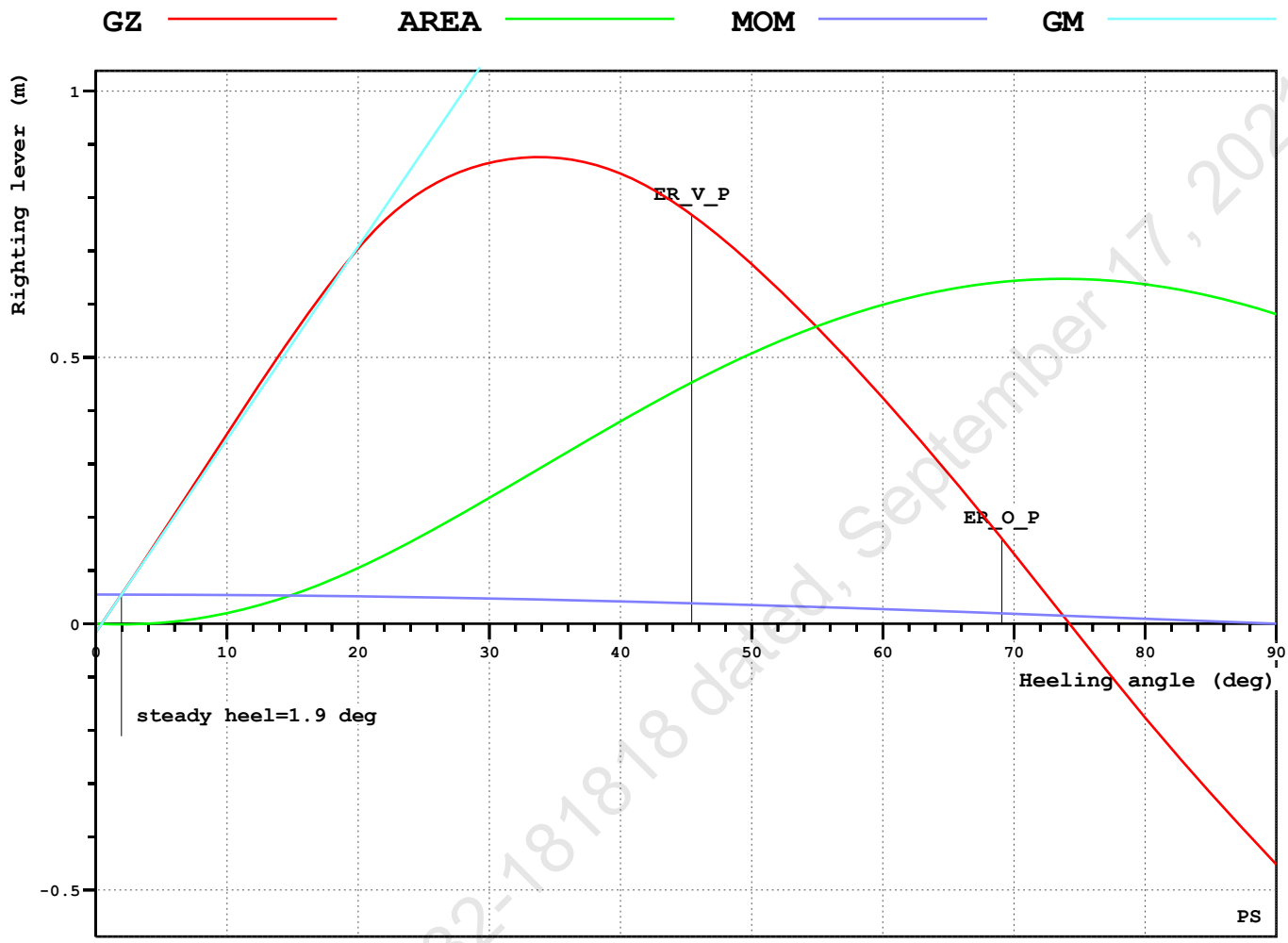
IMO WEATHER CRITERIA



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	0.264	mrad	OK
AREA40	Area under GZ curve up to 40 deg.	0.090	0.415	mrad	OK
AREA3040	Area under GZ curve btw. 30-40 deg.	0.030	0.152	mrad	OK
GZ0.2	Max GZ > 0.2	0.200	0.876	m	OK
MAXGZ25	Max. GZ at an angle > 25 deg.	25.000	33.783	deg	OK
GM0.15	GM > 0.15 m	0.150	2.076	m	OK
V.IMOWEATHER	IMO weather criterion	1.000	2.365		OK
IMO.WIND_HEEL	Wind Heel <16 or <=80% of dk imm.	11.449	1.558	deg	OK
2020IS-B2.9.7.1.2	Eq. angle less than 10 deg. or dk. imm.	14.311	1.950	deg	OK
2020IS-B2.9.7.1.1	Resid. righting area > 0.08 mrad	0.080	0.292	mrad	OK

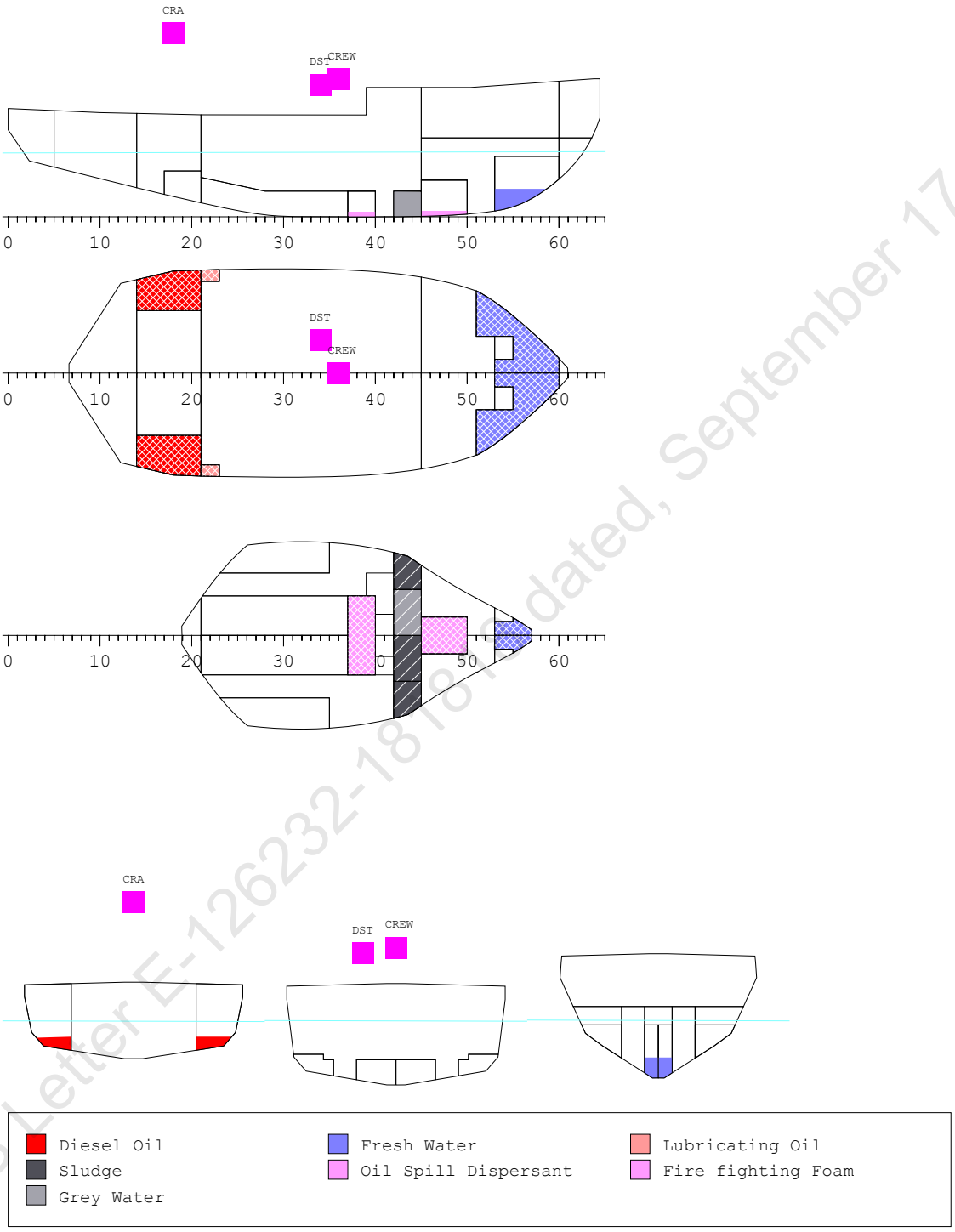
GZ CURVE DATA

HEEL deg	T m	TR m	GZ m	AREA mrad
0.0	3.939	-0.045	-0.016	0.000
0.4	3.939	-0.045	0.000	0.000
10.0	3.855	-0.018	0.357	0.029
20.0	3.627	0.043	0.705	0.123
30.0	3.330	-0.115	0.865	0.264
40.0	2.961	-0.428	0.845	0.415
50.0	2.519	-0.766	0.675	0.550
60.0	2.012	-1.092	0.424	0.646
70.0	1.455	-1.380	0.132	0.695
80.0	0.866	-1.599	-0.176	0.691
90.0	0.287	-1.655	-0.452	0.636

RELEVANT OPENINGS

NAME	TEXT	WT	X m	Y m	Z m	IMMA deg	IMMR m
ER_V_P	ER_INLET_P	UNPROTECTED	13.373	2.300	6.300	45.4	2.340
ER_V_S	ER_INLET_S	UNPROTECTED	13.373	-2.300	6.300	-	2.375
ER_O_P	ER_OUT_P	UNPROTECTED	14.000	1.500	8.400	69.1	4.447
ER_O_S	ER_OUT_S	UNPROTECTED	14.000	-1.500	8.400	-	4.470

LC04 - LC02+CRANE LOAD(3T load)



LC04 - LC02+CRANE LOAD(3T load)

Floating Position - Intact condition

Draught at AP (moulded)	3.485 m
Draught at FP (moulded)	3.550 m
Mean Draught (moulded)	3.517 m
Trim (+ by Bow)	0.065 m
Heel (+ PS)	0.2 deg
KM above moulded BL	6.545 m
KG above moulded BL	4.476 m
GM0 (solid)	2.068 m
Free Surface Correction	0.168 m
GM (liquid)	1.900 m
Density of Water	1.025 t/m3

LCB	:	16.691 m Fwd of AP
LCF	:	15.283 m Fwd of AP
MCT	:	6.279 tm/cm
TPC	:	3.124 t/cm

LOAD SUMMARY TABLE

NAME	LOAD	MASS t	LCG m	TCG m	VCG m
Crane	CRA	3.0	9.000	0.000	10.000
Crew	CREW	1.0	18.000	0.000	7.500
Oil Spill Dispersant	DISPERSANT	0.8	19.240	0.000	0.142
Diesel Oil	DO	10.0	9.059	0.000	2.192
Deck Store	DST	0.2	17.000	1.800	7.200
Fire fighting Foam	FOAM	0.9	23.578	0.000	0.217
Fresh Water	FW	3.4	27.363	0.000	1.144
Grey Water	GWT	4.1	21.741	1.141	0.772
Lubricating Oil	LO	0.4	11.046	0.000	2.541
Sludge	SLU	20.2	21.717	-0.562	0.960
Deadweight		44.0	18.180	-0.143	2.016
Lightweight		642.3	16.584	0.008	4.645
Deadweight		44.0	18.180	-0.143	2.016
Total weight		686.3	16.686	-0.002	4.476

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.P	DO	20.0	5.0	5.8	8.814	4.541	3.732	4.08
R.FODAYTK.S	DO	20.0	5.0	5.8	8.814	-4.541	3.732	4.08
R.FOTK.1P	DO	0.0	0.0	0.0	13.965	4.376	1.368	0.00
R.FOTK.2P	DO	0.0	0.0	0.0	14.508	1.032	0.926	0.00
R.FOTK.2S	DO	0.0	0.0	0.0	14.508	-1.032	0.926	0.00
R.FOTK.1S	DO	0.0	0.0	0.0	13.965	-4.376	1.368	0.00
R.FOTK.3C	DO	0.0	0.0	0.0	9.558	0.000	1.826	44.17
TOTAL			10.0	11.7				52.32

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	1.7	1.7	27.555	1.652	2.434	19.25
R.FWTK.S	FW	10.0	1.7	1.7	27.555	-1.652	2.434	19.25
TOTAL			3.4	3.4				38.49

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	0.2	11.005	5.416	4.010	0.06
R.LOTK.S	LO	10.0	0.2	0.2	11.005	-5.416	4.010	0.06
TOTAL			0.4	0.5				0.13

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	23.732	0.000	1.070	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	0.8	0.8	19.248	0.000	0.755	9.74
TOTAL			0.8	0.8				9.74

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

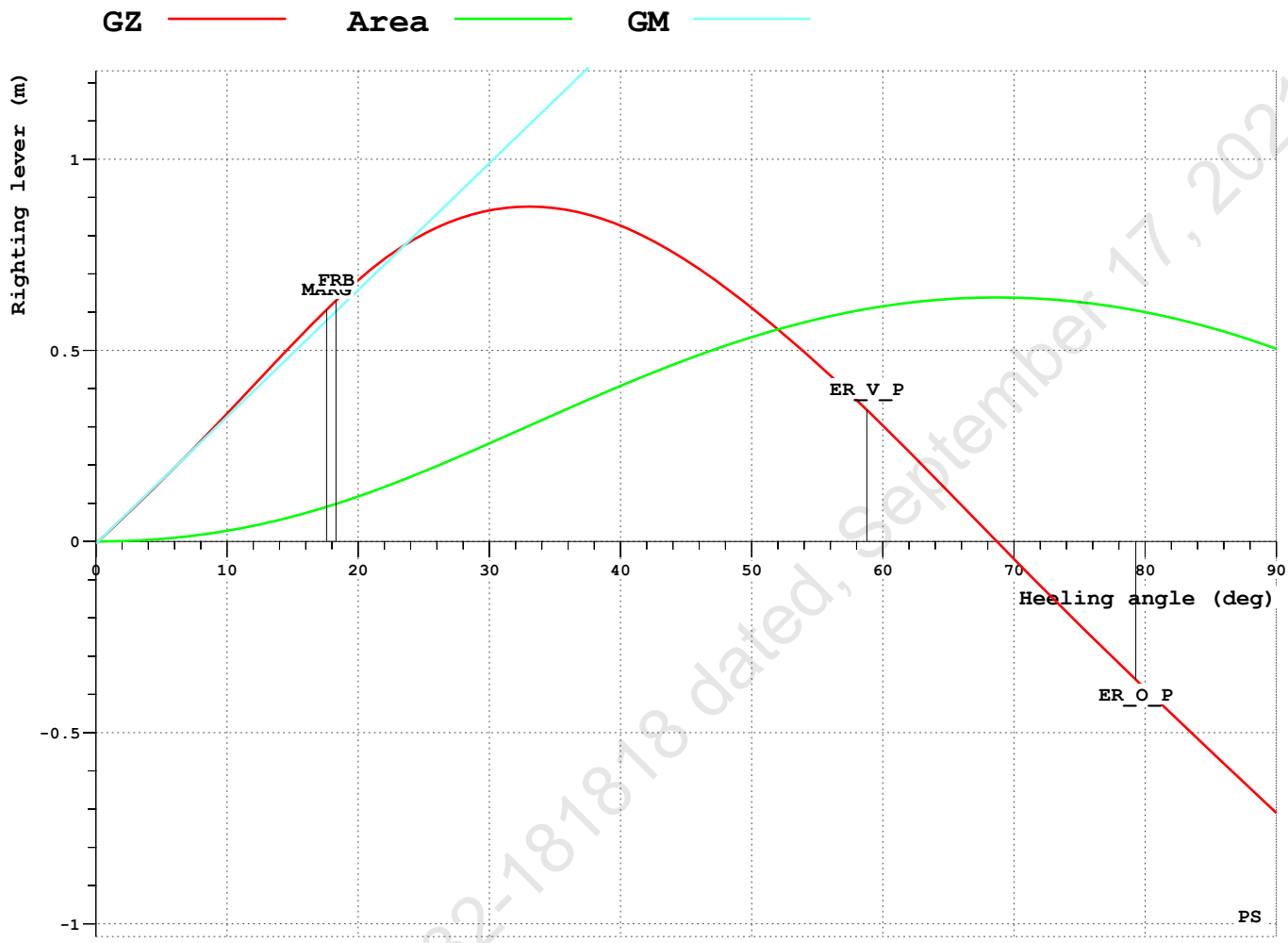
CREW

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

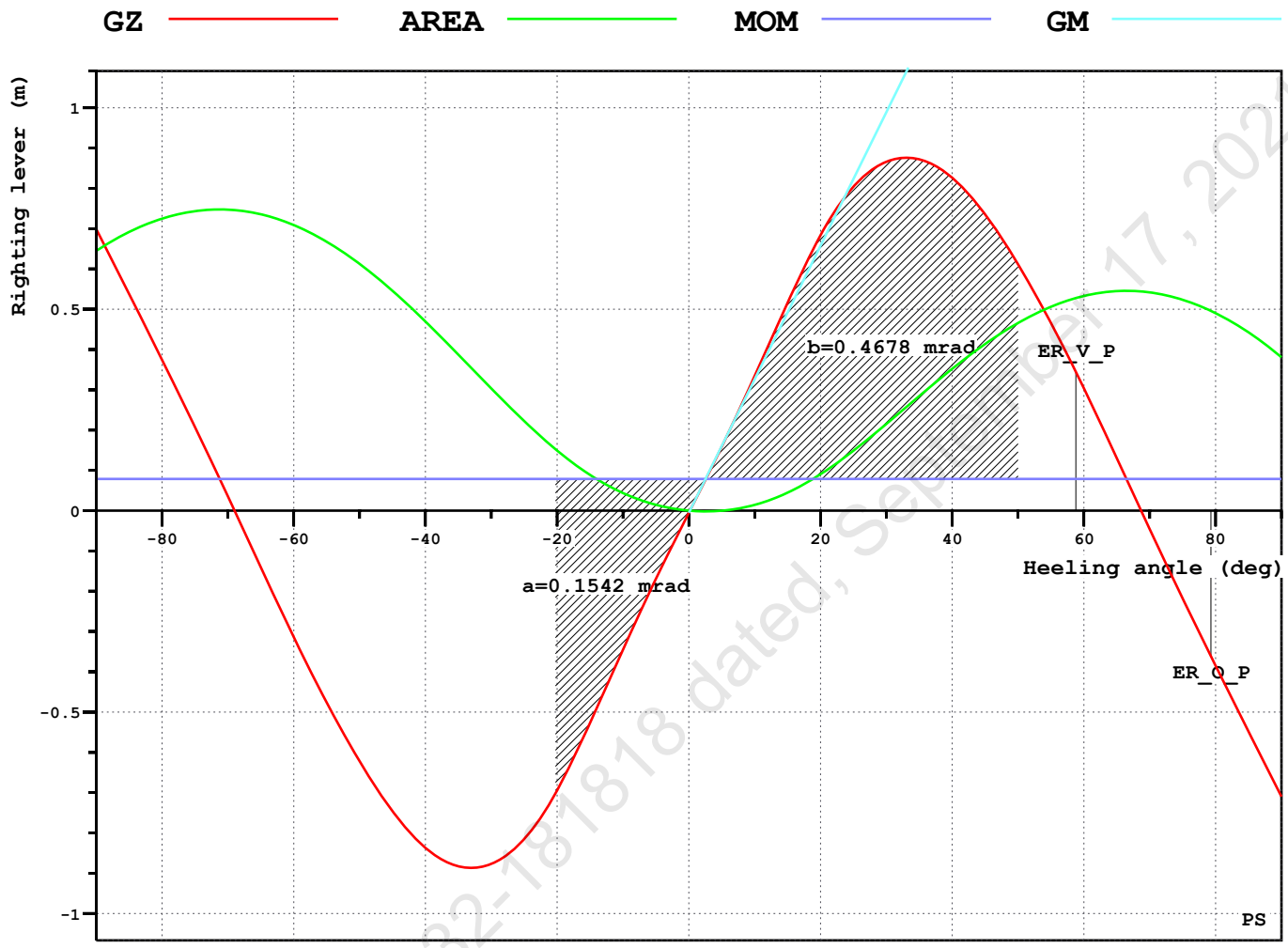
CRANE

NAME	PURP	MASS t	LCG m	TCG m	VCG m
CRANE	MASS	3.0	9.000	0.000	10.000
TOTAL		3.0	9.000	0.000	10.000

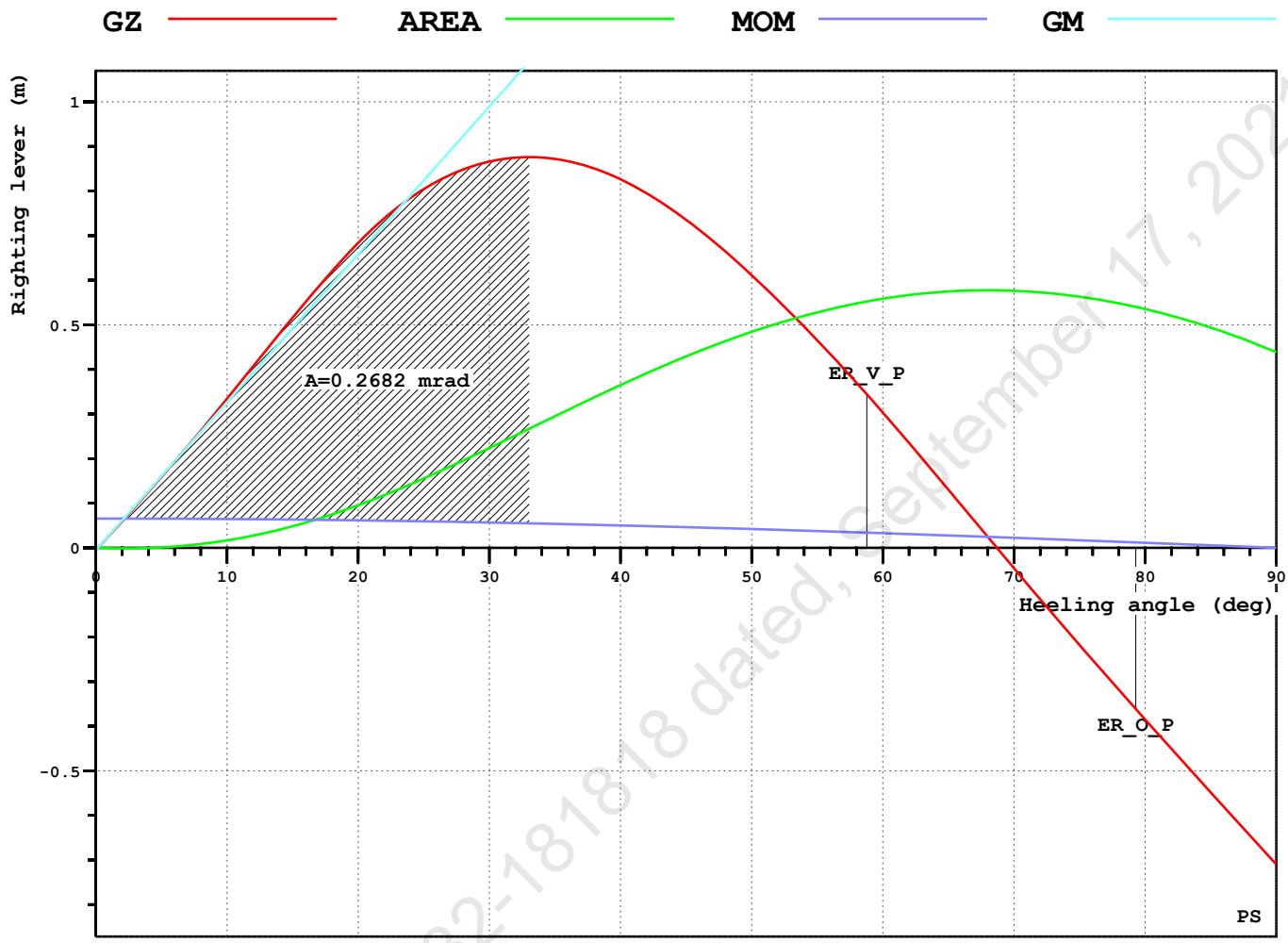
INTACT STABILITY CHECK PLOT



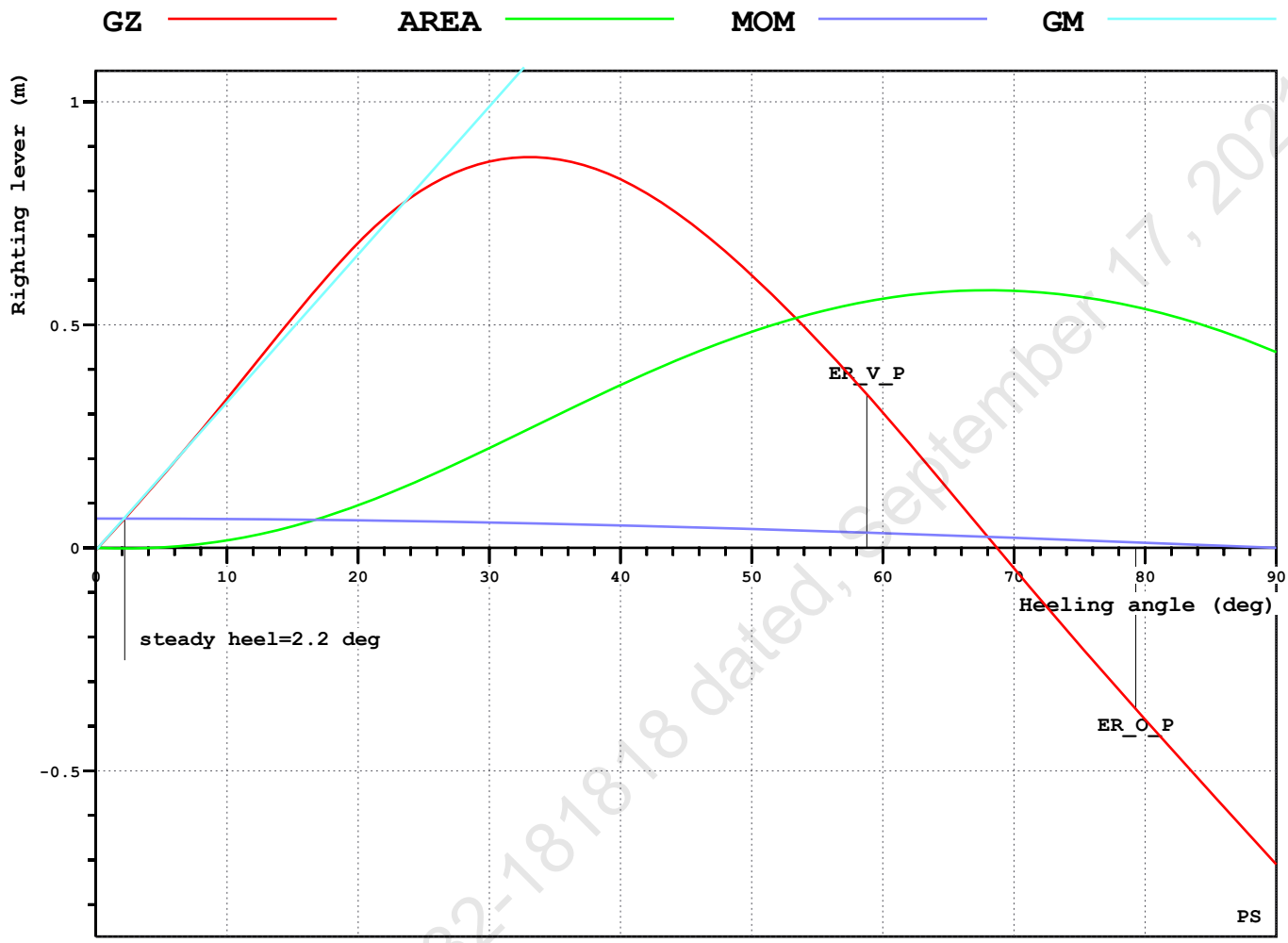
IMO WEATHER CRITERIA



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	0.256	mrad	OK
AREA40	Area under GZ curve up to 40 deg.	0.090	0.407	mrad	OK
AREA3040	Area under GZ curve btw. 30-40 deg.	0.030	0.151	mrad	OK
GZ0.2	Max GZ > 0.2	0.200	0.876	m	OK
MAXGZ25	Max. GZ at an angle > 25 deg.	25.000	33.032	deg	OK
GM0.15	GM > 0.15 m	0.150	1.900	m	OK
V.IMOWEATHER	IMO weather criterion	1.000	3.033		OK
IMO.WIND_HEEL	Wind Heel <16 or <=80% of dk imm.	14.647	1.799	deg	OK
2020IS-B2.9.7.1.2	Eq. angle less than 10 deg. or dk. imm.	18.309	2.202	deg	OK
2020IS-B2.9.7.1.1	Resid. righting area > 0.08 mrad	0.080	0.268	mrad	OK

GZ CURVE DATA

HEEL deg	T m	TR m	GZ m	AREA mrad
0.0	3.517	0.065	-0.005	0.000
0.2	3.517	0.065	0.000	0.000
10.0	3.437	0.111	0.334	0.028
20.0	3.188	0.281	0.684	0.118
30.0	2.816	0.402	0.866	0.256
40.0	2.344	0.314	0.826	0.407
50.0	1.807	0.163	0.612	0.535
60.0	1.228	0.001	0.304	0.615
70.0	0.624	-0.161	-0.046	0.638
80.0	0.033	-0.245	-0.385	0.600
90.0	-0.547	-0.343	-0.710	0.504

RELEVANT OPENINGS

NAME	TEXT	WT	X m	Y m	Z m	IMMA deg	IMMR m
ER_V_P	ER_INLET_P	UNPROTECTED	13.373	2.300	6.300	58.8	2.782
ER_V_S	ER_INLET_S	UNPROTECTED	13.373	-2.300	6.300	-	2.795
ER_O_P	ER_OUT_P	UNPROTECTED	15.000	1.500	8.400	79.3	4.880
ER_O_S	ER_OUT_S	UNPROTECTED	15.000	-1.500	8.400	-	4.889