STABILITETSBOG

"W. Klitgaard"

O X B X

Udført	: December, 2009
Projekt	: W.Klitgaard
Dokument nr.	: Klitgaard-RPT-101-001
Version	: 01
Udført af	: Tomas Valsson

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INDHOLD

AFSNIT 1

GENERAL INFORMATION

INDLEDNING

Denne bog indeholder stabilitets informationer for sejlskibet "W.Klitgaard".

Skibets stabilitet er beregnet med stabilitetsprogrammet "AutoHydro", der er udviklet af Autoship Systems Corporation.
Program version: 6.4.

Navnet på skrog definitions og tank fil er:

KLITGAARD.GF

Baseret på vedlagt linietegning, se afsnit 8.

Stabilitetsbogen indeholder lastekonditioner (se afsnit 2) der vil dække typisk brug af skibet.
Alle lastekonditioner opfylder den danske søfartsstyrelse, Teknisk Forskrift nr. 15 af 20 nov. 2000 og/eller den International Maritime Organization resolution A749(18) - se side 4.

Hvis der opstår lastekondition der ikke dækkes af vedlagte standard lastekonditioner, må skibets fører udfærdige aktuelle afgangs og ankomst lastekonditioner.
Skibets stabilitet kan kontrolleres ved brug af Max VCG-kurve diagrammet (se side 12) - Aktuel VCG skal ligge på den rigtige side af Max VCG-kurven.

NOTE:
Beregninger af stabilitets data og metacenterhøjde, GM, er baseret på skibets aktuelle flyde stilling.
Derfor kan det ikke undgås at mindre afvigelser fremkommer ved de manuel beregninger.

Frederikshavn, December. 2009

ShipCon ApS

Tomas Valsson

HOVEDDATA

Skibets navn:	W. Klitgaard
Skibs type:	Sejlskib med hjælpemotor
Kendingsbogstaver:	O X B X
Kontrolnummer:	V 13
Hjemsted:	Frederikshavn
Ejer:	Den selvejende institution W. Klitgaard c/o Bangsbo Museet 9900 Frederikshavn
Byggeværft:	J.N. Olsen - Frederikshavn
Byggeår:	1891

Længde o.a.:	20.84	m.
Length p.p.:	18.60	m.
Breadth:	5.30	m.
Dybde:	2.50	m.
Bruttoregistertonnage:	37.47	
Nettoregistertonnage:	9.72	
Letvægt	64.7	ton
VCG (eller KG)	2.62	m
LCG	9.33	m

VEJLEDNING TIL SKIBETS FØRER:

Generelt

Skibets fører skal være opmærksom på:

at overholdelse af stabilitets kriterierne ikke sikrer ubetinget mod krængning eller fritager skibets fører for hans ansvar, og at han derfor stadig skal udøve sund dømmekraft og godt sømandskab under hensyntagen til vejrforhold og farvand og skal træffe sådanne hensigtsmæssige foranstaltninger med hensyn til sejladsen, som de tilstedeværende omstændigheder tilsiger.

at der før rejsen påbegyndes, drages omsorg for, at evt. ladning og større udrustnings genstande er forsvarligt stuvet, således at risikoen for forskydning under sejlads begrænses mest muligt.

Skade stabilitets beregninger er ikke udført, hvorfor en skade eller indstrømning gennem eksisterende åbninger kan resultere i at skibet synker.

Sejlkonditionerne er baseret på et vindtryk på 110 N/m^2, der svarer til en vindstyrke på 12 m/sek, med sejlene sat mest ugunstigt i forhold til krængning, hvilket i princippet betyder med alle sejl tot-halet på tværs af vindretningen. Selv om dette synes urealistisk, kan det forekomme.
Så ved vindhastigheder over 12 m/sek skal topsejl stryges, og det anbefales at sætte grænsen ved 10 m/sek. Dette gælder også hvis krængningen af andre årsager overstiger 15°. Se markering på vedlagte billede.

Ved større vind hastigheder bør sejlene yderligere reduceres.

Ved sejlads med sejl føring skal alle udvendige døre og luger holdes lukkede.

De markeret røde sejl anbefales strøget når vindhastigheden overstiger 10 m/sek.

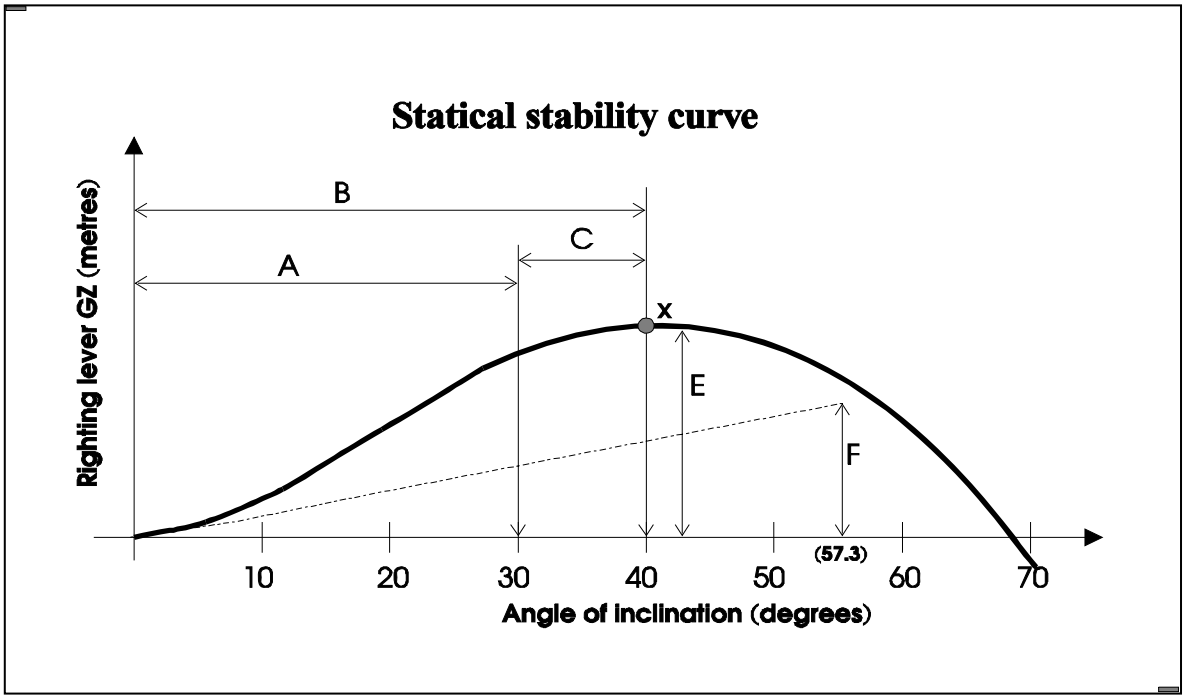
Krængning ved alle passagerer i den ene side.

Beregning af krængning for alle (28) passagerer samlet i den ene side af skibet.
Beregnings grundlag er kondition nr. 5. Da denne kondition har det mindste GM .
GM = 0.941 m. & Depl. = 67.78 t.
Krængningsmoment er: 28 x 0.08 x 2.3 = 5.2 tm.

Arc tgα = Krængningsmoment / Depl x GM = <u>4.7°</u>

STABILITETSKRAV

Stabiliteten for dette skib skal være i overensstemmelse med nedennævnte krav, der er udsat af den danske Søfartsstyrelse, Teknisk Forskrift nr. 15 af 20 nov. 2000.



A. Arealet under kurven op til 30 grader må ikke være mindre end 0.055 radianmeter.

B. Arealet under kurven op til X grader må ikke være mindre end 0.09 radianmeter.

C. Arealet mellem 30 grader og X grader må ikke være mindre end 0.03 radianmeter.

X. 40 grader eller indstrømningsvinkel hvis denne vinkel er mindre end 40 grader, hvorved åbninger i skrog og overbygninger, der ikke kan lukke vejrtæt, kommer under vand.

E. Den oprettende stabilitetsarm GZ skal være mindst 0.20 m ved en krængningsvinkel på 30 grader eller derover.

Den maksimale oprettende stabilitetsarm GZ skal helst forekomme ved en krængningsvinkel. på 30 grader og i hverfald ved mindst 25 grader.

F. Den initiale tværskibs metacenterhøjde GM skal være mindst 0.15 metre.

For sejlskibe skal der desuden udføres beregninger af stabiliteten under sejltryk.
Den maksimale krængning må ikke overstige 15° ved et vindtryk på 110 N/m2 sejlareal.
(110 N/m2 svarer til vindtrykket ved en vindhastighed på 12 m/sek.).

NOTER VEDRØRENDE STABILITET

Generelt set er skibs stabilitet udtryk for skibets evne til at vedligeholde en opret stilling, eller til at genvinde den oprette stilling efter en krængning.

For så vidt angår den intakte båds sødygtighed er det alene nok at undersøge stabilitets-forholdene i tværskibs retning, dvs. overfor rulning og krængning.

Tværskibsstabilitet afhænger af to punkters indbyrdes placering, nemlig fællestyngde-punktet for båd og last (G) og bådens tværskibs metacenter (M), der alene er bestemt af bådens dybgang og form.

Den lodrette afstand mellem disse to punkter, GM, kaldes metacenterhøjde og udtrykker ved små krængninger bådens stabilitet, som følger:

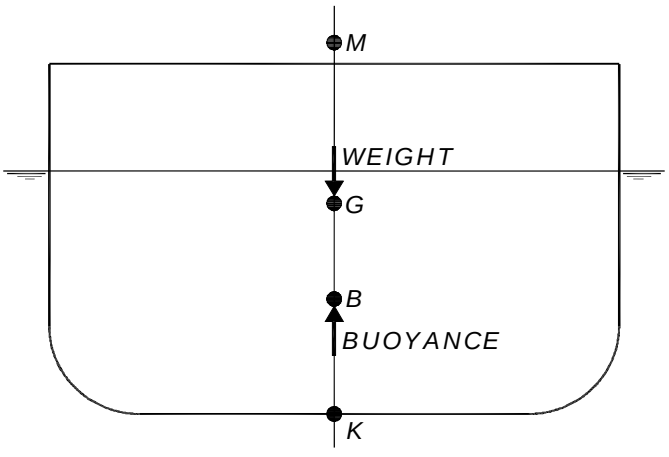
GM = KMT - VCG

Fællestyngdepunktets lodrette placering afhænger dels af letskibs vægten og dens lodrette tyngdepunkt, og dels af lastens vægt og dennes lodrette fordeling om bord.

VCG bestemmes ved at summere samtlige enkelte vægtes lodrette moment i forhold til basislinien og dividere denne sum med den totale vægt af båden og ladning som vist i regneeksemplet på side 11.

KMT er opført i bådens hydrostatiske tabeller.

Betingelsen for at båden har tilstrækkelig stabilitet til at opfylde de lovmæssige fastsatte krav er at VCG er mindre end den til den pågældende dybgang størst tilladelige VCG-værdi, jævnført tabellen over maksimalt tilladeligt VCG i afsnit 5.

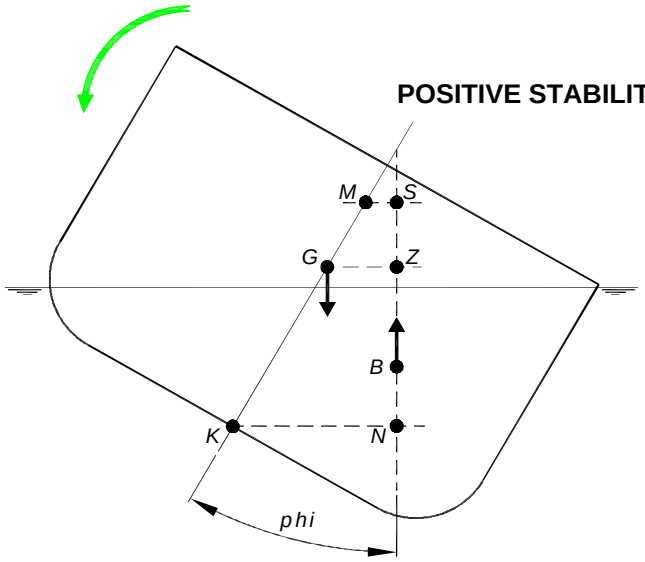


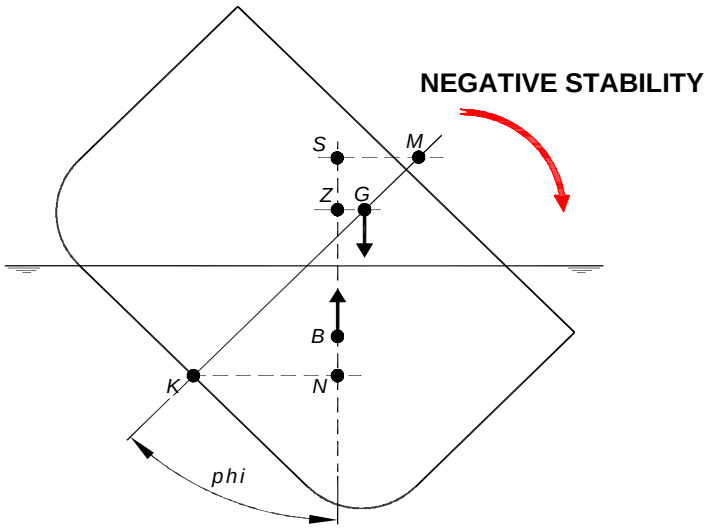
UPRIGHT POSITION

NOTER VEDRØRENDE STABILITET

Statiske stablitetskurver:

Betingelsen for at båden har posetiv stabilitet er at stabilitetsarmen GZ er positiv.





Bådens stabilitet under krængning afbildes normalt med den statiske stabilitetskurve, der viser stabilitetsarmen GZ som funktion af krængningsvinklen.

GZ beregnes efter nedenstående udtryk:

$$GZ = KN - VCG_{Corr} * Sin(phi) \quad (m).$$

KN = Afstand fra køl til metacenter akse (m)
VCG_{Corr} = Vertikal center of gravity, korrekted for effekt af frie overflader (m)
GM = Metacenter højde (m)
phi = Krængningsvinkel

Hvor KN er opført i KN-tabel for den aktuelle krængningsvinkel.

NOTER VEDRØRENDE FRIE OVERFLADER

W. Klitgaard er ikke udrustet med brede tanke, hvor der kan opstå store frie overflader der vil virke negativt på stabiliteten.
Følgende beskrivelse er generel om fri overfladeeffekt.

Hvis væsken i en tank ikke fylder denne helt, vil den når skibet er krænget til vis vinkel, være forskudt til den side, skibet er krænget. Denne væskeflytning, der medfører formindskelse af skibes stabilitet kaldes "fri overfladeeffekt".
Den ugunstige indvirkning medfører tab i begyndelsesstabiliteten - på GM eller også udtrykt i stigning af VCG og er beregnet på følgende måde:

$$\text{F/S Corr.} = \frac{\text{Sum af "Free Surface Moments" i slakke tanke}}{\text{Skibets deplacement i tons}}$$

Det "free surface moment" (FSM) der opstår i en slækk tank, findes ved at beregne tankens frie overflade inertimoment om tankens overflades langskibs tyngdepunktakse (Inertia) og gange det med væskens vægtfylde (SG) i tanken (FSM = Inertia * SG).

VCG korrekttion for fri overflade er derefter fundet ved:

VCG_{Corr} = VCG + F/S Corr. (m).

NOTER VEDRØRENDE TRIM OG DYBGANG

Bådens trim er defineret som forskellen mellem bådens dybgang agterud på AP og forude på FP, begge målt til basislinien.

Beregning af trim og dybgang for en given lastekondition, se også vejledning side 11.
Følgende data er nødvendige for at beregne bådens forventede trim og dybgang:

LCG = Langskibs tyngdepunkt beliggenhed

LCB = Langskibs opdriftscenters beliggenhed

LCF = Langskibs flydecenters beliggenhed

Displ = Bådens aktuelle deplacement

MTcm = Bådens aktuelle trimmoment

MTcm, LCF og LCB fyndes i de hydrostatiske tabeller for trim = 0 m, hvor deplacementet bruges som indgangsværdi.

Trimmet i den aktuelle kondition beregnes efter følgende udtryk:

$$TRIM = \frac{Displ * BGL}{MTcm * 100} \quad (m)$$

BGL = LCB - LCG (m) , også kaldet trimarm, hvis negativ værdi vil båden trimme forover.

Ønsker man at beregne dybgang udfra et bestemt deplacement kan dybgang på AP og FP til underkant køl, beregnes efter udtrykkene:
Se dybgang aflæstning på side 9.

$$Draft\ AP = Draft + \frac{TRIM * LCF}{Lpp} \quad [m]$$

$$Draft\ FP = Draft\ AP - Trim \quad [m]$$

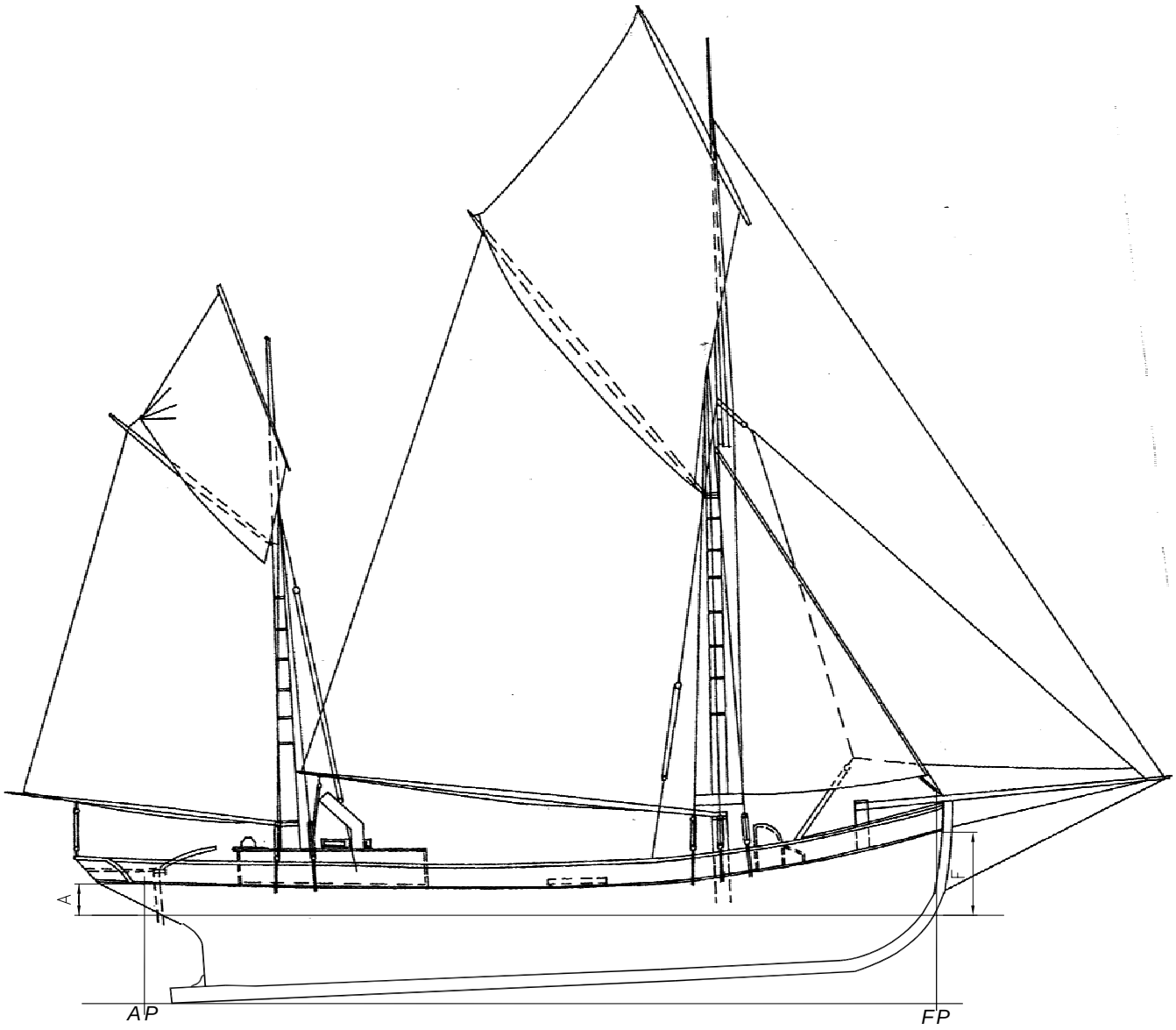
eller

$$Draft\ FP = Draft - \frac{TRIM * (Lpp - LCF)}{Lpp} \quad (m)$$

Hvor Draft er dybgang i de hydrostatiske tabeller svarende til deplacement Displ og trim = 0 m.

Lastekonditioner i denne bog er udført som direkte beregninger, det vil sige beregnet på den aktuelle vandlinie. Lille afvigelse i de manualle beregninger er derfor sandsynlig i konditioner med stort trim.

DYBGANG AFLÆSNING



Draft - FP = 4.50 - F = 4.50 - _____ = _____ m.

Draft - AP = 3.20 - A = 3.20 - _____ = _____ m.

Draft MS = $\frac{\text{Draft AP + Draft FP}}{2}$ = ---------- = _____ m.

Trim = Draft AP - Draft FP = = _____ m.

BRUG AF MaxVCG KURVER.

MaxVCG grænsekurve er en kurve som angiver maksimal tilladelig VCG for forskellige dybgange.
Grænsekurverne er udregnet så alle relevante kriterier er opfyldt når tyngde-punktet ligger under kurven.

Når båden har trim der ligger indenfor de værdier der er vist på kurvebladet på side 12, kan et hurtigt stabilitets check udføres ved at plotte den aktuelle dybgang og VCG ind på kurvebladet. Hvis punktet ligger under den laveste kurve, er stabilitets kravene opfyldt.
Hvis punktet ligger i mellem de indtegnede kurver, afhænger opfyldning af stabiletets kravene af det aktuelle trim i forhold til de kurver punktet ligger under eller over.

Det maksimum tilladelige VCG må ikke være mindre end det aktuelle VCG_{Corr}.

MaxVCG kan beregnes efter formlen for lineær interpolation:

INTERPOLATION MELLEM KURVER

Venligst følg efterfølgnde vejledning for at være sikker på at rigtige kurver bruges:

1) Beregn det aktuelle VCG ved at bruge beregnings skemat på side .

2) Vær sikker på at det beregnede VCG er korrigeret for frie vandoverflader.

3) Vær sikker på at båden er i ballance, ingen slagside.

4) Hvis det aktuelle trim ligger i mellem de viste trim, det maksimum VCG-værdi for det nærmeste trim værdi kan andvendes.
Eller:
Brug interpolation formlen her forneden for at beregne det maksimum tilladeligt VCG for det aktuelle trim.

5) Hvis det maksimum VCG-værdi er større en det akuelle VCG (korrigeret for fri overflade) er bådens stabilitet tilfredsillende.

$$\text{Max VCG} = \frac{(VCG_{T2} - VCG_{T1}) * (TA - T1)}{(T2 - T1)} + VCG_{T1}$$

T1, T2 og Trim er trimværdier Lav, Høj og Aktuel

VCG_{T1} og VCG_{T2} er max VCG der korrespondere med trimværdierne T1 og T2

T1 og T2 skal vælges således at det resuterer T2 > TA > T1

REGNEEKSEMPEL

BEREGNING AF VÆGT OG TYNGDEPUNKT:

Item	Vægt [ton]	VCG [m]	VCG-Mom. [ton x m]	LCG [m]	LCG-Mom [ton x m]	FSM [ton x m]
[a] Total Dødvægt						
[b] Light Ship	64.7	2.62	169.51	9.33	603.65	
Total Sum [a] + [b]						
	[1]		[2]		[3]	[4]

[1] Displ = [1] = _____ ton (Aktuelt deplacement Displ)
[5] LCG = [3] / [1] = _____ m
[6] VCG = [2] / [1] = _____ m
[7] F/S Korrektion = [4] / [1] = _____ m
[8] VCG_{CORR} = [6] + [7] = m (Aktuelt VCG korrigeret for fri vandoverflade)

BEREGNING AF TRIMFORHOLD:

TRIM		Vejledning & Eksempel
Draf		Dybgang svarende til Displ, se hydrosatik, trim=0m
LCB		Fra hydrostatik tabel, trim=0, aktuelt Displ.
LCF		Fra hydrostatik tabel, trim=0, aktuelt Displ.
MTcm		Fra hydrostatik tabel, trim=0, aktuelt Displ.
Trimarm		LCB - LCG =
Trim		(Displ x Trimarm) / (MTcm x 100)=
Draft AP under køl		Draft + ((trim x LCF) / 18.60) =
Draft FP under køl		Draft AP - Trim - 0.92 =

BEREGNING AF MaxVCG:

		Vejledning
Trim		Det aktuelle trim
T1		Aflæst trim fra kurveblad afsnit 4, mindre end aktuelt trim
T2		Aflæst trim fra kurveblad afsnit 4, større end aktuelt trim
VCG_{T1}		Aflæst VCG fra kurveblad afsnit 4, ved mindre trim end det aktuelle trim
VCG_{T2}		Aflæst VCG fra kurveblad afsnit 4, ved større trim end det aktuelle trim
MaxVCG		$VCG_{T1} + \frac{(VCG_{T2} - VCG_{T1}) \times (Trim - T1)}{T2 - T1} = MaxVCG$ + ----------

STABILITET KONTROL:

Stabiliteten er tilfredsstillende, når det korrigerede VCG ligger under det interpolerede tyngdepunkt MaxVCG.
Hvis MaxVCG ligger under det korrigerede VCG, må fordeling af dødvægt ændres (sænkes).

MaxVCG = _____ ***Er større end*** VCG_{CORR} = _____ **=>** Stabilitet **OK!**

REGNEEKSEMPEL

BEREGNING AF VÆGT OG TYNGDEPUNKT:

Item	Vægt [ton]	VCG [m]	VCG-Mom. [ton x m]	LCG [m]	LCG-Mom [ton x m]	FSM [ton x m]
28 PASS	2,30	4,0	9,2	3,5	8,05	0
[a] Total Dødvægt						
[b] Light Ship	64.7	2.62	169.51	9.33	603.65	
Total Sum [a] + [b]	67,0		178,71		611,70	
	[1]		[2]		[3]	[4]

[1]	Displ	= [1] =	67,0 ton	(Aktuelt deplacement Displ)
[5]	LCG	= [3] / [1] =	9,13 m	
[6]	VCG	= [2] / [1] =	2,68 m	
[7]	F/S Korrektion	= [4] / [1] =	0 m	
[8]	VCG_{CORR}	= [6] + [7] =	2,68 m	(Aktuelt VCG korrigeret for fri vandoverflade)

BEREGNING AF TRIMFORHOLD:

TRIM		Vejledning & Eksempel
Draf	2,494	Dybgang svarende til Displ, se hydrosatik, trim=0m
LCB	8,924	Fra hydrostatik tabel, trim=0, aktuelt Displ.
LCF	8,818	Fra hydrostatik tabel, trim=0, aktuelt Displ.
MTcm	0,805	Fra hydrostatik tabel, trim=0, aktuelt Displ.
Trimarm	-0,206	LCB - LCG = 8,924 - 9,13
Trim	-0,171	(Displ x Trimarm) / (MTcm x 100)= 67 x (-0,206) / 0,805 x 100
Draft AP under køl	2,413	Draft + ((trim x LCF) / 18.60) = 2,494 + (-0,171 x 8,818) / 18,60
Draft FP under køl	1,664	Draft AP - Trim - 0.92 = 2,413 - (- 0,171) - 0,92

BEREGNING AF MaxVCG:

		Vejledning
Trim		Det aktuelle trim
T1		Aflæst trim fra kurveblad afsnit 4, mindre end aktuelt trim
T2		Aflæst trim fra kurveblad afsnit 4, større end aktuelt trim
VCG_{T1}		Aflæst VCG fra kurveblad afsnit 4, ved mindre trim end det aktuelle trim
VCG_{T2}		Aflæst VCG fra kurveblad afsnit 4, ved større trim end det aktuelle trim
MaxVCG		$VCG_{T1} + \frac{(VCG_{T2} - VCG_{T1}) \times (Trim - T1)}{T2 - T1} = MaxVCG$ $+ \frac{\quad}{\quad}$

STABILITET KONTROL:

Stabiliteten er tilfredsstillende, når det korrigerede VCG ligger under det interpolerede tyngdepunkt MaxVCG.
Hvis MaxVCG ligger under det korrigerede VCG, må fordeling af dødvægt ændres (sænkes).

MaxVCG = VCG_{CORR} ***Er større end*** VCG_{CORR} = 2,68 => Stabilitet **OK!**

LIGGER UNDER ALLE KURVER => STABILITET OK
(SE SIDE 12)

SIDE 11B

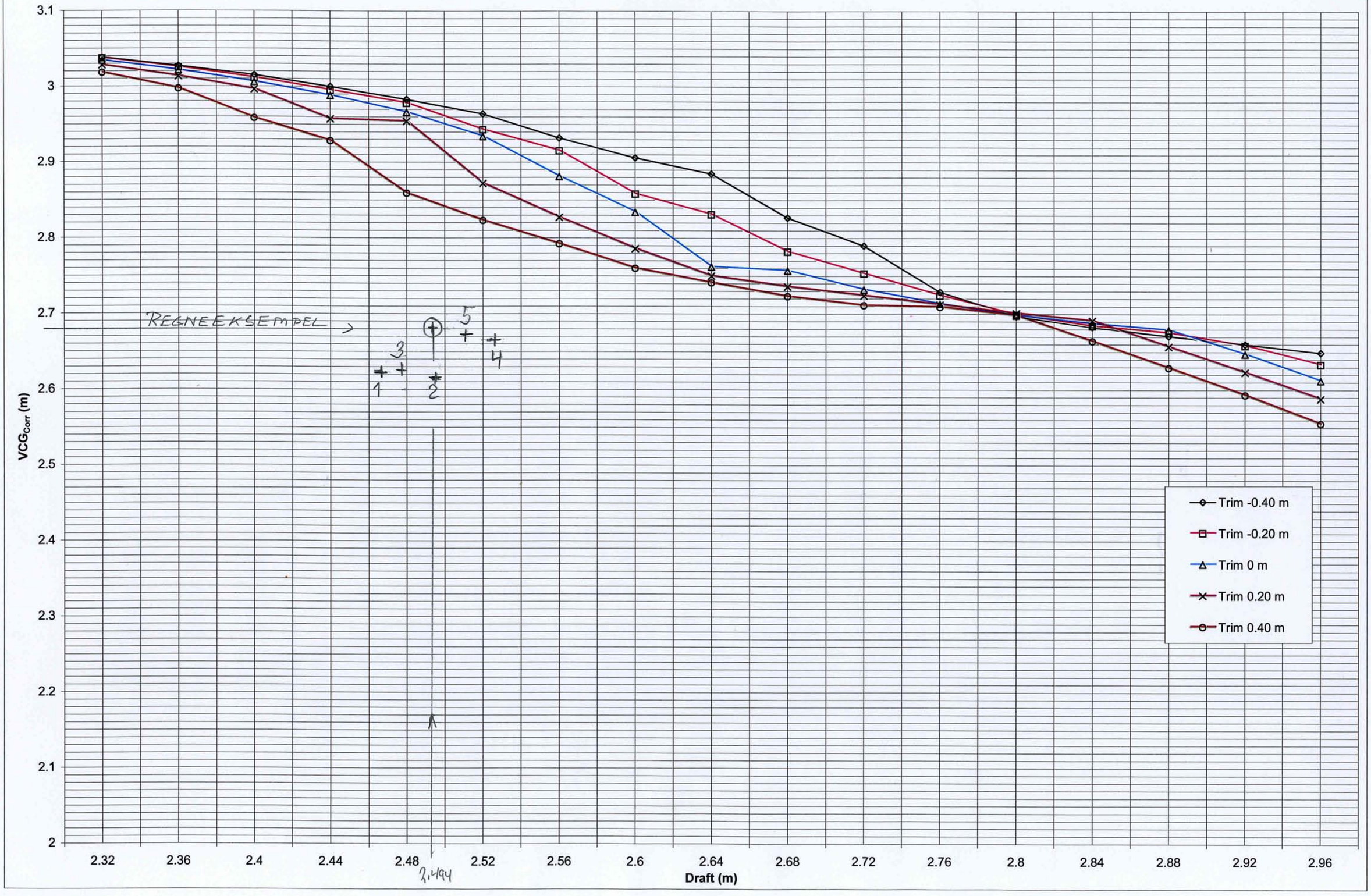
Hydrostatic Properties

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

Draft at 9.300f (m)	Displ (MT)	LCB (m)	VCB (m)	LCF (m)	TPcm (MT/cm)	MTcm (MT-m /cm)	KML (m)	KMT (m)
2.400	60.429	8.932f	1.839	8.895f	0.691	0.736	22.669	3.656
2.410	61.122	8.931f	1.845	8.887f	0.694	0.744	22.630	3.653
2.420	61.819	8.930f	1.852	8.879f	0.696	0.751	22.586	3.650
2.430	62.518	8.930f	1.858	8.872f	0.699	0.758	22.539	3.647
2.440	63.219	8.929f	1.865	8.865f	0.701	0.765	22.496	3.644
2.450	63.924	8.928f	1.871	8.857f	0.704	0.772	22.459	3.641
2.460	64.630	8.927f	1.878	8.848f	0.707	0.779	22.427	3.638
2.470	65.340	8.926f	1.884	8.840f	0.709	0.787	22.398	3.636
2.480	66.051	8.925f	1.891	8.830f	0.712	0.794	22.371	3.633
2.490	66.766	8.924f	1.897	8.821f	0.714	0.802	22.342	3.630
2.500	67.483	8.923f	1.904	8.811f	0.717	0.810	22.325	3.627
2.510	68.202	8.922f	1.910	8.787f	0.721	0.822	22.429	3.626
2.520	68.924	8.921f	1.917	8.778f	0.723	0.830	22.402	3.623
2.530	69.648	8.919f	1.923	8.769f	0.726	0.838	22.376	3.621
2.540	70.375	8.918f	1.929	8.760f	0.728	0.846	22.350	3.618
2.550	71.101	8.917f	1.936	8.823f	0.725	0.830	21.705	3.610
2.560	71.827	8.916f	1.942	8.820f	0.728	0.841	21.767	3.608
2.570	72.557	8.915f	1.949	8.809f	0.730	0.849	21.752	3.605
2.580	73.288	8.914f	1.955	8.797f	0.733	0.857	21.746	3.602
2.590	74.022	8.913f	1.961	8.785f	0.736	0.865	21.745	3.599
2.600	74.759	8.911f	1.968	8.773f	0.738	0.874	21.742	3.596
2.610	75.499	8.910f	1.974	8.762f	0.741	0.882	21.732	3.593
2.620	76.240	8.909f	1.980	8.752f	0.743	0.890	21.712	3.591
2.630	76.984	8.907f	1.987	8.742f	0.745	0.898	21.693	3.588
2.640	77.730	8.905f	1.993	8.731f	0.748	0.906	21.678	3.586
2.650	78.479	8.904f	1.999	8.721f	0.750	0.914	21.657	3.584
2.660	79.230	8.902f	2.005	8.712f	0.752	0.922	21.633	3.581
2.670	79.983	8.900f	2.012	8.703f	0.754	0.929	21.603	3.579
2.680	80.738	8.898f	2.018	8.694f	0.757	0.936	21.574	3.577
2.690	81.495	8.896f	2.024	8.685f	0.759	0.944	21.549	3.574
2.700	82.254	8.895f	2.030	8.675f	0.761	0.952	21.526	3.572
2.710	83.016	8.893f	2.037	8.666f	0.763	0.960	21.498	3.570
2.720	83.779	8.891f	2.043	8.658f	0.765	0.967	21.467	3.568
2.730	84.545	8.888f	2.049	8.649f	0.767	0.974	21.437	3.566
2.740	85.312	8.886f	2.055	8.641f	0.769	0.982	21.400	3.564
2.750	86.081	8.884f	2.062	8.633f	0.771	0.989	21.362	3.562
2.760	86.853	8.882f	2.068	8.625f	0.773	0.996	21.325	3.560
2.770	87.626	8.880f	2.074	8.617f	0.775	1.003	21.284	3.558
2.780	88.401	8.878f	2.080	8.610f	0.777	1.010	21.244	3.556
2.790	89.177	8.875f	2.087	8.602f	0.779	1.017	21.202	3.554
2.800	89.956	8.873f	2.093	8.595f	0.781	1.023	21.160	3.552
2.810	90.736	8.871f	2.099	8.588f	0.782	1.030	21.118	3.550
2.820	91.518	8.869f	2.105	8.581f	0.784	1.037	21.075	3.549
2.830	92.302	8.866f	2.111	8.574f	0.786	1.044	21.034	3.547
2.840	93.087	8.864f	2.117	8.568f	0.788	1.051	20.991	3.545
2.850	93.874	8.861f	2.124	8.561f	0.789	1.057	20.948	3.544
2.860	94.663	8.859f	2.130	8.554f	0.791	1.064	20.906	3.542
2.870	95.453	8.857f	2.136	8.547f	0.793	1.071	20.866	3.540
2.880	96.245	8.854f	2.142	8.540f	0.794	1.078	20.828	3.539
2.890	97.039	8.852f	2.148	8.534f	0.796	1.084	20.784	3.537
2.900	97.834	8.849f	2.154	8.527f	0.797	1.090	20.730	3.535

Water Specific Gravity = 1.025.
Trim is per 18.60m

Max VCG - Curves



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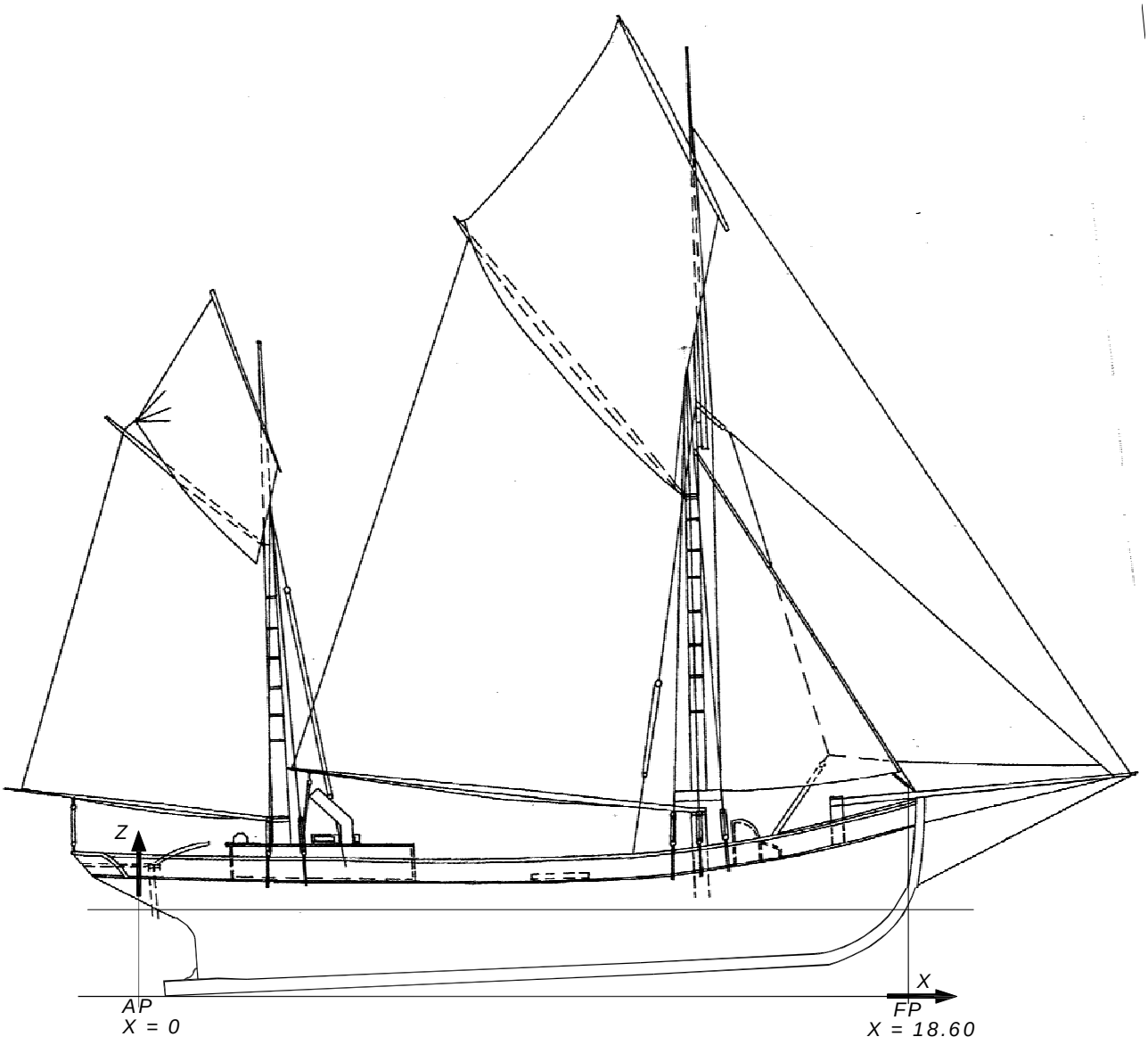


Main axis:

-Origin, The point at which all three of the model axes cross
X = 0 at frame 0
Y = 0 at Centerline of the vessel
Z = 0 at Baseline of the vessel

- Longitudinal, X positive is aft of the origin, negative is forward
The program also recognizes A for aft and F for forward

- Transverse, Y positive to starboard and negative to port
The program also recognizes S for starboard and P for port

- Vertical, Z positive is above the baseplane and negative is below

SYMBOLER og FORKORTELSER

Displ	Displacement in metric tonnes (t).
Depth	Depth is measured from vessel's origin perpendicular to the waterplane.
Draft	Draft is measured on the centerplane.
Draft AP	Draught at aft perpendicular, above moulded base line (m).
Draft FP	Draught at forward perpendicular, above moulded base line (m).
Draft at 18.60f	Draught at Lpp/2 = draught for curves =Draft MS = Draft (m).
Draft MS	Mean draught at Lpp/2 (m)
Trim	Total Trim = Draft AP - Draft FP , Positive for trim aft.
$TRIM_{Corr}$	Trim correction = Displ * BG / MTcm * 100 (m)
LCF	Longitudinal centre of floation, i.e. the centre of gravity of the water line area from aft perpendicular.
LCB	Longitudinal centre of buoyance forward of AP
VCB	Vertical centre of buoyancy : positiv upwards from moulded base line.
LCG	Longitudinal centre of gravity from aft perpendicular.
BGL	Trim lever = LCB - LCG (m).
F/S Corr.	Correction to GM (or VCG) for the effect of free surfaces.
VCG	Vertical centre of gravity above moulded base line (m).
VCG_{Corr}	VCG corrected for free surface effects (m).
GM or $GM_{(Solid)}$	Transverse metacentric height (m) - (KMT - VCG).
$GM_{(Fluid)}$	Transverse metacentric height corrected for free surface effects (m) - (KMT-VCG-F/S Corr.)
KMT	Transverse metacentric height : positiv upwards from moulded base line (m).
KML	Longitudinal metacentric heigh : positiv upwards from moulded base line (m).
GZ	Righting lever (m) - (KN - VCG_{Corr} * SIN(phi)).
KN	Formstability lever - (GZ + VCGCorr * SIN(phi)).
phi	Ships inclining angle in degrees.
MTcm	Moment to change trim one cm in saltwater (MT-m/cm).
TPcm	Weight in tonnes to change the mean draught one cm in saltwater (MT/cm).
TCG	Transverse center of gravity from CL (m).
TCB	Transverse centre of bouyance from CL (m)
Spgr or SG	Specific Gravity (t/m^3).
FSM or FSMt	Free Surface Moment in tanks (MT-m).
Inertia	Transverse moment of inertia of free surface in tanks (m^4).
Lpp	Length between perpendiculars (m).
LBP	Length between perpendiculars (AP and FP) (m). LBP = Lpp
Bmld	Breadth moulded (m).
Displ*VCG	Vertical displacement moment.
$Displ*VCG_{Corr}$	Vertical displacement moment corrected for free surfaces.
WS Area	Wetted surface area (m^2).
Cb	Block coefficient - (DISPL / (LBP * Bmld * Draft MS))
Cm	Midship area coefficient - (Midship area / Bmld * Draft MS)

SYMBOLER og FORKORTELSER

Angle keyword in righting arm table:

Equl	equilibrium angle.
Roll	angle in the direction opposite to the direction of the heeling moment where max roll to windward occure.
MaxRa	angle where maximum righting arm.
RaZero	angle where righting arm is zero.
FldPT	angle where lowest downflood point becomes immersed.

Weather criterion abbreviations:

LPA	Lateral projected area (m^2)
HCP	Height to center of projected area from water line (m).
Arm	Vertical distance from centre of LPA to the centre of the underwater lateral area (m).
Residual ratio	refers to the ratio of residual areas before and after equilibrium (first intercept).

Flood points table:

L,T,V (m)	L - for longitudinal position T - for transvers position V - for vertical position

Units:

(m)	length unit in meter
(deg)	angle unit in degrees
(m-R)	area unit in metric radians
(m-Rad)	area unit in metric radians
(MT)	metric tons
(MT-m)	metric tons - meter

Origin: The ship origin is placed at the frame number 0 on the base line measured positive aft and positive upwards from moulded base line.
Transverse is measured positive to starboard side from the ship center line.

- a Longitudinal orientation, 1a meaning 1 m aft of AP
- f Longitudinal orientation, 1f meaning 1 m forward of AP
- s Transvers orientation, 1s meaning 1 m to starboard
- p Transvers orientation, 1p meaning 1 m to port

B.L. A lign parallel to design water line through intersection of top of keel & centreplane of midsh

METRIC CONVERSIONS

METRIC EQUIVALENTS

MULTIPLY BY	TO CONVERT FROM	TO OPTAIN	-
0.03937	Millimetres	Inches	25.400
0.3937	Centimetres	Inches	2.5400
3.2808	Metres	Feet	0.3048
2.2046	Kilograms	Pounds	0.45359
0.0009842	Kilograms	Tons (2240 lbs.)	1016.047
0.9842	Metric Tons (i.e. Tonnes of 1000 KILOS)	Tons (2240 lbs.)	1.016
2.4998	Metric Tons per centimetre of immmersion	Tons per Inch	0.4000
8.2014	Moment to change trim one centimetre	Moment per Inch	0.122
187.9767	Metre Radians	Feet Degrees	0.0053
0.01745	Metre Degrees	Metre Radians	57.3
-	**TO OBTAIN**	**TO CONVERT FROM**	**MULTIPLY BY ABOVE**

RELATION BETWEEN WEIGHT AND VOLUME

10	m.m. cubed	= 1	Cubic centimetre
1	Cubic centimetre of freshwater (SG = 1.0)	= 1	gram
1000	Cubic centimetre of freshwater (SG = 1.0)	= 1	Kilogram
1	Cubic metre of freshwater (SG = 1.0)	= 1	Tonnes (1000 Kilos)
1	Cubic metre of salteshwater (SG = 1.025)	= 1.025	Tonnes
1	Tonnes of saltwater (SG = 1.025)	= 0.975	Cubic metres

1	Cubic metre	= 35.316	Cubic feet
1	Cubic foot	= 0.0283	Cubic metres

REGISTRERING AF MINDRE FORANDRINGER PÅ SKIBET

Her indskrives alle mindre forandringer af skibet der kan medføre reducering af stabiliteten, men som dog er forholdsvis små i forhold til marginen over tilladelig minimum, eller forandringer der øger stabiliteten.

Hvis der foretages forandringer, som i væsentlig grad får indflydelse på skibets stabilitetsoplysninger, skal der tilvejebringes korrigerede oplysninger om stabiliteten. Skibet skal, om nødvendigt, underkastes en ny krængningsprøve.

Alteration	Weight Tonnes	LCG From AP	Longitud. Moment	VCG Above BL	Vert. Moment

AFSNIT 2

LASTEKONDITIONER

OVERSIGT LASTEKONDITIONER:

Nr.	Lastekondition	Displac. (t)	Draft (m)	Trim (m)	VCG_{Corr} (m)	$VCG_{Allowable}$ (m)	GMT_{Fluid} (m)
1	Light Ship	64.70	2.467	-0.391	2.620	2.988	0.996
2	Departure incl stores - 100% Consumables	66.80	2.496	-0.272	2.618	2.972	0.998
3	Arrival - 10% Consumables	65.48	2.478	-0.344	2.624	2.982	0.992
4	Departure - 100% Consumables + Pass	69.10	2.528	-0.238	2.664	2.929	0.945
5	Arrival - 10% Consumables + Pass	67.78	2.510	0.307	2.671	2.966	0.940

NOTES:

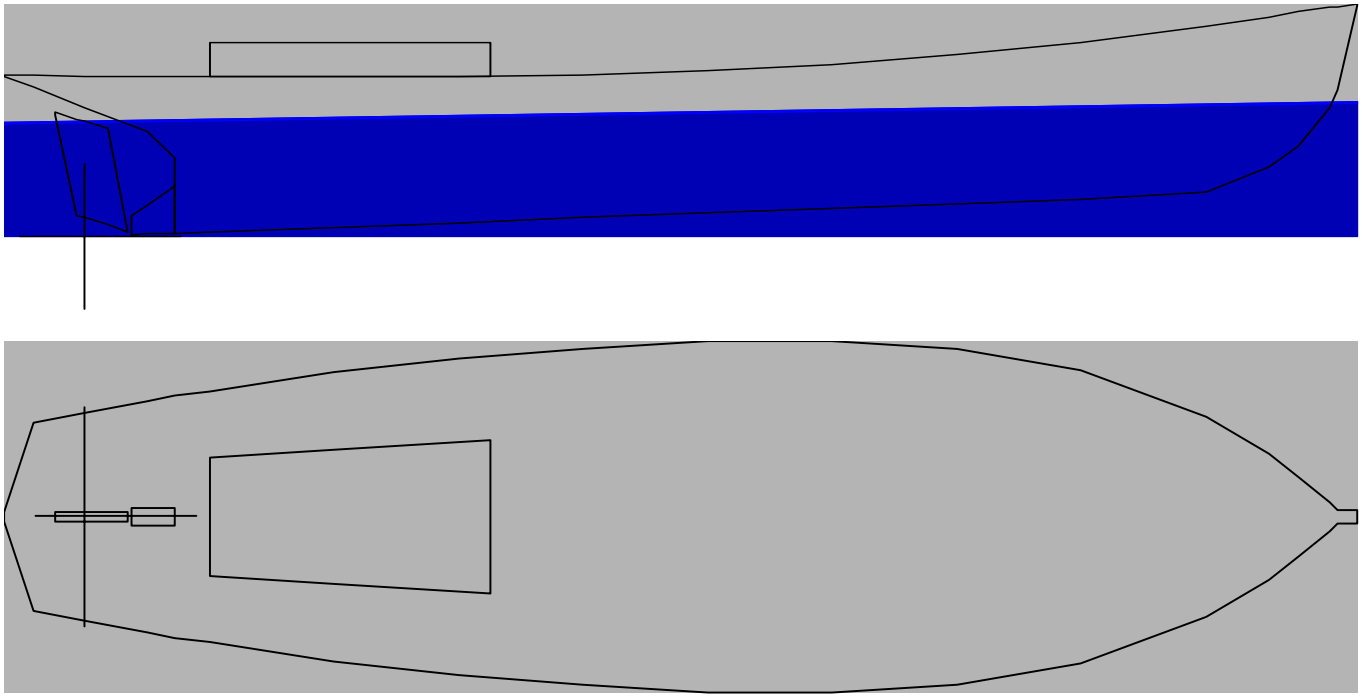
CONDITION No. 01
LIGHT SHIP

Floating Status

Draft FP	2.663 m	Heel	zero	GM(Solid)	0.996 m
Draft MS	2.467 m	Equil	Yes	F/S Corr.	0.000 m
Draft AP	2.272 m	Wind	Off	GM(Fluid)	0.996 m
Trim	fwd 0.391/18.600	Wave	No	KMt	3.616 m
LCG	9.330f m	VCG	2.620 m	TPcm	0.69
Displacement	64.70 MT	WaterSpgr	1.025		

Lateral Plane Status

Part	LPA(Water) (m^2)	LCP(Water) (m)	HCP(Water) (m)	LPA(Air) (m^2)	LCP(Air) (m)	HCP(Air) (m)
HULL.C	35.3	8.780f	-0.996	22.5	9.820f	0.649
Total Lateral Plane	35.3	8.780f	-0.996	22.5	9.820f	0.649



Fixed Weight Status

Item	Weight (MT)	LCG (m)	TCG (m)	VCG (m)
LIGHT SHIP	64.70	9.330f	0.000	2.620u
Total Weight:	64.70	9.330f	0.000	2.620u

Tank Status

FRESH WATER (SpGr 1.000)

Tank Name	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	FSM (MT-m)
FV-TK.P	<empty>					

SEWAGE (SpGr 1.000)

Tank Name	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	FSM (MT-m)
SEWAGE-TK.S	<empty>					

DIESEL OIL (SpGr 0.850)

Tank Name	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	FSM (MT-m)
DO-TK.P	<empty>					
DO-TK.S	<empty>					

All Tanks

	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	FSM (MT-m)

Displacer Status

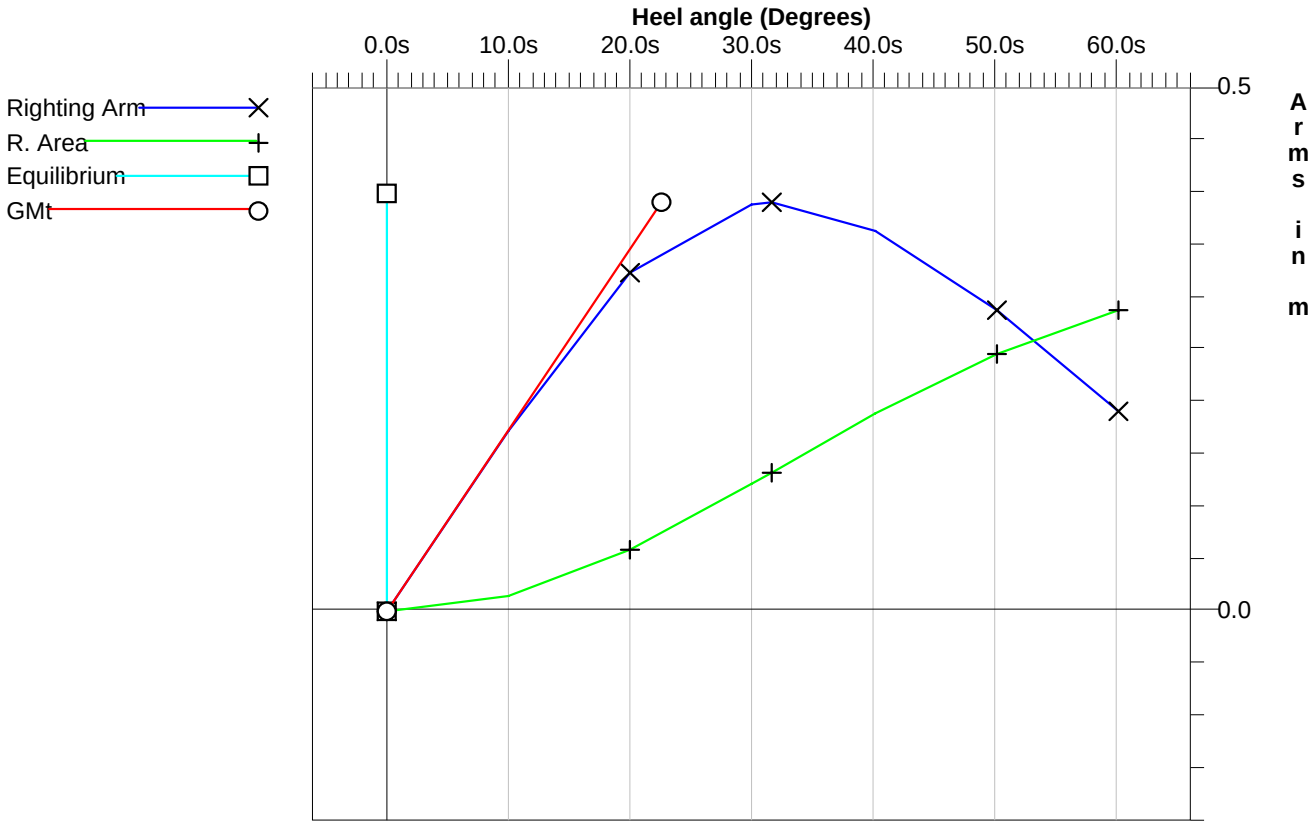
Item	Status	Spgr	Displ (MT)	LCB (m)	TCB (m)	VCB (m)	Eff /Perm
HULL.C	Intact	1.025	64.70	9.345f	0.000	1.882	1.000
Righting Arms vs. Heel - IMO A.749 (18), INTACT STABILITY SubTotals:			64.70	9.345f	0.000	1.882	

Righting Arms vs Heel Angle

Heel Angle (deg)	Trim Angle (deg)	Origin Depth (m)	Righting Arm (m)	Area (m-Rad)	Notes
0.00	1.21f	2.271	0.000	0.000	Equil
10.00s	1.24f	2.214	0.171	0.015	
20.00s	1.32f	2.046	0.324	0.058	
30.00s	1.35f	1.810	0.389	0.122	
31.65s	1.34f	1.769	0.390	0.133	MaxRa
40.00s	1.27f	1.538	0.364	0.189	
50.00s	1.07f	1.238	0.288	0.246	
60.00s	0.85f	0.899	0.192	0.289	

Weight and C.G. used above include tank loads.
The tank load centers were not allowed to shift with heel and trim changes.

Righting Arms vs. Heel - IMO A.749 (18), INTACT STABILITY



IMO A.749 (18), INTACT STABILITY

Limit	Min/Max	Actual	Margin	Pass
(1) Area from 0.00 deg to 30.00	>0.0550 m-R	0.122	0.067	Yes
(2) Area from 0.00 deg to 40.00 or Flood	>0.0900 m-R	0.189	0.099	Yes
(3) Area from 30.00 deg to 40.00 or Flood	>0.0300 m-R	0.067	0.037	Yes
(4) Righting Arm at 30.00 deg or MaxRA	>0.200 m	0.390	0.190	Yes
(5) Absolute Angle at MaxRA	>25.00 deg	31.65	6.65	Yes
(6) GM Upright	>0.150 m	0.996	0.846	Yes
(7) GM at Equilibrium	>0.150 m	0.996	0.846	Yes

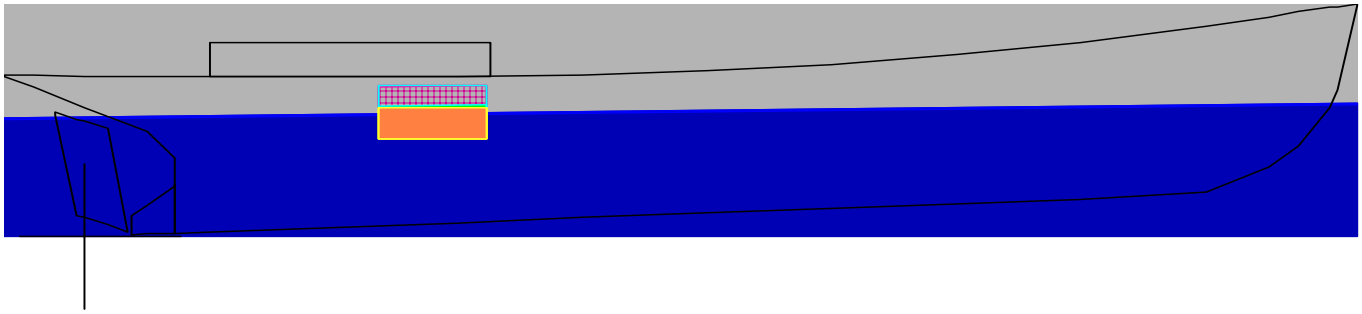
CONDITION No. 02
Departure incl Stores - 100% Consumables

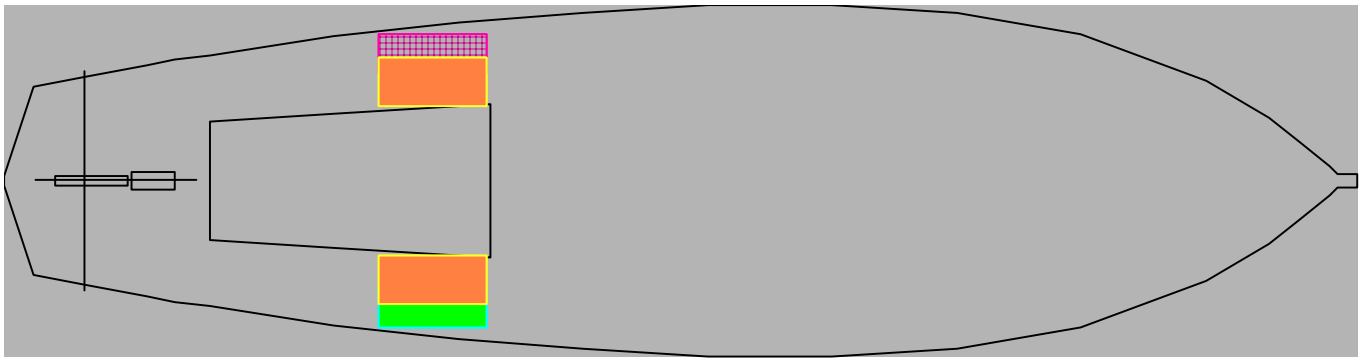
Floating Status

Draft FP	2.632 m	Heel	port 0.37 deg.	GM(Solid)	0.999 m
Draft MS	2.496 m	Equil	Yes	F/S Corr.	0.001 m
Draft AP	2.360 m	Wind	Off	GM(Fluid)	0.998 m
Trim	fwd 0.272/18.600	Wave	No	KMt	3.616 m
LCG	9.205f m	VCG	2.617 m	TPcm	0.71
Displacement	66.80 MT	WaterSpgr	1.025		

Lateral Plane Status

Part	LPA(Water) (m2)	LCP(Water) (m)	HCP(Water) (m)	LPA(Air) (m2)	LCP(Air) (m)	HCP(Air) (m)
HULL.C	35.8	8.689f	-1.014	22.3	9.927f	0.642
Total Lateral Plane	35.8	8.689f	-1.014	22.3	9.927f	0.642





Fluid Legend

Fluid Name	Legend	Weight (MT)	Load%
FRESH WATER		.41	97.99%
SEWAGE		.04	10.00%
DIESEL OIL		1.25	99.00%

Fixed Weight Status

Item	Weight (MT)	LCG (m)	TCG (m)	VCG (m)
LIGHT SHIP	64.70	9.330f	0.000	2.620u
01-PROVIANT & STORES	0.20	8.500f	1.200s	2.200u
02-CREW	0.20	3.500f	0.000	4.000u
Total Fixed:	65.10	9.310f	0.004s	2.623u

Tank Status

FRESH WATER (SpGr 1.000)

Tank Name	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	FSM (MT-m)
FV-TK.P	97.99%	0.41	5.207f	1.905p	2.776	0.02
Subtotals:	97.99%	0.41	5.207f	1.905p	2.776	0.02

SEWAGE (SpGr 1.000)

Tank Name	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	FSM (MT-m)
SEWAGE-TK.S	10.00%	0.04	5.271f	1.901s	2.582	0.03
Subtotals:	10.00%	0.04	5.271f	1.901s	2.582	0.03

DIESEL OIL (SpGr 0.850)

Tank Name	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	FSM (MT-m)
DO-TK.P	97.99%	0.62	5.205f	1.496p	2.234	0.04
DO-TK.S	100.00%	0.63	5.200f	1.495s	2.240	0.00
Subtotals:	99.00%	1.25	5.203f	0.015s	2.237	0.04

All Tanks

	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	FSM (MT-m)
Totals:	81.15%	1.70	5.205f	0.399p	2.374	0.09

Displacer Status

Item	Status	Spgr	Displ (MT)	LCB (m)	TCB (m)	VCB (m)	Eff /Perm
HULL.C	Intact	1.025	66.80	9.215f	0.011p	1.899	1.000
Righting Arms vs. Heel - IMO A.749 (18), INTACT STABILITY SubTotals:			66.80	9.215f	0.011p	1.899	

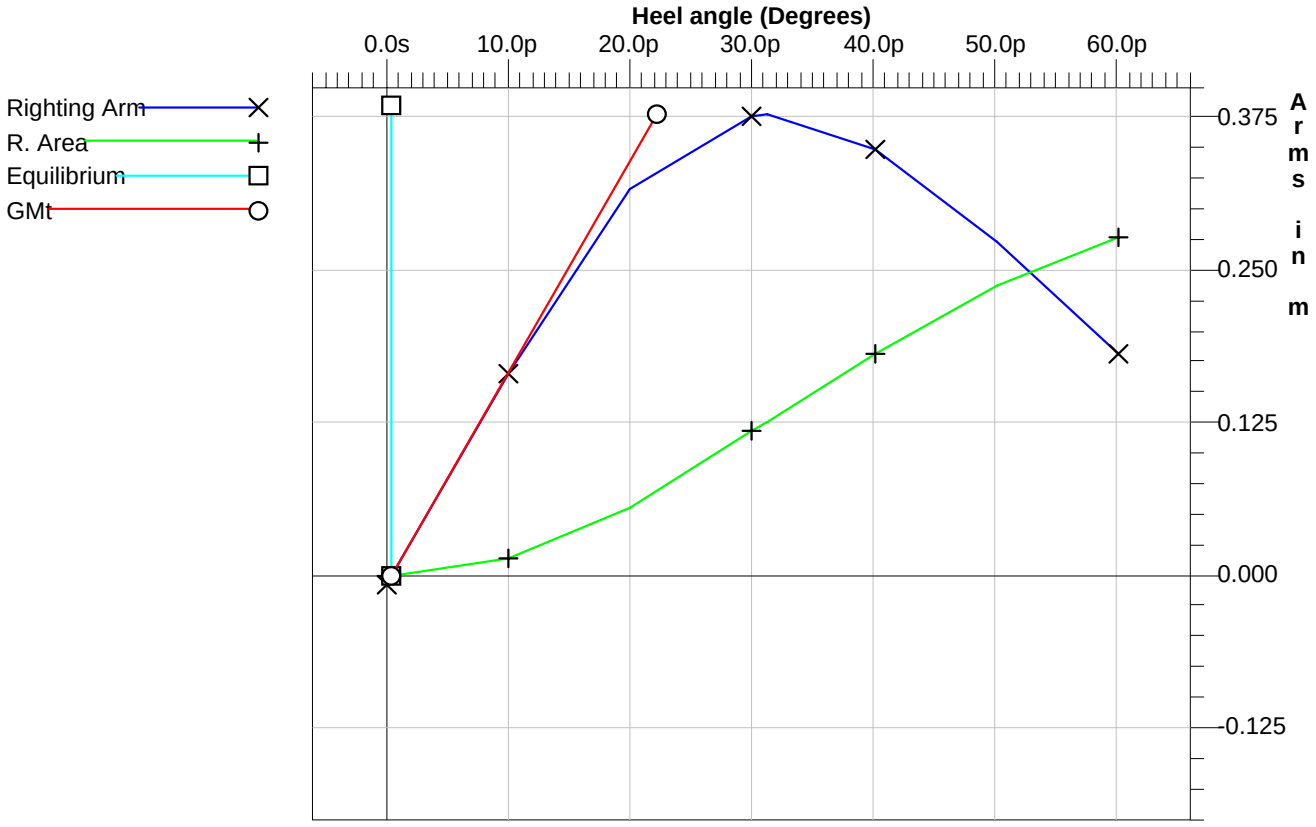
Righting Arms vs Heel Angle

Free Surface Adjustment 0.001
Adjusted VCG 2.618

Heel Angle (deg)	Trim Angle (deg)	Origin Depth (m)	Righting Arm (m)	Area (m-Rad)	Notes
0.00	0.84f	2.360	-0.007	0.000	
0.38p	0.84f	2.360	0.000	0.000	Equil
10.00p	0.88f	2.303	0.165	0.014	
20.00p	0.96f	2.135	0.318	0.056	
30.00p	0.96f	1.909	0.377	0.118	
31.17p	0.95f	1.881	0.378	0.126	MaxRa
40.00p	0.84f	1.650	0.349	0.183	
50.00p	0.62f	1.357	0.274	0.238	
60.00p	0.44f	1.012	0.182	0.278	

Weight and C.G. used above include tank loads.
The tank load centers were not allowed to shift with heel and trim changes.
A Free Surface Moment of 0.1 MT-m was used to adjust the VCG.

Righting Arms vs. Heel - IMO A.749 (18), INTACT STABILITY



IMO A.749 (18), INTACT STABILITY

Limit	Min/Max	Actual	Margin	Pass
(1) Area from 0.00 deg to 30.00	>0.0550 m-R	0.118	0.063	Yes
(2) Area from 0.00 deg to 40.00 or Flood	>0.0900 m-R	0.183	0.093	Yes
(3) Area from 30.00 deg to 40.00 or Flood	>0.0300 m-R	0.065	0.035	Yes
(4) Righting Arm at 30.00 deg or MaxRA	>0.200 m	0.378	0.178	Yes
(5) Absolute Angle at MaxRA	>25.00 deg	31.17	6.17	Yes
(6) GM Upright	>0.150 m	0.998	0.848	Yes
(7) GM at Equilibrium	>0.150 m	0.998	0.848	Yes

Status after Wind applied

Floating Status

Draft FP	2.622 m	Heel	stbd 13.59 deg.	GM(Solid)	0.969 m
Draft MS	2.471 m	Equil	Yes	F/S Corr.	0.000 m
Draft AP	2.320 m	Wind	Off	GM(Fluid)	0.969 m
Trim	fwd 0.294/18.600	Wave	No	KMt	3.558 m
LCG	9.205f m	VCG	2.617 m	TPcm	0.70
Displacement	66.80 MT	WaterSpgr	1.025		

Loading Summary

Item	Weight (MT)	LCG (m)	TCG (m)	VCG (m)
Light Ship	64.70	9.330f	0.000	2.620
Deadweight	2.10	5.355f	0.203p	2.513
Displacement	66.80	9.205f	0.006p	2.617

Fixed Weight Status

Item	Weight (MT)	LCG (m)	TCG (m)	VCG (m)
LIGHT SHIP	64.70	9.330f	0.000	2.620u
01-PROVIANT & STORES	0.20	8.500f	1.200s	2.200u
02-CREW	0.20	3.500f	0.000	4.000u
Total Fixed:	65.10	9.310f	0.004s	2.623u

Tank Status

FRESH WATER (SpGr 1.000)

Tank Name	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)
FV-TK.P	98.00%	0.41	5.203f	1.900p	2.776
Subtotals:	98.00%	0.41	5.203f	1.900p	2.776

SEWAGE (SpGr 1.000)

Tank Name	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)
SEWAGE-TK.S	10.01%	0.04	5.261f	2.045s	2.597
Subtotals:	10.01%	0.04	5.261f	2.045s	2.597

DIESEL OIL (SpGr 0.850)

Tank Name	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)
DO-TK.P	98.00%	0.62	5.202f	1.489p	2.234
DO-TK.S	100.00%	0.63	5.200f	1.495s	2.240
Subtotals:	99.00%	1.25	5.201f	0.018s	2.237

All Tanks

	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)
Totals:	81.15%	1.70	5.203f	0.392p	2.375

Displacer Status

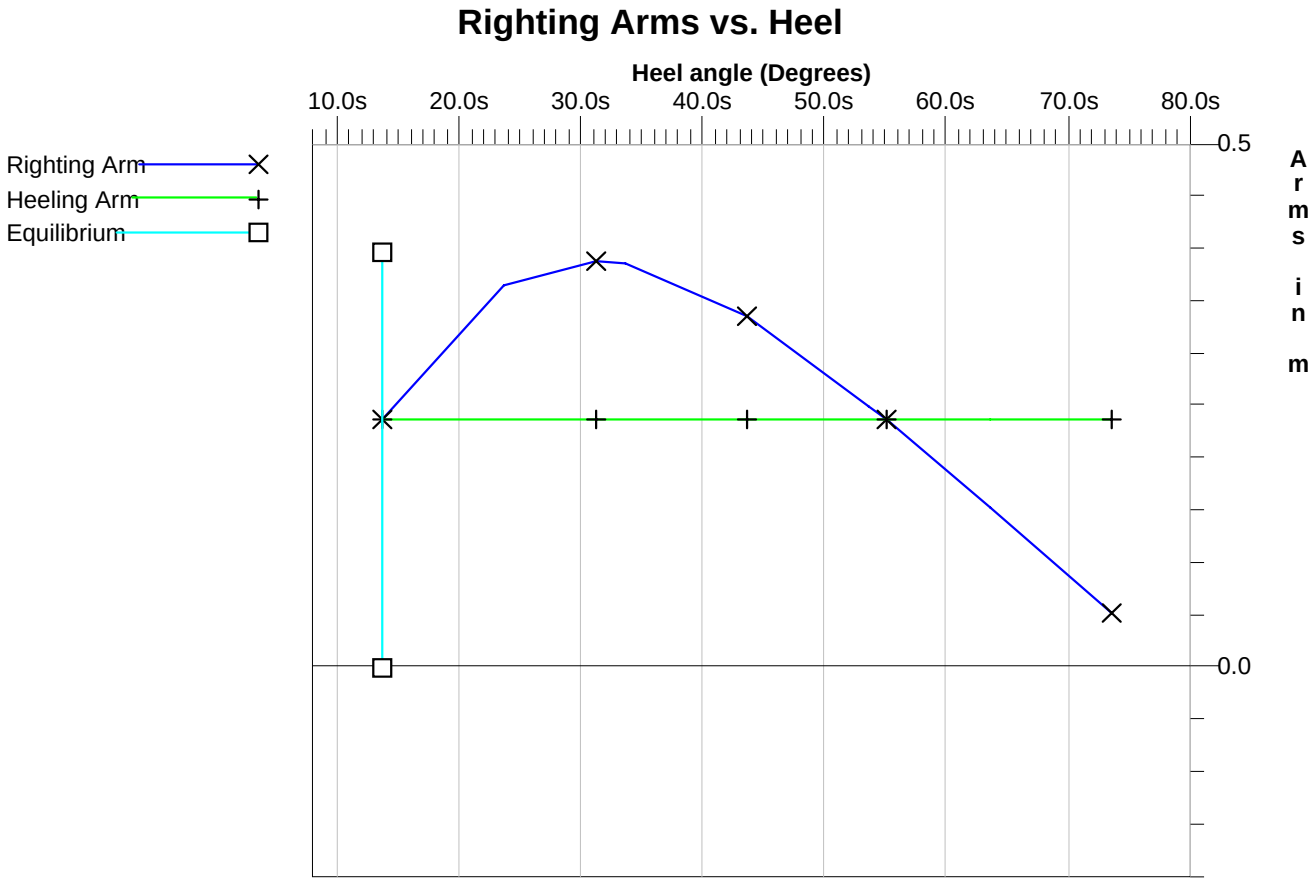
Item	Status	Spgr	Displ (MT)	LCB (m)	TCB (m)	VCB (m)	Eff /Perm
HULL.C	Intact	1.025	66.80	9.217f	0.399s	1.947	1.000
SubTotals:			66.80	9.217f	0.399s	1.947	

Righting Arms vs. Heel

Residual Righting Arms vs Heel Angle

Heel Angle (deg)	Trim Angle (deg)	Origin Depth (m)	Residual Arm (m)
13.59s	0.90f	2.254	0.000
23.59s	0.98f	2.057	0.128
31.09s	0.95f	1.883	0.153
33.59s	0.93f	1.820	0.150
43.59s	0.77f	1.550	0.099
53.59s	0.54f	1.240	0.014
55.02s	0.52f	1.191	0.000
63.59s	0.38f	0.878	-0.083
73.59s	0.20f	0.499	-0.184

Note:
Residual Righting Arms shown above are in excess of the overturning arms derived from this moment (in m-MT):
Stbd heeling moment = 15.82



Limit Report

Limit	Min/Max	Actual	Margin	Pass
(1) Absolute Angle at Equilibrium	<15.00 deg	13.59	1.41	Yes

Wind heeling Moment Report
Wind heeling moment: 15.82 MT-m to starboard

SEJLTRYK - Cond 02:

Sejltryk = 110 N/m^2 = 11.21 kg/m^2 = 0.0112 t/m^2

110 N/m^2 svarer til vindtryk ved en vindhastghed på 12 m/sek.

100% Cond:

Draft = 2.496 m

HCPwater = 1.014 m

= > Arm = $Sail_{VCG}$ - Draft + HCPwater

Sejl	Sejlareal [m^2]	Sejltryk [t/m^2]	$Sail_{VCG}$ [m]	Arm [m]	Moment [tm]
Gaffelstorsejl	71.3	0.0112	11.01	9.53	7.61
Stortopsejl	0	0.0112	20.6	19.12	0.00
Gaffelmesansejl	30.7	0.0112	8.76	7.28	2.50
Mesantopsejl	0	0.0112	14.43	12.95	0.00
Stagfok	26	0.0112	10.3	8.82	2.57
Klyver	29.5	0.0112	11	9.52	3.14
Totalt	157.5				15.82

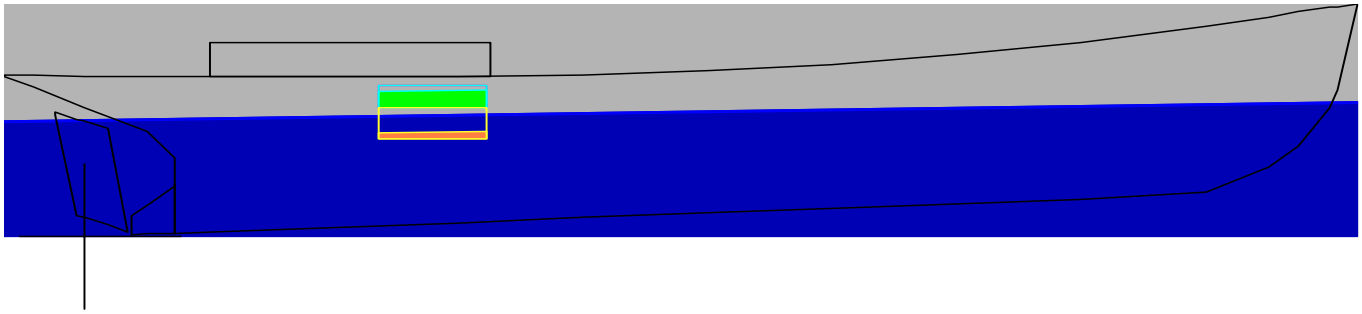
CONDITION No. 03
Arrival - 10% Consumables

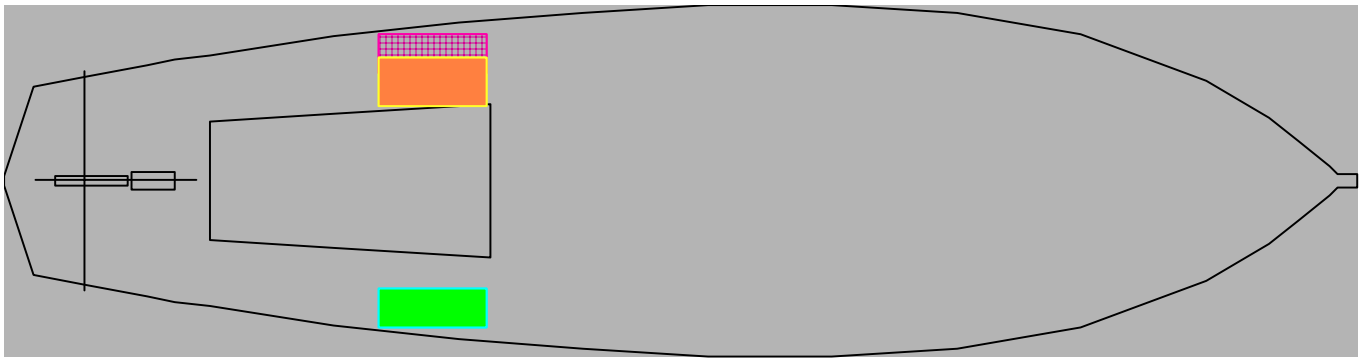
Floating Status

Draft FP	2.650 m	Heel	stbd 0.32 deg.	GM(Solid)	0.993 m
Draft MS	2.478 m	Equil	Yes	F/S Corr.	0.002 m
Draft AP	2.306 m	Wind	Off	GM(Fluid)	0.992 m
Trim	fwd 0.344/18.600	Wave	No	KMt	3.616 m
LCG	9.281f m	VCG	2.623 m	TPcm	0.70
Displacement	65.48 MT	WaterSpgr	1.025		

Lateral Plane Status

Part	LPA(Water) (m^2)	LCP(Water) (m)	HCP(Water) (m)	LPA(Air) (m^2)	LCP(Air) (m)	HCP(Air) (m)
HULL.C	35.5	8.742f	-1.003	22.6	9.851f	0.649
Total Lateral Plane	35.5	8.742f	-1.003	22.6	9.851f	0.649





Fluid Legend

Fluid Name	Legend	Weight (MT)	Load%
FRESH WATER		.04	10.00%
SEWAGE		.31	75.00%
DIESEL OIL		.13	10.00%

Fixed Weight Status

Item	Weight (MT)	LCG (m)	TCG (m)	VCG (m)
LIGHT SHIP	64.70	9.330f	0.000	2.620u
01-PROVIANT & STORES	0.10	8.500f	1.200s	2.200u
02-CREW	0.20	3.500f	0.400p	4.000u
Total Fixed:	65.00	9.311f	0.000	2.624u

Tank Status

FRESH WATER (SpGr 1.000)

Tank Name	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	FSM (MT-m)
FV-TK.P	10.00%	0.04	5.290f	1.901p	2.583	0.03
Subtotals:	10.00%	0.04	5.290f	1.901p	2.583	0.03

SEWAGE (SpGr 1.000)

Tank Name	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	FSM (MT-m)
SEWAGE-TK.S	75.00%	0.31	5.212f	1.905s	2.725	0.03
Subtotals:	75.00%	0.31	5.212f	1.905s	2.725	0.03

DIESEL OIL (SpGr 0.850)

Tank Name	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	FSM (MT-m)
DO-TK.P	20.00%	0.13	5.232f	1.493p	1.992	0.05
DO-TK.S	<empty>					
Subtotals:	10.00%	0.13	5.232f	1.493p	1.992	0.05

All Tanks

	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	FSM (MT-m)
Totals:	22.89%	0.48	5.224f	0.680s	2.520	0.10

Displacer Status

Item	Status	Spgr	Displ (MT)	LCB (m)	TCB (m)	VCB (m)	Eff /Perm
HULL.C	Intact	1.025	65.48	9.294f	0.010s	1.888	1.000
Righting Arms vs. Heel - IMO A.749 (18), INTACT STABILITY SubTotals:			65.48	9.294f	0.010s	1.888	

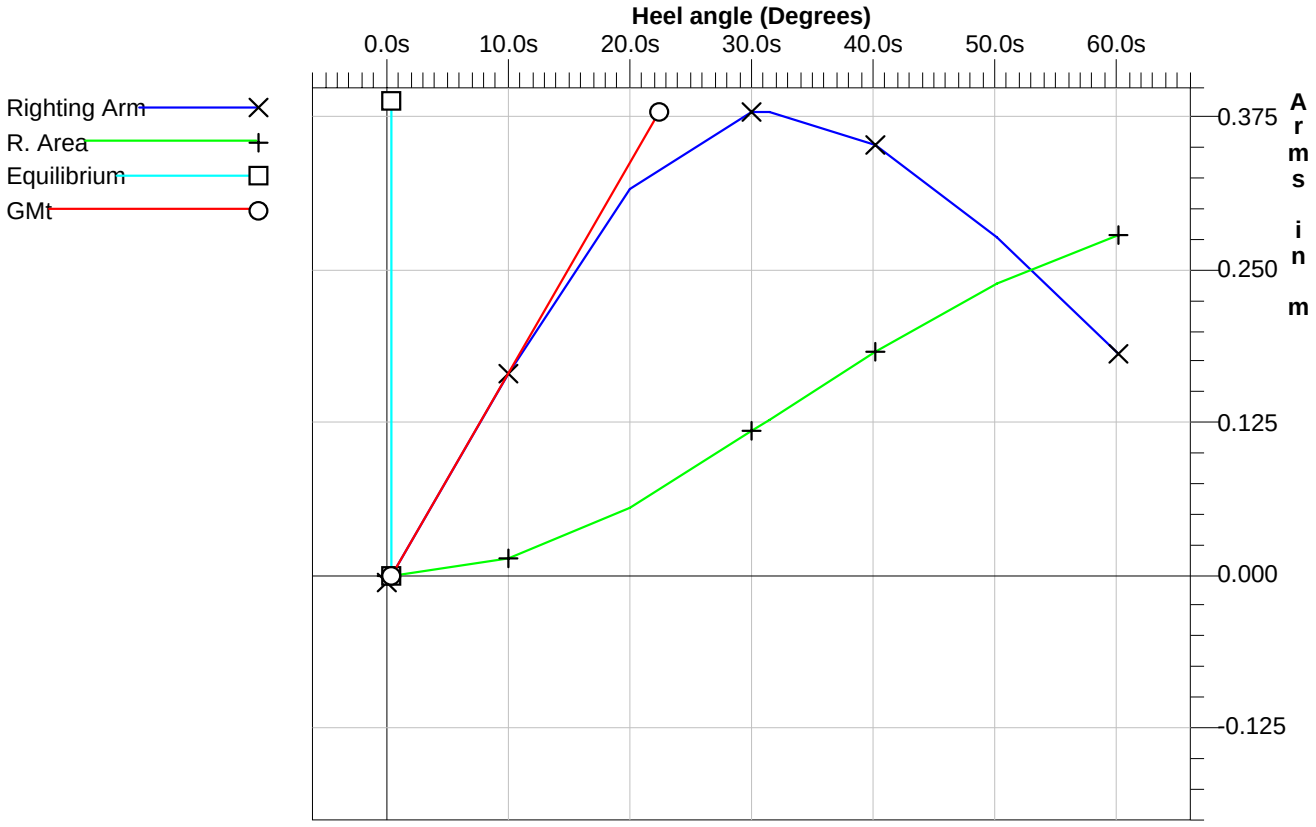
Righting Arms vs Heel Angle

Free Surface Adjustment 0.002
Adjusted VCG 2.624

Heel Angle (deg)	Trim Angle (deg)	Origin Depth (m)	Righting Arm (m)	Area (m-Rad)	Notes
0.00	1.06f	2.305	-0.006	0.000	
0.33s	1.06f	2.305	0.000	0.000	Equil
10.00s	1.10f	2.248	0.165	0.014	
20.00s	1.18f	2.081	0.317	0.056	
30.00s	1.20f	1.848	0.380	0.118	
31.40s	1.19f	1.813	0.380	0.128	MaxRa
40.00s	1.10f	1.580	0.353	0.183	
50.00s	0.90f	1.283	0.277	0.239	
60.00s	0.69f	0.942	0.182	0.279	

Weight and C.G. used above include tank loads.
The tank load centers were not allowed to shift with heel and trim changes.
A Free Surface Moment of 0.1 MT-m was used to adjust the VCG.

Righting Arms vs. Heel - IMO A.749 (18), INTACT STABILITY



IMO A.749 (18), INTACT STABILITY

Limit	Min/Max	Actual	Margin	Pass
(1) Area from 0.00 deg to 30.00	>0.0550 m-R	0.118	0.063	Yes
(2) Area from 0.00 deg to 40.00 or Flood	>0.0900 m-R	0.183	0.093	Yes
(3) Area from 30.00 deg to 40.00 or Flood	>0.0300 m-R	0.065	0.035	Yes
(4) Righting Arm at 30.00 deg or MaxRA	>0.200 m	0.380	0.180	Yes
(5) Absolute Angle at MaxRA	>25.00 deg	31.40	6.40	Yes
(6) GM Upright	>0.150 m	0.992	0.842	Yes
(7) GM at Equilibrium	>0.150 m	0.992	0.842	Yes

Status after Wind applied

Floating Status

Draft FP	2.638 m	Heel	stbd 14.79 deg.	GM(Solid)	0.954 m
Draft MS	2.447 m	Equil	Yes	F/S Corr.	0.001 m
Draft AP	2.256 m	Wind	Off	GM(Fluid)	0.952 m
Trim	fwd 0.369/18.600	Wave	No	KMt	3.545 m
LCG	9.281f m	VCG	2.623 m	TPcm	0.69
Displacement	65.48 MT	WaterSpgr	1.025		

Loading Summary

Item	Weight (MT)	LCG (m)	TCG (m)	VCG (m)
Light Ship	64.70	9.330f	0.000	2.620
Deadweight	0.78	5.202f	0.502s	2.863
Displacement	65.48	9.281f	0.006s	2.623

Fixed Weight Status

Item	Weight (MT)	LCG (m)	TCG (m)	VCG (m)
LIGHT SHIP	64.70	9.330f	0.000	2.620u
01-PROVIANT & STORES	0.10	8.500f	1.200s	2.200u
02-CREW	0.20	3.500f	0.400p	4.000u
Total Fixed:	65.00	9.311f	0.000	2.624u

Tank Status

FRESH WATER (SpGr 1.000)

Tank Name	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)
FV-TK.P	10.02%	0.04	5.273f	1.758p	2.599
Subtotals:	10.02%	0.04	5.273f	1.758p	2.599

SEWAGE (SpGr 1.000)

Tank Name	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)
SEWAGE-TK.S	75.00%	0.31	5.213f	1.928s	2.728
Subtotals:	75.00%	0.31	5.213f	1.928s	2.728

DIESEL OIL (SpGr 0.850)

Tank Name	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)
DO-TK.P	20.00%	0.13	5.235f	1.394p	2.005
DO-TK.S	<empty>				
Subtotals:	10.00%	0.13	5.235f	1.394p	2.005

All Tanks

	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)
Totals:	22.89%	0.48	5.224f	0.733s	2.527

Displacer Status

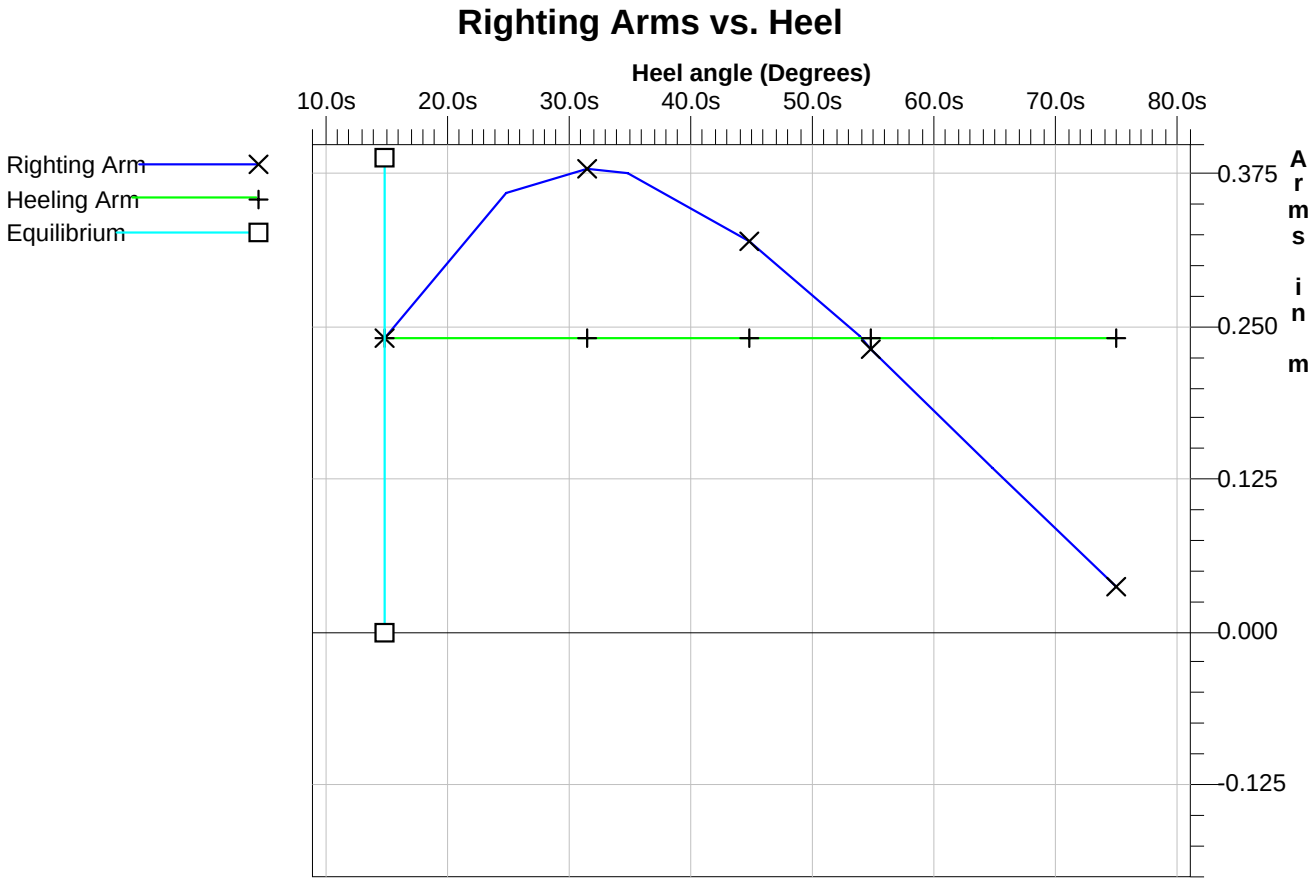
Item	Status	Spgr	Displ (MT)	LCB (m)	TCB (m)	VCB (m)	Eff /Perm
HULL.C	Intact	1.025	65.48	9.296f	0.435s	1.945	1.000
SubTotals:			65.48	9.296f	0.435s	1.945	

Righting Arms vs. Heel

Residual Righting Arms vs Heel Angle

Heel Angle (deg)	Trim Angle (deg)	Origin Depth (m)	Residual Arm (m)
14.79s	1.14f	2.181	0.000
24.79s	1.20f	1.974	0.119
31.51s	1.19f	1.810	0.139
34.79s	1.16f	1.725	0.134
44.79s	1.02f	1.442	0.078
53.75s	0.81f	1.162	0.001
54.79s	0.79f	1.127	-0.009
64.79s	0.61f	0.764	-0.107
74.79s	0.41f	0.389	-0.204

Note:
Residual Righting Arms shown above are in excess of the overturning arms derived from this moment (in m-MT):
Stbd heeling moment = 15.84



Limit Report

Limit	Min/Max	Actual	Margin	Pass
(1) Absolute Angle at Equilibrium	<15.00 deg	14.79	0.21	Yes

Wind heeling Moment Report
Wind heeling moment: 15.84 MT-m to starboard

SEJLTRYK - Cond 03:

Sejltryk = 110 N/m^2 = 11.21 kg/m^2 = 0.0112 t/m^2

110 N/m^2 svarer til vindtryk ved en vindhastghed på 12 m/sek.

10% Cond:

Draft = 2.478 m

HCPwater = 1.003 m

= > Arm = $Sail_{VCG}$ - Draft + HCPwater

Sejl	Sejlareal [m^2]	Sejltryk [t/m^2]	$Sail_{VCG}$ [m]	Arm [m]	Moment [tm]
Gaffelstorsejl	71.3	0.0112	11.01	9.54	7.61
Stortopsejl	0	0.0112	20.6	19.13	0.00
Gaffelmesansejl	30.7	0.0112	8.76	7.29	2.50
Mesantopsejl	0	0.0112	14.43	12.96	0.00
Stagfok	26	0.0112	10.3	8.83	2.57
Klyver	29.5	0.0112	11	9.53	3.15
Totalt	157.5				15.84

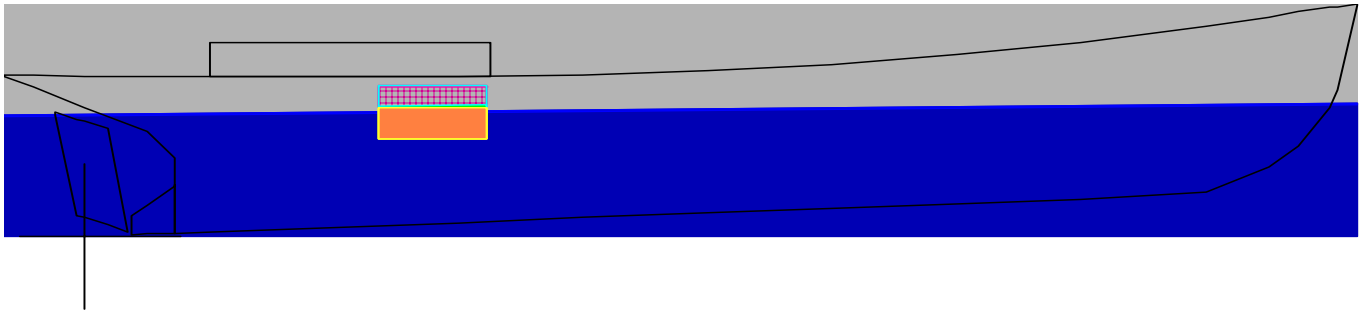
CONDITION No. 04
Departure - 100% Consumables + Pass

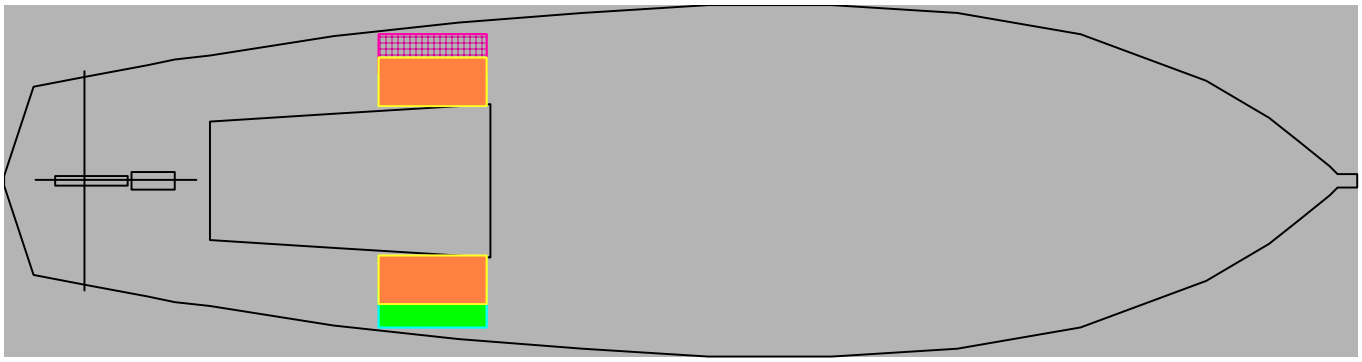
Floating Status

Draft FP	2.647 m	Heel	port 0.38 deg.	GM(Solid)	0.946 m
Draft MS	2.528 m	Equil	Yes	F/S Corr.	0.001 m
Draft AP	2.409 m	Wind	Off	GM(Fluid)	0.945 m
Trim	fwd 0.238/18.600	Wave	No	KMt	3.609 m
LCG	9.165f m	VCG	2.663 m	TPcm	0.71
Displacement	69.10 MT	WaterSpgr	1.025		

Lateral Plane Status

Part	LPA(Water) (m2)	LCP(Water) (m)	HCP(Water) (m)	LPA(Air) (m2)	LCP(Air) (m)	HCP(Air) (m)
HULL.C	36.4	8.676f	-1.027	21.8	9.972f	0.628
Total Lateral Plane	36.4	8.676f	-1.027	21.8	9.972f	0.628





Fluid Legend

Fluid Name	Legend	Weight (MT)	Load%
FRESH WATER		.41	97.99%
SEWAGE		.04	10.02%
DIESEL OIL		1.25	99.00%

Fixed Weight Status

Item	Weight (MT)	LCG (m)	TCG (m)	VCG (m)
LIGHT SHIP	64.70	9.330f	0.000	2.620u
01-PROVIANT & STORES	0.20	8.500f	1.200s	2.200u
02-CREW	0.20	3.500f	0.000	4.000u
03-28 PASS	2.30	8.000f	0.000	4.000u
Total Fixed:	67.40	9.265f	0.004s	2.670u

Tank Status

FRESH WATER (SpGr 1.000)

Tank Name	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	FSM (MT-m)
FV-TK.P	97.99%	0.41	5.206f	1.905p	2.776	0.02
Subtotals:	97.99%	0.41	5.206f	1.905p	2.776	0.02

SEWAGE (SpGr 1.000)

Tank Name	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	FSM (MT-m)
SEWAGE-TK.S	10.02%	0.04	5.262f	1.901s	2.582	0.03
Subtotals:	10.02%	0.04	5.262f	1.901s	2.582	0.03

DIESEL OIL (SpGr 0.850)

Tank Name	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	FSM (MT-m)
DO-TK.P	98.00%	0.62	5.205f	1.496p	2.234	0.05
DO-TK.S	100.00%	0.63	5.200f	1.495s	2.240	0.00
Subtotals:	99.00%	1.25	5.202f	0.015s	2.237	0.05

All Tanks

	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	FSM (MT-m)
Totals:	81.15%	1.70	5.205f	0.399p	2.374	0.10

Displacer Status

Item	Status	Spgr	Displ (MT)	LCB (m)	TCB (m)	VCB (m)	Eff /Perm
HULL.C	Intact	1.025	69.10	9.174f	0.011p	1.919	1.000
Righting Arms vs. Heel - IMO A.749 (18), INTACT STABILITY SubTotals:			69.10	9.174f	0.011p	1.919	

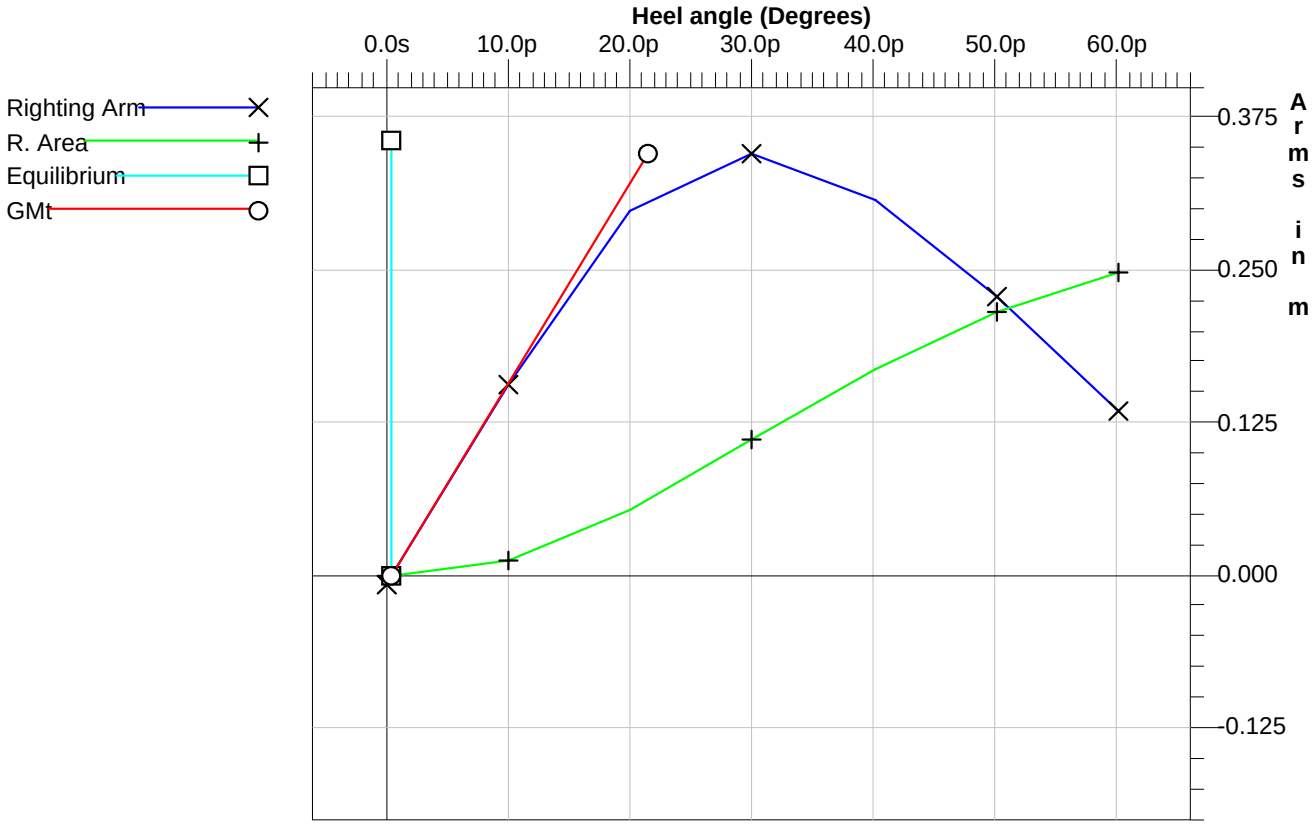
Righting Arms vs Heel Angle

Free Surface Adjustment 0.001
Adjusted VCG 2.664

Heel Angle (deg)	Trim Angle (deg)	Origin Depth (m)	Righting Arm (m)	Area (m-Rad)	Notes
0.00	0.73f	2.408	-0.006	0.000	
0.39p	0.73f	2.408	0.000	0.000	Equil
10.00p	0.77f	2.352	0.157	0.013	
20.00p	0.86f	2.185	0.299	0.053	
30.00p	0.85f	2.028	0.346	0.111	
40.00p	0.67f	1.723	0.309	0.169	
50.00p	0.45f	1.434	0.230	0.217	
60.00p	0.29f	1.086	0.135	0.249	

Weight and C.G. used above include tank loads.
The tank load centers were not allowed to shift with heel and trim changes.
A Free Surface Moment of 0.1 MT-m was used to adjust the VCG.

Righting Arms vs. Heel - IMO A.749 (18), INTACT STABILITY



IMO A.749 (18), INTACT STABILITY

Limit	Min/Max	Actual	Margin	Pass
(1) Area from 0.00 deg to 30.00	>0.0550 m-R	0.111	0.056	Yes
(2) Area from 0.00 deg to 40.00 or Flood	>0.0900 m-R	0.169	0.079	Yes
(3) Area from 30.00 deg to 40.00 or Flood	>0.0300 m-R	0.058	0.028	Yes
(4) Righting Arm at 30.00 deg or MaxRA	>0.200 m	0.346	0.146	Yes
(5) Absolute Angle at MaxRA	>25.00 deg	30.00	5.00	Yes
(6) GM Upright	>0.150 m	0.945	0.795	Yes
(7) GM at Equilibrium	>0.150 m	0.945	0.795	Yes

Status after Wind applied

Floating Status

Draft FP	2.637 m	Heel	stbd 13.82 deg.	GM(Solid)	0.922 m
Draft MS	2.503 m	Equil	Yes	F/S Corr.	0.000 m
Draft AP	2.369 m	Wind	Off	GM(Fluid)	0.922 m
Trim	fwd 0.260/18.600	Wave	No	KMt	3.558 m
LCG	9.165f m	VCG	2.663 m	TPcm	0.71
Displacement	69.10 MT	WaterSpgr	1.025		

Loading Summary

Item	Weight (MT)	LCG (m)	TCG (m)	VCG (m)
Light Ship	64.70	9.330f	0.000	2.620
Deadweight	4.40	6.737f	0.097p	3.290
Displacement	69.10	9.165f	0.006p	2.663

Fixed Weight Status

Item	Weight (MT)	LCG (m)	TCG (m)	VCG (m)
LIGHT SHIP	64.70	9.330f	0.000	2.620u
01-PROVIANT & STORES	0.20	8.500f	1.200s	2.200u
02-CREW	0.20	3.500f	0.000	4.000u
03-28 PASS	2.30	8.000f	0.000	4.000u
Total Fixed:	67.40	9.265f	0.004s	2.670u

Tank Status

FRESH WATER (SpGr 1.000)

Tank Name	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)
FV-TK.P	97.99%	0.41	5.203f	1.900p	2.776
Subtotals:	97.99%	0.41	5.203f	1.900p	2.776

SEWAGE (SpGr 1.000)

Tank Name	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)
SEWAGE-TK.S	10.03%	0.04	5.254f	2.047s	2.598
Subtotals:	10.03%	0.04	5.254f	2.047s	2.598

DIESEL OIL (SpGr 0.850)

Tank Name	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)
DO-TK.P	98.00%	0.62	5.202f	1.489p	2.234
DO-TK.S	100.00%	0.63	5.200f	1.495s	2.240
Subtotals:	99.00%	1.25	5.201f	0.018s	2.237

All Tanks

	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)
Totals:	81.15%	1.70	5.203f	0.392p	2.375

Displacer Status

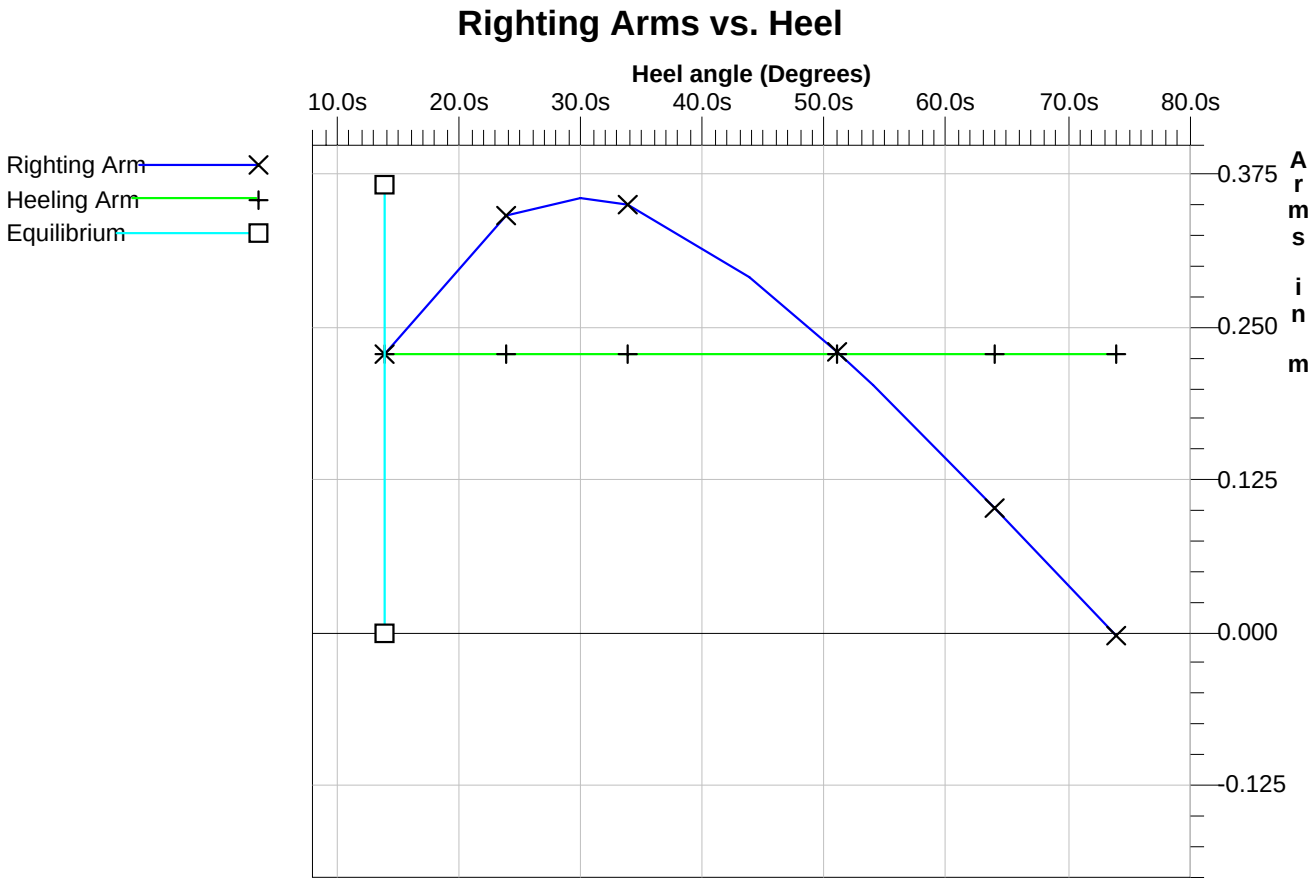
Item	Status	Spgr	Displ (MT)	LCB (m)	TCB (m)	VCB (m)	Eff /Perm
HULL.C	Intact	1.025	69.10	9.175f	0.400s	1.968	1.000
SubTotals:			69.10	9.175f	0.400s	1.968	

Righting Arms vs. Heel

Residual Righting Arms vs Heel Angle

Heel Angle (deg)	Trim Angle (deg)	Origin Depth (m)	Residual Arm (m)
13.82s	0.80f	2.300	0.000
13.82s	0.80f	2.300	0.000
23.82s	0.86f	2.108	0.114
29.92s	0.83f	1.973	0.129
33.82s	0.78f	1.879	0.123
43.82s	0.59f	1.619	0.063
50.94s	0.43f	1.404	0.002
53.82s	0.38f	1.308	-0.025
63.82s	0.23f	0.943	-0.125
73.82s	0.04f	0.563	-0.230

Note:
Residual Righting Arms shown above are in excess of the overturning arms derived from this moment (in m-MT):
Stbd heeling moment = 15.79



Limit Report

Limit	Min/Max	Actual	Margin	Pass
(1) Absolute Angle at Equilibrium	<15.00 deg	13.82	1.18	Yes

Wind heeling Moment Report
Wind heeling moment: 15.79 MT-m to starboard

SEJLTRYK - Cond 04:

Sejltryk = 110 N/m^2 = 11.21 kg/m^2 = 0.0112 t/m^2

110 N/m^2 svarer til vindtryk ved en vindhastghed på 12 m/sek.

100% Cond + Pass:

Draft = 2.528 m

HCPwater = 1.027 m

= > Arm = $Sail_{VCG}$ - Draft + HCPwater

Sejl	Sejlareal [m^2]	Sejltryk [t/m^2]	$Sail_{VCG}$ [m]	Arm [m]	Moment [tm]
Gaffelstorsejl	71.3	0.0112	11.01	9.51	7.59
Stortopsejl	0	0.0112	20.6	19.10	0.00
Gaffelmesansejl	30.7	0.0112	8.76	7.26	2.50
Mesantopsejl	0	0.0112	14.43	12.93	0.00
Stagfok	26	0.0112	10.3	8.80	2.56
Klyver	29.5	0.0112	11	9.50	3.14
Totalt	157.5				15.79

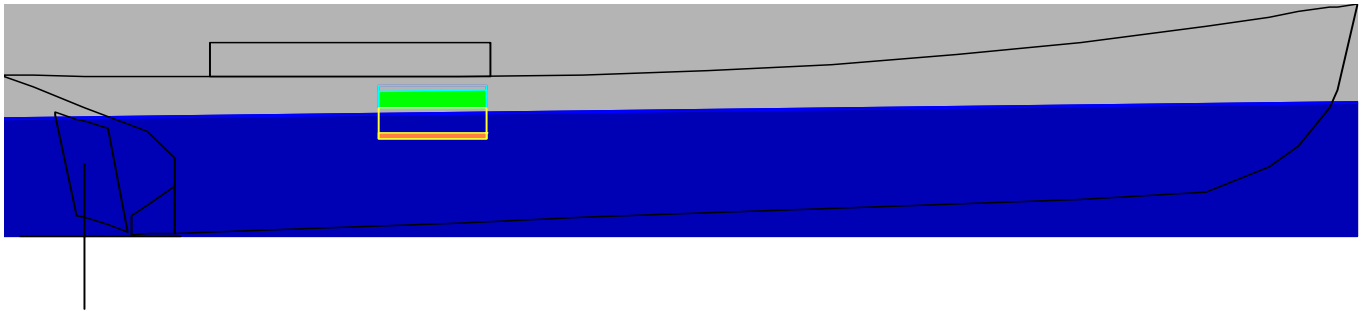
CONDITION No. 05
Arrival - 10% Consumables + Pass

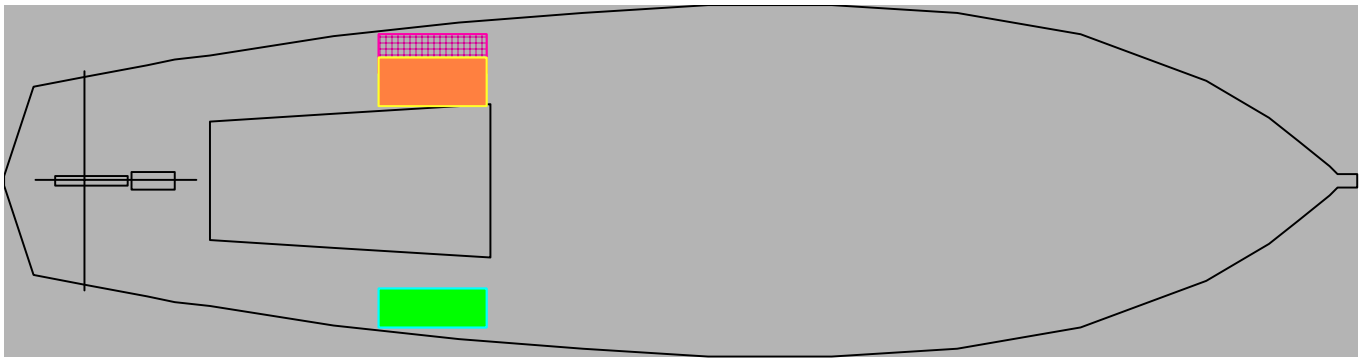
Floating Status

Draft FP	2.664 m	Heel	0.01 deg.	GM(Solid)	0.941 m
Draft MS	2.510 m	Equil	Yes	F/S Corr.	0.002 m
Draft AP	2.357 m	Wind	Off	GM(Fluid)	0.940 m
Trim	fwd 0.307/18.600	Wave	No	KMt	3.610 m
LCG	9.237f m	VCG	2.670 m	TPcm	0.71
Displacement	67.78 MT	WaterSpgr	1.025		

Lateral Plane Status

Part	LPA(Water) (m2)	LCP(Water) (m)	HCP(Water) (m)	LPA(Air) (m2)	LCP(Air) (m)	HCP(Air) (m)
HULL.C	36.1	8.725f	-1.019	21.8	9.923f	0.630
Total Lateral Plane	36.1	8.725f	-1.019	21.8	9.923f	0.630





Fluid Legend

Fluid Name	Legend	Weight (MT)	Load%
FRESH WATER		.04	10.00%
SEWAGE		.31	75.00%
DIESEL OIL		.13	10.00%

Fixed Weight Status

Item	Weight (MT)	LCG (m)	TCG (m)	VCG (m)
LIGHT SHIP	64.70	9.330f	0.000	2.620u
01-PROVIANT & STORES	0.10	8.500f	1.200s	2.200u
02-CREW	0.20	3.500f	0.000	4.000u
03-28 PASS	2.30	8.000f	0.200p	4.000u
Total Fixed:	67.30	9.266f	0.005p	2.671u

Tank Status

FRESH WATER (SpGr 1.000)

Tank Name	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	FSM (MT-m)
FV-TK.P	10.00%	0.04	5.280f	1.905p	2.582	0.03
Subtotals:	10.00%	0.04	5.280f	1.905p	2.582	0.03

SEWAGE (SpGr 1.000)

Tank Name	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	FSM (MT-m)
SEWAGE-TK.S	75.00%	0.31	5.211f	1.905s	2.725	0.03
Subtotals:	75.00%	0.31	5.211f	1.905s	2.725	0.03

DIESEL OIL (SpGr 0.850)

Tank Name	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	FSM (MT-m)
DO-TK.P	20.00%	0.13	5.228f	1.495p	1.992	0.05
DO-TK.S	<empty>					
Subtotals:	10.00%	0.13	5.228f	1.495p	1.992	0.05

All Tanks

	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)	FSM (MT-m)
Totals:	22.89%	0.48	5.221f	0.679s	2.520	0.10

Displacer Status

Item	Status	Spgr	Displ (MT)	LCB (m)	TCB (m)	VCB (m)	Eff /Perm
HULL.C	Intact	1.025	67.78	9.250f	0.000	1.909	1.000
Righting Arms vs. Heel - IMO A.749 (18), INTACT STABILITY SubTotals:			67.78	9.250f	0.000	1.909	

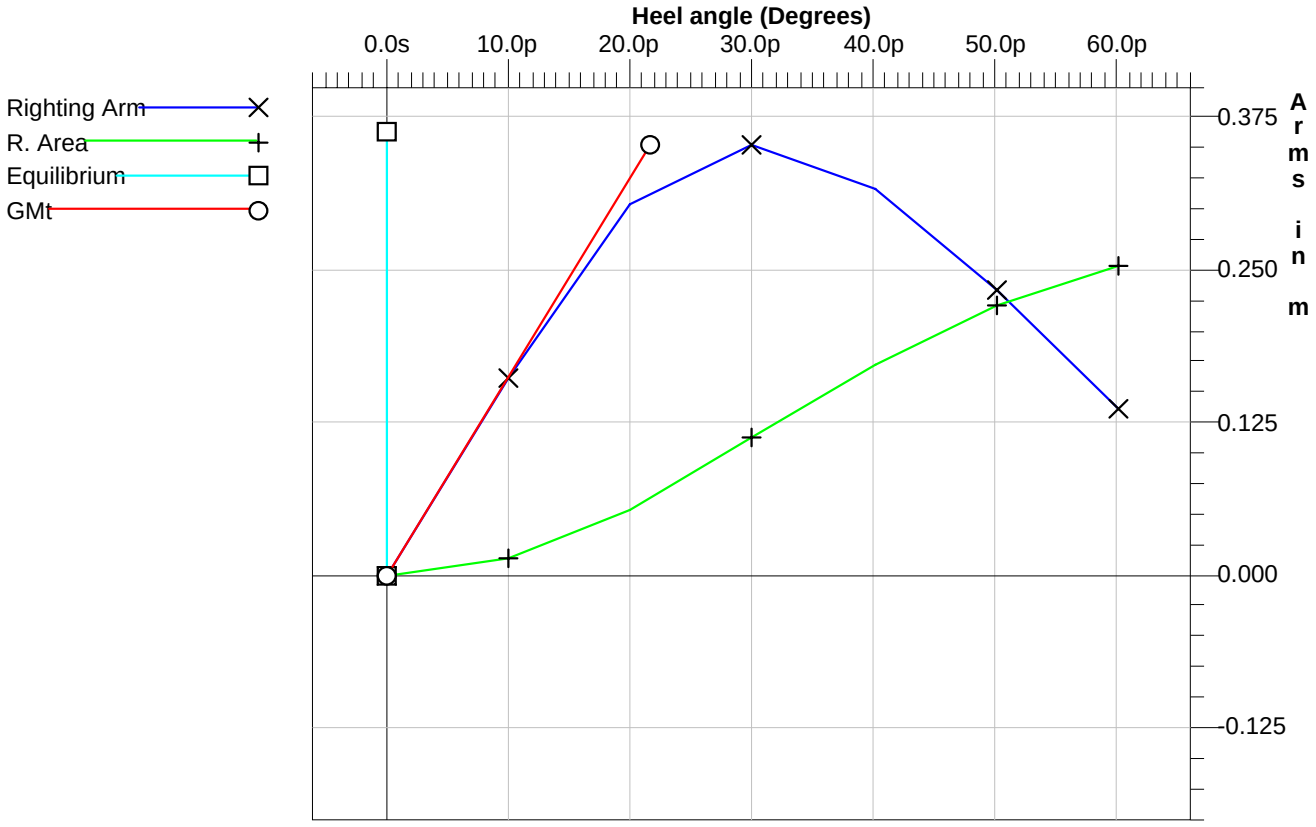
Righting Arms vs Heel Angle

Free Surface Adjustment 0.002
Adjusted VCG 2.671

Heel Angle (deg)	Trim Angle (deg)	Origin Depth (m)	Righting Arm (m)	Area (m-Rad)	Notes
0.00	0.95f	2.356	0.000	0.000	
0.01p	0.95f	2.356	0.000	0.000	Equil
10.00p	0.98f	2.299	0.161	0.014	
20.00p	1.07f	2.133	0.304	0.055	
30.00p	1.06f	1.910	0.353	0.114	
40.00p	0.94f	1.653	0.316	0.173	
50.00p	0.73f	1.361	0.235	0.222	
60.00p	0.54f	1.016	0.137	0.255	

Weight and C.G. used above include tank loads.
The tank load centers were not allowed to shift with heel and trim changes.
A Free Surface Moment of 0.1 MT-m was used to adjust the VCG.

Righting Arms vs. Heel - IMO A.749 (18), INTACT STABILITY



IMO A.749 (18), INTACT STABILITY

Limit	Min/Max	Actual	Margin	Pass
(1) Area from 0.00 deg to 30.00	>0.0550 m-R	0.114	0.059	Yes
(2) Area from 0.00 deg to 40.00 or Flood	>0.0900 m-R	0.173	0.083	Yes
(3) Area from 30.00 deg to 40.00 or Flood	>0.0300 m-R	0.060	0.030	Yes
(4) Righting Arm at 30.00 deg or MaxRA	>0.200 m	0.353	0.153	Yes
(5) Absolute Angle at MaxRA	>25.00 deg	30.00	5.00	Yes
(6) GM Upright	>0.150 m	0.940	0.790	Yes
(7) GM at Equilibrium	>0.150 m	0.940	0.790	Yes

Status after Wind applied

Floating Status

Draft FP	2.652 m	Heel	stbd 14.67 deg.	GM(Solid)	0.909 m
Draft MS	2.481 m	Equil	Yes	F/S Corr.	0.001 m
Draft AP	2.310 m	Wind	Off	GM(Fluid)	0.907 m
Trim	fwd 0.331/18.600	Wave	No	KMt	3.549 m
LCG	9.237f m	VCG	2.670 m	TPcm	0.70
Displacement	67.78 MT	WaterSpgr	1.025		

Loading Summary

Item	Weight (MT)	LCG (m)	TCG (m)	VCG (m)
Light Ship	64.70	9.330f	0.000	2.620
Deadweight	3.08	7.291f	0.004s	3.712
Displacement	67.78	9.237f	0.000	2.670

Fixed Weight Status

Item	Weight (MT)	LCG (m)	TCG (m)	VCG (m)
LIGHT SHIP	64.70	9.330f	0.000	2.620u
01-PROVIANT & STORES	0.10	8.500f	1.200s	2.200u
02-CREW	0.20	3.500f	0.000	4.000u
03-28 PASS	2.30	8.000f	0.200p	4.000u
Total Fixed:	67.30	9.266f	0.005p	2.671u

Tank Status

FRESH WATER (SpGr 1.000)

Tank Name	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)
FV-TK.P	10.02%	0.04	5.266f	1.759p	2.599
Subtotals:	10.02%	0.04	5.266f	1.759p	2.599

SEWAGE (SpGr 1.000)

Tank Name	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)
SEWAGE-TK.S	75.00%	0.31	5.212f	1.928s	2.728
Subtotals:	75.00%	0.31	5.212f	1.928s	2.728

DIESEL OIL (SpGr 0.850)

Tank Name	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)
DO-TK.P	20.00%	0.13	5.232f	1.395p	2.005
DO-TK.S	<empty>				
Subtotals:	10.00%	0.13	5.232f	1.395p	2.005

All Tanks

	Load (%)	Weight (MT)	LCG (m)	TCG (m)	VCG (m)
Totals:	22.89%	0.48	5.222f	0.732s	2.526

Displacer Status

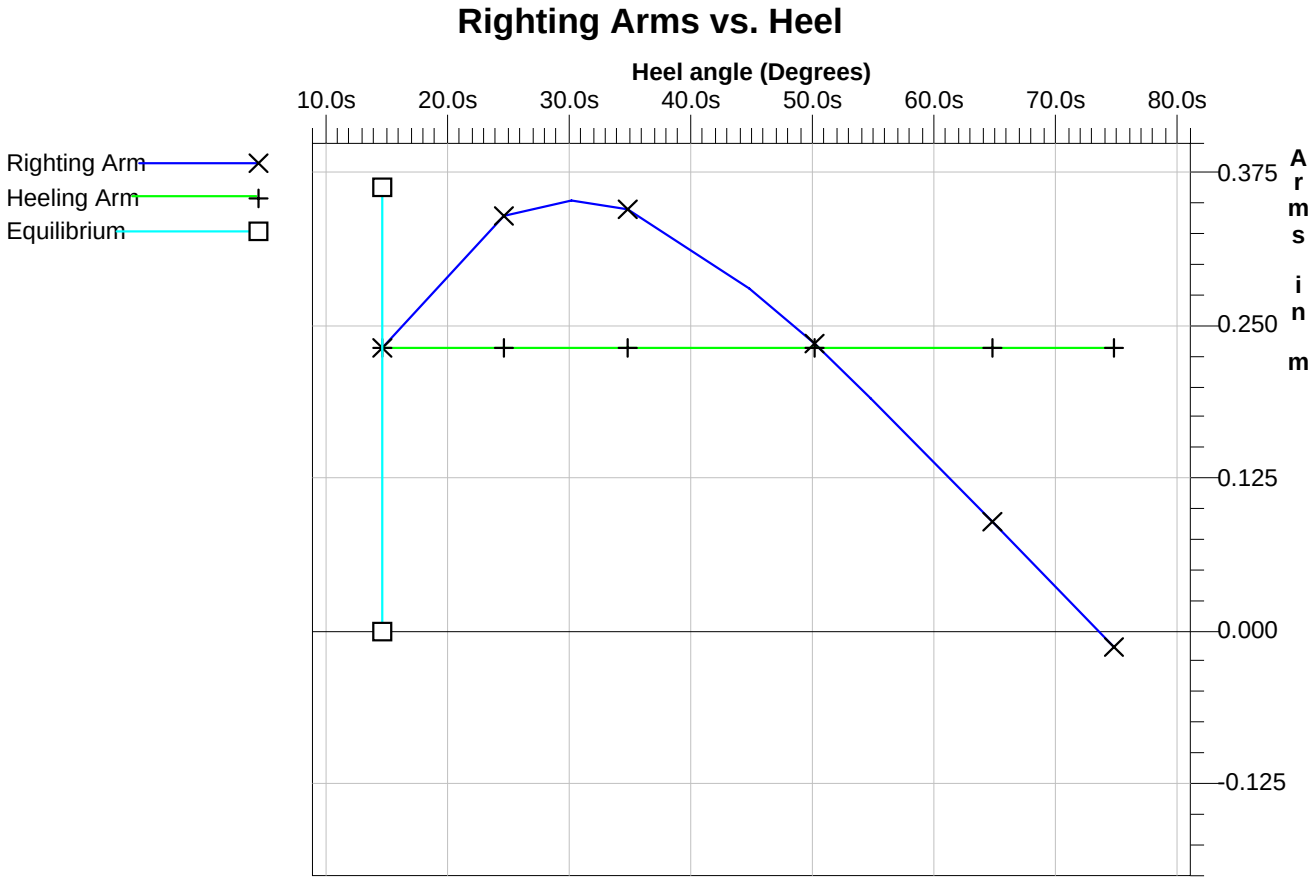
Item	Status	Spgr	Displ (MT)	LCB (m)	TCB (m)	VCB (m)	Eff /Perm
HULL.C	Intact	1.025	67.78	9.251f	0.426s	1.964	1.000
SubTotals:			67.78	9.251f	0.426s	1.964	

Righting Arms vs. Heel

Residual Righting Arms vs Heel Angle

Heel Angle (deg)	Trim Angle (deg)	Origin Depth (m)	Residual Arm (m)
14.67s	1.02f	2.234	0.000
14.67s	1.02f	2.234	0.000
24.67s	1.08f	2.032	0.108
30.16s	1.06f	1.906	0.120
34.67s	1.02f	1.794	0.112
44.67s	0.85f	1.522	0.049
50.01s	0.73f	1.361	0.002
54.67s	0.63f	1.207	-0.042
64.67s	0.47f	0.841	-0.144
74.67s	0.27f	0.464	-0.247

Note:
Residual Righting Arms shown above are in excess of the overturning arms derived from this moment (in m-MT):
Stbd heeling moment = 15.81



Limit Report

Limit	Min/Max	Actual	Margin	Pass
(1) Absolute Angle at Equilibrium	<15.00 deg	14.67	0.33	Yes

Wind heeling Moment Report
Wind heeling moment: 15.81 MT-m to starboard

SEJLTRYK - Cond 05:

Sejltryk = 110 N/m^2 = 11.21 kg/m^2 = 0.0112 t/m^2

110 N/m^2 svarer til vindtryk ved en vindhastghed på 12 m/sek.

10% Cond + Pass:

Draft = 2.51 m

HCPwater = 1.02 m

= > Arm = $Sail_{VCG}$ - Draft + HCPwater

Sejl	Sejlareal [m^2]	Sejltryk [t/m^2]	$Sail_{VCG}$ [m]	Arm [m]	Moment [tm]
Gaffelstorsejl	71.3	0.0112	11.01	9.52	7.60
Stortopsejl	0	0.0112	20.6	19.11	0.00
Gaffelmesansejl	30.7	0.0112	8.76	7.27	2.50
Mesantopsejl	0	0.0112	14.43	12.94	0.00
Stagfok	26	0.0112	10.3	8.81	2.57
Klyver	29.5	0.0112	11	9.51	3.14
Totalt	157.5				15.81

AFSNIT 3

HYDROSTATISKE TABELLER

HYDROSTATIC PROPPERTIES

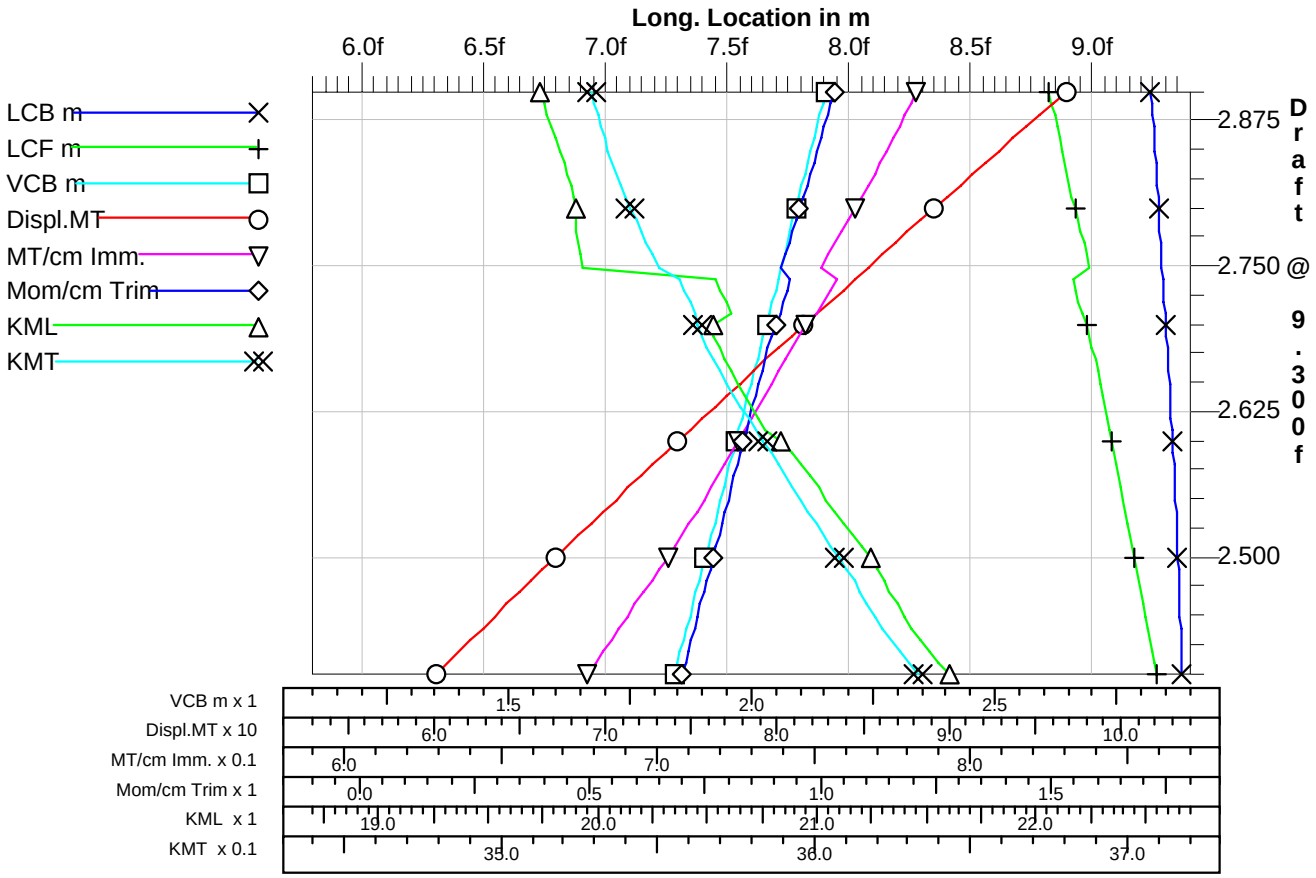
Hydrostatic Properties

Draft is from Baseline.
Trim: fwd 0.400/18.600, No heel, VCG = 0.000

Draft at 9.300f (m)	Displ (MT)	LCB (m)	VCB (m)	LCF (m)	TPcm (MT/cm)	MTcm (MT-m /cm)	KML (m)	KMT (m)
2.400	60.084	9.364f	1.839	9.260f	0.677	0.698	21.602	3.633
2.410	60.763	9.363f	1.846	9.252f	0.680	0.704	21.552	3.630
2.420	61.444	9.362f	1.852	9.244f	0.682	0.711	21.507	3.627
2.430	62.128	9.360f	1.859	9.235f	0.685	0.717	21.466	3.624
2.440	62.814	9.359f	1.865	9.225f	0.687	0.724	21.427	3.621
2.450	63.503	9.357f	1.871	9.216f	0.690	0.730	21.391	3.619
2.460	64.195	9.356f	1.878	9.206f	0.693	0.737	21.359	3.617
2.470	64.889	9.354f	1.884	9.195f	0.695	0.744	21.327	3.614
2.480	65.586	9.352f	1.890	9.185f	0.698	0.751	21.304	3.612
2.490	66.285	9.350f	1.897	9.174f	0.700	0.758	21.273	3.610
2.500	66.987	9.348f	1.903	9.164f	0.703	0.765	21.239	3.608
2.510	67.692	9.346f	1.909	9.154f	0.705	0.772	21.200	3.605
2.520	68.399	9.344f	1.916	9.145f	0.708	0.778	21.160	3.603
2.530	69.108	9.342f	1.922	9.136f	0.710	0.785	21.121	3.600
2.540	69.820	9.340f	1.928	9.127f	0.712	0.791	21.080	3.598
2.550	70.534	9.337f	1.935	9.118f	0.714	0.798	21.039	3.595
2.560	71.250	9.335f	1.941	9.108f	0.717	0.805	21.000	3.593
2.570	71.968	9.332f	1.947	9.099f	0.719	0.811	20.960	3.591
2.580	72.689	9.330f	1.954	9.090f	0.721	0.818	20.921	3.588
2.590	73.412	9.327f	1.960	9.081f	0.723	0.824	20.878	3.586
2.600	74.138	9.325f	1.966	9.073f	0.725	0.830	20.830	3.584
2.610	74.865	9.322f	1.972	9.067f	0.727	0.836	20.762	3.581
2.620	75.595	9.320f	1.979	9.058f	0.730	0.843	20.728	3.579
2.630	76.326	9.317f	1.985	9.048f	0.732	0.849	20.695	3.576
2.640	77.060	9.314f	1.991	9.038f	0.734	0.856	20.665	3.574
2.650	77.796	9.312f	1.997	9.027f	0.736	0.863	20.636	3.572
2.660	78.534	9.309f	2.004	9.017f	0.738	0.870	20.605	3.570
2.670	79.273	9.306f	2.010	9.007f	0.740	0.877	20.576	3.568
2.680	80.015	9.303f	2.016	8.997f	0.742	0.884	20.551	3.566
2.690	80.759	9.300f	2.022	8.986f	0.745	0.891	20.524	3.564
2.700	81.505	9.297f	2.028	8.975f	0.747	0.899	20.517	3.562
2.710	82.253	9.294f	2.034	8.951f	0.750	0.911	20.603	3.562
2.720	83.003	9.291f	2.041	8.941f	0.753	0.919	20.579	3.560
2.730	83.755	9.288f	2.047	8.930f	0.755	0.926	20.555	3.558
2.740	84.509	9.285f	2.053	8.920f	0.757	0.933	20.533	3.556
2.750	85.262	9.282f	2.059	8.985f	0.752	0.914	19.926	3.550
2.760	86.015	9.280f	2.065	8.974f	0.754	0.921	19.916	3.548
2.770	86.770	9.277f	2.071	8.963f	0.756	0.929	19.902	3.546
2.780	87.527	9.274f	2.077	8.950f	0.758	0.937	19.897	3.544
2.790	88.287	9.271f	2.084	8.937f	0.761	0.945	19.896	3.543
2.800	89.048	9.268f	2.090	8.924f	0.763	0.953	19.895	3.541
2.810	89.812	9.265f	2.096	8.912f	0.765	0.960	19.887	3.540
2.820	90.578	9.262f	2.102	8.902f	0.767	0.968	19.871	3.538
2.830	91.345	9.259f	2.108	8.891f	0.769	0.975	19.856	3.537
2.840	92.115	9.256f	2.114	8.880f	0.771	0.983	19.842	3.535
2.850	92.886	9.253f	2.120	8.870f	0.773	0.990	19.825	3.534
2.860	93.660	9.250f	2.126	8.860f	0.775	0.998	19.806	3.533
2.870	94.435	9.247f	2.132	8.850f	0.777	1.005	19.784	3.532
2.880	95.212	9.243f	2.138	8.840f	0.779	1.012	19.763	3.531
2.890	95.991	9.240f	2.144	8.830f	0.781	1.019	19.746	3.530
2.900	96.772	9.237f	2.150	8.820f	0.783	1.027	19.730	3.529

Water Specific Gravity = 1.025.
Trim is per 18.60m

Hydrostatic Properties at fwd 0.400/18.600, Heel = 0.00



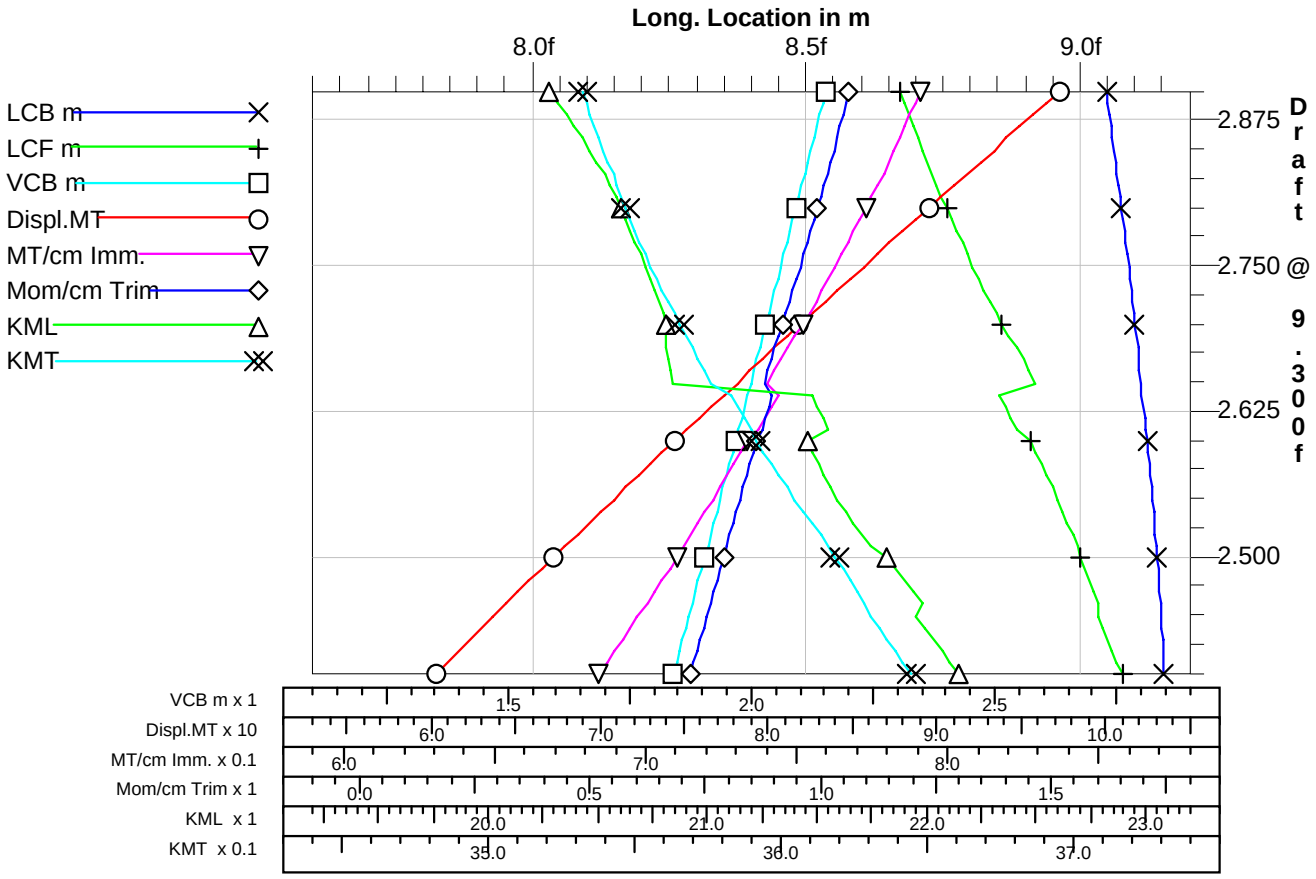
Hydrostatic Properties

Draft is from Baseline.
Trim: fwd 0.200/18.600, No heel, VCG = 0.000

Draft at 9.300f (m)	Displ (MT)	LCB (m)	VCB (m)	LCF (m)	TPcm (MT/cm)	MTcm (MT-m /cm)	KML (m)	KMT (m)
2.400	60.185	9.151f	1.837	9.075f	0.684	0.716	22.138	3.644
2.410	60.871	9.151f	1.844	9.066f	0.687	0.723	22.102	3.642
2.420	61.560	9.150f	1.850	9.057f	0.689	0.730	22.066	3.639
2.430	62.252	9.148f	1.857	9.048f	0.692	0.737	22.024	3.636
2.440	62.947	9.147f	1.863	9.040f	0.694	0.744	21.982	3.633
2.450	63.644	9.146f	1.870	9.032f	0.697	0.751	21.942	3.631
2.460	64.344	9.145f	1.876	9.031f	0.700	0.760	21.977	3.628
2.470	65.046	9.143f	1.882	9.022f	0.703	0.767	21.938	3.626
2.480	65.751	9.142f	1.889	9.014f	0.705	0.774	21.898	3.623
2.490	66.458	9.140f	1.895	9.006f	0.708	0.781	21.856	3.621
2.500	67.168	9.139f	1.902	8.997f	0.710	0.788	21.811	3.618
2.510	67.880	9.137f	1.908	8.992f	0.712	0.793	21.740	3.616
2.520	68.595	9.135f	1.915	8.984f	0.715	0.800	21.697	3.613
2.530	69.312	9.134f	1.921	8.975f	0.717	0.807	21.658	3.610
2.540	70.031	9.132f	1.927	8.966f	0.719	0.814	21.623	3.607
2.550	70.752	9.130f	1.934	8.956f	0.722	0.821	21.588	3.605
2.560	71.476	9.128f	1.940	8.947f	0.724	0.828	21.556	3.602
2.570	72.202	9.126f	1.946	8.937f	0.726	0.836	21.529	3.599
2.580	72.930	9.124f	1.953	8.928f	0.729	0.843	21.500	3.596
2.590	73.661	9.122f	1.959	8.918f	0.731	0.850	21.472	3.594
2.600	74.394	9.120f	1.965	8.907f	0.734	0.858	21.456	3.591
2.610	75.129	9.118f	1.972	8.882f	0.737	0.870	21.547	3.590
2.620	75.866	9.116f	1.978	8.872f	0.739	0.878	21.520	3.588
2.630	76.605	9.113f	1.984	8.862f	0.742	0.885	21.494	3.585
2.640	77.346	9.111f	1.991	8.852f	0.744	0.893	21.468	3.583
2.650	78.087	9.109f	1.997	8.916f	0.740	0.875	20.840	3.576
2.660	78.828	9.107f	2.003	8.905f	0.742	0.883	20.827	3.574
2.670	79.571	9.105f	2.009	8.894f	0.744	0.890	20.813	3.572
2.680	80.316	9.103f	2.015	8.881f	0.747	0.899	20.807	3.569
2.690	81.064	9.101f	2.022	8.869f	0.749	0.907	20.804	3.567
2.700	81.815	9.099f	2.028	8.856f	0.752	0.915	20.801	3.565
2.710	82.567	9.097f	2.034	8.844f	0.754	0.923	20.790	3.563
2.720	83.322	9.094f	2.040	8.834f	0.756	0.930	20.770	3.561
2.730	84.079	9.092f	2.046	8.823f	0.758	0.938	20.753	3.559
2.740	84.837	9.090f	2.053	8.812f	0.760	0.946	20.738	3.557
2.750	85.598	9.087f	2.059	8.802f	0.762	0.953	20.714	3.555
2.760	86.361	9.085f	2.065	8.792f	0.764	0.961	20.691	3.553
2.770	87.126	9.082f	2.071	8.783f	0.766	0.968	20.666	3.551
2.780	87.893	9.079f	2.077	8.773f	0.768	0.975	20.639	3.550
2.790	88.662	9.077f	2.084	8.764f	0.770	0.983	20.617	3.548
2.800	89.433	9.074f	2.090	8.754f	0.773	0.991	20.603	3.547
2.810	90.206	9.071f	2.096	8.744f	0.775	0.998	20.580	3.545
2.820	90.981	9.069f	2.102	8.735f	0.776	1.005	20.551	3.544
2.830	91.757	9.066f	2.108	8.726f	0.778	1.013	20.523	3.542
2.840	92.536	9.063f	2.114	8.717f	0.780	1.019	20.489	3.541
2.850	93.316	9.060f	2.120	8.709f	0.782	1.026	20.455	3.539
2.860	94.097	9.057f	2.126	8.700f	0.784	1.033	20.422	3.537
2.870	94.881	9.054f	2.133	8.693f	0.785	1.040	20.385	3.536
2.880	95.666	9.051f	2.139	8.685f	0.787	1.047	20.349	3.534
2.890	96.453	9.049f	2.145	8.677f	0.789	1.053	20.312	3.533
2.900	97.241	9.046f	2.151	8.670f	0.790	1.060	20.275	3.532

Water Specific Gravity = 1.025.
Trim is per 18.60m

Hydrostatic Properties at fwd 0.200/18.600, Heel = 0.00



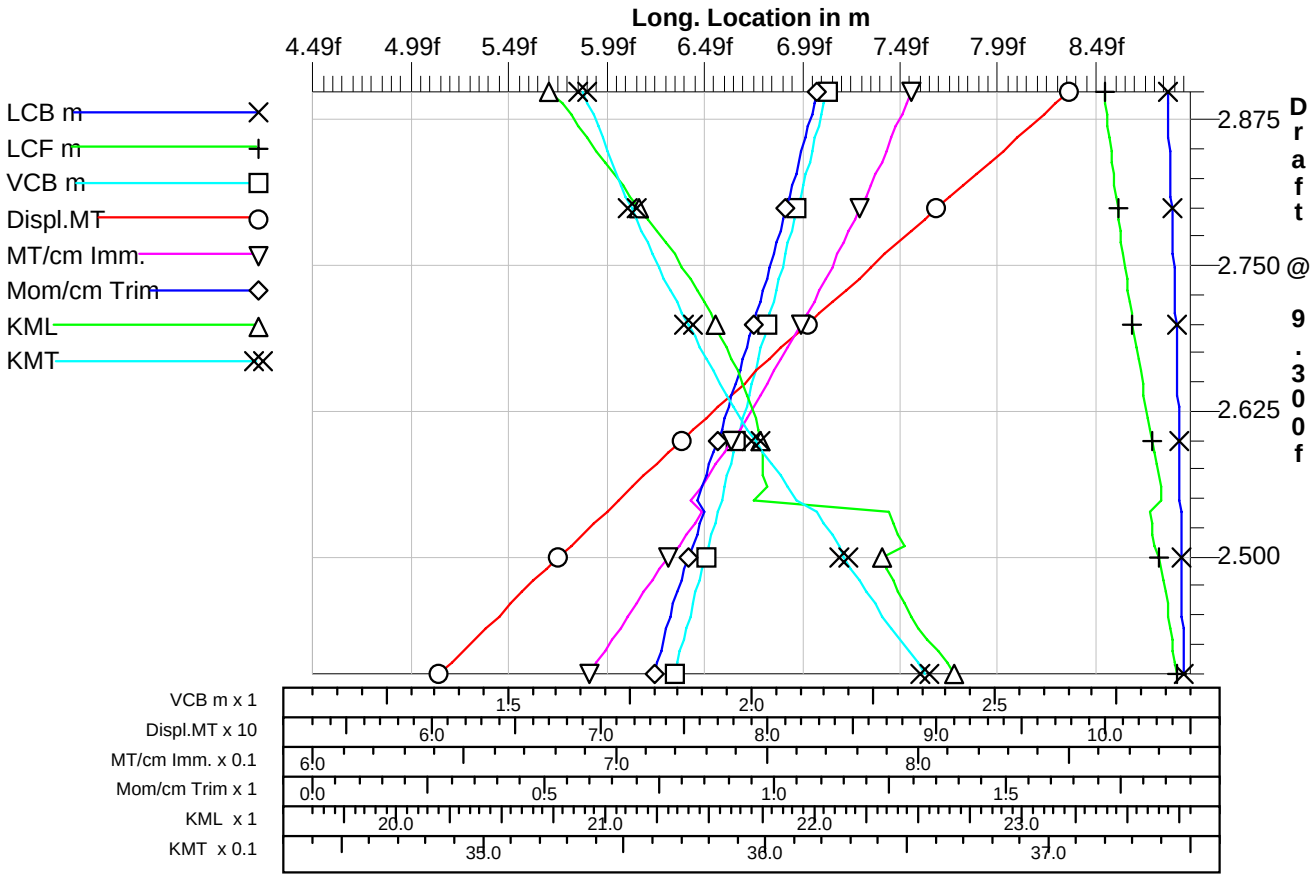
Hydrostatic Properties

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

Draft at 9.300f (m)	Displ (MT)	LCB (m)	VCB (m)	LCF (m)	TPcm (MT/cm)	MTcm (MT-m /cm)	KML (m)	KMT (m)
2.400	60.429	8.932f	1.839	8.895f	0.691	0.736	22.669	3.656
2.410	61.122	8.931f	1.845	8.887f	0.694	0.744	22.630	3.653
2.420	61.819	8.930f	1.852	8.879f	0.696	0.751	22.586	3.650
2.430	62.518	8.930f	1.858	8.872f	0.699	0.758	22.539	3.647
2.440	63.219	8.929f	1.865	8.865f	0.701	0.765	22.496	3.644
2.450	63.924	8.928f	1.871	8.857f	0.704	0.772	22.459	3.641
2.460	64.630	8.927f	1.878	8.848f	0.707	0.779	22.427	3.638
2.470	65.340	8.926f	1.884	8.840f	0.709	0.787	22.398	3.636
2.480	66.051	8.925f	1.891	8.830f	0.712	0.794	22.371	3.633
2.490	66.766	8.924f	1.897	8.821f	0.714	0.802	22.342	3.630
2.500	67.483	8.923f	1.904	8.811f	0.717	0.810	22.325	3.627
2.510	68.202	8.922f	1.910	8.787f	0.721	0.822	22.429	3.626
2.520	68.924	8.921f	1.917	8.778f	0.723	0.830	22.402	3.623
2.530	69.648	8.919f	1.923	8.769f	0.726	0.838	22.376	3.621
2.540	70.375	8.918f	1.929	8.760f	0.728	0.846	22.350	3.618
2.550	71.101	8.917f	1.936	8.823f	0.725	0.830	21.705	3.610
2.560	71.827	8.916f	1.942	8.820f	0.728	0.841	21.767	3.608
2.570	72.557	8.915f	1.949	8.809f	0.730	0.849	21.752	3.605
2.580	73.288	8.914f	1.955	8.797f	0.733	0.857	21.746	3.602
2.590	74.022	8.913f	1.961	8.785f	0.736	0.865	21.745	3.599
2.600	74.759	8.911f	1.968	8.773f	0.738	0.874	21.742	3.596
2.610	75.499	8.910f	1.974	8.762f	0.741	0.882	21.732	3.593
2.620	76.240	8.909f	1.980	8.752f	0.743	0.890	21.712	3.591
2.630	76.984	8.907f	1.987	8.742f	0.745	0.898	21.693	3.588
2.640	77.730	8.905f	1.993	8.731f	0.748	0.906	21.678	3.586
2.650	78.479	8.904f	1.999	8.721f	0.750	0.914	21.657	3.584
2.660	79.230	8.902f	2.005	8.712f	0.752	0.922	21.633	3.581
2.670	79.983	8.900f	2.012	8.703f	0.754	0.929	21.603	3.579
2.680	80.738	8.898f	2.018	8.694f	0.757	0.936	21.574	3.577
2.690	81.495	8.896f	2.024	8.685f	0.759	0.944	21.549	3.574
2.700	82.254	8.895f	2.030	8.675f	0.761	0.952	21.526	3.572
2.710	83.016	8.893f	2.037	8.666f	0.763	0.960	21.498	3.570
2.720	83.779	8.891f	2.043	8.658f	0.765	0.967	21.467	3.568
2.730	84.545	8.888f	2.049	8.649f	0.767	0.974	21.437	3.566
2.740	85.312	8.886f	2.055	8.641f	0.769	0.982	21.400	3.564
2.750	86.081	8.884f	2.062	8.633f	0.771	0.989	21.362	3.562
2.760	86.853	8.882f	2.068	8.625f	0.773	0.996	21.325	3.560
2.770	87.626	8.880f	2.074	8.617f	0.775	1.003	21.284	3.558
2.780	88.401	8.878f	2.080	8.610f	0.777	1.010	21.244	3.556
2.790	89.177	8.875f	2.087	8.602f	0.779	1.017	21.202	3.554
2.800	89.956	8.873f	2.093	8.595f	0.781	1.023	21.160	3.552
2.810	90.736	8.871f	2.099	8.588f	0.782	1.030	21.118	3.550
2.820	91.518	8.869f	2.105	8.581f	0.784	1.037	21.075	3.549
2.830	92.302	8.866f	2.111	8.574f	0.786	1.044	21.034	3.547
2.840	93.087	8.864f	2.117	8.568f	0.788	1.051	20.991	3.545
2.850	93.874	8.861f	2.124	8.561f	0.789	1.057	20.948	3.544
2.860	94.663	8.859f	2.130	8.554f	0.791	1.064	20.906	3.542
2.870	95.453	8.857f	2.136	8.547f	0.793	1.071	20.866	3.540
2.880	96.245	8.854f	2.142	8.540f	0.794	1.078	20.828	3.539
2.890	97.039	8.852f	2.148	8.534f	0.796	1.084	20.784	3.537
2.900	97.834	8.849f	2.154	8.527f	0.797	1.090	20.730	3.535

Water Specific Gravity = 1.025.
Trim is per 18.60m

Hydrostatic Properties at zero, Heel = 0.00



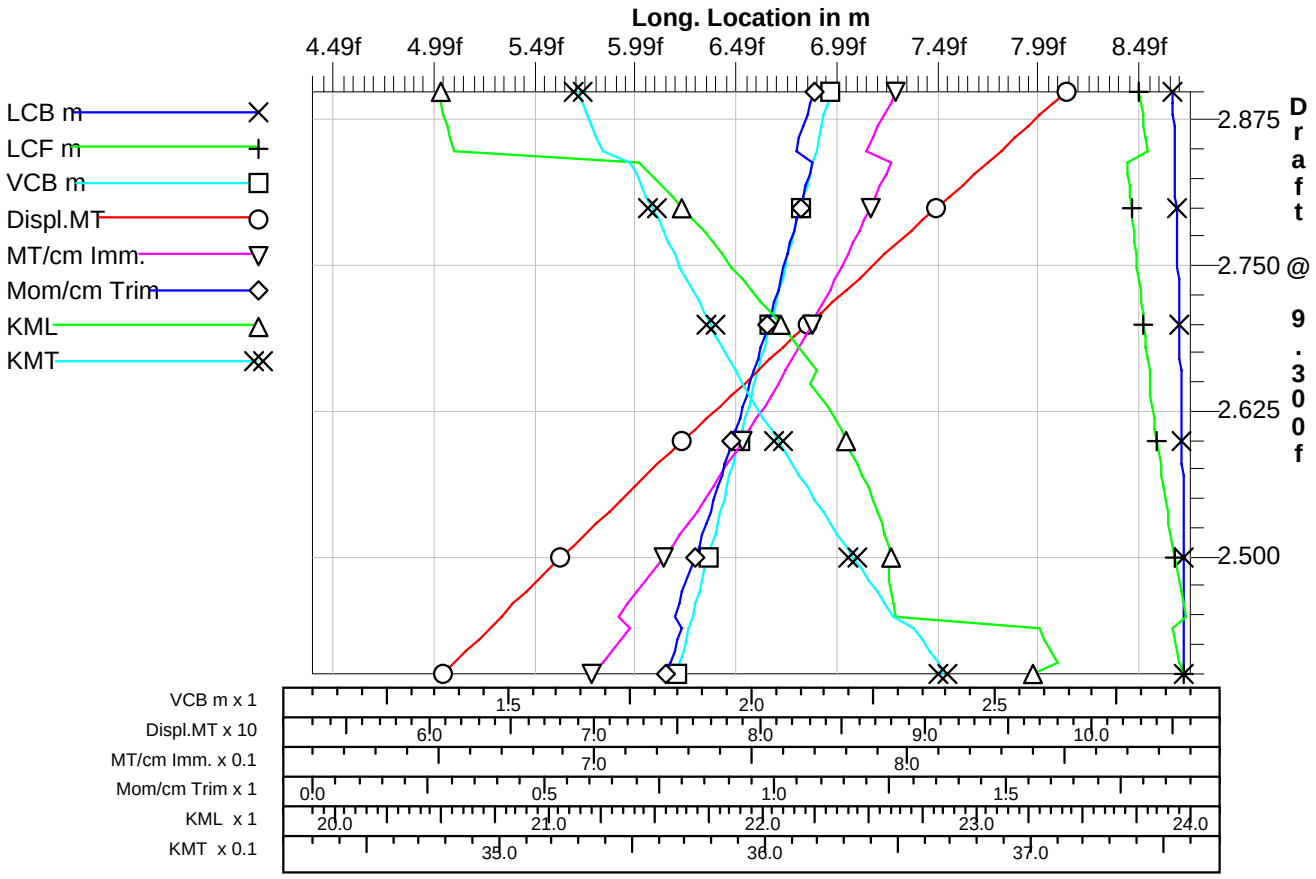
Hydrostatic Properties

Draft is from Baseline.
Trim: aft 0.200/18.600, No heel, VCG = 0.000

Draft at 9.300f (m)	Displ (MT)	LCB (m)	VCB (m)	LCF (m)	TPcm (MT/cm)	MTcm (MT-m /cm)	KML (m)	KMT (m)
2.400	60.816	8.706f	1.844	8.703f	0.698	0.761	23.267	3.666
2.410	61.517	8.706f	1.851	8.680f	0.702	0.773	23.379	3.665
2.420	62.220	8.706f	1.857	8.671f	0.705	0.781	23.349	3.662
2.430	62.926	8.706f	1.864	8.663f	0.708	0.789	23.319	3.659
2.440	63.634	8.705f	1.870	8.654f	0.711	0.797	23.291	3.656
2.450	64.343	8.705f	1.877	8.715f	0.708	0.783	22.621	3.648
2.460	65.052	8.705f	1.883	8.705f	0.710	0.791	22.609	3.645
2.470	65.764	8.705f	1.890	8.695f	0.713	0.799	22.595	3.642
2.480	66.479	8.705f	1.896	8.684f	0.716	0.807	22.591	3.639
2.490	67.197	8.705f	1.903	8.673f	0.719	0.816	22.592	3.636
2.500	67.917	8.705f	1.909	8.661f	0.722	0.825	22.593	3.633
2.510	68.641	8.704f	1.915	8.650f	0.724	0.834	22.587	3.630
2.520	69.367	8.704f	1.922	8.641f	0.727	0.842	22.569	3.627
2.530	70.095	8.703f	1.928	8.632f	0.730	0.850	22.552	3.624
2.540	70.826	8.703f	1.935	8.622f	0.732	0.858	22.536	3.622
2.550	71.560	8.702f	1.941	8.613f	0.735	0.866	22.515	3.619
2.560	72.296	8.701f	1.948	8.605f	0.737	0.874	22.493	3.616
2.570	73.034	8.700f	1.954	8.597f	0.740	0.882	22.464	3.613
2.580	73.775	8.699f	1.960	8.588f	0.742	0.890	22.436	3.610
2.590	74.519	8.698f	1.967	8.580f	0.744	0.898	22.412	3.607
2.600	75.264	8.697f	1.973	8.571f	0.747	0.906	22.391	3.605
2.610	76.012	8.696f	1.979	8.563f	0.749	0.914	22.364	3.602
2.620	76.762	8.695f	1.986	8.555f	0.751	0.922	22.331	3.599
2.630	77.515	8.693f	1.992	8.547f	0.754	0.929	22.300	3.596
2.640	78.269	8.692f	1.998	8.541f	0.756	0.937	22.262	3.594
2.650	79.026	8.691f	2.005	8.534f	0.758	0.944	22.224	3.591
2.660	79.784	8.690f	2.011	8.534f	0.761	0.955	22.253	3.588
2.670	80.545	8.688f	2.017	8.527f	0.763	0.962	22.209	3.586
2.680	81.307	8.687f	2.024	8.520f	0.765	0.969	22.168	3.584
2.690	82.072	8.685f	2.030	8.513f	0.767	0.976	22.124	3.581
2.700	82.839	8.684f	2.036	8.507f	0.769	0.983	22.079	3.579
2.710	83.607	8.682f	2.043	8.501f	0.771	0.991	22.036	3.577
2.720	84.378	8.681f	2.049	8.494f	0.773	0.998	21.991	3.575
2.730	85.150	8.679f	2.055	8.488f	0.775	1.005	21.946	3.572
2.740	85.925	8.678f	2.061	8.482f	0.777	1.012	21.899	3.570
2.750	86.701	8.676f	2.068	8.476f	0.778	1.019	21.852	3.568
2.760	87.478	8.674f	2.074	8.469f	0.780	1.026	21.807	3.566
2.770	88.258	8.673f	2.080	8.463f	0.782	1.033	21.764	3.564
2.780	89.040	8.671f	2.086	8.456f	0.784	1.040	21.722	3.562
2.790	89.823	8.669f	2.093	8.451f	0.786	1.047	21.674	3.559
2.800	90.608	8.667f	2.099	8.446f	0.788	1.053	21.623	3.557
2.810	91.395	8.666f	2.105	8.440f	0.789	1.060	21.573	3.555
2.820	92.183	8.664f	2.111	8.434f	0.791	1.067	21.523	3.553
2.830	92.973	8.662f	2.118	8.429f	0.793	1.073	21.473	3.551
2.840	93.764	8.660f	2.124	8.423f	0.794	1.080	21.423	3.549
2.850	94.555	8.659f	2.130	8.527f	0.786	1.045	20.557	3.538
2.860	95.342	8.657f	2.136	8.518f	0.788	1.053	20.538	3.536
2.870	96.132	8.656f	2.142	8.509f	0.790	1.061	20.521	3.535
2.880	96.923	8.655f	2.148	8.500f	0.792	1.069	20.508	3.533
2.890	97.716	8.654f	2.154	8.490f	0.794	1.077	20.497	3.531
2.900	98.510	8.652f	2.160	8.480f	0.796	1.085	20.489	3.530

Water Specific Gravity = 1.025.
Trim is per 18.60m

Hydrostatic Properties at aft 0.200/18.600, Heel = 0.00



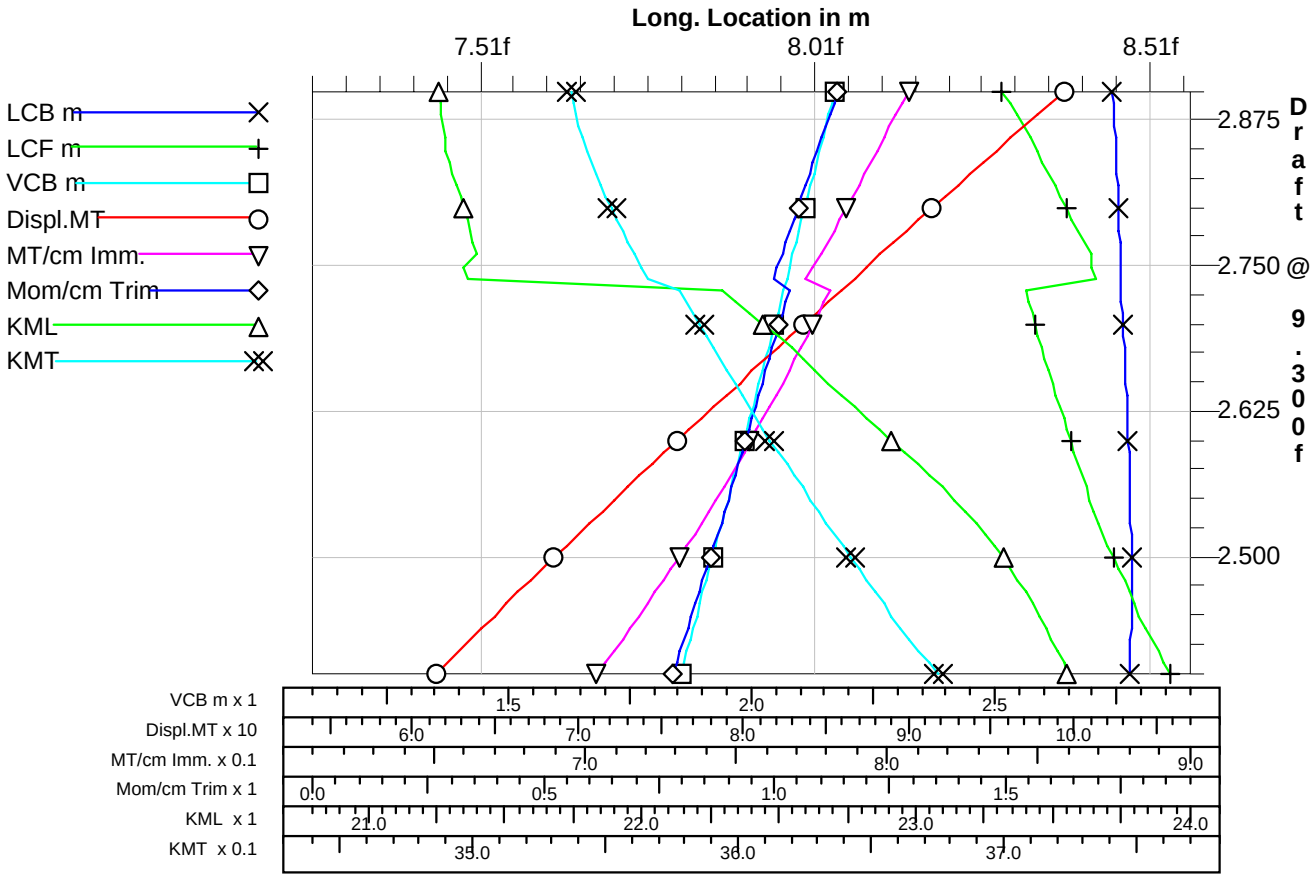
Hydrostatic Properties

Draft is from Baseline.
Trim: aft 0.400/18.600, No heel, VCG = 0.000

Draft at 9.300f (m)	Displ (MT)	LCB (m)	VCB (m)	LCF (m)	TPcm (MT/cm)	MTcm (MT-m /cm)	KML (m)	KMT (m)
2.400	61.330	8.479f	1.853	8.541f	0.703	0.777	23.548	3.675
2.410	62.035	8.479f	1.859	8.530f	0.706	0.785	23.539	3.671
2.420	62.742	8.480f	1.866	8.521f	0.709	0.793	23.513	3.668
2.430	63.453	8.480f	1.872	8.511f	0.712	0.802	23.492	3.664
2.440	64.166	8.481f	1.879	8.502f	0.715	0.810	23.472	3.661
2.450	64.882	8.481f	1.885	8.494f	0.718	0.818	23.449	3.658
2.460	65.601	8.481f	1.892	8.485f	0.720	0.826	23.426	3.654
2.470	66.322	8.481f	1.898	8.478f	0.723	0.834	23.397	3.651
2.480	67.046	8.481f	1.905	8.471f	0.726	0.842	23.366	3.648
2.490	67.772	8.481f	1.911	8.463f	0.728	0.851	23.340	3.645
2.500	68.501	8.481f	1.918	8.454f	0.731	0.859	23.317	3.642
2.510	69.233	8.481f	1.924	8.447f	0.733	0.867	23.287	3.639
2.520	69.967	8.481f	1.931	8.440f	0.736	0.875	23.251	3.636
2.530	70.704	8.480f	1.937	8.432f	0.738	0.883	23.216	3.633
2.540	71.442	8.480f	1.944	8.426f	0.741	0.890	23.175	3.630
2.550	72.183	8.480f	1.950	8.420f	0.743	0.898	23.133	3.627
2.560	72.927	8.479f	1.957	8.413f	0.745	0.906	23.092	3.624
2.570	73.673	8.479f	1.963	8.408f	0.748	0.913	23.046	3.621
2.580	74.420	8.478f	1.969	8.402f	0.750	0.921	23.002	3.618
2.590	75.171	8.477f	1.976	8.396f	0.752	0.928	22.958	3.615
2.600	75.923	8.477f	1.982	8.391f	0.754	0.935	22.910	3.612
2.610	76.677	8.476f	1.989	8.385f	0.756	0.943	22.862	3.609
2.620	77.434	8.475f	1.995	8.380f	0.759	0.950	22.815	3.606
2.630	78.192	8.475f	2.001	8.374f	0.761	0.957	22.771	3.604
2.640	78.953	8.474f	2.008	8.369f	0.763	0.965	22.724	3.601
2.650	79.716	8.473f	2.014	8.364f	0.765	0.972	22.677	3.598
2.660	80.481	8.472f	2.020	8.358f	0.767	0.979	22.630	3.596
2.670	81.248	8.471f	2.027	8.352f	0.769	0.987	22.586	3.593
2.680	82.016	8.471f	2.033	8.347f	0.771	0.994	22.543	3.590
2.690	82.787	8.470f	2.039	8.342f	0.773	1.001	22.494	3.588
2.700	83.560	8.469f	2.046	8.337f	0.775	1.008	22.441	3.585
2.710	84.335	8.468f	2.052	8.333f	0.777	1.015	22.390	3.583
2.720	85.111	8.467f	2.058	8.329f	0.779	1.023	22.341	3.580
2.730	85.889	8.466f	2.065	8.324f	0.781	1.030	22.290	3.578
2.740	86.669	8.465f	2.071	8.430f	0.773	0.995	21.358	3.565
2.750	87.443	8.464f	2.077	8.421f	0.775	1.004	21.348	3.563
2.760	88.219	8.464f	2.083	8.420f	0.778	1.015	21.393	3.560
2.770	88.998	8.464f	2.089	8.412f	0.780	1.023	21.378	3.558
2.780	89.778	8.463f	2.096	8.403f	0.782	1.032	21.368	3.556
2.790	90.561	8.463f	2.102	8.393f	0.784	1.040	21.361	3.554
2.800	91.346	8.462f	2.108	8.385f	0.786	1.048	21.345	3.552
2.810	92.133	8.461f	2.114	8.375f	0.788	1.057	21.332	3.550
2.820	92.921	8.461f	2.120	8.367f	0.790	1.065	21.316	3.548
2.830	93.712	8.460f	2.126	8.358f	0.792	1.074	21.302	3.546
2.840	94.505	8.459f	2.133	8.349f	0.794	1.082	21.291	3.544
2.850	95.299	8.458f	2.139	8.339f	0.796	1.091	21.281	3.542
2.860	96.096	8.457f	2.145	8.329f	0.798	1.099	21.275	3.541
2.870	96.894	8.456f	2.151	8.319f	0.800	1.108	21.269	3.540
2.880	97.694	8.455f	2.157	8.309f	0.802	1.117	21.265	3.539
2.890	98.497	8.454f	2.163	8.299f	0.805	1.126	21.260	3.538
2.900	99.301	8.453f	2.170	8.289f	0.807	1.135	21.253	3.537

Water Specific Gravity = 1.025.
Trim is per 18.60m

Hydrostatic Properties at aft 0.400/18.600, Heel = 0.00



AFSNIT 4

FORMSTABILITET TABELLER

KN - FORM STABILITY DATA

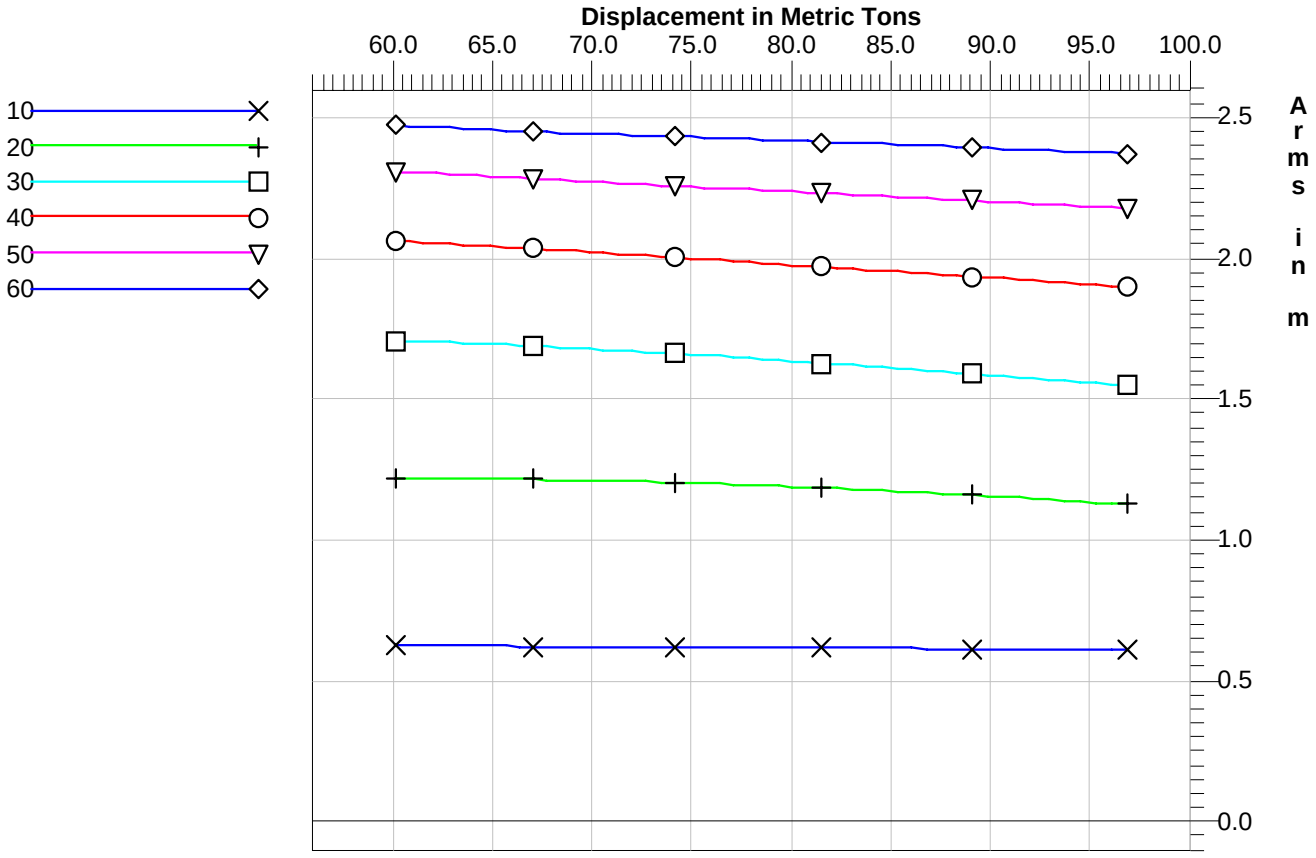
Cross Curves of Stability

Righting Arms(heel) for VCG = 0.00
Trim fwd 0.400/18.600 at heel = 0 (RA Trim = 0)

Displ (MT)	10.000s	20.000s	30.000s	40.000s	50.000s	60.000s
60.084	0.629s	1.222s	1.711s	2.065s	2.312s	2.476s
60.763	0.628s	1.222s	1.709s	2.062s	2.309s	2.473s
61.444	0.628s	1.222s	1.708s	2.060s	2.307s	2.471s
62.128	0.628s	1.222s	1.706s	2.057s	2.304s	2.469s
62.814	0.627s	1.221s	1.704s	2.055s	2.302s	2.466s
63.503	0.627s	1.221s	1.702s	2.052s	2.299s	2.464s
64.195	0.627s	1.220s	1.700s	2.049s	2.296s	2.462s
64.889	0.626s	1.220s	1.698s	2.047s	2.294s	2.460s
65.586	0.626s	1.219s	1.696s	2.044s	2.291s	2.458s
66.285	0.626s	1.219s	1.694s	2.041s	2.289s	2.456s
66.987	0.625s	1.218s	1.692s	2.038s	2.286s	2.454s
67.692	0.625s	1.217s	1.689s	2.035s	2.283s	2.452s
68.399	0.625s	1.216s	1.687s	2.032s	2.281s	2.450s
69.108	0.624s	1.215s	1.684s	2.029s	2.278s	2.448s
69.820	0.624s	1.214s	1.682s	2.026s	2.276s	2.446s
70.534	0.624s	1.213s	1.679s	2.022s	2.273s	2.444s
71.250	0.623s	1.212s	1.677s	2.019s	2.270s	2.443s
71.968	0.623s	1.211s	1.674s	2.016s	2.268s	2.441s
72.689	0.623s	1.210s	1.671s	2.013s	2.265s	2.439s
73.412	0.622s	1.208s	1.668s	2.010s	2.263s	2.437s
74.138	0.622s	1.207s	1.665s	2.006s	2.260s	2.436s
74.865	0.622s	1.205s	1.662s	2.003s	2.258s	2.434s
75.595	0.622s	1.204s	1.659s	2.000s	2.255s	2.432s
76.326	0.621s	1.202s	1.656s	1.996s	2.253s	2.430s
77.060	0.621s	1.200s	1.653s	1.993s	2.250s	2.429s
77.796	0.621s	1.198s	1.649s	1.989s	2.248s	2.427s
78.534	0.620s	1.196s	1.646s	1.986s	2.245s	2.425s
79.273	0.620s	1.195s	1.642s	1.983s	2.243s	2.423s
80.015	0.620s	1.193s	1.638s	1.979s	2.240s	2.421s
80.759	0.620s	1.190s	1.635s	1.976s	2.238s	2.419s
81.505	0.619s	1.188s	1.631s	1.973s	2.235s	2.417s
82.253	0.619s	1.186s	1.627s	1.969s	2.233s	2.415s
83.003	0.619s	1.184s	1.623s	1.966s	2.230s	2.414s
83.755	0.618s	1.181s	1.620s	1.962s	2.228s	2.412s
84.509	0.618s	1.179s	1.616s	1.959s	2.225s	2.410s
85.262	0.618s	1.176s	1.612s	1.955s	2.222s	2.408s
86.015	0.618s	1.173s	1.608s	1.952s	2.220s	2.406s
86.770	0.617s	1.171s	1.604s	1.949s	2.217s	2.404s
87.527	0.617s	1.168s	1.600s	1.945s	2.214s	2.401s
88.287	0.617s	1.165s	1.596s	1.942s	2.212s	2.399s
89.048	0.616s	1.162s	1.592s	1.938s	2.209s	2.397s
89.812	0.616s	1.159s	1.588s	1.935s	2.206s	2.395s
90.578	0.616s	1.156s	1.583s	1.931s	2.203s	2.393s
91.345	0.615s	1.153s	1.579s	1.928s	2.200s	2.391s
92.115	0.615s	1.150s	1.575s	1.924s	2.198s	2.389s
92.886	0.615s	1.147s	1.571s	1.921s	2.195s	2.387s
93.660	0.614s	1.143s	1.567s	1.917s	2.192s	2.384s
94.435	0.613s	1.140s	1.563s	1.914s	2.189s	2.382s
95.212	0.613s	1.136s	1.558s	1.910s	2.186s	2.380s
95.991	0.612s	1.132s	1.554s	1.907s	2.182s	2.377s
96.772	0.611s	1.129s	1.550s	1.903s	2.179s	2.375s

Water Specific Gravity = 1.025.

Cross Curves



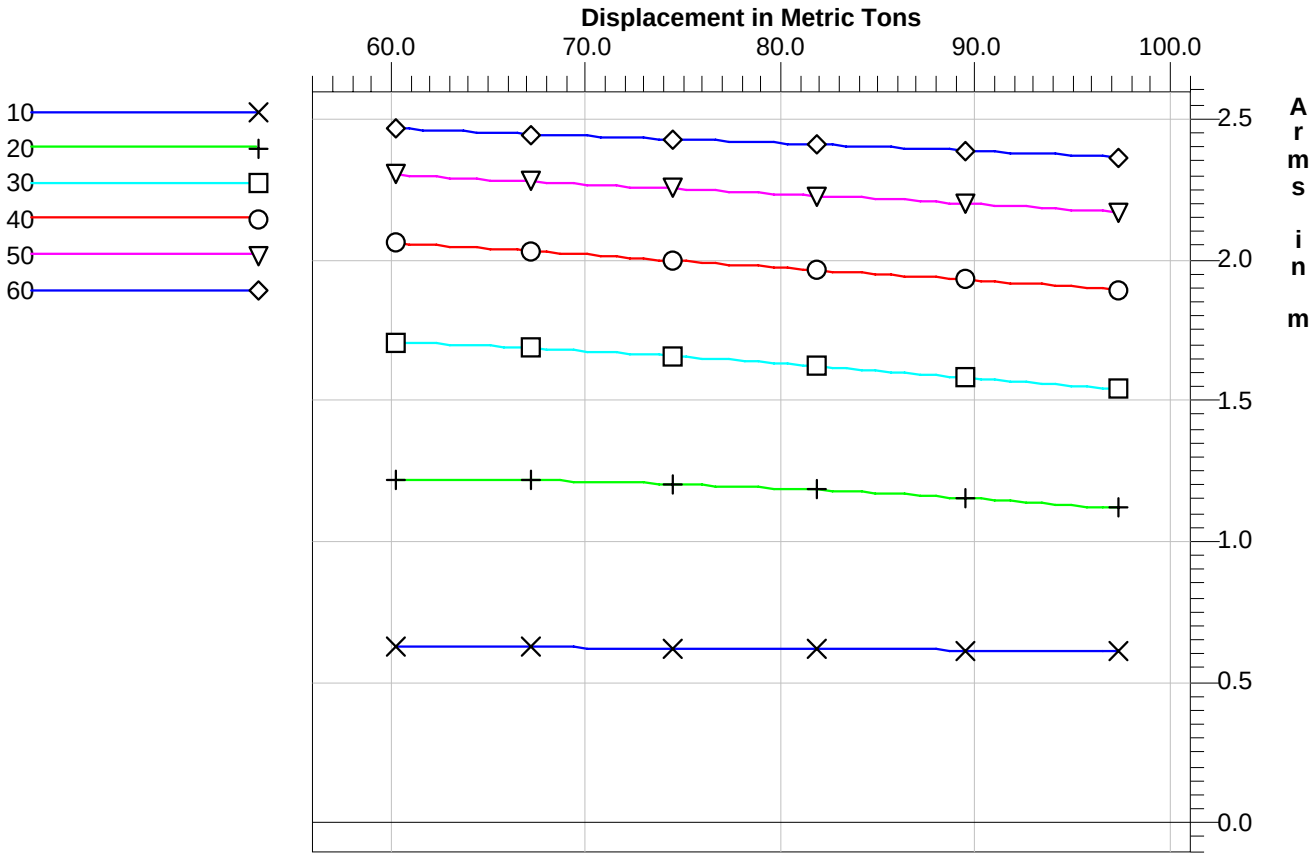
Cross Curves of Stability

Righting Arms(heel) for VCG = 0.00
Trim fwd 0.200/18.600 at heel = 0 (RA Trim = 0)

Displ (MT)	10.000s	20.000s	30.000s	40.000s	50.000s	60.000s
60.185	0.630s	1.225s	1.711s	2.062s	2.306s	2.470s
60.871	0.630s	1.225s	1.709s	2.060s	2.304s	2.468s
61.560	0.630s	1.224s	1.707s	2.057s	2.301s	2.466s
62.252	0.629s	1.224s	1.706s	2.054s	2.298s	2.464s
62.947	0.629s	1.224s	1.704s	2.051s	2.295s	2.462s
63.644	0.629s	1.223s	1.701s	2.048s	2.293s	2.460s
64.344	0.628s	1.222s	1.699s	2.046s	2.290s	2.458s
65.046	0.628s	1.222s	1.697s	2.043s	2.288s	2.456s
65.751	0.628s	1.221s	1.695s	2.040s	2.285s	2.454s
66.458	0.627s	1.220s	1.692s	2.037s	2.283s	2.452s
67.168	0.627s	1.220s	1.690s	2.033s	2.280s	2.450s
67.880	0.627s	1.219s	1.687s	2.030s	2.278s	2.448s
68.595	0.626s	1.218s	1.685s	2.027s	2.275s	2.446s
69.312	0.626s	1.217s	1.682s	2.024s	2.273s	2.444s
70.031	0.626s	1.215s	1.679s	2.021s	2.270s	2.442s
70.752	0.625s	1.214s	1.677s	2.017s	2.268s	2.441s
71.476	0.625s	1.213s	1.674s	2.014s	2.265s	2.439s
72.202	0.625s	1.211s	1.671s	2.011s	2.263s	2.437s
72.930	0.624s	1.210s	1.668s	2.007s	2.260s	2.435s
73.661	0.624s	1.208s	1.665s	2.004s	2.258s	2.433s
74.394	0.624s	1.206s	1.661s	2.001s	2.256s	2.431s
75.129	0.623s	1.205s	1.658s	1.997s	2.253s	2.430s
75.866	0.623s	1.203s	1.655s	1.994s	2.251s	2.428s
76.605	0.623s	1.201s	1.651s	1.990s	2.248s	2.426s
77.346	0.622s	1.199s	1.648s	1.987s	2.246s	2.424s
78.087	0.622s	1.197s	1.644s	1.984s	2.243s	2.422s
78.828	0.622s	1.195s	1.640s	1.980s	2.241s	2.420s
79.571	0.621s	1.193s	1.637s	1.977s	2.239s	2.418s
80.316	0.621s	1.191s	1.633s	1.973s	2.236s	2.416s
81.064	0.621s	1.189s	1.629s	1.970s	2.234s	2.415s
81.815	0.620s	1.186s	1.625s	1.967s	2.231s	2.413s
82.567	0.620s	1.184s	1.621s	1.963s	2.229s	2.411s
83.322	0.620s	1.181s	1.617s	1.960s	2.226s	2.409s
84.079	0.619s	1.179s	1.613s	1.956s	2.223s	2.406s
84.837	0.619s	1.176s	1.609s	1.953s	2.221s	2.404s
85.598	0.619s	1.173s	1.605s	1.949s	2.218s	2.402s
86.361	0.618s	1.170s	1.601s	1.946s	2.215s	2.400s
87.126	0.618s	1.167s	1.597s	1.943s	2.212s	2.398s
87.893	0.618s	1.164s	1.593s	1.939s	2.209s	2.396s
88.662	0.617s	1.161s	1.589s	1.936s	2.206s	2.394s
89.433	0.617s	1.157s	1.585s	1.932s	2.204s	2.391s
90.206	0.617s	1.154s	1.581s	1.929s	2.201s	2.389s
90.981	0.616s	1.150s	1.576s	1.926s	2.198s	2.387s
91.757	0.616s	1.147s	1.572s	1.922s	2.195s	2.385s
92.536	0.615s	1.143s	1.568s	1.919s	2.191s	2.382s
93.316	0.614s	1.139s	1.564s	1.915s	2.188s	2.380s
94.097	0.614s	1.136s	1.559s	1.911s	2.185s	2.378s
94.881	0.613s	1.132s	1.555s	1.908s	2.182s	2.375s
95.666	0.612s	1.128s	1.551s	1.904s	2.179s	2.373s
96.453	0.611s	1.124s	1.547s	1.901s	2.176s	2.370s
97.241	0.610s	1.120s	1.542s	1.897s	2.172s	2.368s

Water Specific Gravity = 1.025.

Cross Curves



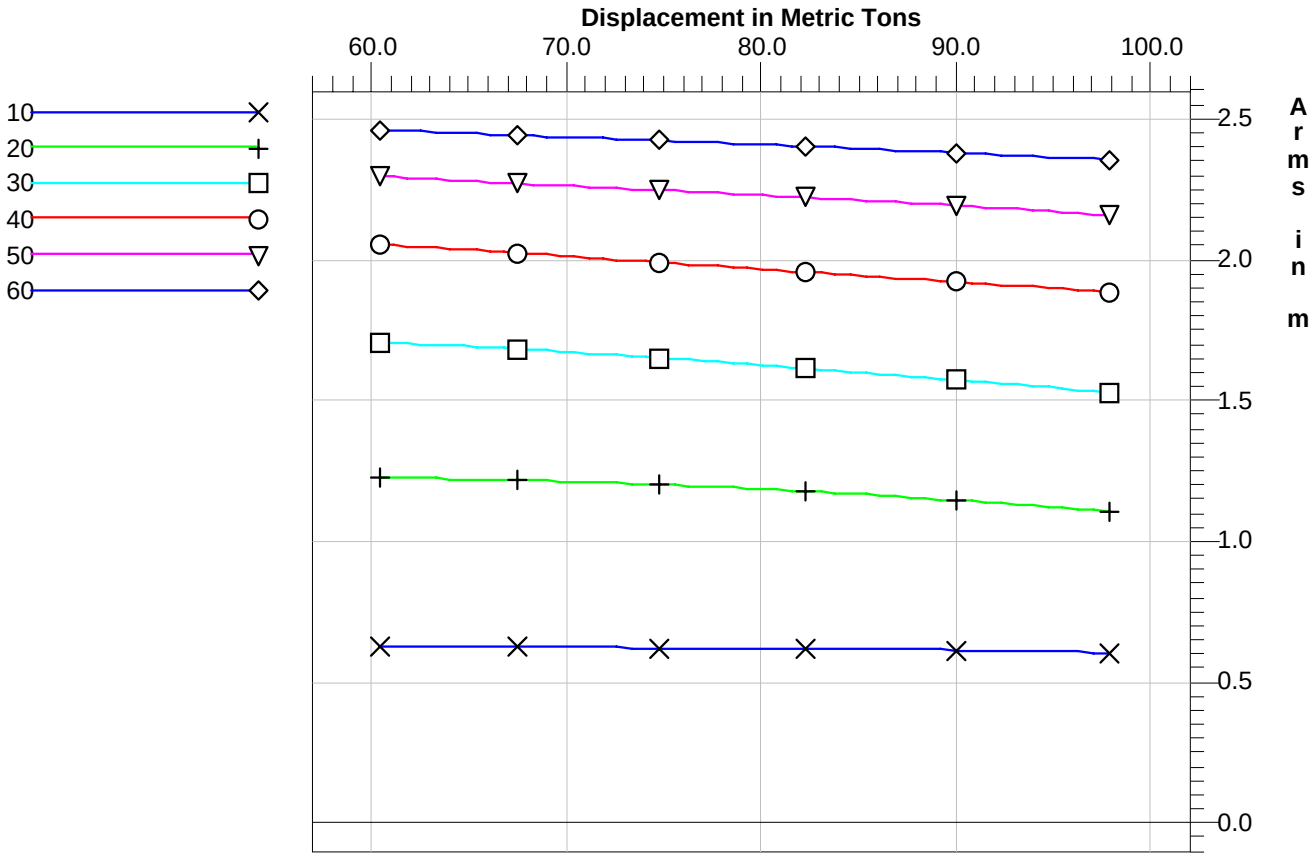
Cross Curves of Stability

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

Displ (MT)	10.000s	20.000s	30.000s	40.000s	50.000s	60.000s
60.429	0.632s	1.228s	1.710s	2.057s	2.299s	2.464s
61.122	0.632s	1.227s	1.708s	2.054s	2.297s	2.462s
61.819	0.632s	1.227s	1.706s	2.052s	2.294s	2.460s
62.518	0.631s	1.226s	1.704s	2.049s	2.291s	2.458s
63.219	0.631s	1.226s	1.702s	2.046s	2.289s	2.457s
63.924	0.631s	1.225s	1.699s	2.043s	2.286s	2.455s
64.630	0.630s	1.224s	1.697s	2.040s	2.283s	2.453s
65.340	0.630s	1.223s	1.694s	2.037s	2.281s	2.451s
66.051	0.629s	1.222s	1.692s	2.033s	2.278s	2.449s
66.766	0.629s	1.221s	1.689s	2.030s	2.276s	2.447s
67.483	0.629s	1.220s	1.687s	2.027s	2.273s	2.445s
68.202	0.628s	1.219s	1.684s	2.024s	2.271s	2.444s
68.924	0.628s	1.218s	1.681s	2.020s	2.268s	2.442s
69.648	0.628s	1.217s	1.678s	2.017s	2.266s	2.440s
70.375	0.627s	1.215s	1.675s	2.014s	2.264s	2.438s
71.101	0.627s	1.214s	1.671s	2.010s	2.261s	2.436s
71.827	0.626s	1.212s	1.668s	2.007s	2.259s	2.434s
72.557	0.626s	1.211s	1.665s	2.004s	2.257s	2.432s
73.288	0.626s	1.209s	1.662s	2.000s	2.254s	2.430s
74.022	0.625s	1.207s	1.658s	1.997s	2.252s	2.428s
74.759	0.625s	1.205s	1.655s	1.994s	2.250s	2.426s
75.499	0.624s	1.203s	1.651s	1.990s	2.248s	2.424s
76.240	0.624s	1.201s	1.647s	1.987s	2.245s	2.422s
76.984	0.624s	1.199s	1.644s	1.983s	2.243s	2.420s
77.730	0.623s	1.197s	1.640s	1.980s	2.241s	2.418s
78.479	0.623s	1.195s	1.636s	1.977s	2.238s	2.416s
79.230	0.622s	1.192s	1.632s	1.973s	2.236s	2.414s
79.983	0.622s	1.190s	1.629s	1.970s	2.233s	2.412s
80.738	0.622s	1.188s	1.625s	1.966s	2.230s	2.410s
81.495	0.621s	1.185s	1.621s	1.963s	2.228s	2.408s
82.254	0.621s	1.182s	1.617s	1.959s	2.225s	2.406s
83.016	0.621s	1.179s	1.613s	1.956s	2.222s	2.404s
83.779	0.620s	1.176s	1.609s	1.952s	2.220s	2.402s
84.545	0.620s	1.173s	1.605s	1.949s	2.217s	2.400s
85.312	0.620s	1.170s	1.601s	1.946s	2.214s	2.397s
86.081	0.619s	1.167s	1.597s	1.942s	2.211s	2.395s
86.853	0.619s	1.163s	1.592s	1.939s	2.208s	2.393s
87.626	0.619s	1.160s	1.588s	1.935s	2.205s	2.391s
88.401	0.618s	1.156s	1.584s	1.932s	2.202s	2.388s
89.177	0.618s	1.153s	1.580s	1.928s	2.199s	2.386s
89.956	0.617s	1.149s	1.576s	1.925s	2.196s	2.384s
90.736	0.616s	1.145s	1.571s	1.921s	2.193s	2.381s
91.518	0.616s	1.141s	1.567s	1.918s	2.190s	2.379s
92.302	0.615s	1.137s	1.563s	1.914s	2.186s	2.376s
93.087	0.614s	1.134s	1.559s	1.910s	2.183s	2.374s
93.874	0.613s	1.130s	1.554s	1.907s	2.180s	2.371s
94.663	0.612s	1.126s	1.550s	1.903s	2.176s	2.369s
95.453	0.611s	1.122s	1.546s	1.899s	2.173s	2.366s
96.245	0.610s	1.118s	1.542s	1.895s	2.170s	2.364s
97.039	0.608s	1.114s	1.537s	1.892s	2.166s	2.361s
97.834	0.607s	1.110s	1.533s	1.888s	2.163s	2.358s

Water Specific Gravity = 1.025.

Cross Curves



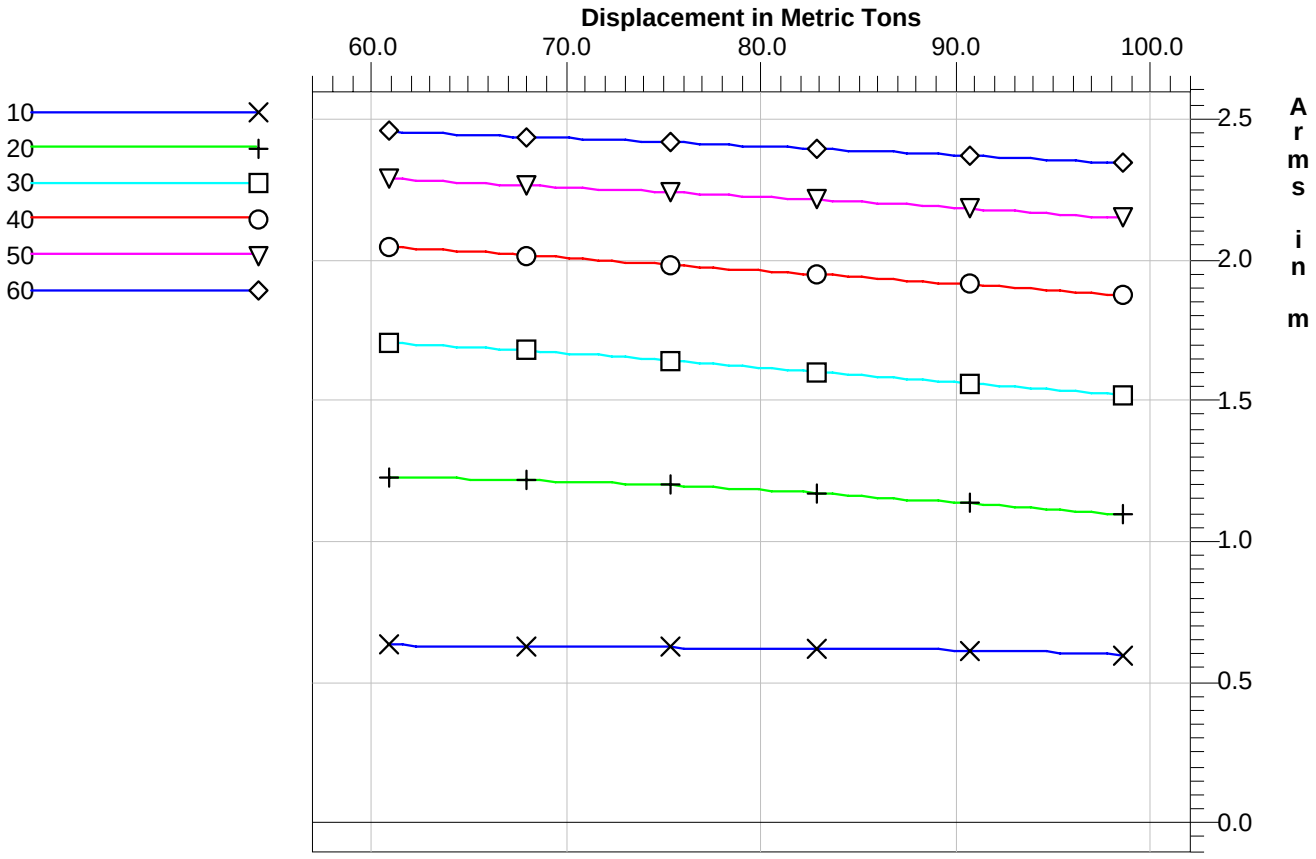
Cross Curves of Stability

Righting Arms(heel) for VCG = 0.00
Trim aft 0.200/18.600 at heel = 0 (RA Trim = 0)

Displ (MT)	10.000s	20.000s	30.000s	40.000s	50.000s	60.000s
60.816	0.634s	1.230s	1.707s	2.050s	2.292s	2.460s
61.517	0.634s	1.229s	1.705s	2.047s	2.289s	2.458s
62.220	0.634s	1.229s	1.703s	2.044s	2.287s	2.455s
62.926	0.633s	1.228s	1.700s	2.041s	2.284s	2.453s
63.634	0.633s	1.227s	1.698s	2.038s	2.281s	2.451s
64.343	0.632s	1.226s	1.695s	2.035s	2.279s	2.449s
65.052	0.632s	1.225s	1.692s	2.032s	2.276s	2.447s
65.764	0.631s	1.224s	1.689s	2.028s	2.274s	2.445s
66.479	0.631s	1.223s	1.686s	2.025s	2.271s	2.443s
67.197	0.630s	1.222s	1.683s	2.022s	2.269s	2.441s
67.917	0.630s	1.220s	1.680s	2.019s	2.266s	2.440s
68.641	0.630s	1.219s	1.677s	2.015s	2.264s	2.438s
69.367	0.629s	1.217s	1.674s	2.012s	2.262s	2.436s
70.095	0.629s	1.216s	1.671s	2.009s	2.259s	2.434s
70.826	0.628s	1.214s	1.667s	2.006s	2.257s	2.432s
71.560	0.628s	1.213s	1.664s	2.002s	2.255s	2.430s
72.296	0.627s	1.211s	1.660s	1.999s	2.252s	2.428s
73.034	0.627s	1.209s	1.656s	1.995s	2.250s	2.426s
73.775	0.627s	1.207s	1.653s	1.992s	2.248s	2.424s
74.519	0.626s	1.205s	1.649s	1.989s	2.245s	2.422s
75.264	0.626s	1.203s	1.645s	1.985s	2.243s	2.420s
76.012	0.625s	1.200s	1.641s	1.982s	2.241s	2.418s
76.762	0.625s	1.198s	1.638s	1.978s	2.238s	2.416s
77.515	0.625s	1.195s	1.634s	1.975s	2.236s	2.414s
78.269	0.624s	1.192s	1.630s	1.972s	2.233s	2.411s
79.026	0.624s	1.189s	1.626s	1.968s	2.230s	2.409s
79.784	0.623s	1.186s	1.622s	1.965s	2.228s	2.407s
80.545	0.623s	1.183s	1.618s	1.961s	2.225s	2.405s
81.307	0.623s	1.180s	1.614s	1.958s	2.222s	2.402s
82.072	0.622s	1.177s	1.610s	1.954s	2.220s	2.400s
82.839	0.622s	1.174s	1.606s	1.951s	2.217s	2.398s
83.607	0.622s	1.171s	1.602s	1.947s	2.214s	2.396s
84.378	0.621s	1.167s	1.598s	1.944s	2.211s	2.393s
85.150	0.621s	1.164s	1.594s	1.940s	2.208s	2.391s
85.925	0.620s	1.160s	1.590s	1.937s	2.205s	2.388s
86.701	0.620s	1.156s	1.586s	1.933s	2.202s	2.386s
87.478	0.619s	1.153s	1.581s	1.930s	2.199s	2.384s
88.258	0.619s	1.149s	1.577s	1.926s	2.196s	2.381s
89.040	0.618s	1.145s	1.573s	1.923s	2.192s	2.379s
89.823	0.617s	1.141s	1.569s	1.919s	2.189s	2.376s
90.608	0.616s	1.137s	1.565s	1.915s	2.186s	2.374s
91.395	0.615s	1.133s	1.560s	1.911s	2.182s	2.371s
92.183	0.614s	1.129s	1.556s	1.908s	2.179s	2.368s
92.973	0.613s	1.126s	1.552s	1.904s	2.176s	2.366s
93.764	0.611s	1.121s	1.547s	1.900s	2.172s	2.363s
94.555	0.610s	1.117s	1.543s	1.896s	2.169s	2.360s
95.342	0.608s	1.113s	1.539s	1.892s	2.165s	2.358s
96.132	0.606s	1.109s	1.535s	1.888s	2.162s	2.355s
96.923	0.604s	1.105s	1.531s	1.884s	2.158s	2.352s
97.716	0.602s	1.101s	1.526s	1.880s	2.154s	2.350s
98.510	0.600s	1.097s	1.522s	1.876s	2.151s	2.347s

Water Specific Gravity = 1.025.

Cross Curves



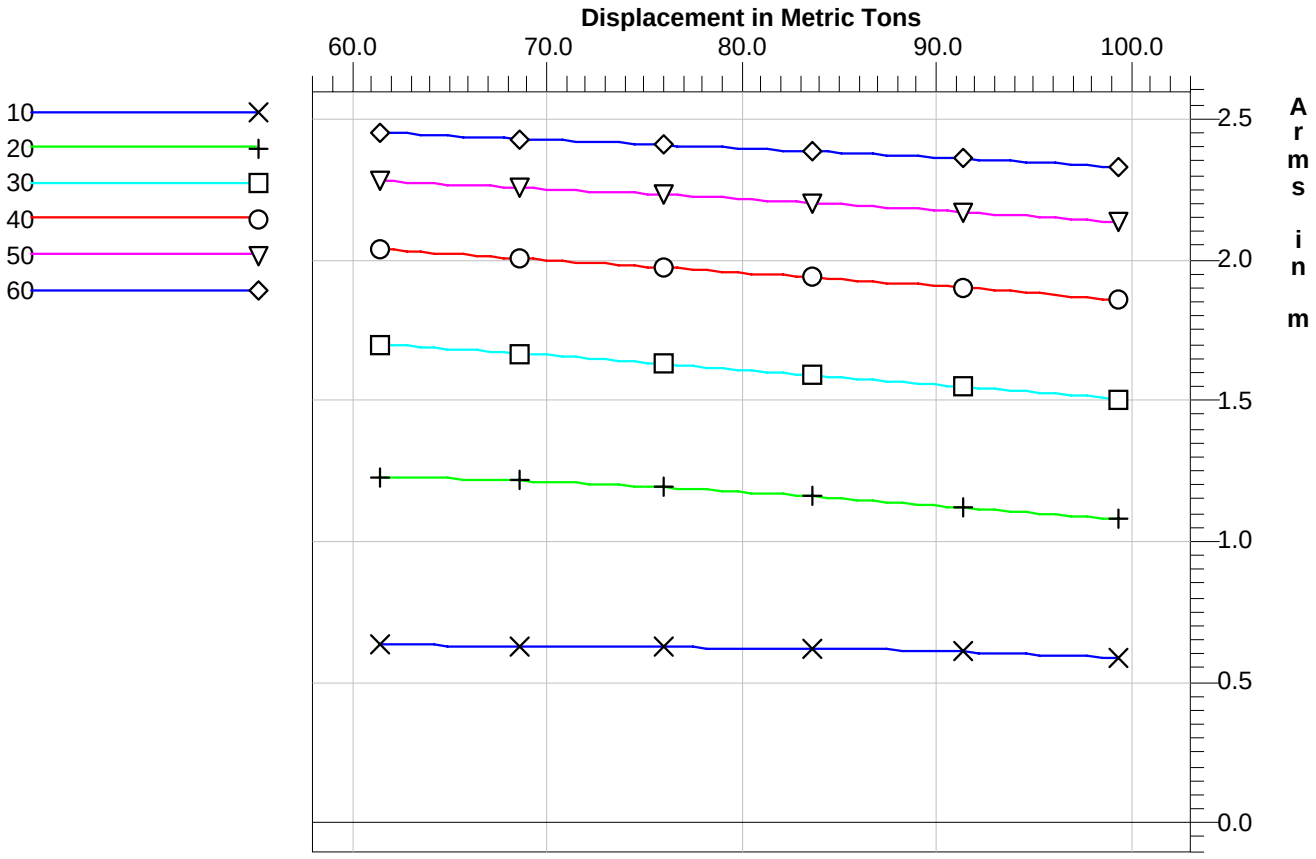
Cross Curves of Stability

Righting Arms(heel) for VCG = 0.00
Trim aft 0.400/18.600 at heel = 0 (RA Trim = 0)

Displ (MT)	10.000s	20.000s	30.000s	40.000s	50.000s	60.000s
61.330	0.636s	1.231s	1.702s	2.040s	2.284s	2.455s
62.035	0.636s	1.230s	1.699s	2.037s	2.281s	2.453s
62.742	0.635s	1.229s	1.696s	2.034s	2.279s	2.451s
63.453	0.635s	1.228s	1.694s	2.031s	2.276s	2.448s
64.166	0.634s	1.227s	1.691s	2.028s	2.274s	2.446s
64.882	0.634s	1.226s	1.688s	2.025s	2.271s	2.444s
65.601	0.633s	1.225s	1.685s	2.022s	2.269s	2.442s
66.322	0.633s	1.223s	1.681s	2.019s	2.266s	2.440s
67.046	0.632s	1.222s	1.678s	2.015s	2.264s	2.437s
67.772	0.632s	1.220s	1.675s	2.012s	2.261s	2.435s
68.501	0.631s	1.219s	1.671s	2.009s	2.259s	2.433s
69.233	0.631s	1.217s	1.668s	2.005s	2.257s	2.431s
69.967	0.630s	1.215s	1.664s	2.002s	2.254s	2.429s
70.704	0.630s	1.213s	1.660s	1.999s	2.252s	2.426s
71.442	0.629s	1.211s	1.656s	1.995s	2.250s	2.424s
72.183	0.629s	1.209s	1.653s	1.992s	2.247s	2.422s
72.927	0.628s	1.206s	1.649s	1.989s	2.245s	2.420s
73.673	0.628s	1.204s	1.645s	1.985s	2.242s	2.418s
74.420	0.628s	1.201s	1.641s	1.982s	2.240s	2.416s
75.171	0.627s	1.198s	1.637s	1.979s	2.237s	2.413s
75.923	0.627s	1.196s	1.633s	1.975s	2.234s	2.411s
76.677	0.626s	1.193s	1.629s	1.972s	2.232s	2.409s
77.434	0.626s	1.190s	1.625s	1.968s	2.229s	2.407s
78.192	0.625s	1.186s	1.621s	1.965s	2.226s	2.405s
78.953	0.625s	1.183s	1.617s	1.961s	2.223s	2.402s
79.716	0.625s	1.180s	1.613s	1.958s	2.220s	2.400s
80.481	0.624s	1.176s	1.609s	1.955s	2.217s	2.398s
81.248	0.624s	1.173s	1.605s	1.951s	2.215s	2.395s
82.016	0.624s	1.169s	1.601s	1.948s	2.212s	2.393s
82.787	0.623s	1.166s	1.597s	1.944s	2.209s	2.390s
83.560	0.623s	1.162s	1.593s	1.941s	2.205s	2.388s
84.335	0.622s	1.158s	1.589s	1.937s	2.202s	2.385s
85.111	0.621s	1.154s	1.585s	1.934s	2.199s	2.383s
85.889	0.621s	1.151s	1.581s	1.930s	2.196s	2.380s
86.669	0.620s	1.147s	1.576s	1.926s	2.193s	2.378s
87.443	0.618s	1.143s	1.572s	1.922s	2.190s	2.375s
88.219	0.617s	1.139s	1.568s	1.919s	2.186s	2.372s
88.998	0.616s	1.136s	1.564s	1.915s	2.183s	2.370s
89.778	0.614s	1.132s	1.560s	1.911s	2.180s	2.367s
90.561	0.613s	1.128s	1.556s	1.907s	2.176s	2.364s
91.346	0.611s	1.124s	1.552s	1.903s	2.173s	2.362s
92.133	0.609s	1.120s	1.547s	1.899s	2.169s	2.359s
92.921	0.608s	1.116s	1.543s	1.895s	2.166s	2.356s
93.712	0.606s	1.112s	1.539s	1.891s	2.162s	2.353s
94.505	0.603s	1.108s	1.535s	1.887s	2.159s	2.351s
95.299	0.601s	1.103s	1.531s	1.883s	2.155s	2.348s
96.096	0.599s	1.099s	1.526s	1.878s	2.151s	2.345s
96.894	0.596s	1.095s	1.522s	1.874s	2.148s	2.342s
97.694	0.594s	1.091s	1.518s	1.870s	2.144s	2.339s
98.497	0.591s	1.087s	1.514s	1.865s	2.140s	2.336s
99.301	0.588s	1.082s	1.509s	1.861s	2.136s	2.333s

Water Specific Gravity = 1.025.

Cross Curves



AFSNIT 5

MAXIMUM VCG TABELLER

MAX VCG DATA

Maximum VCG vs. Displacement

Trim = fwd 0.400/18.600 at zero heel (Trim righting arm held at zero)

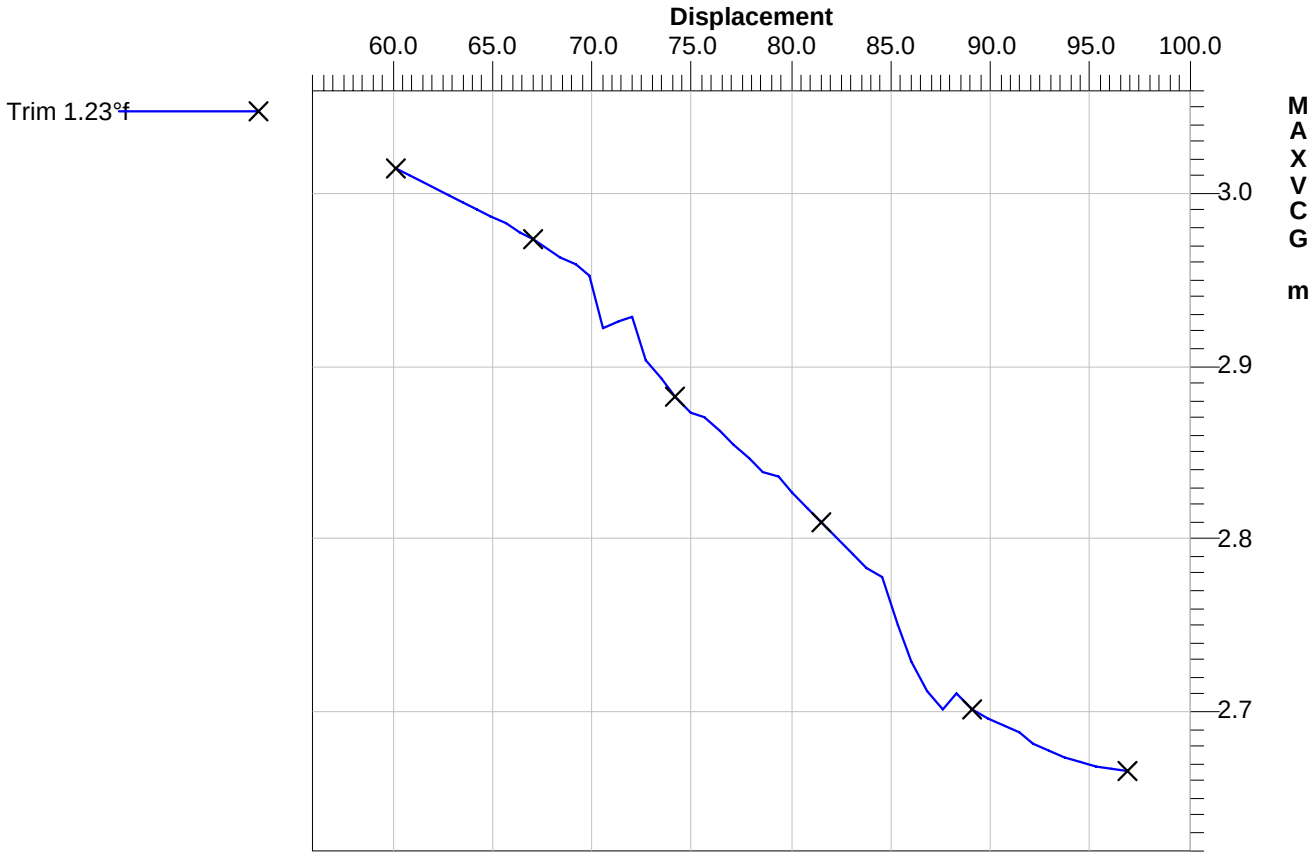
Intact Displ (MT)	Intact Draft At -9.300 (m)	Max.VCG (m)	Limit 1	Limit 2	Limit 3	Limit 4	Limit 5	Limit 6	Limit 7
60.1	2.40	3.015	30.0%	12.8%	0.0%	1.9%	1.1°	312.3%	312.3%
60.8	2.41	3.011	30.4%	13.0%	0.0%	2.0%	1.1°	312.7%	312.7%
61.4	2.42	3.007	30.9%	13.3%	0.0%	2.1%	1.0°	313.2%	313.2%
62.1	2.43	3.004	31.3%	13.6%	0.0%	2.2%	0.9°	313.8%	313.8%
62.8	2.44	3.000	31.8%	13.8%	0.0%	2.3%	0.8°	314.6%	314.6%
63.5	2.45	2.996	32.2%	14.1%	0.0%	2.4%	0.7°	315.6%	315.6%
64.2	2.46	2.991	32.6%	14.4%	0.0%	2.5%	0.6°	316.9%	316.9%
64.9	2.47	2.987	33.1%	14.7%	0.0%	2.6%	0.5°	318.3%	318.3%
65.6	2.48	2.983	33.6%	14.9%	0.0%	2.6%	0.3°	319.9%	319.9%
66.3	2.49	2.978	34.0%	15.2%	0.0%	2.7%	0.2°	321.4%	321.4%
67.0	2.50	2.974	34.5%	15.5%	0.0%	2.7%	0.2°	322.8%	322.8%
67.7	2.51	*2.969	35.2%	16.0%	0.3%	3.0%	0.2°	325.0%	325.0%
68.4	2.52	2.964	35.4%	16.0%	0.0%	2.7%	0.0°	325.9%	325.9%
69.1	2.53	2.959	35.8%	16.3%	0.0%	2.8%	0.0°	327.7%	327.7%
69.8	2.54	2.953	36.5%	16.8%	0.2%	2.9%	0.0°	330.0%	330.0%
70.5	2.55	2.923	43.0%	23.5%	8.5%	9.2%	0.0°	348.3%	348.3%
71.2	2.56	2.927	41.3%	21.5%	5.6%	6.9%	0.0°	344.3%	344.3%
72.0	2.57	2.929	39.7%	19.7%	2.8%	4.9%	0.0°	340.8%	340.8%
72.7	2.58	2.904	45.0%	25.1%	9.4%	9.8%	0.0°	356.2%	356.2%
73.4	2.59	2.893	46.7%	26.7%	11.1%	11.0%	0.0°	361.9%	361.9%
74.1	2.60	2.883	48.2%	28.1%	12.6%	12.1%	0.1°	367.0%	367.0%
74.9	2.61	2.873	49.6%	29.4%	14.0%	13.0%	0.1°	372.0%	372.0%
75.6	2.62	2.871	49.2%	28.7%	12.8%	12.1%	0.0°	371.9%	371.9%
76.3	2.63	2.862	50.2%	29.6%	13.6%	12.6%	0.0°	376.0%	376.0%
77.1	2.64	2.855	51.0%	30.3%	14.2%	13.0%	0.0°	379.7%	379.7%
77.8	2.65	2.847	51.7%	31.0%	14.8%	13.3%	0.0°	383.5%	383.5%
78.5	2.66	2.839	52.4%	31.5%	15.1%	13.4%	0.0°	387.0%	387.0%
79.3	2.67	2.837	51.8%	30.7%	13.9%	12.2%	0.0°	387.3%	387.3%
80.0	2.68	2.827	52.9%	31.8%	15.0%	12.9%	0.0°	392.4%	392.4%
80.8	2.69	2.818	53.8%	32.6%	15.8%	13.3%	0.0°	397.1%	397.1%
81.5	2.70	2.810	54.4%	33.1%	16.3%	13.4%	0.0°	401.3%	401.3%
82.3	2.71	2.801	55.2%	33.9%	17.1%	13.7%	0.0°	406.9%	406.9%
83.0	2.72	2.792	56.0%	34.7%	18.0%	14.1%	0.0°	412.0%	412.0%
83.8	2.73	2.784	56.6%	35.2%	18.6%	14.3%	0.0°	416.4%	416.4%
84.5	2.74	2.779	56.3%	34.9%	18.0%	13.6%	0.0°	418.5%	418.5%
85.3	2.75	2.751	61.5%	40.4%	25.0%	18.5%	0.0°	432.6%	432.6%
86.0	2.76	2.730	65.3%	44.3%	30.0%	21.9%	0.0°	445.8%	445.8%
86.8	2.77	2.712	67.9%	47.1%	33.5%	24.2%	0.0°	456.0%	456.0%
87.5	2.78	2.702	68.7%	48.0%	34.6%	24.7%	0.0°	461.5%	461.5%
88.3	2.79	2.711	64.8%	43.9%	29.4%	20.5%	0.0°	454.4%	454.4%
89.0	2.80	2.702	65.4%	44.6%	30.4%	20.8%	0.0°	459.8%	459.8%
89.8	2.81	2.697	64.9%	44.0%	29.7%	20.0%	0.0°	461.9%	461.9%
90.6	2.82	2.692	64.2%	43.3%	29.0%	19.0%	0.0°	463.9%	463.9%
91.3	2.83	2.689	63.3%	42.4%	27.9%	17.9%	0.0°	465.4%	465.4%
92.1	2.84	2.682	63.1%	42.3%	27.9%	17.5%	0.0°	468.9%	468.9%
92.9	2.85	2.678	62.2%	41.4%	27.0%	16.4%	0.0°	470.7%	470.7%
93.7	2.86	2.674	61.1%	40.4%	25.9%	15.2%	0.0°	472.3%	472.3%
94.4	2.87	2.672	59.8%	39.2%	24.5%	13.8%	0.0°	473.4%	473.4%
95.2	2.88	2.670	58.3%	37.7%	23.0%	12.2%	0.0°	474.2%	474.2%
96.0	2.89	2.668	56.6%	36.1%	21.3%	10.5%	0.0°	474.7%	474.7%
96.8	2.90	2.667	54.7%	34.3%	19.3%	8.7%	0.0°	474.7%	474.7%

Notes : MaxVcg marked with * means that this vcg is the nearest maxvcg data Autohydro can find. There is no exact solution. Please use ra /lim command to verify the result.

IMO A.749 (18), INTACT STABILITY

Limit	Min/Max
(1) Area from 0.00 deg to 30.00	>0.0550 m-R
(2) Area from 0.00 deg to 40.00 or Flood	>0.0900 m-R
(3) Area from 30.00 deg to 40.00 or Flood	>0.0300 m-R
(4) Righting Arm at 30.00 deg or MaxRA	>0.200 m
(5) Absolute Angle at MaxRA	>25.00 deg
(6) GM Upright	>0.150 m
(7) GM at Equilibrium	>0.150 m

Max. VCG vs. Displacement



Maximum VCG vs. Displacement

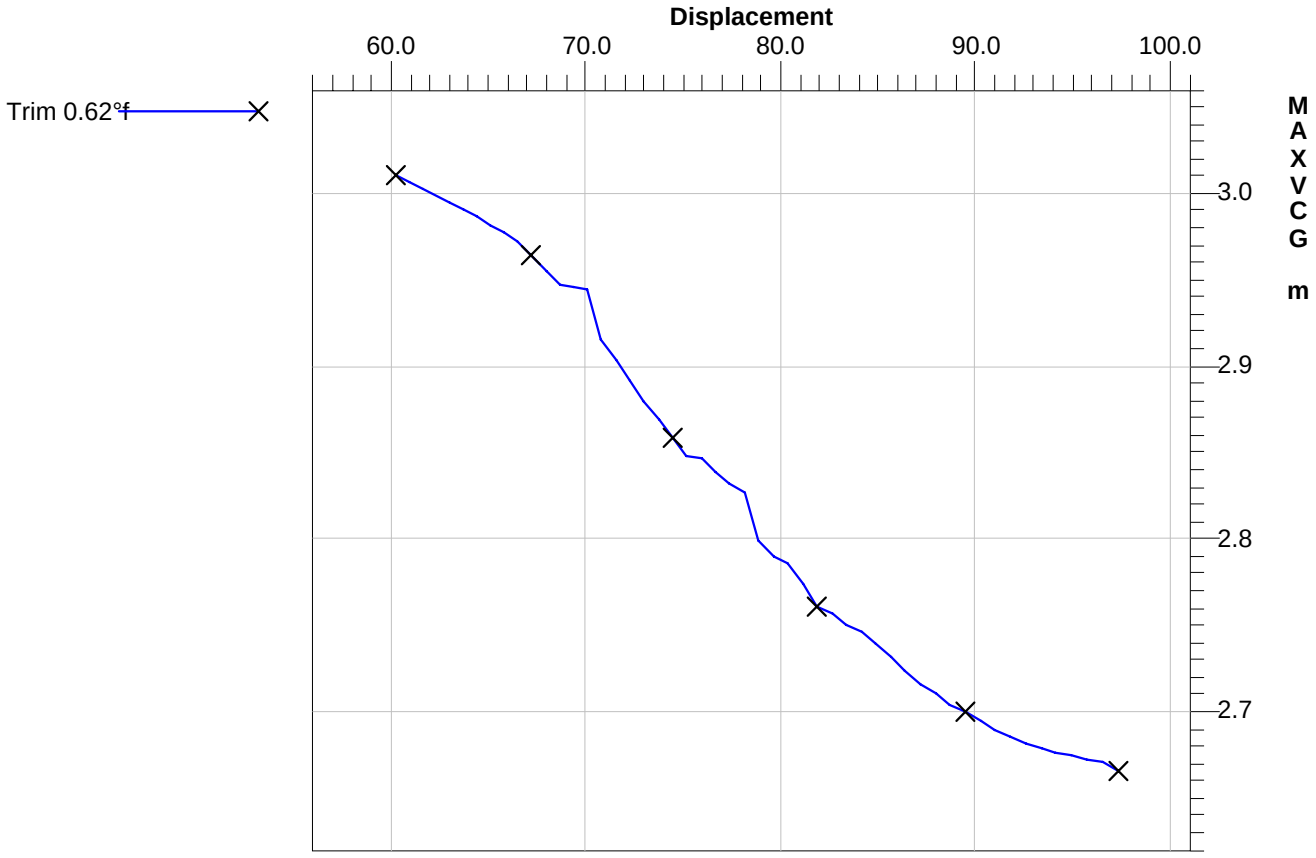
Trim = fwd 0.200/18.600 at zero heel (Trim righting arm held at zero)

Intact Displ (MT)	Intact Draft At -9.300 (m)	Max.VCG (m)	Limit 1	Limit 2	Limit 3	Limit 4	Limit 5	Limit 6	Limit 7
60.2	2.40	3.011	32.3%	14.2%	0.0%	2.8%	0.9°	321.9%	321.9%
60.9	2.41	3.008	32.8%	14.5%	0.0%	2.9%	0.9°	322.6%	322.6%
61.6	2.42	3.004	33.2%	14.8%	0.0%	2.9%	0.8°	323.4%	323.4%
62.3	2.43	3.000	33.7%	15.0%	0.0%	3.0%	0.8°	324.2%	324.2%
62.9	2.44	2.995	34.1%	15.3%	0.0%	3.0%	0.8°	325.2%	325.2%
63.6	2.45	2.991	34.6%	15.6%	0.1%	3.0%	0.4°	326.4%	326.4%
64.3	2.46	2.987	35.1%	15.9%	0.0%	3.0%	0.4°	327.6%	327.6%
65.0	2.47	2.982	35.5%	16.1%	0.1%	3.1%	0.3°	329.0%	329.0%
65.8	2.48	2.978	36.0%	16.4%	0.1%	3.1%	0.0°	330.6%	330.6%
66.5	2.49	2.973	36.5%	16.7%	0.1%	3.1%	0.0°	332.2%	332.2%
67.2	2.50	2.965	37.5%	17.6%	0.7%	3.7%	0.0°	335.4%	335.4%
67.9	2.51	2.955	39.2%	19.2%	2.4%	5.0%	0.0°	340.6%	340.6%
68.6	2.52	2.947	40.3%	20.2%	3.3%	5.7%	0.0°	344.0%	344.0%
69.3	2.53	2.946	39.8%	19.4%	2.0%	4.7%	0.0°	342.9%	342.9%
70.0	2.54	2.945	39.2%	18.6%	0.5%	3.7%	0.0°	341.8%	341.8%
70.8	2.55	2.916	45.2%	24.8%	8.2%	9.4%	0.0°	358.9%	358.9%
71.5	2.56	2.904	47.4%	26.9%	10.5%	11.2%	0.0°	365.5%	365.5%
72.2	2.57	2.892	49.1%	28.6%	12.3%	12.5%	0.0°	371.2%	371.2%
72.9	2.58	2.881	51.0%	30.4%	14.3%	13.9%	0.0°	377.3%	377.3%
73.7	2.59	2.869	52.6%	31.9%	16.0%	15.1%	0.0°	383.0%	383.0%
74.4	2.60	2.859	54.2%	33.4%	17.6%	16.2%	0.1°	388.6%	388.6%
75.1	2.61	2.848	55.5%	34.7%	18.9%	17.1%	0.1°	394.3%	394.3%
75.9	2.62	2.847	54.8%	33.8%	17.5%	15.8%	0.0°	394.0%	394.0%
76.6	2.63	2.839	55.6%	34.4%	18.0%	16.1%	0.0°	397.7%	397.7%
77.3	2.64	2.832	55.9%	34.6%	18.1%	15.9%	0.0°	400.6%	400.6%
78.1	2.65	2.827	55.8%	34.4%	17.6%	15.3%	0.0°	399.2%	399.2%
78.8	2.66	2.799	61.4%	40.2%	24.8%	20.5%	0.0°	416.4%	416.4%
79.6	2.67	2.791	62.1%	40.9%	25.5%	20.8%	0.0°	420.5%	420.5%
80.3	2.68	2.787	61.6%	40.3%	24.5%	19.8%	0.0°	421.5%	421.5%
81.1	2.69	2.774	63.3%	42.0%	26.7%	21.1%	0.0°	428.8%	428.8%
81.8	2.70	2.762	64.8%	43.6%	28.5%	22.2%	0.0°	435.5%	435.5%
82.6	2.71	2.757	64.5%	43.2%	28.0%	21.5%	0.0°	437.5%	437.5%
83.3	2.72	2.751	64.4%	43.0%	27.6%	21.0%	0.0°	439.9%	439.9%
84.1	2.73	2.746	64.0%	42.5%	27.0%	20.2%	0.0°	441.8%	441.8%
84.8	2.74	2.740	64.0%	42.6%	27.0%	19.8%	0.0°	445.1%	445.1%
85.6	2.75	2.732	64.2%	42.8%	27.3%	19.7%	0.0°	448.8%	448.8%
86.4	2.76	2.725	64.3%	42.9%	27.5%	19.5%	0.0°	452.4%	452.4%
87.1	2.77	2.717	64.4%	43.1%	27.8%	19.4%	0.0°	456.3%	456.3%
87.9	2.78	2.711	64.2%	42.9%	27.7%	18.9%	0.0°	459.4%	459.4%
88.7	2.79	2.705	63.7%	42.5%	27.3%	18.2%	0.0°	462.1%	462.1%
89.4	2.80	2.700	63.0%	41.9%	26.7%	17.4%	0.0°	464.4%	464.4%
90.2	2.81	2.696	62.2%	41.1%	25.9%	16.4%	0.0°	466.4%	466.4%
91.0	2.82	2.690	61.7%	40.6%	25.5%	15.7%	0.0°	469.2%	469.2%
91.8	2.83	2.686	60.6%	39.7%	24.6%	14.6%	0.0°	470.9%	470.9%
92.5	2.84	2.683	59.4%	38.6%	23.4%	13.3%	0.0°	472.1%	472.1%
93.3	2.85	2.680	58.1%	37.3%	22.1%	12.0%	0.0°	473.0%	473.0%
94.1	2.86	2.677	56.6%	35.9%	20.7%	10.5%	0.0°	473.7%	473.7%
94.9	2.87	2.675	54.9%	34.4%	19.1%	8.9%	0.0°	474.1%	474.1%
95.7	2.88	2.673	53.1%	32.7%	17.3%	7.1%	0.0°	474.2%	474.2%
96.5	2.89	2.672	51.2%	30.8%	15.3%	5.3%	0.0°	474.0%	474.0%
97.2	2.90	2.666	50.4%	30.3%	15.2%	4.7%	0.0°	477.5%	477.5%

IMO A.749 (18), INTACT STABILITY

Limit	Min/Max
(1) Area from 0.00 deg to 30.00	>0.0550 m-R
(2) Area from 0.00 deg to 40.00 or Flood	>0.0900 m-R
(3) Area from 30.00 deg to 40.00 or Flood	>0.0300 m-R
(4) Righting Arm at 30.00 deg or MaxRA	>0.200 m
(5) Absolute Angle at MaxRA	>25.00 deg
(6) GM Upright	>0.150 m
(7) GM at Equilibrium	>0.150 m

Max. VCG vs. Displacement



Maximum VCG vs. Displacement

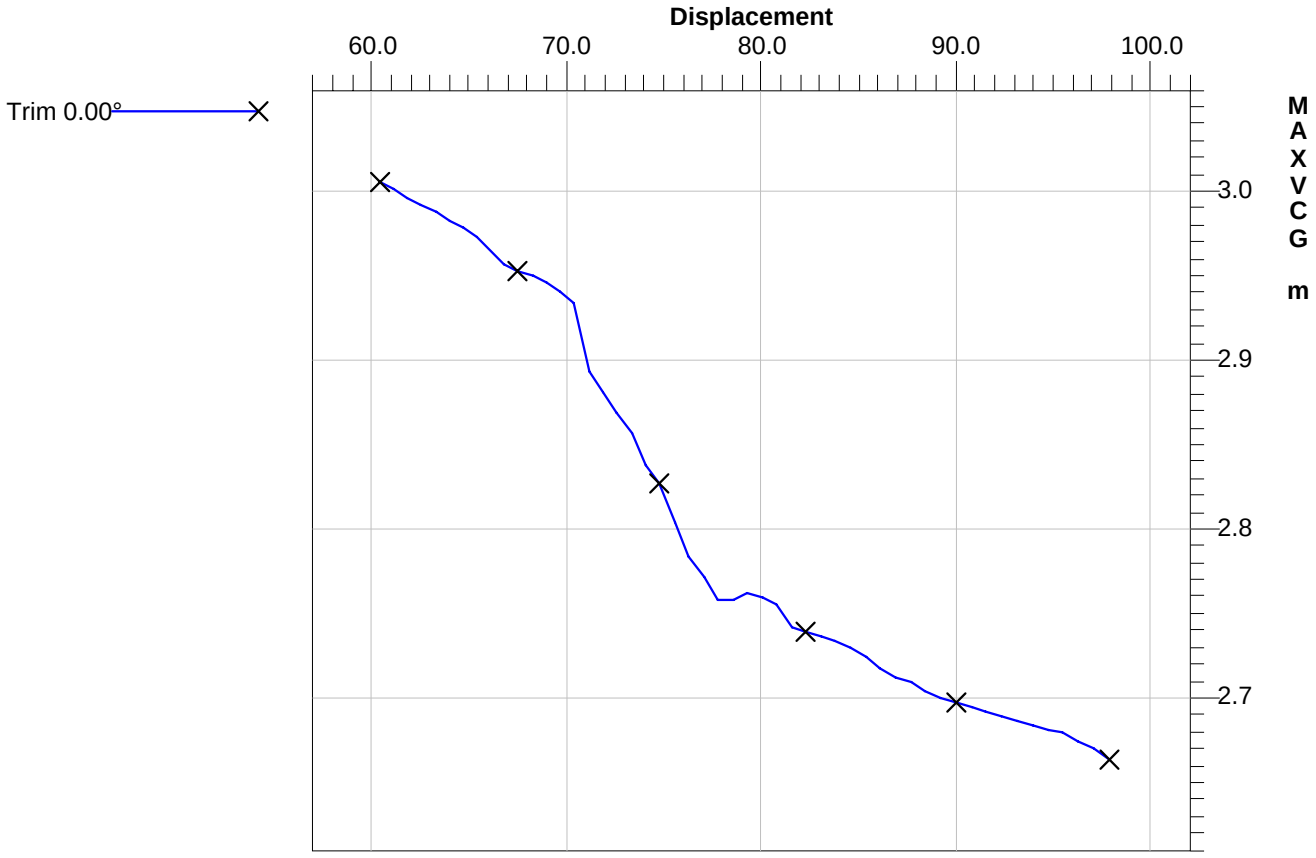
Trim = zero at zero heel (Trim righting arm held at zero)

Intact Displ (MT)	Intact Draft At -9.300 (m)	Max.VCG (m)	Limit 1	Limit 2	Limit 3	Limit 4	Limit 5	Limit 6	Limit 7
60.4	2.40	3.006	35.3%	16.0%	0.0%	3.6%	0.5°	333.8%	333.8%
61.1	2.41	3.001	35.7%	16.3%	0.0%	3.6%	0.4°	334.7%	334.7%
61.8	2.42	2.997	36.2%	16.6%	0.0%	3.7%	0.4°	335.6%	335.6%
62.5	2.43	2.993	36.7%	16.8%	0.0%	3.7%	0.3°	336.4%	336.4%
63.2	2.44	2.988	37.1%	17.1%	0.0%	3.8%	0.2°	337.3%	337.3%
63.9	2.45	2.983	37.6%	17.4%	0.0%	3.8%	0.1°	338.5%	338.5%
64.6	2.46	2.978	38.0%	17.7%	0.0%	3.9%	0.0°	339.9%	339.9%
65.3	2.47	2.973	38.6%	18.1%	0.1%	4.0%	0.0°	341.7%	341.7%
66.1	2.48	2.965	39.7%	19.0%	1.0%	4.7%	0.0°	345.0%	345.0%
66.8	2.49	2.957	40.9%	20.1%	2.1%	5.5%	0.0°	348.8%	348.8%
67.5	2.50	2.953	40.9%	19.9%	1.4%	4.9%	0.0°	349.2%	349.2%
68.2	2.51	2.951	40.6%	19.4%	0.4%	4.2%	0.0°	349.9%	349.9%
68.9	2.52	2.946	40.8%	19.4%	0.0%	3.8%	0.0°	351.2%	351.2%
69.6	2.53	2.940	41.3%	19.7%	0.0%	3.7%	0.0°	353.4%	353.4%
70.4	2.54	2.935	41.7%	19.9%	0.0%	3.7%	0.0°	355.5%	355.5%
71.1	2.55	2.893	50.7%	29.4%	11.8%	12.4%	0.0°	378.1%	378.1%
71.8	2.56	2.881	52.6%	31.2%	13.8%	13.8%	0.0°	384.3%	384.3%
72.6	2.57	2.870	54.3%	32.8%	15.7%	15.0%	0.0°	390.0%	390.0%
73.3	2.58	2.857	56.2%	34.7%	17.8%	16.4%	0.0°	396.4%	396.4%
74.0	2.59	2.839	59.4%	38.1%	21.8%	19.3%	0.0°	406.8%	406.8%
74.8	2.60	2.828	60.9%	39.4%	23.4%	20.3%	0.0°	412.1%	412.1%
75.5	2.61	2.804	65.4%	44.2%	29.2%	24.5%	0.0°	426.3%	426.3%
76.2	2.62	2.785	68.8%	47.6%	33.5%	27.4%	0.0°	437.3%	437.3%
77.0	2.63	2.773	70.3%	49.2%	35.4%	28.6%	0.0°	443.6%	443.6%
77.7	2.64	2.759	72.3%	51.3%	37.9%	30.2%	0.0°	451.4%	451.4%
78.5	2.65	2.759	70.7%	49.5%	35.5%	28.2%	0.0°	449.5%	449.5%
79.2	2.66	2.763	68.4%	46.9%	32.1%	25.4%	0.0°	445.6%	445.6%
80.0	2.67	2.760	67.6%	46.1%	30.9%	24.2%	0.0°	446.0%	446.0%
80.7	2.68	2.756	66.9%	45.3%	29.9%	23.1%	0.0°	446.9%	446.9%
81.5	2.69	2.743	68.5%	47.0%	32.1%	24.4%	0.0°	454.3%	454.3%
82.3	2.70	2.739	67.8%	46.3%	31.2%	23.4%	0.0°	455.5%	455.5%
83.0	2.71	2.736	66.7%	45.2%	29.8%	22.1%	0.0°	455.8%	455.8%
83.8	2.72	2.734	65.7%	44.1%	28.5%	20.7%	0.0°	456.2%	456.2%
84.5	2.73	2.730	64.9%	43.3%	27.6%	19.7%	0.0°	457.5%	457.5%
85.3	2.74	2.724	64.3%	42.8%	27.1%	18.9%	0.0°	459.6%	459.6%
86.1	2.75	2.718	63.9%	42.5%	26.8%	18.4%	0.0°	462.2%	462.2%
86.9	2.76	2.713	63.4%	42.0%	26.4%	17.7%	0.0°	464.7%	464.7%
87.6	2.77	2.710	62.3%	40.9%	25.2%	16.4%	0.0°	465.6%	465.6%
88.4	2.78	2.704	61.6%	40.3%	24.7%	15.6%	0.0°	467.8%	467.8%
89.2	2.79	2.701	60.4%	39.2%	23.6%	14.4%	0.0°	468.8%	468.8%
90.0	2.80	2.698	59.1%	38.0%	22.3%	13.1%	0.0°	469.8%	469.8%
90.7	2.81	2.695	57.7%	36.7%	21.0%	11.7%	0.0°	470.6%	470.6%
91.5	2.82	2.692	56.2%	35.3%	19.6%	10.2%	0.0°	471.3%	471.3%
92.3	2.83	2.689	54.6%	33.9%	18.2%	8.7%	0.0°	471.9%	471.9%
93.1	2.84	2.687	52.9%	32.3%	16.6%	7.2%	0.0°	472.3%	472.3%
93.9	2.85	2.685	51.1%	30.7%	14.9%	5.5%	0.0°	472.5%	472.5%
94.7	2.86	2.682	49.4%	29.2%	13.5%	4.1%	0.0°	473.0%	473.0%
95.5	2.87	2.680	47.6%	27.5%	11.9%	2.4%	0.0°	473.4%	473.4%
96.2	2.88	2.675	46.5%	26.6%	11.3%	1.6%	0.0°	475.9%	475.9%
97.0	2.89	2.671	44.8%	25.2%	10.0%	0.3%	0.0°	477.0%	477.0%
97.8	2.90	2.664	44.2%	24.8%	10.1%	0.0%	0.0°	480.9%	480.9%

IMO A.749 (18), INTACT STABILITY

Limit	Min/Max
(1) Area from 0.00 deg to 30.00	>0.0550 m-R
(2) Area from 0.00 deg to 40.00 or Flood	>0.0900 m-R
(3) Area from 30.00 deg to 40.00 or Flood	>0.0300 m-R
(4) Righting Arm at 30.00 deg or MaxRA	>0.200 m
(5) Absolute Angle at MaxRA	>25.00 deg
(6) GM Upright	>0.150 m
(7) GM at Equilibrium	>0.150 m

Max. VCG vs. Displacement



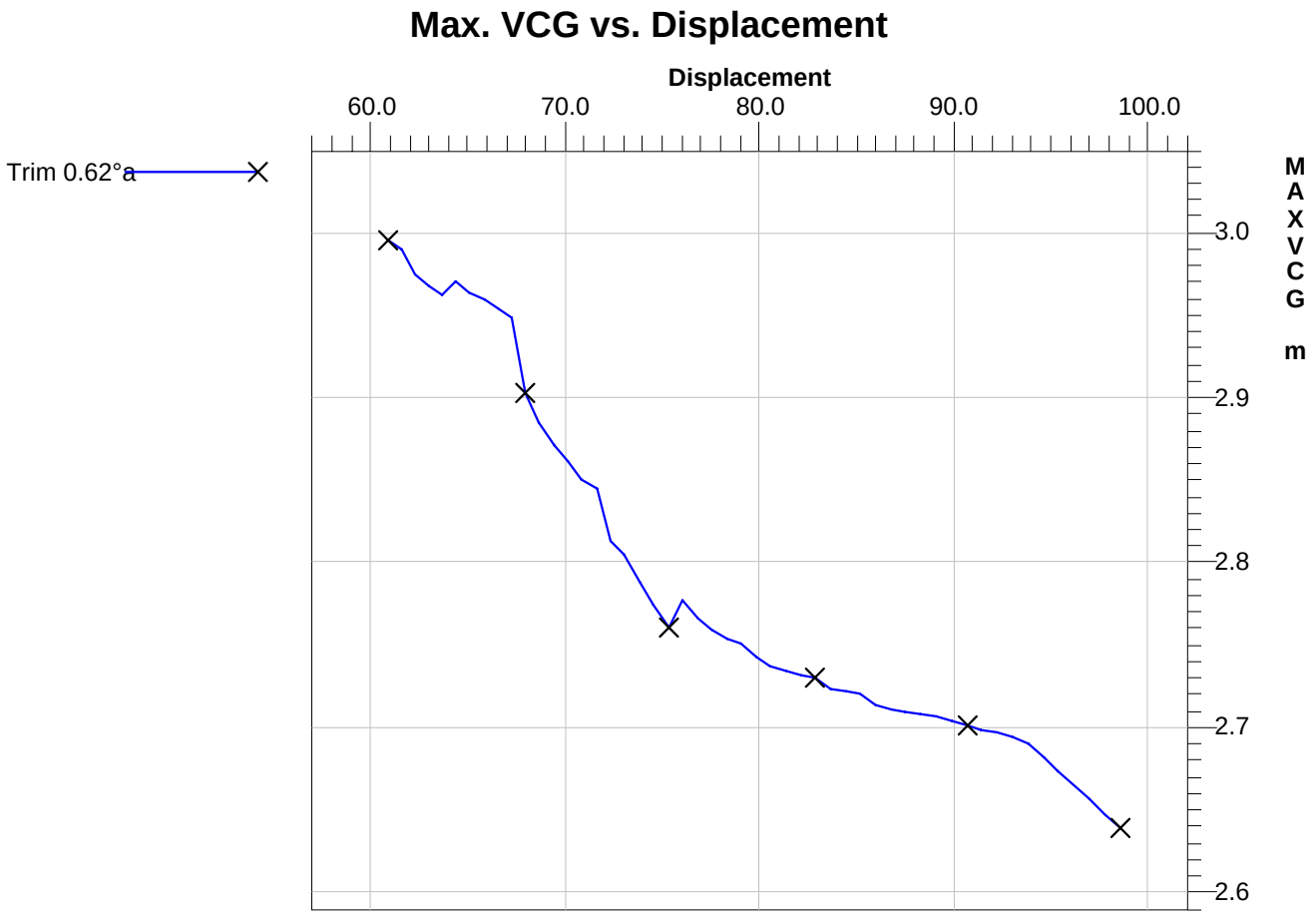
Maximum VCG vs. Displacement

Trim = aft 0.200/18.600 at zero heel (Trim righting arm held at zero)

Intact Displ (MT)	Intact Draft At -9.300 (m)	Max.VCG (m)	Limit 1	Limit 2	Limit 3	Limit 4	Limit 5	Limit 6	Limit 7
60.8	2.40	2.996	38.8%	18.1%	0.0%	4.6%	0.1°	347.2%	347.2%
61.5	2.41	2.991	39.4%	18.6%	0.2%	4.8%	0.0°	349.5%	349.5%
62.2	2.42	2.975	42.3%	21.5%	3.6%	7.4%	0.1°	357.5%	357.5%
62.9	2.43	2.968	43.2%	22.3%	4.2%	7.9%	0.0°	360.2%	360.2%
63.6	2.44	2.963	43.8%	22.7%	4.4%	8.0%	0.0°	362.0%	362.0%
64.3	2.45	2.971	41.1%	19.5%	0.0%	4.7%	0.0°	351.6%	351.6%
65.1	2.46	2.965	41.7%	20.0%	0.2%	4.8%	0.0°	353.6%	353.6%
65.8	2.47	2.960	42.0%	20.1%	0.1%	4.6%	0.0°	354.9%	354.9%
66.5	2.48	2.954	42.4%	20.3%	0.0%	4.5%	0.0°	356.4%	356.4%
67.2	2.49	2.949	42.8%	20.6%	0.0%	4.4%	0.0°	358.1%	358.1%
67.9	2.50	2.903	52.8%	31.1%	13.2%	14.2%	0.0°	386.4%	386.4%
68.6	2.51	2.886	56.0%	34.3%	17.0%	16.9%	0.0°	396.1%	396.1%
69.4	2.52	2.872	58.2%	36.5%	19.5%	18.6%	0.0°	403.2%	403.2%
70.1	2.53	2.862	59.6%	37.8%	20.9%	19.5%	0.0°	408.1%	408.1%
70.8	2.54	2.851	61.2%	39.4%	22.7%	20.6%	0.0°	413.8%	413.8%
71.6	2.55	2.846	61.1%	39.2%	22.2%	20.0%	0.0°	415.1%	415.1%
72.3	2.56	2.814	67.7%	46.1%	30.9%	26.3%	0.0°	434.7%	434.7%
73.0	2.57	2.806	68.3%	46.6%	31.3%	26.3%	0.0°	437.9%	437.9%
73.8	2.58	2.789	71.0%	49.5%	34.8%	28.6%	0.0°	447.2%	447.2%
74.5	2.59	2.776	73.0%	51.5%	37.3%	30.2%	0.0°	454.6%	454.6%
75.3	2.60	2.762	74.9%	53.5%	39.7%	31.7%	0.0°	462.2%	462.2%
76.0	2.61	2.778	69.4%	47.5%	32.1%	25.7%	0.0°	449.4%	449.4%
76.8	2.62	2.767	70.6%	48.8%	33.7%	26.6%	0.0°	455.1%	455.1%
77.5	2.63	2.760	70.7%	49.0%	33.9%	26.4%	0.0°	457.9%	457.9%
78.3	2.64	2.755	70.2%	48.4%	33.2%	25.6%	0.0°	459.1%	459.1%
79.0	2.65	2.752	69.3%	47.5%	32.1%	24.5%	0.0°	459.5%	459.5%
79.8	2.66	2.743	69.7%	47.9%	32.7%	24.6%	0.0°	463.5%	463.5%
80.5	2.67	2.738	69.3%	47.6%	32.4%	24.0%	0.0°	465.7%	465.7%
81.3	2.68	2.735	68.2%	46.5%	31.1%	22.7%	0.0°	466.1%	466.1%
82.1	2.69	2.733	66.9%	45.2%	29.6%	21.2%	0.0°	465.9%	465.9%
82.8	2.70	2.731	65.4%	43.7%	27.9%	19.6%	0.0°	465.5%	465.5%
83.6	2.71	2.725	65.0%	43.4%	27.7%	19.2%	0.0°	468.4%	468.4%
84.4	2.72	2.722	63.7%	42.1%	26.3%	17.7%	0.0°	468.4%	468.4%
85.2	2.73	2.721	62.0%	40.5%	24.5%	16.0%	0.0°	467.8%	467.8%
85.9	2.74	2.714	61.6%	40.2%	24.4%	15.6%	0.0°	470.6%	470.6%
86.7	2.75	2.712	60.0%	38.7%	22.8%	14.0%	0.0°	470.4%	470.4%
87.5	2.76	2.710	58.2%	37.0%	21.0%	12.3%	0.0°	470.1%	470.1%
88.3	2.77	2.709	56.5%	35.4%	19.3%	10.6%	0.0°	470.0%	470.0%
89.0	2.78	2.707	54.7%	33.8%	17.6%	9.0%	0.0°	469.9%	469.9%
89.8	2.79	2.705	53.0%	32.2%	16.0%	7.4%	0.0°	470.0%	470.0%
90.6	2.80	2.702	51.3%	30.6%	14.5%	5.9%	0.0°	470.2%	470.2%
91.4	2.81	2.699	49.6%	29.1%	13.1%	4.5%	0.0°	470.7%	470.7%
92.2	2.82	2.698	47.6%	27.3%	11.3%	2.7%	0.0°	470.5%	470.5%
93.0	2.83	2.696	45.6%	25.5%	9.6%	1.0%	0.0°	470.4%	470.4%
93.8	2.84	2.691	44.2%	24.3%	8.7%	0.0%	0.2°	472.1%	472.1%
94.6	2.85	2.683	43.8%	24.2%	9.1%	0.0%	0.6°	470.5%	470.5%
95.3	2.86	2.674	43.4%	24.1%	9.6%	0.0%	1.1°	475.0%	475.0%
96.1	2.87	2.666	42.9%	24.0%	10.0%	0.0%	1.5°	479.5%	479.5%
96.9	2.88	2.657	42.4%	23.8%	10.3%	0.0%	1.9°	484.0%	484.0%
97.7	2.89	2.649	41.8%	23.6%	10.7%	0.0%	2.3°	488.5%	488.5%
98.5	2.90	2.640	41.3%	23.3%	11.0%	0.0%	2.7°	493.0%	493.0%

IMO A.749 (18), INTACT STABILITY

Limit	Min/Max
(1) Area from 0.00 deg to 30.00	>0.0550 m-R
(2) Area from 0.00 deg to 40.00 or Flood	>0.0900 m-R
(3) Area from 30.00 deg to 40.00 or Flood	>0.0300 m-R
(4) Righting Arm at 30.00 deg or MaxRA	>0.200 m
(5) Absolute Angle at MaxRA	>25.00 deg
(6) GM Upright	>0.150 m
(7) GM at Equilibrium	>0.150 m



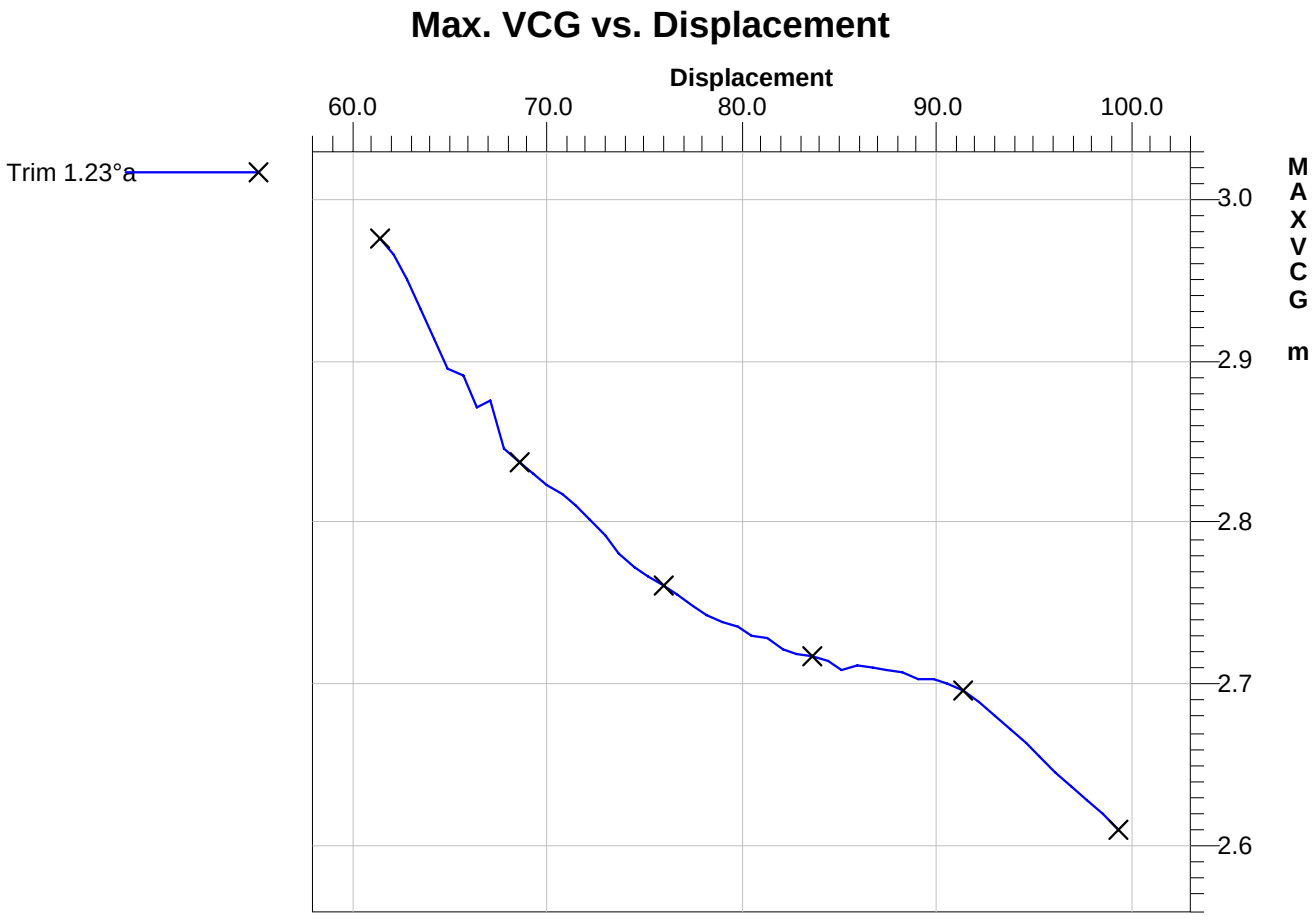
Maximum VCG vs. Displacement

Trim = aft 0.400/18.600 at zero heel (Trim righting arm held at zero)

Intact Displ (MT)	Intact Draft At -9.300 (m)	Max.VCG (m)	Limit 1	Limit 2	Limit 3	Limit 4	Limit 5	Limit 6	Limit 7
61.3	2.40	2.977	43.8%	21.7%	1.5%	6.4%	0.0°	365.2%	365.2%
62.0	2.41	2.967	45.4%	23.3%	3.1%	7.6%	0.0°	369.9%	369.9%
62.7	2.42	2.950	48.6%	26.4%	6.8%	10.4%	0.0°	378.4%	378.4%
63.5	2.43	2.932	52.0%	29.9%	11.0%	13.4%	0.0°	388.1%	388.1%
64.2	2.44	2.914	55.5%	33.4%	15.2%	16.6%	0.0°	398.1%	398.1%
64.9	2.45	2.896	59.0%	37.0%	19.5%	19.6%	0.0°	408.1%	408.1%
65.6	2.46	2.892	58.9%	36.7%	18.8%	19.0%	0.0°	408.6%	408.6%
66.3	2.47	2.872	62.5%	40.4%	23.3%	22.2%	0.0°	419.4%	419.4%
67.0	2.48	2.876	60.5%	38.1%	20.1%	19.6%	0.0°	414.8%	414.8%
67.8	2.49	2.847	66.4%	44.3%	27.8%	25.1%	0.0°	432.3%	432.3%
68.5	2.50	2.839	67.2%	45.0%	28.4%	25.4%	0.0°	435.9%	435.9%
69.2	2.51	2.831	67.8%	45.6%	29.1%	25.6%	0.0°	439.3%	439.3%
70.0	2.52	2.824	68.1%	45.7%	29.1%	25.3%	0.0°	441.4%	441.4%
70.7	2.53	2.819	68.0%	45.6%	28.8%	24.8%	0.0°	442.9%	442.9%
71.4	2.54	2.811	68.5%	46.1%	29.4%	24.9%	0.0°	446.2%	446.2%
72.2	2.55	2.802	69.1%	46.7%	30.1%	25.1%	0.0°	449.7%	449.7%
72.9	2.56	2.792	70.0%	47.7%	31.3%	25.7%	0.0°	454.5%	454.5%
73.7	2.57	2.781	71.2%	48.9%	32.8%	26.5%	0.0°	459.9%	459.9%
74.4	2.58	2.773	71.5%	49.2%	33.3%	26.5%	0.0°	463.1%	463.1%
75.2	2.59	2.767	71.3%	49.1%	33.2%	26.1%	0.0°	465.3%	465.3%
75.9	2.60	2.762	71.0%	48.8%	32.9%	25.5%	0.0°	467.0%	467.0%
76.7	2.61	2.757	70.4%	48.2%	32.3%	24.7%	0.0°	468.3%	468.3%
77.4	2.62	2.748	70.6%	48.5%	32.8%	24.7%	0.0°	472.0%	472.0%
78.2	2.63	2.744	69.9%	47.9%	32.2%	23.8%	0.0°	473.4%	473.4%
79.0	2.64	2.740	68.9%	47.0%	31.3%	22.8%	0.0°	474.4%	474.4%
79.7	2.65	2.736	67.8%	46.0%	30.2%	21.6%	0.0°	474.9%	474.9%
80.5	2.66	2.731	67.1%	45.3%	29.7%	20.8%	0.0°	476.4%	476.4%
81.2	2.67	2.729	65.7%	44.0%	28.3%	19.4%	0.0°	476.3%	476.3%
82.0	2.68	2.722	65.3%	43.8%	28.3%	19.0%	0.0°	479.2%	479.2%
82.8	2.69	2.719	63.8%	42.4%	26.9%	17.6%	0.0°	479.2%	479.2%
83.6	2.70	2.718	62.1%	40.8%	25.2%	15.9%	0.0°	478.5%	478.5%
84.3	2.71	2.716	60.4%	39.2%	23.5%	14.3%	0.0°	478.1%	478.1%
85.1	2.72	2.710	59.5%	38.5%	23.0%	13.6%	0.0°	480.1%	480.1%
85.9	2.73	2.712	56.7%	35.8%	20.1%	10.9%	0.0°	477.0%	477.0%
86.7	2.74	2.711	54.7%	33.9%	18.2%	9.1%	0.0°	469.7%	469.7%
87.4	2.75	2.710	52.7%	32.0%	16.2%	7.4%	0.0°	468.7%	468.7%
88.2	2.76	2.709	50.5%	30.1%	14.3%	5.5%	0.0°	467.8%	467.8%
89.0	2.77	2.704	49.5%	29.2%	13.8%	4.8%	0.0°	469.9%	469.9%
89.8	2.78	2.703	47.1%	27.0%	11.5%	2.8%	0.0°	468.7%	468.7%
90.6	2.79	2.701	45.1%	25.3%	9.8%	1.2%	0.0°	468.7%	468.7%
91.3	2.80	2.698	43.5%	23.9%	8.6%	0.0%	0.0°	469.7%	469.7%
92.1	2.81	2.689	43.0%	23.7%	9.0%	0.0%	0.5°	474.0%	474.0%
92.9	2.82	2.681	42.4%	23.5%	9.4%	0.0%	1.1°	478.2%	478.2%
93.7	2.83	2.672	41.8%	23.2%	9.7%	0.0%	1.7°	482.5%	482.5%
94.5	2.84	2.664	41.2%	23.0%	10.0%	0.0%	2.4°	487.0%	487.0%
95.3	2.85	2.655	40.6%	22.7%	10.3%	0.0%	3.0°	491.6%	491.6%
96.1	2.86	2.647	39.9%	22.4%	10.6%	0.0%	3.5°	496.3%	496.3%
96.9	2.87	2.638	39.2%	22.0%	10.8%	0.0%	3.9°	501.1%	501.1%
97.7	2.88	2.629	38.4%	21.6%	11.1%	0.0%	4.1°	506.2%	506.2%
98.5	2.89	2.621	37.7%	21.3%	11.4%	0.0%	5.0°	511.5%	511.5%
99.3	2.90	2.612	36.9%	20.9%	11.7%	0.0%	5.0°	516.8%	516.8%

IMO A.749 (18), INTACT STABILITY

Limit	Min/Max
(1) Area from 0.00 deg to 30.00	>0.0550 m-R
(2) Area from 0.00 deg to 40.00 or Flood	>0.0900 m-R
(3) Area from 30.00 deg to 40.00 or Flood	>0.0300 m-R
(4) Righting Arm at 30.00 deg or MaxRA	>0.200 m
(5) Absolute Angle at MaxRA	>25.00 deg
(6) GM Upright	>0.150 m
(7) GM at Equilibrium	>0.150 m



AFSNIT 6

KRÆNGNINGSFORSØG

Direktoratet for Statens Skibstilsyn

KRÆNGNINGS – OG RULNINGSFORSØG

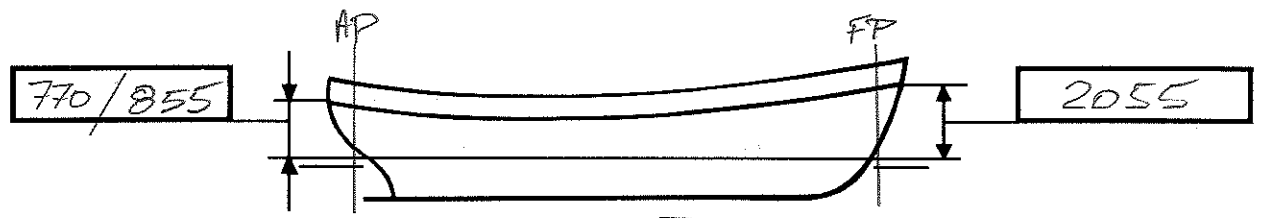
Skib: W. KLITGAARD	Type: SEJLSKIB-BEV.VERP	Kontr. nr.: 1271	
Forsøg afholdt i: FREDERIKSHAVN		Dato: 02.06.2009	
Længde p-p: 18.60 m		Vandets vægtf.: 1,025 t/m³	
Bredde mould.: 5.30 m		Vind og sø: 5-1	
Dybde mould.: 2.50 m		Bemærkn.: FRI AF KAJ. VIND RET FOR.	
U. k. køl-BL for kurver:			
Konstr. trim (styrlastigh.):			

Dybgange under forsøget

For	Ved amn. u. k. køl	SB / BB		Ved FP u. k. køl		d midd. u. k. køl	d midd. BL	Trim ex styrl.
Agt	Ved amn. u. k. køl	SB / BB		Ved AP u. k. køl			2,425	÷0,103

Fribord ved ⊗	SB =	835
" " "	BB =	925

Hvis ingen amningsmærker måles fribord for og agter og linietegning vedlægges rapport:



Fra linietegning: Dybgang – FP = 2480 TIL BL.

Dybgang – AP = 2377 TIL BL

d middel til BL for kurver: 2425

Krængningsvægte (w)

Vægt nr.	Vægt t	⊙ over dæk	⊙ fra AP
1	0,91	0,50 m	6,50 m
2			
3			

Penduler (min. 2 stk.)

Pendul nr. 1	L = 2610
Pendul nr. 2	L = 3107

Krængninger (min. 4)

obs. tg Ø > 0,025 < 0,040

Krængn. nr.	Flytn.retning SB-BB	Flytn. (a) Vægt	Flytn. (a) Afst.	Pendul 1 (FOR) udsl. mm	Pendul 1 (FOR) midd.	Pendul 1 (FOR) tg Ø	Pendul 2 (MIO) udsl. mm	Pendul 2 (MIO) midd.	Pendul 2 (MIO) tg Ø
1	SB→BB	0,91	2,20	92		0,035612	110		0,035404
2	BB→SB	0,91	2,20	95			110		
3	SB→BB	0,91	2,20	93			110		
4	BB→SB	0,91	2,20	92	93		110	110	

tg Ø middel = 0,035518

Rulningsforsøg (i krængningskondition) **Udføres kun hvor det er praktisk muligt**

Rulningstid for ( )dobbeltrulninger:

Dobb.rulning = rulning ud og tilbage til udgangspunkt.

Forsøg 1 = sek.

Forsøg 2 = sek.

Forsøg 3 = sek.

Deplacement

Deplacement fra kurveblad (m³)	=	
Korr. for. vægtfy. (m³ (vf – 1))	=	
Korr. for trim: $\frac{f^* . Tr.\ t/cm}{Lpp}$	= + ÷	
Depl. i krængningskondition (W)	=	

*) f = afst. ⊠ –flydecenter.
+ hvis flydec. er på samme side af ⊠ som skibet trimmer.
÷ hvis modsat.

OBS: Hvis trim under krængningsforsøg er større end 1,5 % af Lpp skal deplacement og BM specielt beregnes til den trimmede VL.

Deplacement i krængningskondition iflg. vedl. beregn. SE VEDLAGT BILAG I = 62.015 ton

$$GM = \frac{w \cdot a}{W \cdot tg\ \varnothing} = \frac{0{,}91\ t * 2.20\ m}{62.015t * 0.035518} = 0{,}91\ M$$

KM (fra kurveblad)	=	
KM (iflg. vedl. beregning)	=	3,64 m
KG ukorrigeret	=	2,73 m
Korr. for frie overflader	= ÷	0
KG i krængningskondition	=	2.73

Afst. G-AP

B_0–G = $\frac{Tr.\ tm/cm}{Depl}$	=	
⊠ –B_0 (kurvebl)	=	
⊠ –G	=	
G –AP	=	

Korrektioner. (overtallige- og manglende vægte iflg. vedlagt spec.)

	Vægt t	⊙-BL	Mom-BL	⊙-AP	Mom-AP
Skib i krængningskond.	62,02	2,73		9,04	
Overtallige vægte	1.32	3.44		7.08	
Manglende vægte	4,00	1,27		13.11	
Letvægt	64,70	2.62		9.33	

Bemærkninger:

OVERTALLIGE VÆGTE:

2 MANØ + KRENG.UDST.	0,26	2,90	10,05
KRÆNGVÆGTE	0,91	3,74	6.50
OIL	0,10	2,18	5,22
H. OIL	0,05	3,31	5.80
	1,32t	3,44M	7,08m

MANGLENDE:

FAST BALLAST	2.0	1,40	12,77
— " —	2.0	1,15	13,45
	4,0	1,27	13,11

shipcon CONSULTING CONSTRUCTION CONTROL
9900 Frederikshavn - Denmark

Kontr. af: _____ (underskrift)

Udført af: _____ (underskrift)

BILAG I

HYDROSTATIC PROPPERTIES

Krængningsforsøg: 02 juni 2009.

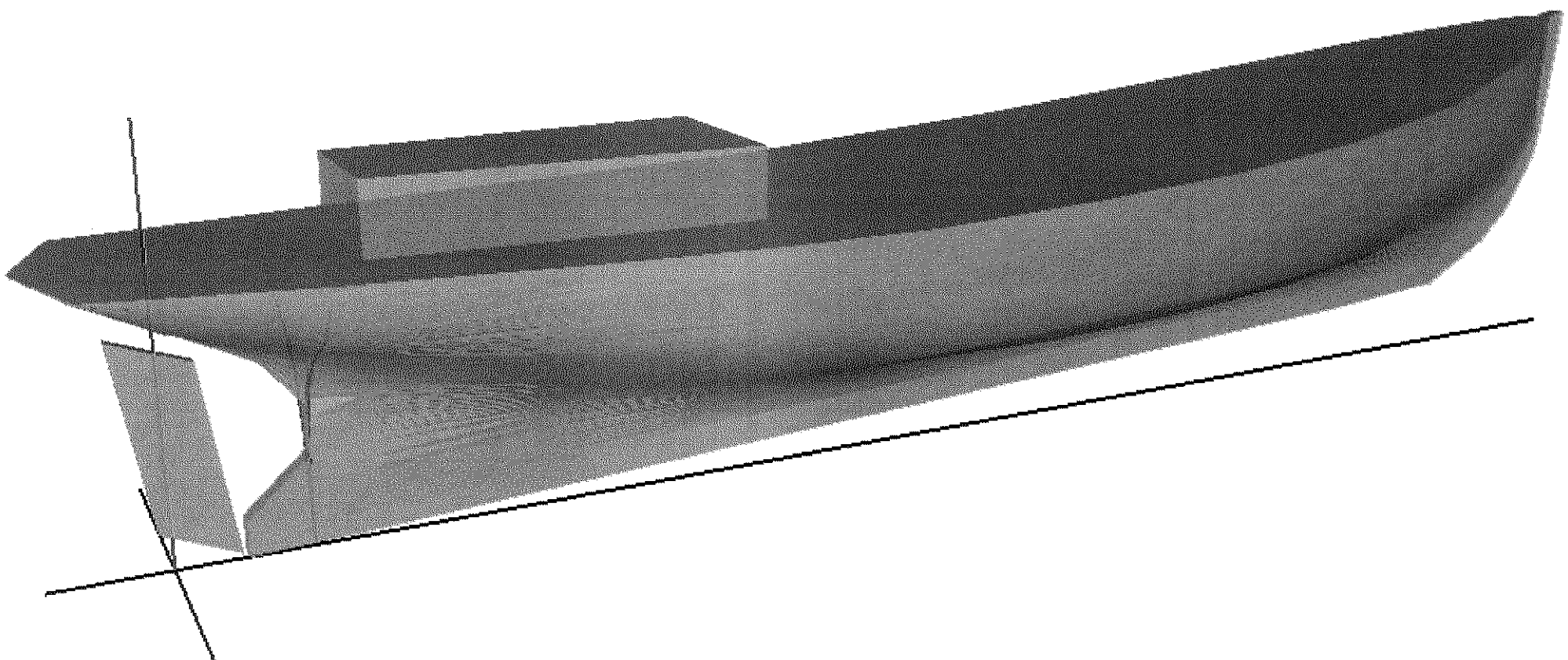
Hydrostatic Properties

Draft is from Baseline.
Trim: fwd 0.103/18.600, No heel, VCG = 0.000

Draft at 9.300f (m)	Displ (MT)	LCB (m)	VCB (m)	LCF (m)	TPcm (MT/cm)	MTcm (MT-m /cm)	KML (m)	KMT (m)
2.425	62.015	9.044f	1.854	8.966f	0.694	0.744	22.310	3.643

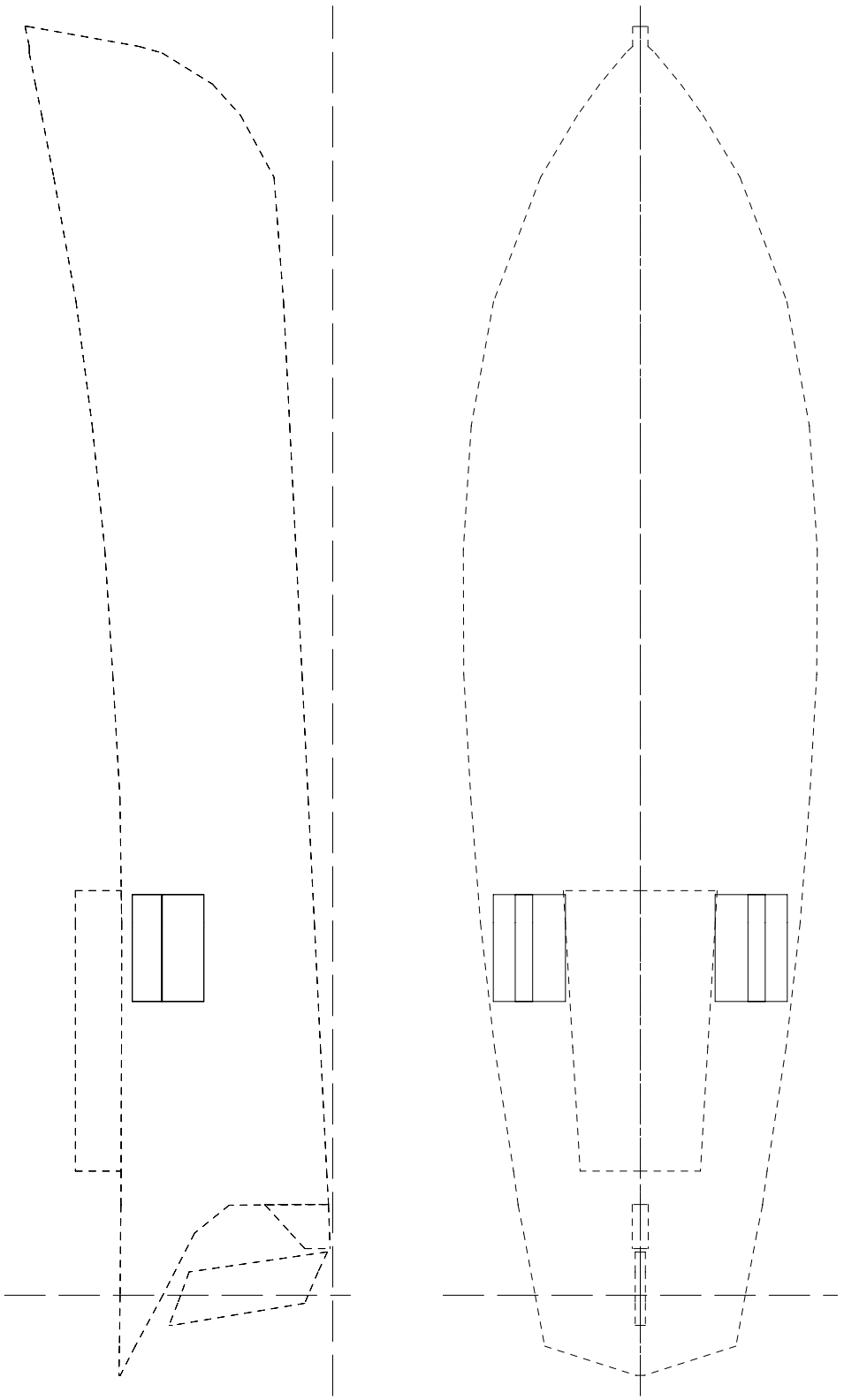
Water Specific Gravity = 1.025.
Trim is per 18.60m

W. KLITGAARD

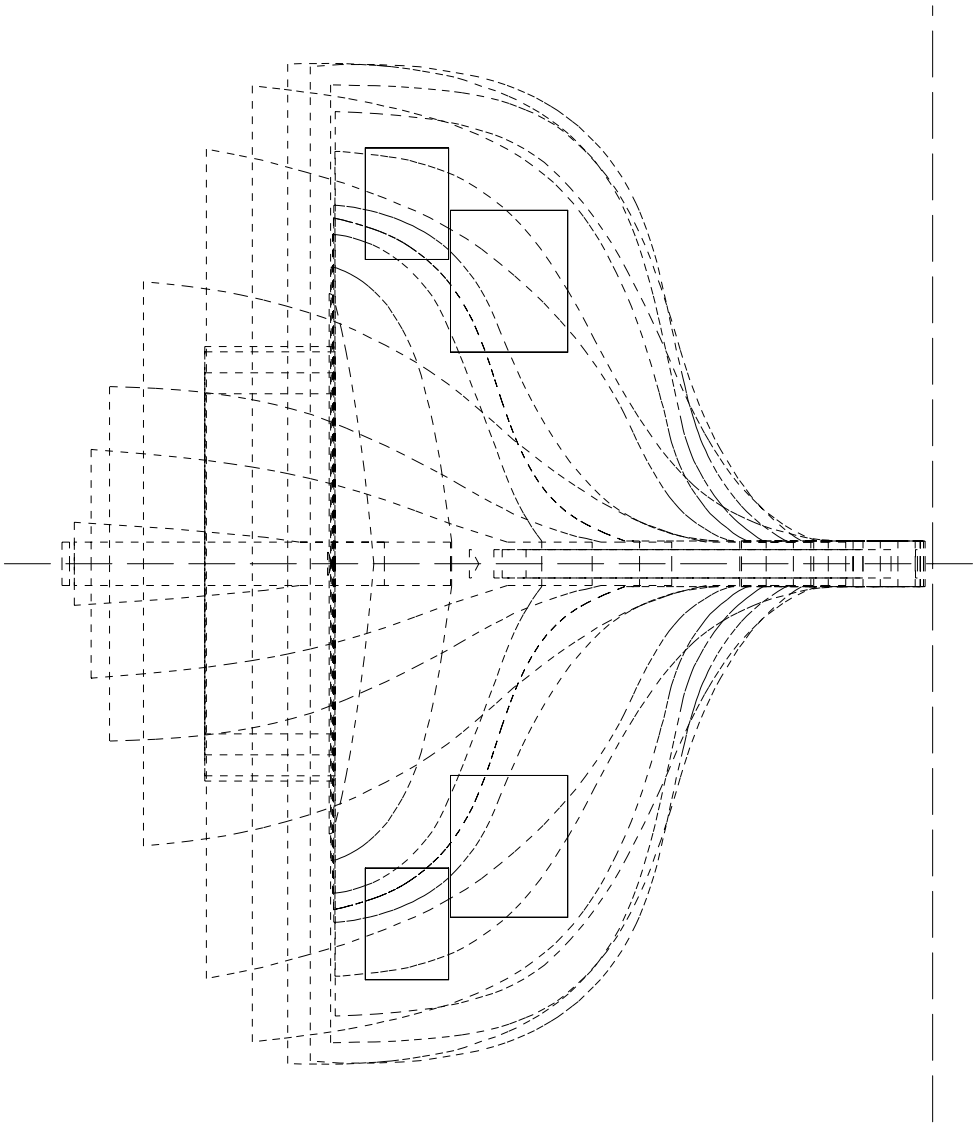


AFSNIT 7

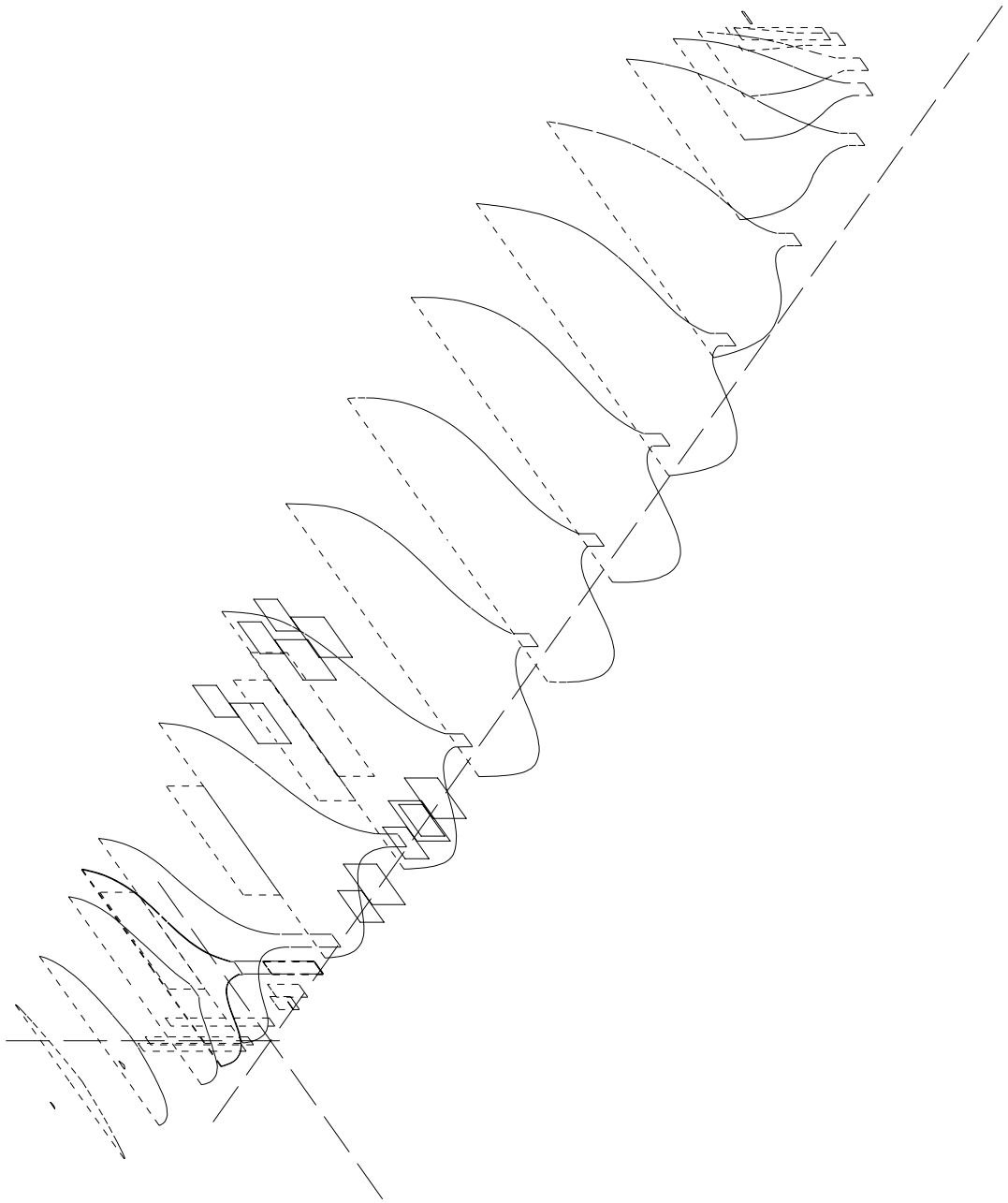
SKROGDEFINITION



Scale 1:100



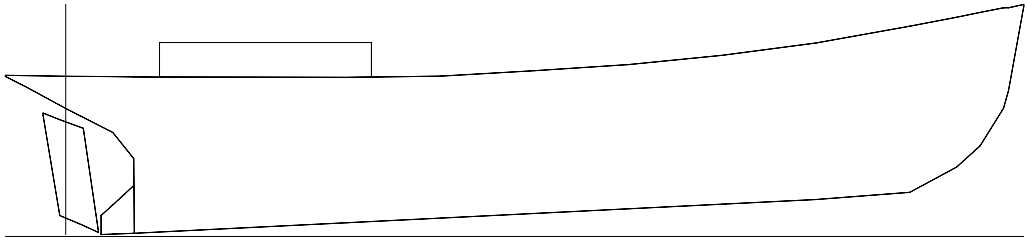
Scale 1:40

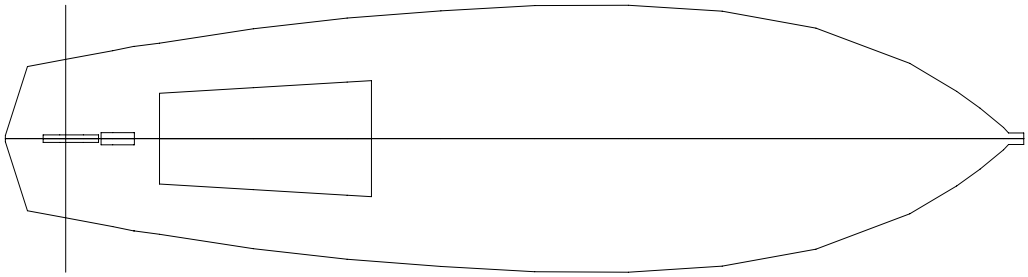


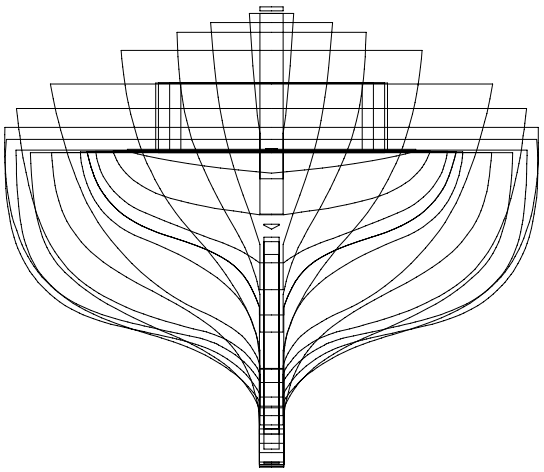
General Arrangement

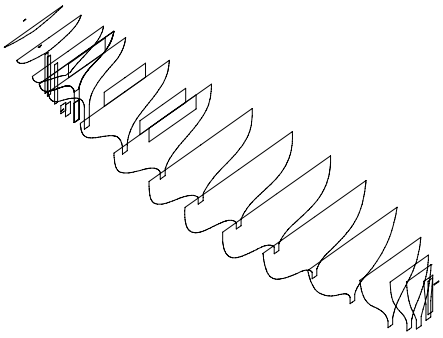
Type: Displacer
Fluid: SW @ Specific Gravity = 1.025

Component	Effect	Longitudinal Location in Meters
HULL.C	1	19.000f to 1.200a
ROR.C	1	0.650f to 0.450a
HEAL.C	1	1.360f to 0.700f
ROOF.C	1	6.060f to 1.860f









Scale 1:75 Scale 1:150

Component Name: HULL.C

L = 19.000f T,V: 0.000, 4.565 0.115s, 4.565 0.115s, 4.605 0.000, 4.605
L = 18.700f T,V: 0.000, 2.900 0.115s, 2.900 0.115s, 4.540 0.000, 4.540
L = 18.600f T,V: 0.000, 2.550 0.115s, 2.550 0.115s, 2.900 0.115s, 3.350 0.140s, 3.529
0.185s, 4.019 0.220s, 4.540 0.000, 4.540
L = 18.135f T,V: 0.000, 1.800 0.115s, 1.800 0.115s, 2.250 0.210s, 2.544 0.282s, 2.739
0.336s, 2.892 0.380s, 3.028 0.421s, 3.173 0.451s, 3.292 0.477s, 3.411 0.491s, 3.479
0.512s, 3.598 0.529s, 3.710 0.547s, 3.841 0.565s, 3.999 0.582s, 4.174 0.605s, 4.450
0.605s, 4.450 0.000, 4.450
L = 17.670f T,V: 0.000, 1.380 0.115s, 1.380 0.115s, 1.643 0.115s, 1.754 0.126s, 1.799
0.134s, 1.832 0.144s, 1.882 0.158s, 1.929 0.177s, 1.988 0.203s, 2.065 0.232s, 2.140
0.265s, 2.220 0.294s, 2.273 0.324s, 2.333 0.360s, 2.399 0.417s, 2.498 0.457s, 2.566
0.486s, 2.620 0.537s, 2.719 0.579s, 2.800 0.623s, 2.890 0.668s, 2.989 0.718s, 3.101
0.755s, 3.196 0.789s, 3.285 0.818s, 3.386 0.842s, 3.477 0.862s, 3.565 0.874s, 3.633
0.889s, 3.722 0.901s, 3.805 0.911s, 3.895 0.920s, 3.988 0.928s, 4.111 0.933s, 4.229
0.938s, 4.354 0.000, 4.354
L = 16.740f T,V: 0.000, 0.880 0.115s, 0.880 0.115s, 1.042 0.115s, 1.196 0.123s, 1.236
0.135s, 1.285 0.146s, 1.328 0.158s, 1.372 0.171s, 1.411 0.190s, 1.462 0.206s, 1.508
0.227s, 1.558 0.257s, 1.625 0.304s, 1.711 0.337s, 1.773 0.383s, 1.843 0.414s, 1.891
0.452s, 1.948 0.490s, 2.002 0.540s, 2.069 0.596s, 2.139 0.656s, 2.217 0.746s, 2.317
0.809s, 2.390 0.894s, 2.491 0.953s, 2.565 1.019s, 2.660 1.065s, 2.730 1.106s, 2.802
1.156s, 2.894 1.197s, 2.978 1.234s, 3.050 1.269s, 3.131 1.302s, 3.219 1.331s, 3.309
1.364s, 3.421 1.397s, 3.542 1.422s, 3.657 1.439s, 3.741 1.452s, 3.830 1.467s, 3.932
1.476s, 4.010 1.485s, 4.091 1.492s, 4.174 0.000, 4.174
L = 14.880f T,V: 0.000, 0.736 0.115s, 0.736 0.115s, 0.880 0.115s, 1.042 0.127s, 1.087
0.144s, 1.132 0.164s, 1.170 0.187s, 1.207 0.213s, 1.248 0.235s, 1.277 0.265s, 1.313
0.293s, 1.341 0.325s, 1.368 0.355s, 1.393 0.400s, 1.425 0.452s, 1.457 0.500s, 1.485
0.544s, 1.510 0.607s, 1.543 0.653s, 1.565 0.695s, 1.584 0.795s, 1.631 0.845s, 1.657
0.904s, 1.690 0.972s, 1.731 1.039s, 1.775 1.126s, 1.837 1.195s, 1.890 1.291s, 1.973
1.384s, 2.060 1.441s, 2.120 1.525s, 2.213 1.590s, 2.290 1.666s, 2.387 1.721s, 2.467
1.781s, 2.570 1.831s, 2.659 1.868s, 2.738 1.899s, 2.814 1.934s, 2.897 1.956s, 2.956
2.014s, 3.114 2.041s, 3.208 2.072s, 3.316 2.091s, 3.386 2.112s, 3.462 2.135s, 3.548
2.165s, 3.693 2.194s, 3.841 0.000, 3.841
L = 13.020f T,V: 0.000, 0.644 0.115s, 0.644 0.115s, 0.729 0.115s, 0.880 0.115s, 0.959
0.125s, 0.989 0.143s, 1.024 0.163s, 1.055 0.190s, 1.087 0.215s, 1.120 0.239s, 1.147
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0.497s, 1.327 0.524s, 1.338 0.567s, 1.355 0.609s, 1.370 0.644s, 1.381 0.678s, 1.390
0.726s, 1.401 0.775s, 1.412 0.823s, 1.423 0.867s, 1.436 0.908s, 1.447 0.963s, 1.463
1.045s, 1.486 1.117s, 1.508 1.196s, 1.533 1.268s, 1.558 1.362s, 1.593 1.443s, 1.628
1.538s, 1.672 1.593s, 1.700 1.660s, 1.734 1.712s, 1.764 1.760s, 1.794 1.800s, 1.821
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2.149s, 2.176 2.195s, 2.252 2.234s, 2.327 2.273s, 2.410 2.305s, 2.491 2.333s, 2.560
2.350s, 2.623 2.373s, 2.704 2.389s, 2.767 2.408s, 2.835 2.421s, 2.901 2.436s, 2.963
2.453s, 3.049 2.464s, 3.107 2.476s, 3.181 2.487s, 3.254 2.495s, 3.326 2.505s, 3.390
2.512s, 3.452 2.520s, 3.522 2.529s, 3.598 0.000, 3.598
L = 11.160f T,V: 0.000, 0.552 0.115s, 0.552 0.115s, 0.644 0.115s, 0.736 0.115s, 0.880
0.122s, 0.897 0.138s, 0.924 0.161s, 0.956 0.183s, 0.985 0.200s, 1.006 0.217s, 1.027
0.236s, 1.047 0.271s, 1.083 0.301s, 1.108 0.329s, 1.130 0.360s, 1.155 0.410s, 1.188
0.449s, 1.211 0.486s, 1.231 0.525s, 1.252 0.543s, 1.262 0.566s, 1.271 0.600s, 1.284
0.636s, 1.297 0.682s, 1.312 0.707s, 1.319 0.744s, 1.327 0.814s, 1.342 0.885s, 1.358
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1.317s, 1.454 1.378s, 1.467 1.425s, 1.479 1.488s, 1.496 1.549s, 1.514 1.618s, 1.534
1.682s, 1.554 1.733s, 1.573 1.788s, 1.594 1.853s, 1.622 1.935s, 1.659 2.011s, 1.703
2.099s, 1.763 2.146s, 1.799 2.187s, 1.838 2.237s, 1.887 2.275s, 1.927 2.316s, 1.977
2.355s, 2.031 2.388s, 2.080 2.416s, 2.129 2.456s, 2.205 2.474s, 2.245 2.502s, 2.311
2.526s, 2.384 2.558s, 2.474 2.575s, 2.531 2.587s, 2.590 2.600s, 2.659 2.608s, 2.709

L = 11.160f T,V: continued...
2.617s, 2.764 2.625s, 2.823 2.630s, 2.864 2.633s, 2.899 2.637s, 2.941 2.640s, 2.994
2.644s, 3.060 2.646s, 3.118 2.647s, 3.192 2.646s, 3.257 2.646s, 3.337 2.644s, 3.411
0.000, 3.411
L = 9.300f T,V: 0.000, 0.460 0.115s, 0.460 0.115s, 0.552 0.115s, 0.644 0.115s, 0.736
0.117s, 0.758 0.126s, 0.784 0.145s, 0.817 0.181s, 0.868 0.212s, 0.912 0.250s, 0.955
0.276s, 0.983 0.308s, 1.013 0.344s, 1.044 0.390s, 1.079 0.439s, 1.113 0.482s, 1.141
0.535s, 1.170 0.570s, 1.188 0.600s, 1.201 0.632s, 1.216 0.658s, 1.227 0.692s, 1.239
0.724s, 1.250 0.755s, 1.260 0.784s, 1.269 0.828s, 1.282 0.860s, 1.292 0.903s, 1.302
0.943s, 1.311 0.980s, 1.320 1.053s, 1.337 1.129s, 1.355 1.203s, 1.370 1.265s, 1.384
1.327s, 1.397 1.385s, 1.409 1.452s, 1.426 1.529s, 1.443 1.594s, 1.458 1.652s, 1.475
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2.315s, 1.874 2.341s, 1.906 2.375s, 1.952 2.398s, 1.984 2.420s, 2.019 2.444s, 2.060
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2.641s, 3.134 2.630s, 3.292 0.000, 3.292
L = 7.440f T,V: 0.000, 0.368 0.120s, 0.368 0.120s, 0.429 0.120s, 0.465 0.121s, 0.531
0.123s, 0.697 0.141s, 0.728 0.180s, 0.779 0.232s, 0.839 0.288s, 0.898 0.360s, 0.962
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2.351s, 2.050 2.384s, 2.112 2.401s, 2.152 2.420s, 2.200 2.435s, 2.241 2.452s, 2.295
2.471s, 2.373 2.485s, 2.448 2.492s, 2.490 2.501s, 2.555 2.508s, 2.628 2.515s, 2.702
2.520s, 2.770 2.525s, 2.839 2.529s, 2.948 2.530s, 3.048 2.533s, 3.131 2.534s, 3.184
0.000, 3.184
L = 5.580f T,V: 0.000, 0.276 0.120s, 0.276 0.120s, 0.368 0.120s, 0.429 0.121s, 0.531
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2.340s, 2.579 2.351s, 2.645 2.361s, 2.730 2.372s, 2.826 2.381s, 2.936 2.388s, 3.052
2.392s, 3.159 0.000, 3.159
L = 3.720f T,V: 0.000, 0.184 0.120s, 0.184 0.120s, 0.276 0.120s, 0.368 0.120s, 0.465
0.127s, 0.594 0.137s, 0.661 0.151s, 0.721 0.169s, 0.789 0.185s, 0.851 0.204s, 0.907
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0.880s, 1.620 0.945s, 1.658 1.020s, 1.699 1.090s, 1.737 1.183s, 1.787 1.268s, 1.831
1.340s, 1.869 1.440s, 1.926 1.515s, 1.973 1.591s, 2.021 1.669s, 2.075 1.739s, 2.130
1.794s, 2.177 1.841s, 2.224 1.887s, 2.273 1.941s, 2.344 1.993s, 2.418 2.030s, 2.480
2.055s, 2.530 2.077s, 2.583 2.094s, 2.631 2.110s, 2.682 2.122s, 2.727 2.135s, 2.772
2.147s, 2.836 2.154s, 2.881 2.161s, 2.931 2.170s, 3.018 2.176s, 3.079 2.181s, 3.133
2.181s, 3.161 0.000, 3.161
L = 1.860f T,V: 0.000, 0.092 0.120s, 0.092 0.120s, 0.184 0.120s, 0.276 0.120s, 0.368
0.120s, 0.648 0.120s, 0.710 0.120s, 0.771 0.120s, 0.891 0.120s, 1.052 0.120s, 1.144
0.125s, 1.192 0.132s, 1.248 0.143s, 1.315 0.155s, 1.369 0.172s, 1.417 0.189s, 1.469
0.208s, 1.517 0.223s, 1.549 0.246s, 1.594 0.283s, 1.656 0.321s, 1.710 0.363s, 1.759
0.412s, 1.808 0.470s, 1.860 0.539s, 1.918 0.604s, 1.964 0.672s, 2.009 0.739s, 2.050
0.805s, 2.088 0.863s, 2.120 0.927s, 2.153 0.981s, 2.179 1.054s, 2.212 1.138s, 2.250
1.233s, 2.289 1.297s, 2.315 1.361s, 2.342 1.413s, 2.369 1.458s, 2.395 1.505s, 2.425
1.545s, 2.456 1.591s, 2.493 1.621s, 2.520 1.660s, 2.559 1.690s, 2.594 1.716s, 2.630
1.737s, 2.659 1.756s, 2.689 1.773s, 2.722 1.788s, 2.750 1.802s, 2.781 1.816s, 2.812

L = 1.860f T,V: continued...
1.832s, 2.852 1.844s, 2.891 1.858s, 2.935 1.868s, 2.975 1.878s, 3.022 1.886s, 3.060
1.892s, 3.108 1.896s, 3.147 1.896s, 3.167 0.000, 3.167
L = 1.360f T,V: 0.000, 0.065 0.120s, 0.065 0.120s, 0.184 0.120s, 0.276 0.120s, 0.368
0.120s, 0.648 0.120s, 0.710 0.120s, 0.771 0.120s, 0.891 0.120s, 1.052 0.120s, 1.144
0.120s, 1.192 0.120s, 1.248 0.120s, 1.315 0.120s, 1.369 0.120s, 1.417 0.120s, 1.629
0.162s, 1.734 0.205s, 1.825 0.236s, 1.880 0.278s, 1.941 0.323s, 1.992 0.375s, 2.040
0.432s, 2.083 0.490s, 2.120 0.559s, 2.158 0.629s, 2.191 0.694s, 2.218 0.752s, 2.240
0.859s, 2.278 0.991s, 2.321 1.052s, 2.341 1.135s, 2.370 1.222s, 2.405 1.283s, 2.432
1.336s, 2.459 1.406s, 2.500 1.472s, 2.545 1.509s, 2.576 1.551s, 2.614 1.586s, 2.650
1.619s, 2.687 1.652s, 2.730 1.676s, 2.764 1.699s, 2.800 1.722s, 2.841 1.744s, 2.889
1.760s, 2.928 1.773s, 2.963 1.789s, 3.013 1.804s, 3.067 1.811s, 3.091 1.818s, 3.117
1.825s, 3.149 1.830s, 3.169 0.000, 3.169
L = 1.350f T,V: 0.000, 1.550 0.120s, 1.550 0.120s, 1.629 0.162s, 1.734 0.205s, 1.825
0.236s, 1.880 0.278s, 1.941 0.323s, 1.992 0.375s, 2.040 0.432s, 2.083 0.490s, 2.120
0.559s, 2.158 0.629s, 2.191 0.694s, 2.218 0.752s, 2.240 0.859s, 2.278 0.991s, 2.321
1.052s, 2.341 1.135s, 2.370 1.222s, 2.405 1.283s, 2.432 1.336s, 2.459 1.406s, 2.500
1.472s, 2.545 1.509s, 2.576 1.551s, 2.614 1.586s, 2.650 1.619s, 2.687 1.652s, 2.730
1.676s, 2.764 1.699s, 2.800 1.722s, 2.841 1.744s, 2.889 1.760s, 2.928 1.773s, 2.963
1.789s, 3.013 1.804s, 3.067 1.811s, 3.091 1.818s, 3.117 1.825s, 3.149 1.830s, 3.169
0.000, 3.169
L = 0.930f T,V: 0.000, 2.068 0.120s, 2.068 0.155s, 2.093 0.194s, 2.120 0.231s, 2.142
0.268s, 2.165 0.314s, 2.189 0.363s, 2.213 0.430s, 2.242 0.483s, 2.263 0.552s, 2.289
0.610s, 2.309 0.671s, 2.332 0.741s, 2.359 0.797s, 2.380 0.864s, 2.405 0.934s, 2.434
1.004s, 2.461 1.061s, 2.483 1.111s, 2.503 1.166s, 2.526 1.247s, 2.561 1.307s, 2.587
1.363s, 2.615 1.416s, 2.646 1.457s, 2.678 1.507s, 2.720 1.564s, 2.776 1.602s, 2.822
1.638s, 2.873 1.669s, 2.924 1.689s, 2.964 1.701s, 2.997 1.711s, 3.027 1.725s, 3.071
1.733s, 3.103 1.739s, 3.135 1.744s, 3.174 0.000, 3.174
L = 0.000 T,V: 0.000, 2.544 0.120s, 2.544 0.208s, 2.556 0.298s, 2.570 0.376s, 2.581
0.486s, 2.596 0.563s, 2.608 0.655s, 2.626 0.744s, 2.643 0.828s, 2.662 0.897s, 2.680
0.997s, 2.705 1.080s, 2.732 1.148s, 2.759 1.203s, 2.785 1.242s, 2.806 1.287s, 2.832
1.327s, 2.858 1.367s, 2.883 1.410s, 2.922 1.442s, 2.954 1.469s, 2.985 1.493s, 3.014
1.512s, 3.044 1.533s, 3.080 1.547s, 3.109 1.556s, 3.131 1.565s, 3.152 1.569s, 3.171
1.571s, 3.181 0.000, 3.181
L = 0.760a T,V: 0.000, 2.955 0.154s, 2.970 0.328s, 2.988 0.506s, 3.007 0.666s, 3.028
0.828s, 3.052 1.000s, 3.080 1.120s, 3.102 1.235s, 3.126 1.327s, 3.148 1.403s, 3.167
1.422s, 3.174 1.428s, 3.184 1.430s, 3.192 0.000, 3.192
L = 1.200a T,V: 0.000, 3.180 0.033s, 3.187 0.060s, 3.196 0.060s, 3.200 0.000, 3.200

Component Name: ROR.C

L = 0.650f T,V: 0.000, 0.080 0.075s, 0.080 0.075s, 0.090 0.000, 0.090
L = 0.350f T,V: 0.000, 0.220 0.075s, 0.220 0.075s, 2.150 0.000, 2.150
L = 0.000 T,V: 0.000, 0.369 0.075s, 0.369 0.075s, 2.277 0.000, 2.277
L = 0.120a T,V: 0.000, 0.420 0.075s, 0.420 0.075s, 2.320 0.000, 2.320
L = 0.450a T,V: 0.000, 2.400 0.075s, 2.440 0.075s, 2.450 0.000, 2.450

Component Name: HEAL.C

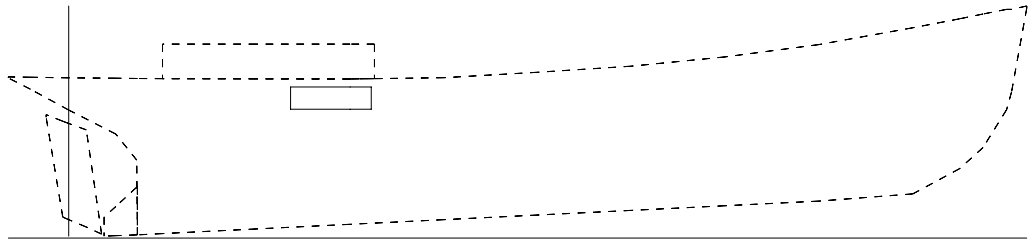
L = 1.360f T,V: 0.000, 0.065 0.120s, 0.065 0.120s, 1.020 0.000, 1.020
L = 1.350f T,V: 0.000, 0.065 0.120s, 0.065 0.120s, 1.011 0.000, 1.011
L = 0.930f T,V: 0.000, 0.049 0.120s, 0.049 0.120s, 0.629 0.000, 0.629
L = 0.700f T,V: 0.000, 0.040 0.120s, 0.040 0.120s, 0.420 0.000, 0.420

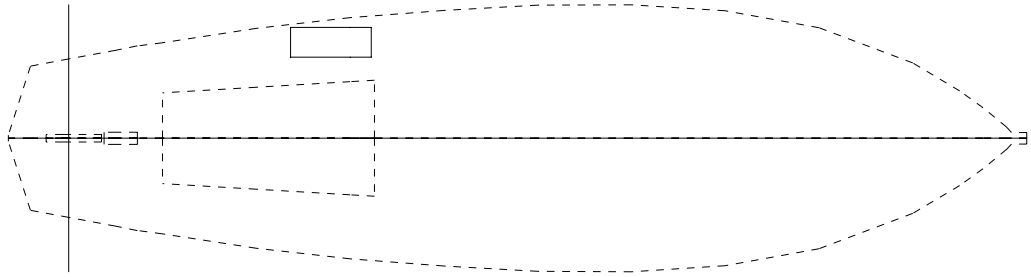
Component Name: ROOF.C

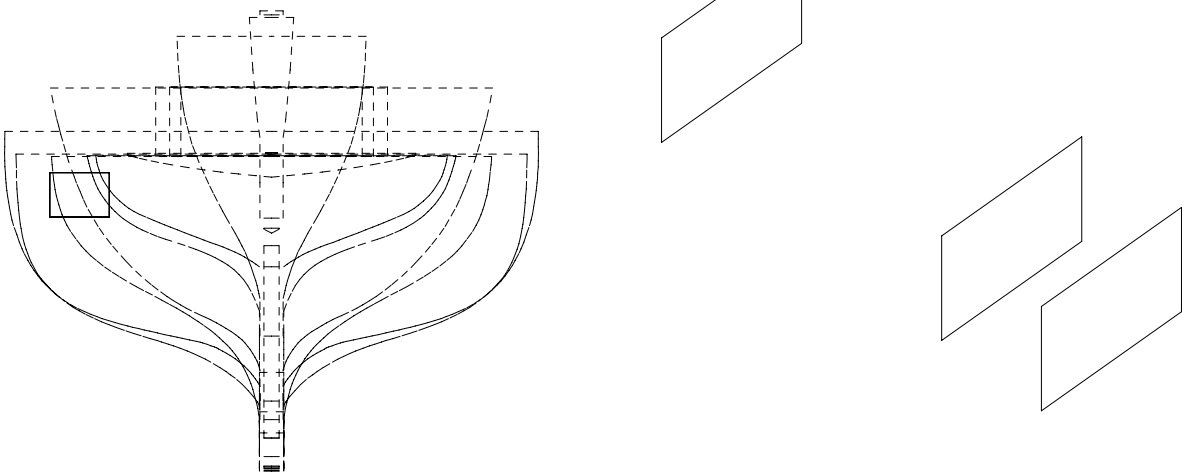
L = 6.060f T,V: 0.000, 3.165 1.150s, 3.165 1.150s, 3.850 0.000, 3.850
L = 5.580f T,V: 0.000, 3.159 1.121s, 3.159 1.121s, 3.850 0.000, 3.850
L = 3.720f T,V: 0.000, 3.161 1.011s, 3.161 1.011s, 3.850 0.000, 3.850
L = 1.860f T,V: 0.000, 3.167 0.900s, 3.167 0.900s, 3.850 0.000, 3.850

Type: Container
Fluid: FW @ Specific Gravity = 1

Component	Effect	Longitudinal Location in Meters
FV-TK.P	1	6.000f to 4.400f







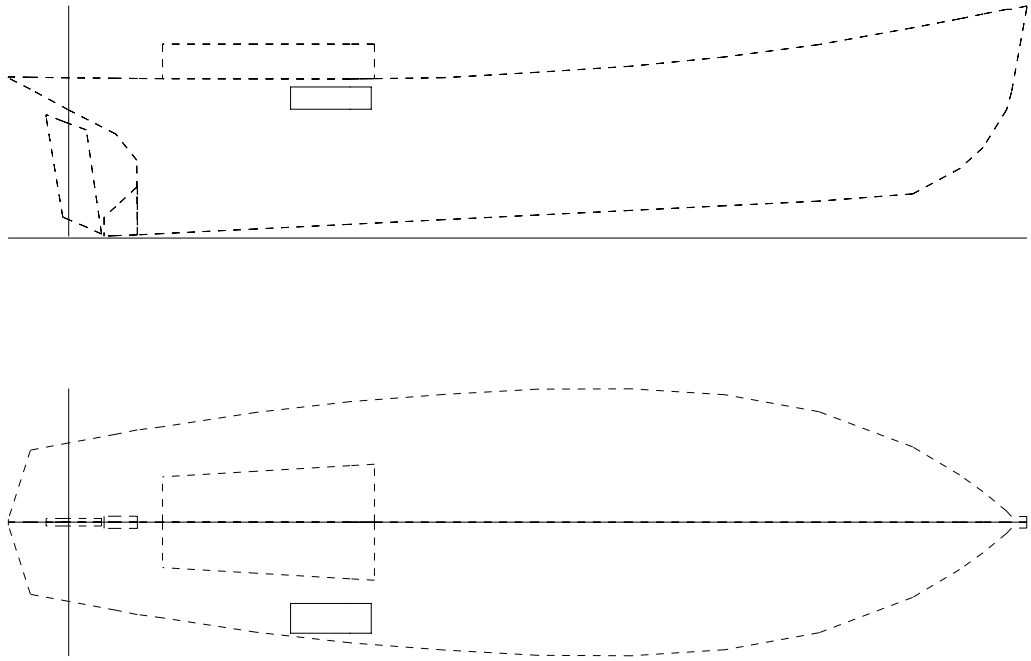
Scale 1:75 Scale 1:150

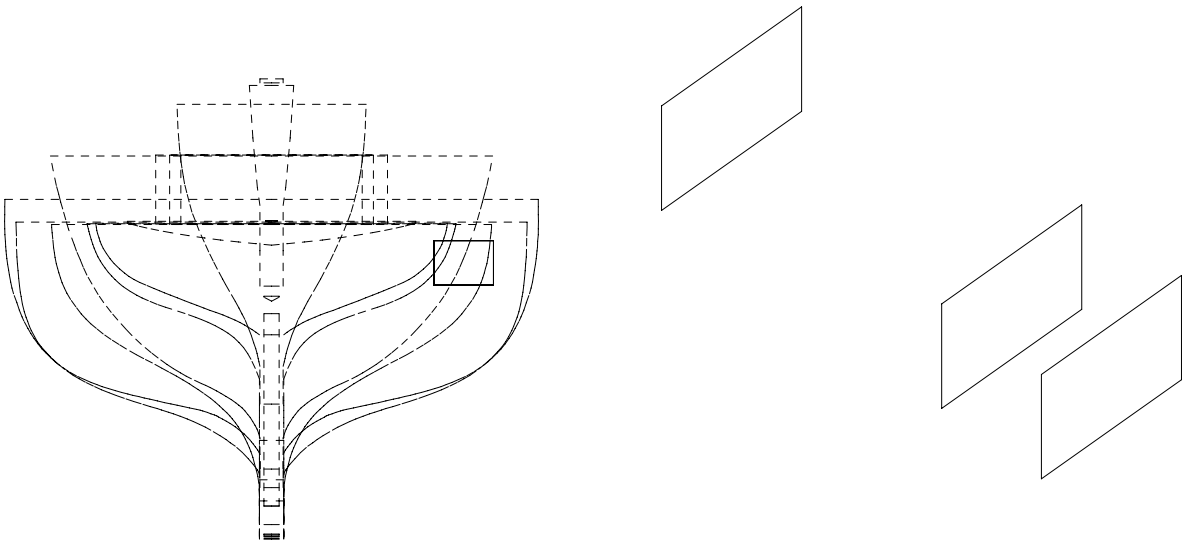
Component Name: FV-TK.P

L = 6.000f	T,V:	1.610s,	2.560	2.200s,	2.560	2.200s,	3.000	1.610s,	3.000	1.610s,	2.560
L = 5.580f	T,V:	1.610s,	2.560	2.200s,	2.560	2.200s,	3.000	1.610s,	3.000	1.610s,	2.560
L = 4.400f	T,V:	1.610s,	2.560	2.200s,	2.560	2.200s,	3.000	1.610s,	3.000	1.610s,	2.560

Type: Container
Fluid: SEWAGE @ Specific Gravity = 1

Component	Effect	Longitudinal Location in Meters
SEWAGE-TK.S	1	6.000f to 4.400f





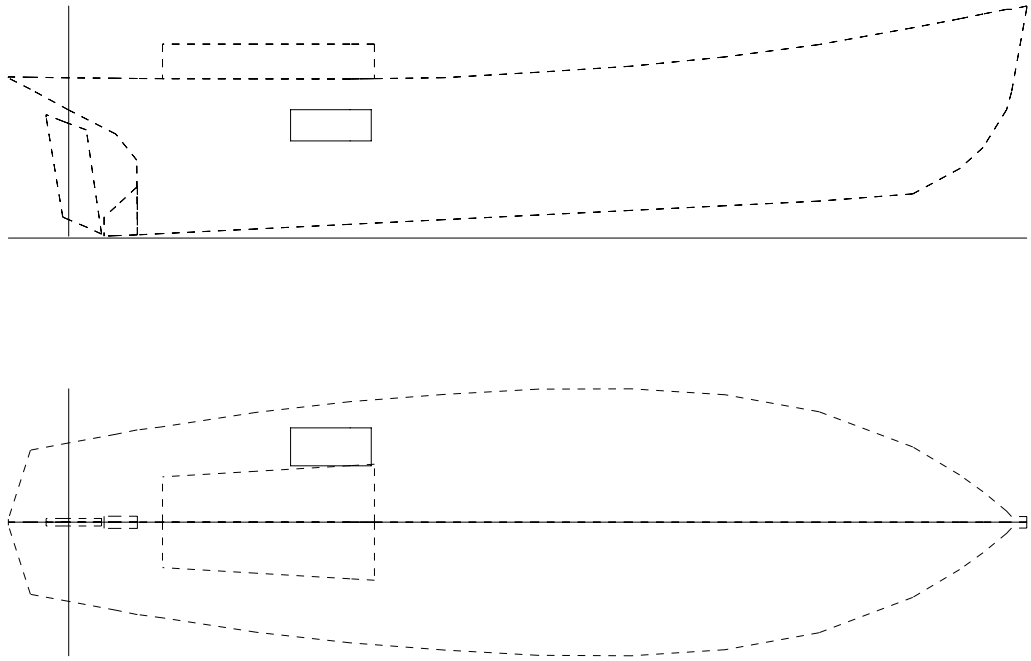
Scale 1:75 Scale 1:150

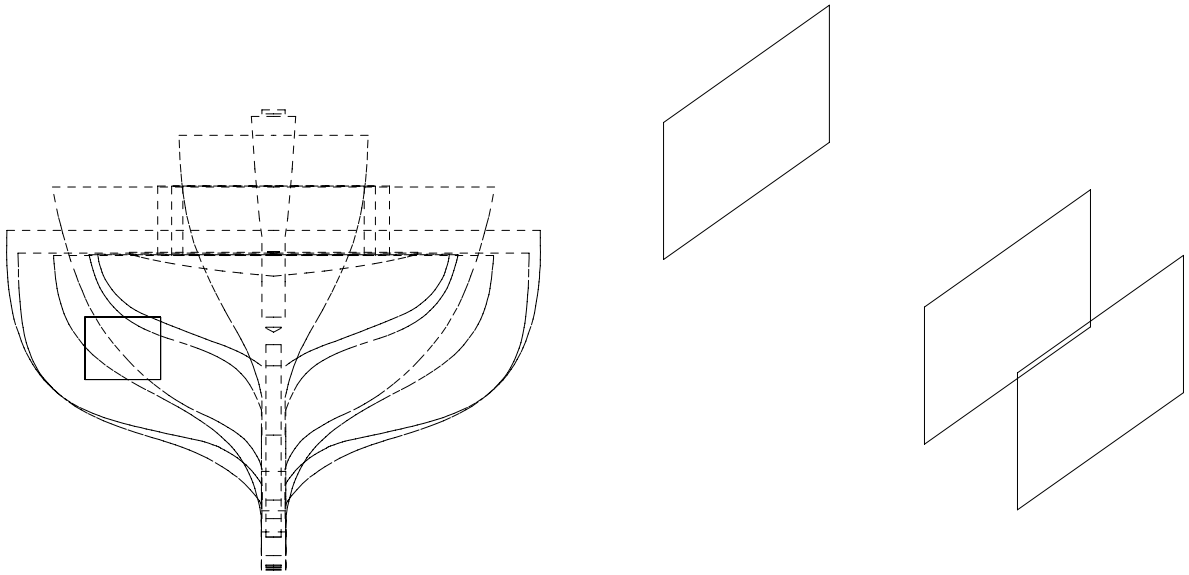
Component Name: SEWAGE-TK.S

L = 6.000f	T,V:	1.610s,	2.560	2.200s,	2.560	2.200s,	3.000	1.610s,	3.000	1.610s,	2.560
L = 5.580f	T,V:	1.610s,	2.560	2.200s,	2.560	2.200s,	3.000	1.610s,	3.000	1.610s,	2.560
L = 4.400f	T,V:	1.610s,	2.560	2.200s,	2.560	2.200s,	3.000	1.610s,	3.000	1.610s,	2.560

Type: Container
Fluid: DO @ Specific Gravity = .85

Component	Effect	Longitudinal Location in Meters
DO-TK.P	1	6.000f to 4.400f





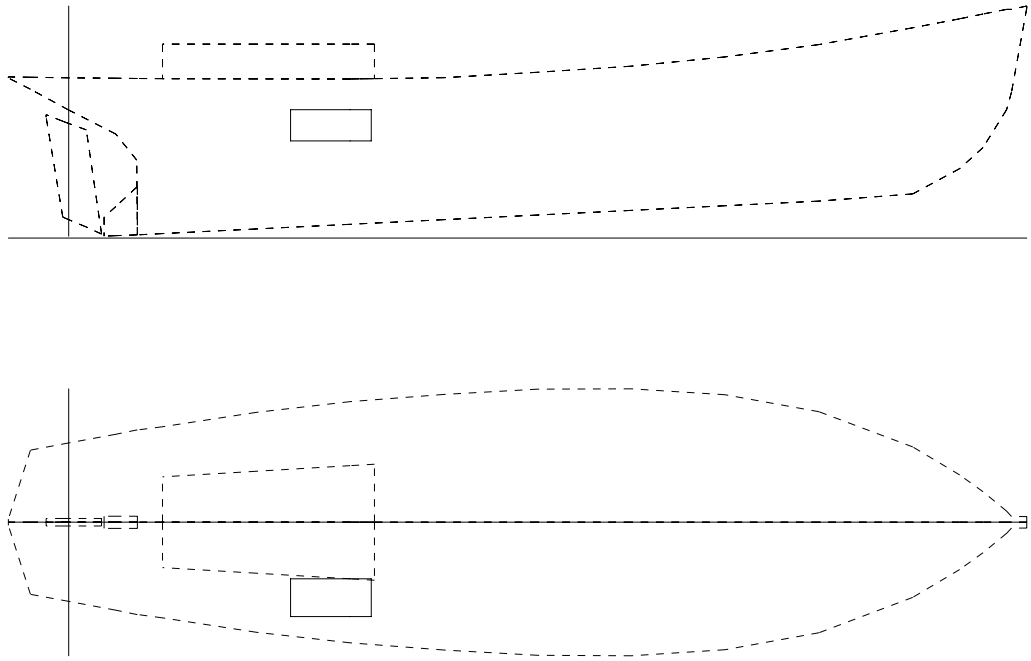
Scale 1:75 Scale 1:150

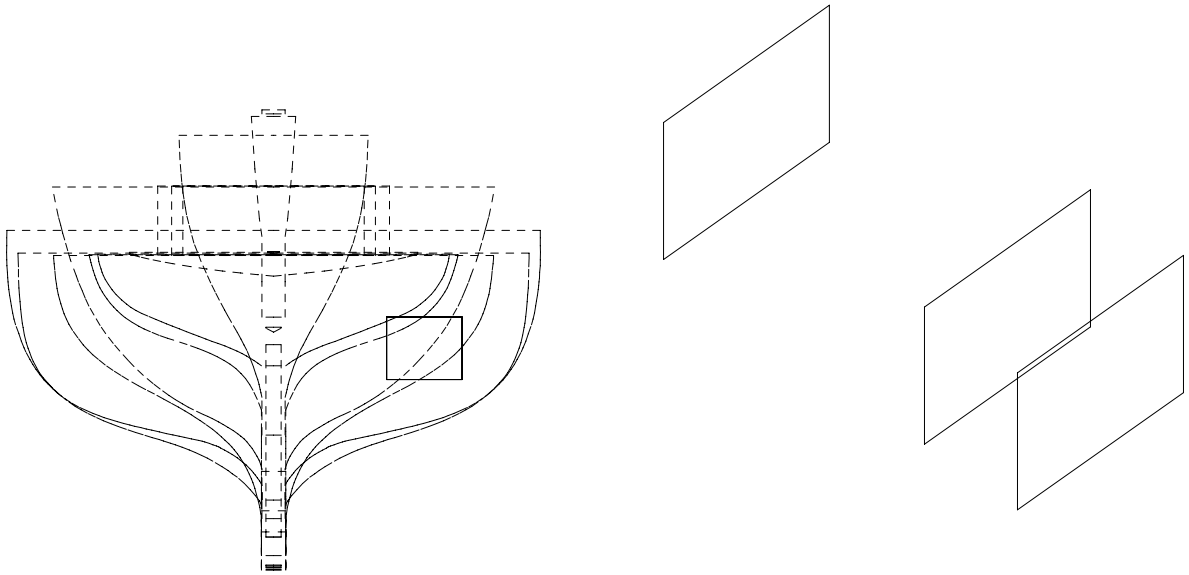
Component Name: DO-TK.P

L = 6.000f	T,V:	1.120s,	1.930	1.870s,	1.930	1.870s,	2.550	1.120s,	2.550	1.120s,	1.930
L = 5.580f	T,V:	1.120s,	1.930	1.870s,	1.930	1.870s,	2.550	1.120s,	2.550	1.120s,	1.930
L = 4.400f	T,V:	1.120s,	1.930	1.870s,	1.930	1.870s,	2.550	1.120s,	2.550	1.120s,	1.930

Type: Container
Fluid: DO @ Specific Gravity = .85

Component	Effect	Longitudinal Location in Meters
DO-TK.S	1	6.000f to 4.400f





Scale 1:75 Scale 1:150

Component Name: DO-TK.S

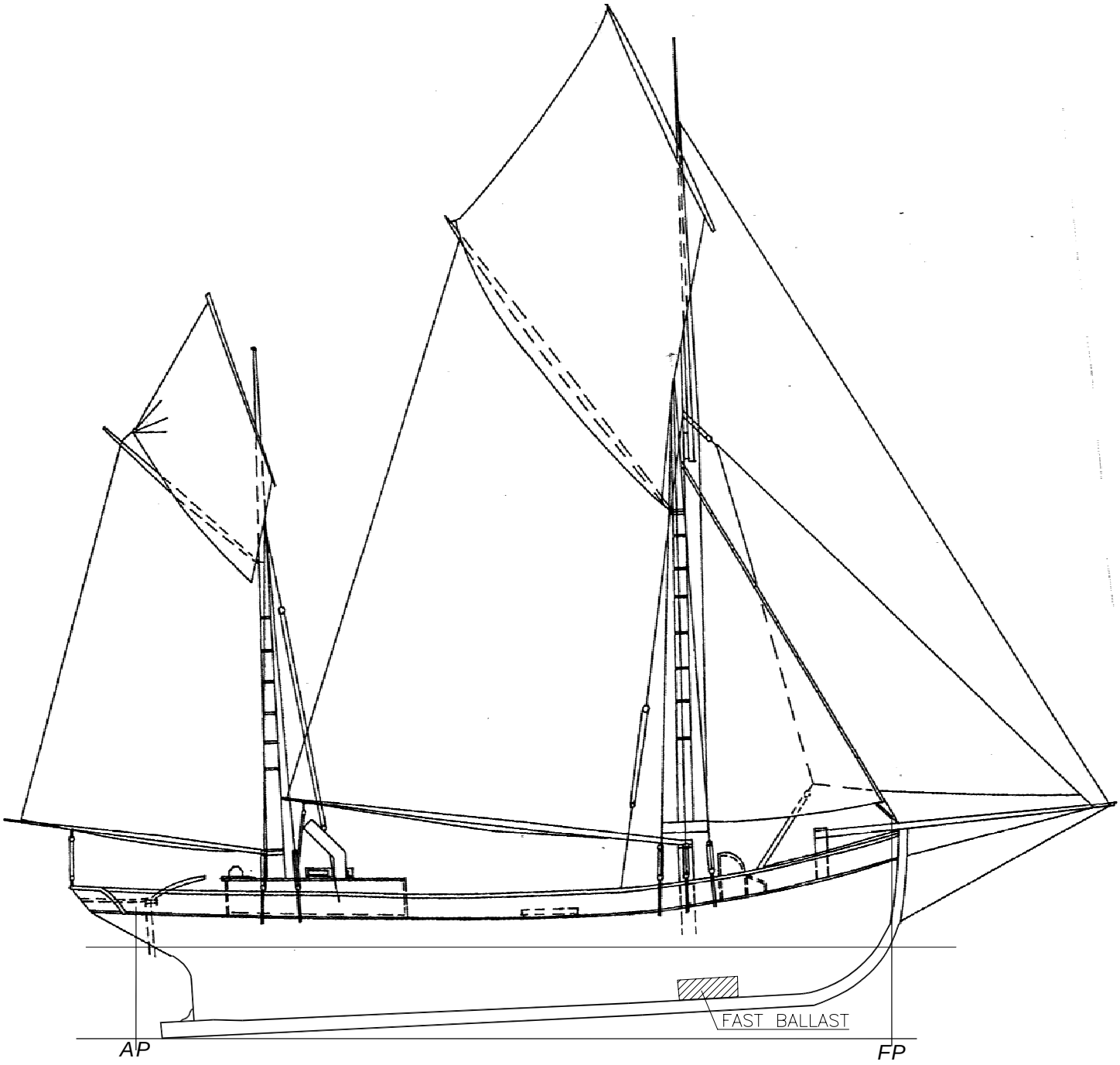
L = 6.000f	T,V:	1.120s,	1.930	1.870s,	1.930	1.870s,	2.550	1.120s,	2.550	1.120s,	1.930
L = 5.580f	T,V:	1.120s,	1.930	1.870s,	1.930	1.870s,	2.550	1.120s,	2.550	1.120s,	1.930
L = 4.400f	T,V:	1.120s,	1.930	1.870s,	1.930	1.870s,	2.550	1.120s,	2.550	1.120s,	1.930

AFSNIT 8

TEGNINGER

PLACERING AF FAST BALLAST

Se også afsnit 6 – Krængningsforsøg.



W. KLITGAARD

VEJLEDNING TIL SKIBETS FØRER:

Generelt

Skibets fører skal være opmærksom på:

at overholdelse af stabilitets kriterierne ikke sikrer ubetinget mod krængning eller fritager skibets fører for hans ansvar, og at han derfor stadig skal udøve sund dømmekraft og godt sømandskab under hensyntagen til vejrforhold og farvand og skal træffe sådanne hensigtsmæssige foranstaltninger med hensyn til sejladsen, som de tilstedeværende omstændigheder tilsiger.

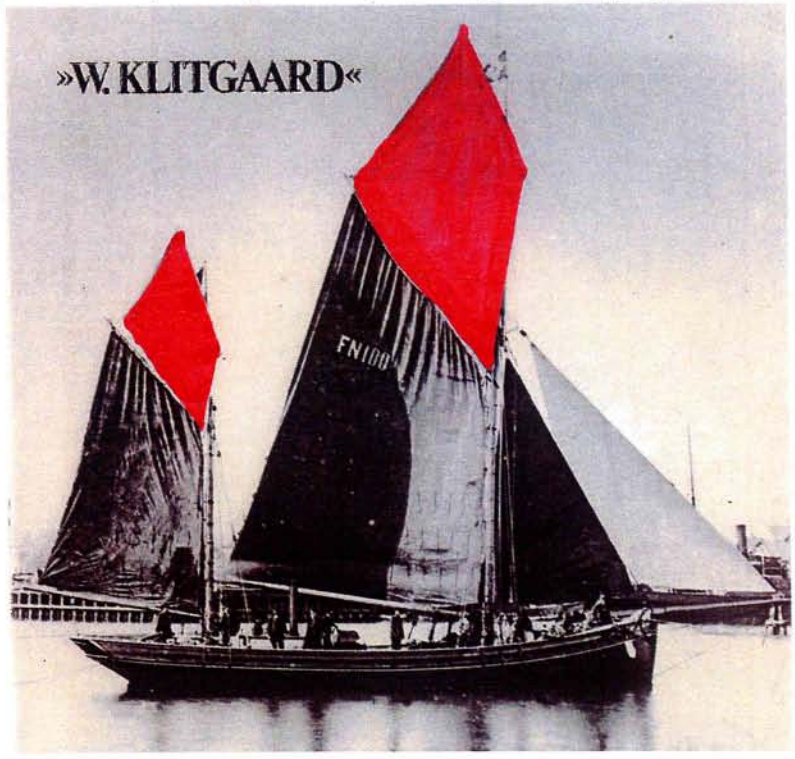
at der før rejsen påbegyndes, drages omsorg for, at evt. ladning og større udrustnings genstande er forsvarligt stuvet, således at risikoen for forskydning under sejlads begrænses mest muligt.

Skade stabilitets beregninger er ikke udført, hvorfor en skade eller indstrømning gennem eksisterende åbninger kan resultere i at skibet synker.

Sejlkonditionerne er baseret på et vindtryk på 110 N/m^2, der svarer til en vindstyrke på 12 m/sek, med sejlene sat mest ugunstigt i forhold til krængning, hvilket i princippet betyder med alle sejl tot-halet på tværs af vindretningen. Selv om dette synes urealistisk, kan det forekomme.
Så ved vindhastigheder over 12 m/sek skal topsejl stryges, og det anbefales at sætte grænsen ved 10 m/sek. Dette gælder også hvis krængningen af andre årsager overstiger 15°. Se markering på vedlagte billede.

Ved større vind hastigheder bør sejlene yderligere reduceres.

Ved sejlads med sejl føring skal alle udvendige døre og luger holdes lukkede.



De markeret røde sejl anbefales strøget når vindhastigheden overstiger 10 m/sek.

Krængning ved alle passagerer i den ene side.

Beregning af krængning for alle (28) passagerer samlet i den ene side af skibet.
Beregnings grundlag er kondition nr. 5. Da denne kondition har det mindste GM .
GM = 0.941 m. & Depl. = 67.78 t.
Krængningsmoment er: 28 x 0.08 x 2.3 = 5.2 tm.

Arc tgα = Krængningsmoment / Depl x GM = <u>4.7°</u>

AFSNIT 9

TIDLIGERE STAB INFORMATIONER

Direktoratet for
Statens Skibstilsyn

INCLINING AND ROLLING TEST

Encl. 1
Denmark

Ship: W. KAITGAARD — Off No.: J 1271

Place: FR. HAVN STRØMØY — Date: 28-5-88 24.05.00

Length betw. p-p: 18,4 — Density of water: 1017

Breadth mould.: 5,3 — Wind and sea: 0

Depth mould.: 2,5 — Remarks: FRI AF KAJ

U.s. keel to BL for curves:

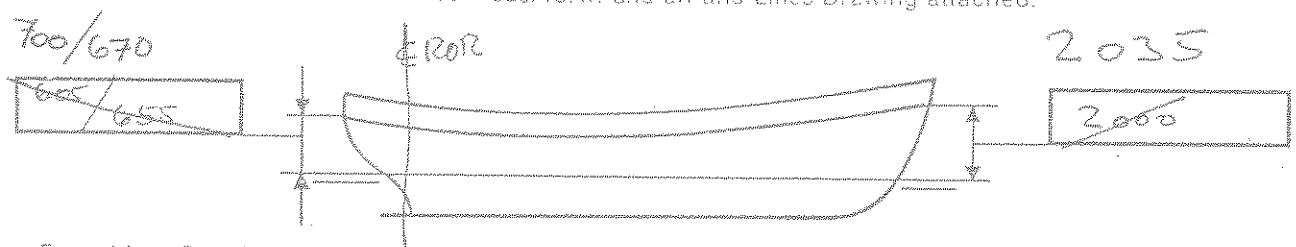
Design Trim:

Draughts during test

Forw.	At dr. marks u.s. keel	SB		At FP u.s. keel		mean dr. u.s. keel	mean dr. BL	Trim ex design trim
		P						
Aft	At dr. marks u.s. keel	SB		At AP u.s. keel				
		P						

Freeboard at ⊗ (½ Length)	SB =	
Freeboard at ⊠ (½ Length)	P =	

If no dr. marks the freeboard shall be meas. forw. and aft and Lines Drawing attached:



From Lines Drawing: Draught FP =

Draught AP =

Mean Draught to BL for curves:

Inclining weights (w)

Weight No	Weight t	C. G. above deck	C. G. from AP
1	500	0,45	
2	0,460		
3			

Pendulums (min. 2) 2,58

Pendulum No. 1 L = 2140

Pendulum No. 2 L = 2140

Shifting of weights (min. 4)

Note: tan Θ 0.025 / 0.040

Shift No.	Direction SB.-P	Shift. dist (a) Weight	Shift. dist (a) Dist.	Pendulum 1 swing mm	Pendulum 1 mean	Pendulum 1 tan Θ	Pendulum 2 swing mm	Pendulum 2 mean	Pendulum 2 tan Θ
1		(1)	58	87			58		
2			40/60	89	88				
3			3940	90	88,5			58	
4		(2)	58	88			58		

tan Θ mean =

Rolling Test (in inclining condition)

Note: Only if practicable

Mean Rolling Period for complete oscilations (SB-P-SB)

Test 1 = sec.

Test 2 = sec.

Displacement

Displacement from hydr. curves (m³)	=	
Corr. for density of water (m³(dens. −1))	=	
Corr. for trim: $\frac{f^{*} \cdot Tr. \cdot t/cm}{Lpp}$	= ±	
Displacement in inclining cond. (W)	=	

*) f = Dist. Ø to C.F. To be applied with plus if the C.F. is situated in the same direction from amidships as the trim of the ship (after corr. for the design trim) otherwise minus

Note: If trim (corr. for the design trim) during the test is more than 1.5 % of Lpp, the Displ. and BM shall be special calculated to the actual trimmed WL.

Displacement in inclining condition (attached calculation) =

GM = $\frac{w \cdot a}{W \cdot \tan Ø}$ = $\frac{0{,}82 \cdot 4{,}06}{71{,}6 \cdot 0{,}027}$ (corrected: 0,46 · 3,94 / 0,034)	=	~~1,09~~
KM (from curves)	=	3,201
KM (attached calculation)	=	
KG uncorrected	=	2,11
Corr. for free surfaces	=	0
KG in inclining condition	=	2,11

KB 1,484

Dist. G-AP

B_0–G = $\frac{Tr. \cdot tm/cm}{Displ.}$	=	
Ø – B_0 (curves)	=	
Ø – G	=	
G – AP	=	

Corrections: Weights to be deducted or added (attached specification)

	Weight t	C.G.-BL	Mom-BL	C.G.-AP	Mom-AP
Ship in inclining condition					
Weights to be deducted	0				
Weights to be added	0				
Lightweight					

Remarks:
5 mand ombord w/ [illegible]
BRO-tank fuld

FORSØGET AFHOLDT EFTER SKROGREP., UDSKIFTNING AF MASTER & DÆKSSPIL, UD- & INDTAGNING AF BALAST. 5,8T UD; CA 3T IND + 1,3T IND = 4,3T

Attending surveyor: [signature]
Signature
E. Lyngbye

Person in charge: [signature]
Signature