Ship Consulting Ltd

16 September, 2013

HARALD

TRIM AND

STABILITY

Ship Consulting Ltd Oy
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TraFi **Liikenteen turvallisuusvirasto**
Trafiksäkerhetsverket

PÄÄTÖS

Päiväys/Datum 27.09.2013

Dnro/Dnr FI 70/600/2013

Viite/Referens Kirje 17.09.2013

Alfons Håkans Oy Ab
Linnankatu 36 C
20100 Turku

Hinaajan kallistuskoeraportin ja vakavuustietojen hyväksyminen

Hakija

Ship Consulting Ltd Oy

Alus

Hinaaja Harald OIWX

Hakemus

Hinaaja Haraldin kallistuskoepöytäkirjan ja vakavuuslaskelmien hyväksyminen.

Päätös

Liikenteen turvallisuusvirasto hyväksyy edellä mainittujen selvitysten perusteella aluksen kallistuskokeen ja vakavuuslaskelmat.

Perustelut

Vakavuuslaskelmat perustuvat 21.08.2013 suoritetun kallistuskokeen tulokseen.

Päätökseen liittyvät ehdot, rajoitukset ja huomautukset

Hinaavan aluksen vakavuus on laskettu kaavalla, joka sallii hinaajan avustaa omaa potkurikonetta käyttävää alusta, tai hinausta yhteistyössä toisen hinaajan kanssa.

Sovelletut säännökset

Laki alusten teknisestä turvallisuudesta ja turvallisesta käytöstä (1686/2009), 5 ja 75 §.
Trafin määräys alusten vakavuudesta TRAFI/18516/03.04.01.00/2012.

Päätöksestä perittävä maksu ja sen perusteet

600 euroa

Valtion maksuperustelaki (150/1992)
Liikenne- ja viestintäministeriön asetus Liikenteen turvallisuusviraston maksullisista suoritteista (420/2013), liite 1, kappale 10.1.3

Muutoksenhaku

Tähän päätökseen tyytymätön saa hakea siihen oikaisua Liikenteen turvallisuusvirastolta. Ohje oikaisuvaatimuksen tekemiseen on tämän päätöksen liitteenä.

Lisätietoja päätöksestä antaa

Jussi Salminen, puh. 029 5345294, sähköposti jussi.salminen@trafi.fi

Jussi Salminen
ylitarkastaja

Liitteet

Hyväksytyt laskelmat
Oikaisuvaatimusohje

Liite
Liikenteen turvallisuusviraston
päätökseen

TraFi

OIKAISUVAATIMUSOHJE

Oikaisuvaatimuksen käsittelevä viranomainen

Tähän päätökseen tyytymätön saa hakea siihen oikaisua Liikenteen turvallisuusvirastolta.

Määräaika

Oikaisuvaatimus on tehtävä 30 päivän kuluessa päätöksen tiedoksisaantipäivästä, sitä päivää lukuun ottamatta. Oikaisuvaatimus on kuitenkin tehtävä 14 päivän kuluessa siitä päivästä, jona päällikkö tai laivanisäntä on saanut tiedon alusturvallisuuden valvonnasta annetun lain (370/1995) 14 tai 14 b §:ssä tarkoitetusta pysäyttämispäätöksestä tai 14 c–14 h §:ssä tarkoitetusta satamaan pääsyn epäämismääräyksestä. Jos määräajan viimeinen päivä on lauantai, pyhäpäivä, itsenäisyyspäivä, vapunpäivä, joulu-aatto tai juhannusaatto, määräaika jatkuu vielä seuraavan arkipäivän.

Postitse tavallisena kirjeenä lähetetty päätös katsotaan saadun tiedoksi seitsemäntenä päivänä kirjeen lähettämisestä, jollei muuta näytetä. Viranomaisen tietoon päätös katsotaan kuitenkin tulleen kirjeen saapumispäivänä. Sähköisesti tiedoksiannettu päätös katsotaan saadun tiedoksi, kun asianosainen tai tämän edustaja on noutanut asiakirjan Liikenteen turvallisuusviraston osoittamalta palvelimelta. Muissa tapauksissa tiedoksisaantipäivän osoittaa tiedoksianto- tai saantitodistus. Milloin kysymyksessä on sijaistiedoksianto, päätös katsotaan saadun tiedoksi, jollei muuta näytetä, kolmantena päivänä tiedoksiantotodistuksen osoittamasta päivästä.

Oikaisuvaatimuksen muoto ja sisältö

Oikaisuvaatimus on tehtävä kirjallisesti ja se osoitetaan Liikenteen turvallisuusvirastolle. Oikaisuvaatimuksessa on ilmoitettava:

- vaatimuksen esittäjän nimi ja kotikunta (tai yhteisön kotipaikka),
- päätös, johon haetaan oikaisua, sekä se, millaista oikaisua vaaditaan ja millä perusteilla sitä vaaditaan, sekä
- postiosoite ja puhelinnumero, joihin asiaa koskevat ilmoitukset oikaisuvaatimuksen esittäjälle voidaan toimittaa.

Jos oikaisuvaatimuksen tekijän puhevaltaa käyttää hänen laillinen edustajansa tai asiamiehensä tai jos oikaisuvaatimuksen laatijana on joku muu henkilö, oikaisuvaatimuksessa on ilmoitettava myös tämän nimi ja kotikunta.

Oikaisuvaatimuksen tekijän, laillisen edustajan tai asiamiehen on allekirjoitettava oikaisuvaatimuskirjelmä. Sähköisestä allekirjoituksesta säädetään laissa 617/2009.

Oikaisuvaatimuskirjelmän liitteet

Oikaisuvaatimukseen on liitettävä:

- päätös, johon muutosta haetaan, alkuperäisenä tai jäljennöksenä,
- todistus siitä, minä päivänä päätös on annettu tiedoksi, tai muu selvitys määräajan alkamisajankohdasta,
- asiakirjat, joihin oikaisuvaatimuksen tekijä vetoaa vaatimuksensa tueksi, jollei niitä ole jo aikaisemmin toimitettu Liikenteen turvallisuusvirastolle, sekä
- asiamiehen valtakirja, jollei hän ole asianajaja tai yleinen oikeusavustaja.

Oikaisuvaatimuksen toimittaminen perille

Oikaisuvaatimus on toimitettava määräajan kuluessa Liikenteen turvallisuusvirastolle. Oikaisuvaatimuksen tulee olla perillä määräajan viimeisenä päivänä ennen viraston aukioloajan päättymistä. Liikenteen turvallisuusviraston kirjaamon aukioloaika on kello 8.00 - 16.15. Oikaisuvaatimuksen voi toimittaa henkilökohtaisesti, postitse tai asiamiehen tai lähetin välityksellä. Oikaisuvaatimuksen lähettäminen postitse tai sähköisesti tapahtuu lähettäjän omalla vastuulla. Sähköisestä asioinnista säädetään laissa sähköisestä asioinnista viranomaistoiminnassa (13/2003).

Liikenteen turvallisuusviraston yhteystiedot

Postiosoite:	PL 320, 00101 Helsinki
Käyntiosoite:	Kumpulantie 9, 00520 Helsinki
Puhelin:	029 534 5000
Faksi:	029 534 5095
Sähköposti:	kirjaamo@trafi.fi

PÄÄTÖKSESTÄ PERITTÄVÄÄ MAKSUA KOSKEVA MUUTOKSENHAKU

Maksuvelvollinen, joka katsoo, että tästä päätöksestä perittävän maksun määräämisessä on tapahtunut virhe, voi vaatia siihen oikaisua Liikenteen turvallisuusvirastolta kuuden kuukauden kuluessa maksun määräämisestä. Maksua koskevaa oikaisuvaatimusta tehtäessä tulee soveltuvin osin noudattaa edellä selostettuja oikaisuvaatimusta koskevia ohjeita.

16 September, 2013

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Contents

Appendix:

Ice load calculations
Inclining test report

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Ship Consulting Ltd

SHIP'S NAME: Harald

FLAG STATE: Finland

OWNER: Alfons Håkans

MAIN DIMENSIONS:

Length pp	27.70 m
Breadth max	8.10 m
Draught	3.80 m

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GENERAL

This Trim and Stability booklet contain some sample loading conditions.

Towing hook criterions has been shown on page 52.

All door and hatches on main deck MUST be closed and secured at sea. The stability tables (MS) assume that these doors are watertight.

Bilges shall be kept pumped minimum content at all times.

Calculations have been done by using seawater density 1.005 t/m^3.

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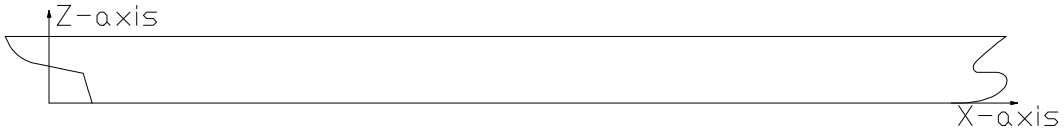
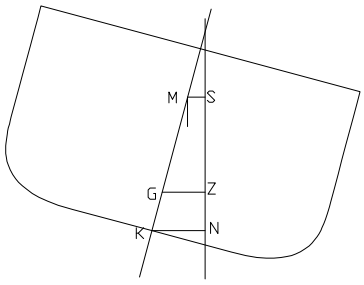
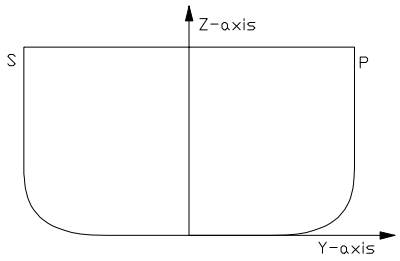
SYMBOLIT / SYMBOLS

L/2	On sama kuin Lpp/2 (-/+ = perä/keula) / Denotes Lpp/2 (-/+ = aft/forw.)
BL	Peruslinja / Base line
CL	Keskilinja / Center line
TM	Keskisyväys / Mean draught
TFP	Syväys keulaperpendikkelissä / Draught at fore perpendicular
TAP	Syväys peräperpendikkelissä / Draught at aft perpendicular
Tr	Trimmi (-/+ = perä/keula) / Trim (-/+ = stern/head)
KM	Kohtisuora etäisyys peruslinjasta alkuvaintokeskukseen / Vertical distance from base line to transverse metacentre
KG	Painopisteen korkeus peruslinjasta / Centre of gravity above base line
GM0	Alkuvaihtokeskuskorkeus / Transverse metacentric height
GMcorr	GM:n vapaan nestepinnankorjaus / Free surface correction of GM
GM	Korjattu GM / Corrected GM
GZ	Oikaiseva momentti / Righting lever
dGZ	GZ:n vapaan nestepinnankorjaus / Free surface correction of GZ
phi	Kallistuman kulma / Angle of inclination
e(phi)	Dynaaminen vakavuuskäyrä / Dynamic lever
MFS	Vapaasta nestepinnasta aiheutuva momentti / Moment of free liquid surface
L.C.G.=cgx	Pituussuuntainen painopiste vertailupisteestä / Longitudinal centre of gravity from reference point
T.C.G.=cgy	Poikittainen painopiste keskilinjasta / Transversal centre of gravity from CL
V.C.G.=cgz	Korkeussuuntainen painopiste peruslinjasta / Vertical centre of gravity from BL
SWBM	Tyynenveden taivutusmomentti / Still water bending moment
RHO=DENS	Tiheys / Density







GZ = KN – KG*SIN(phi)
GZ = MS + GM*SIN(phi)
MS = KN - KM*SIN(phi)

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Email vm.junnila@shipcons.inet.fi

REFERENCE POINT 13.85 M FORWARD FROM FRAME

CAPACITY OF Ballast Water RHO=1.005 TON/M3

name	comp. description	net volume m3	mass load t	CENTRES OF GRAVITY cgx of volume m	cgy of volume m	cgz of volume m	Max. IY of surface m4
T1	BW AFT PEAK	42.5	42.7	-12.27	0.00	3.91	73.02
T4P	BW PS 2	8.8	8.9	3.58	1.24	2.00	5.79
T4S	BW SB 2	8.8	8.9	3.58	-1.24	2.00	5.79
T5P	BW PS 1	6.0	6.1	5.76	0.86	2.09	2.90
T5S	BW SB 1	6.0	6.1	5.76	-0.86	2.09	2.90
T6	BW FORE PEAK	12.4	12.4	9.03	0.00	3.19	13.86
TOTAL OF Ballast Water		84.6	85.1	-3.28	0.00	3.15	

CAPACITY OF Fresh Water RHO=1 TON/M3

name	comp. description	net volume m3	mass load t	CENTRES OF GRAVITY cgx of volume m	cgy of volume m	cgz of volume m	Max. IY of surface m4
T3P	FW TK PS	5.5	5.5	2.04	1.46	1.96	4.08
T3S	FW TK 3S	5.5	5.5	2.04	-1.46	1.96	4.08
TOTAL OF Fresh Water		10.9	10.9	2.04	0.00	1.96	

CAPACITY OF Diesel Oil RHO=0.86 TON/M3

name	comp. description	net volume m3	mass load t	CENTRES OF GRAVITY cgx of volume m	cgy of volume m	cgz of volume m	Max. IY of surface m4
T2P	DO PS	14.2	12.2	-8.72	2.46	3.78	2.88
T2S	DO SB	15.7	13.5	-8.55	-2.49	3.82	3.43
T7	DO DAY TANK	1.4	1.2	-6.83	2.81	4.26	0.48
TOTAL OF Diesel Oil		31.3	26.9	-8.55	0.00	3.82	

LOADING CONDITION LC0, LIGHTSHIP

L O A D I N G C O M P O N E N T S

Deadweight	0.0	0.00	0.00	0.00	0.0
Lightweight	257.0	11.19	0.00	3.96	
Displacement (rho=1.005)	257.0	11.19	0.00	3.96	0.0

F L O A T I N G P O S I T I O N

Draught moulded	3.232	m	KM	4.60 m
Trim	-1.157	m	KG	3.96 m
Heel, PS=+	0.0	deg		
TA	3.810	m	GM0	0.65 m
TF	2.653	m	GMCORR	0.00 m
Trimming moment	-219	tonm	GM	0.65 m

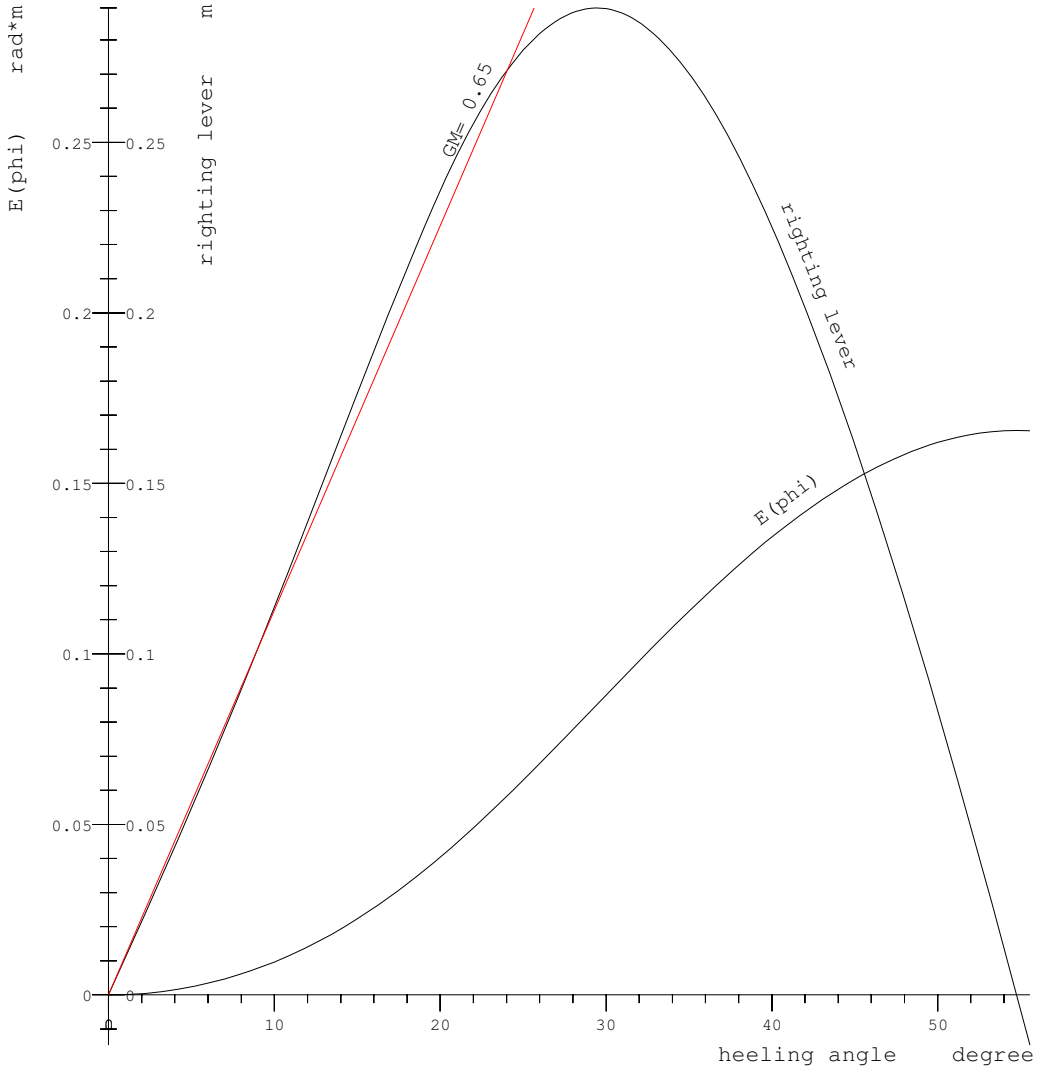
HEEL degree	MS m	HPHI m	EPHI rad*m	FSMOM tm	DGZ m
0.0	0.000	0.00	0.000	0.0	0.000
10.0	0.002	0.11	0.010	0.0	0.000
20.0	0.015	0.24	0.040	0.0	0.000
30.0	-0.034	0.29	0.088	0.0	0.000
40.0	-0.190	0.23	0.134	0.0	0.000
50.0	-0.411	0.08	0.162	0.0	0.000
60.0	-0.657	-0.10	0.161	0.0	0.000

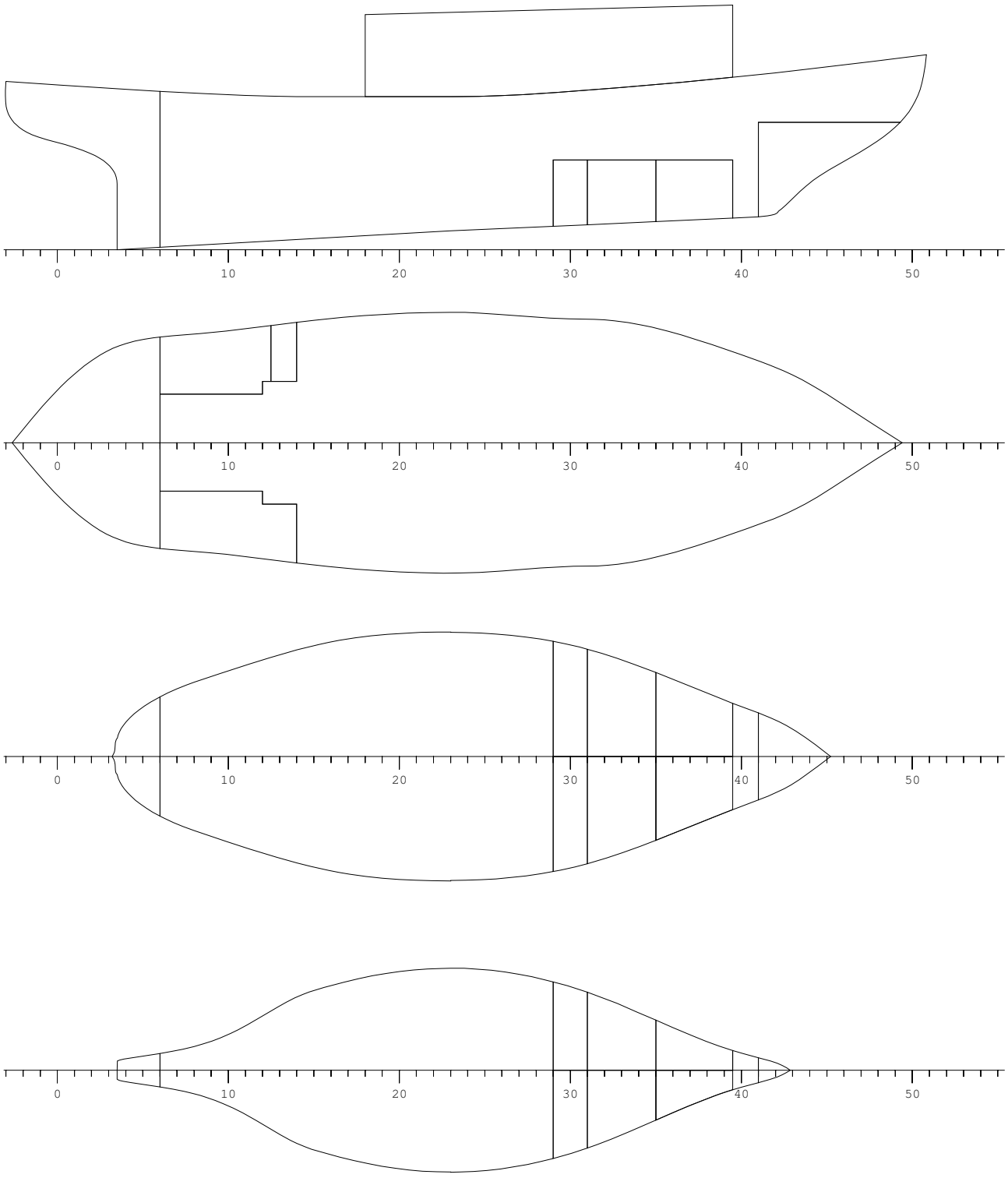
Loading condition: LIGHTSHIP

RCR	TEXT	REQ	ATTV	UNIT	STAT
AREA30	Area under GZ curve .	0.055	0.088	mrad	OK
AREA40	Area under GZ curve .	0.090	0.134	mrad	OK
AREA3040	Area under GZ curve .	0.030	0.046	mrad	OK
GZ0.2	Max GZ > 0.2	0.200	0.289	m	OK
MAXGZ25	Max. GZ at an angle .	25.000	29.452	deg	OK
GM0.15	GM > 0.15 m	0.150	0.646	m	OK

STABILITY CURVES

PROJECT	P322/A
DATE	2013-09-16
CONDITION	LC0
DISP.	257 TON
DRAUGHT	3.23 M
TRIM	-1.16

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LOADING CONDITION LC1, 100% STORES, DEPARTURE COND.

L O A D I N G C O M P O N E N T S

Name		Max. weight	Mass	Center of gravity cgx	cgy	cgz	Free s. moment
Diesel Oil, RHO=0.860							
T2P	DO PS	11.6	11.4	5.17	2.45	3.70	2.3
T2S	DO SB	12.8	12.5	5.34	-2.48	3.75	2.8
T7	DO DAY TANK	1.2	0.6	7.03	2.79	4.00	0.3
Total of DO		25.6	24.5	5.30	-0.06	3.74	5.5
Ballast Water, RHO=1.025							
T4P	BW PS 2	9.0	8.6	17.43	1.22	1.96	5.6
T4S	BW SB 2	9.0	8.6	17.43	-1.22	1.96	5.6
T5P	BW PS 1	6.2	5.9	19.61	0.85	2.06	2.8
T5S	BW SB 1	6.2	5.9	19.61	-0.85	2.06	2.8
T6	BW FORE PEAK	12.7	12.1	22.86	0.00	3.15	13.1
Total of BW		43.2	41.0	19.65	0.00	2.34	29.8
Fresh Water, RHO=1.000							
T3P	FW TK PS	5.2	5.1	15.89	1.44	1.90	3.9
T3S	FW TK 3S	5.2	5.1	15.89	-1.44	1.90	3.9
Total of FW		10.4	10.2	15.89	0.00	1.90	7.7
CREW&STORES							
(CREW.		0.0	0.5	17.50	0.00	6.70	0.0
Deadweight			76.2	14.52	-0.02	2.76	43.0
Lightweight			257.0	11.19	0.00	3.96	
Displacement (rho=1.005)			333.2	11.95	-0.00	3.68	43.0

F L O A T I N G P O S I T I O N

Draught moulded	3.803	m	KM	4.57 m
Trim	-0.083	m	KG	3.68 m
Heel, PS=+	-0.4	deg		
TA	3.845	m	GM0	0.89 m
TF	3.762	m	GMCORR	-0.13 m
Trimming moment	-20	tonm	GM	0.76 m

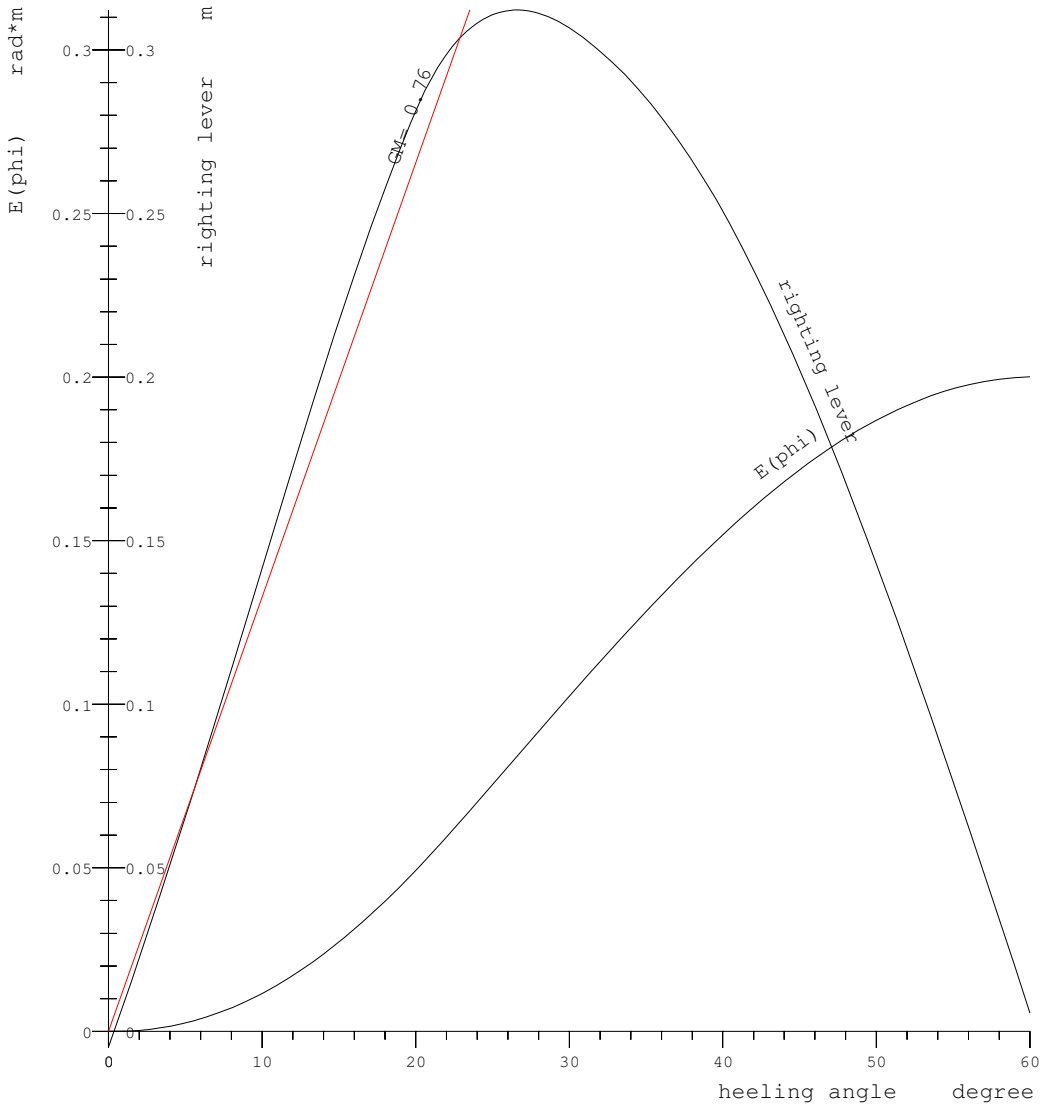
HEEL degree	MS m	HPHI m	EPHI rad*m	FSMOM tm	DGZ m
0.0	-0.005	-0.00	0.000	0.0	0.000
10.0	-0.001	0.14	0.012	3.9	0.012
20.0	-0.009	0.28	0.049	4.7	0.014
30.0	-0.124	0.31	0.102	4.8	0.015
40.0	-0.307	0.25	0.152	4.7	0.014
50.0	-0.525	0.14	0.187	4.4	0.013
60.0	-0.753	0.01	0.200	3.9	0.012

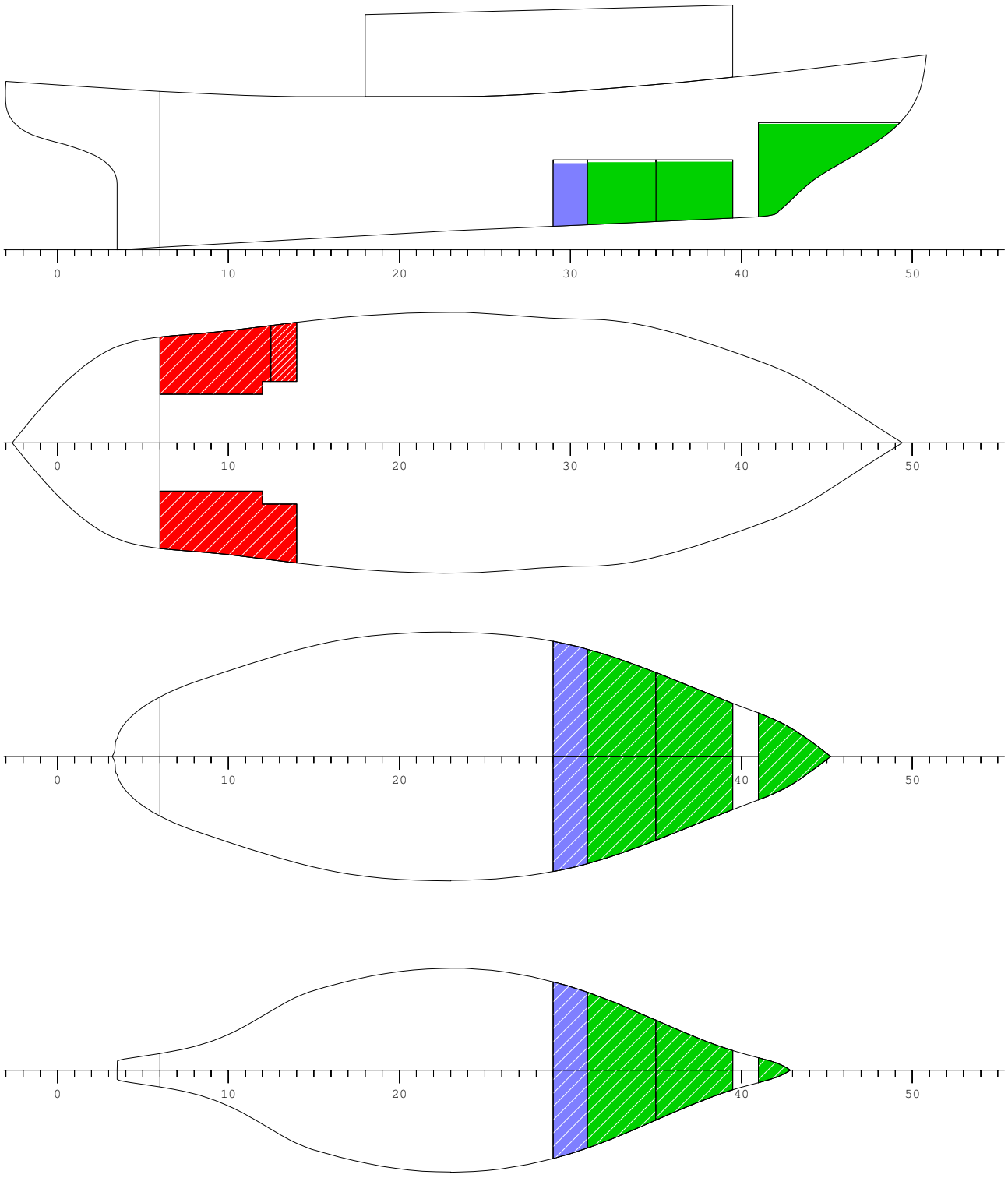
Loading condition: 100% STORES, DEPARTURE COND.

RCR	TEXT	REQ	ATTV	UNIT	STAT
AREA30	Area under GZ curve .	0.055	0.102	mrad	OK
AREA40	Area under GZ curve .	0.090	0.152	mrad	OK
AREA3040	Area under GZ curve .	0.030	0.049	mrad	OK
GZ0.2	Max GZ > 0.2	0.200	0.307	m	OK
MAXGZ25	Max. GZ at an angle .	25.000	26.619	deg	OK
GM0.15	GM > 0.15 m	0.150	0.761	m	OK

STABILITY CURVES

PROJECT	P322/A
DATE	2013-09-16
CONDITION	LC1
DISP.	333 TON
DRAUGHT	3.8 M
TRIM	-0.08

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LOADING CONDITION LC2, 50% STORES

L O A D I N G C O M P O N E N T S

Name	Max. weight	Mass	Center of gravity cgx	cgy	cgz	Free s. moment
Diesel Oil, RHO=0.860						
T2P DO PS	11.6	5.8	5.40	2.39	3.22	1.9
T2S DO SB	12.8	6.4	5.39	-2.40	3.27	2.0
T7 DO DAY TANK	1.2	0.6	7.03	2.79	4.00	0.3
Total of DO	25.6	12.8	5.47	0.01	3.28	4.2
Ballast Water, RHO=1.025						
T4P BW PS 2	9.0	8.6	17.43	1.22	1.96	5.6
T4S BW SB 2	9.0	8.6	17.43	-1.22	1.96	5.6
T5P BW PS 1	6.2	5.9	19.61	0.85	2.06	2.8
T5S BW SB 1	6.2	5.9	19.61	-0.85	2.06	2.8
T6 BW FORE PEAK	12.7	8.0	22.73	0.00	2.86	8.0
Total of BW	43.2	36.9	19.27	0.00	2.19	24.7
Fresh Water, RHO=1.000						
T3P FW TK PS	5.2	2.6	15.89	1.22	1.49	2.5
T3S FW TK 3S	5.2	2.6	15.89	-1.22	1.49	2.5
Total of FW	10.4	5.2	15.89	0.00	1.49	5.0
CREW&STORES						
(CREW.	0.0	0.5	17.50	0.00	6.70	0.0
Deadweight		55.4	15.75	0.00	2.41	33.9
Lightweight		257.0	11.19	0.00	3.96	
Displacement (rho=1.005)		312.4	12.00	0.00	3.68	33.9

F L O A T I N G P O S I T I O N

Draught moulded	3.680	m	KM	4.56 m
Trim	-0.028	m	KG	3.68 m
Heel, PS=+	0.0	deg		
TA	3.694	m	GM0	0.88 m
TF	3.666	m	GMCORR	-0.11 m
Trimming moment	-6	tonm	GM	0.77 m

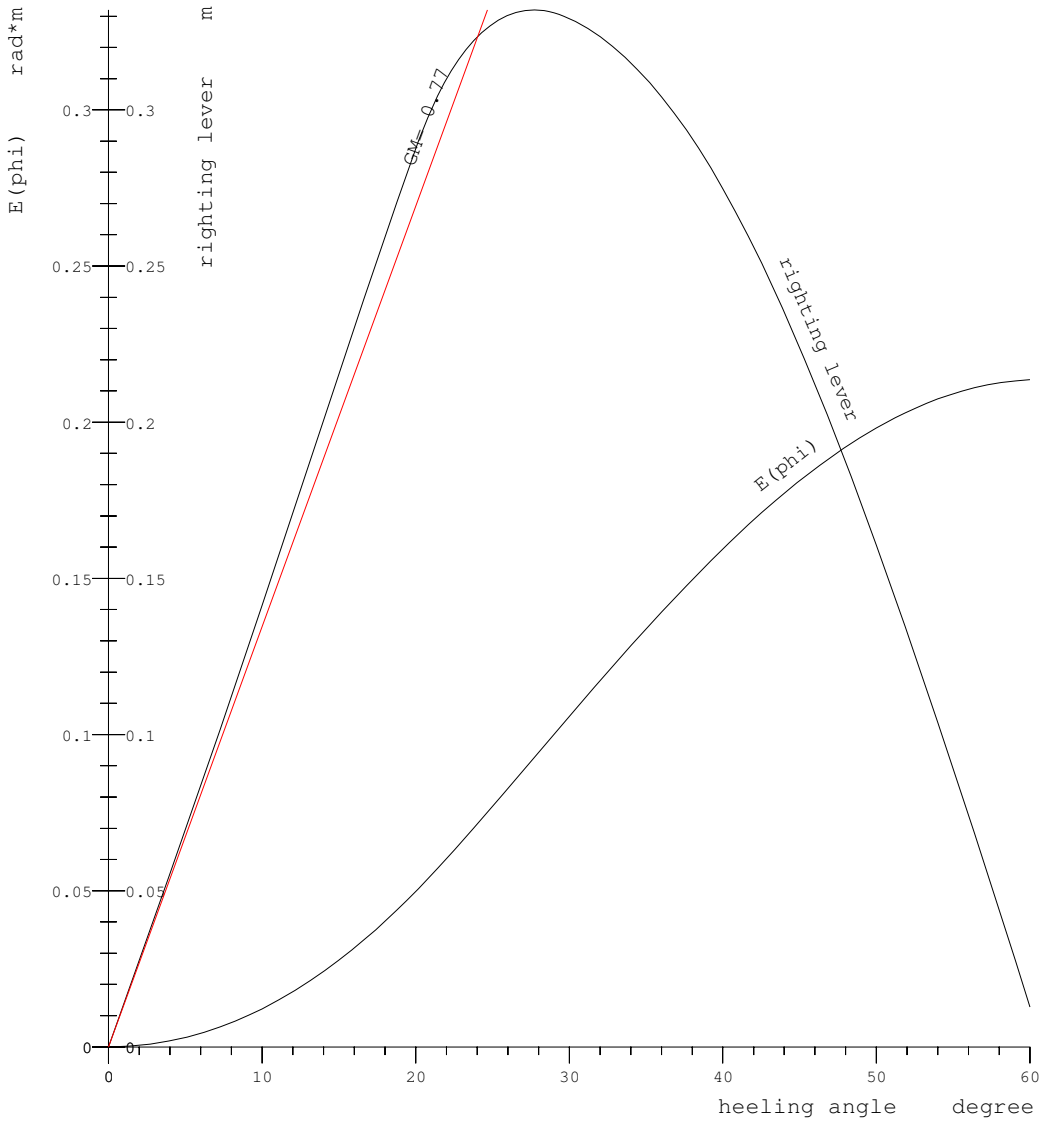
HEEL degree	MS m	HPHI m	EPHI rad*m	FSMOM tm	DGZ m
0.0	0.000	0.00	0.000	0.0	0.000
10.0	0.003	0.14	0.012	4.4	0.014
20.0	0.011	0.29	0.050	7.4	0.024
30.0	-0.079	0.33	0.106	9.8	0.031
40.0	-0.253	0.27	0.159	11.7	0.037
50.0	-0.471	0.16	0.198	13.2	0.042
60.0	-0.704	0.01	0.214	13.9	0.044

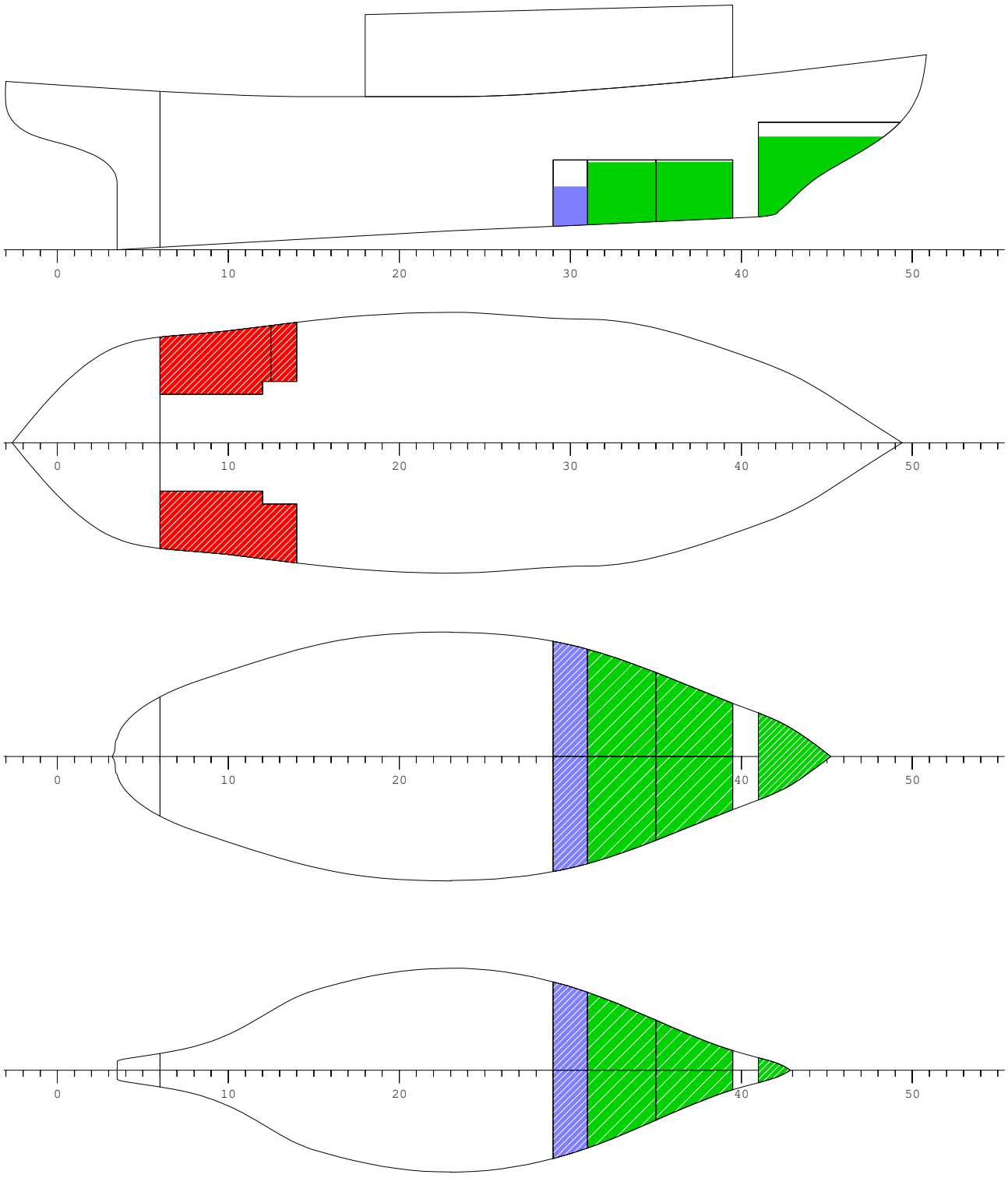
Loading condition: 50% STORES

RCR	TEXT	REQ	ATTV	UNIT	STAT
AREA30	Area under GZ curve .	0.055	0.106	mrad	OK
AREA40	Area under GZ curve .	0.090	0.159	mrad	OK
AREA3040	Area under GZ curve .	0.030	0.054	mrad	OK
GZ0.2	Max GZ > 0.2	0.200	0.329	m	OK
MAXGZ25	Max. GZ at an angle .	25.000	27.723	deg	OK
GM0.15	GM > 0.15 m	0.150	0.771	m	OK

STABILITY CURVES

PROJECT	P322/A
DATE	2013-09-16
CONDITION	LC2
DISP.	312 TON
DRAUGHT	3.68 M
TRIM	-0.03

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LOADING CONDITION LC3, 10% STORES, ARRIVAL COND.

L O A D I N G C O M P O N E N T S

Name	Max. weight	Mass	Center of gravity cgx	cgy	cgz	Free s. moment
Diesel Oil, RHO=0.860						
T2P DO PS	11.6	1.2	5.50	2.27	2.78	1.1
T2S DO SB	12.8	1.3	5.49	-2.28	2.79	1.1
T7 DO DAY TANK	1.2	0.6	7.03	2.79	4.00	0.3
Total of DO	25.6	3.0	5.79	0.45	3.02	2.5
Ballast Water, RHO=1.025						
T4P BW PS 2	9.0	8.7	17.43	1.23	1.97	5.7
T4S BW SB 2	9.0	8.7	17.43	-1.23	1.97	5.7
T5P BW PS 1	6.2	6.0	19.61	0.85	2.07	2.8
T5S BW SB 1	6.2	6.0	19.61	-0.85	2.07	2.8
Total of BW	30.5	29.4	18.32	0.00	2.01	16.9
Fresh Water, RHO=1.000						
T3P FW TK PS	5.2	1.0	15.88	0.92	1.17	1.3
T3S FW TK 3S	5.2	1.0	15.88	-0.92	1.17	1.3
Total of FW	10.4	2.0	15.88	0.00	1.17	2.5
CREW&STORES						
(CREW.	0.0	0.5	17.50	0.00	6.70	0.0
Deadweight		34.9	17.08	0.04	2.12	22.0
Lightweight		257.0	11.19	0.00	3.96	
Displacement (rho=1.005)		291.9	11.89	0.00	3.74	22.0

F L O A T I N G P O S I T I O N

Draught moulded	3.540	m	KM	4.56 m
Trim	-0.183	m	KG	3.74 m
Heel, PS=+	0.4	deg		
TA	3.631	m	GM0	0.82 m
TF	3.448	m	GMCORR	-0.08 m
Trimming moment	-39	tonm	GM	0.75 m

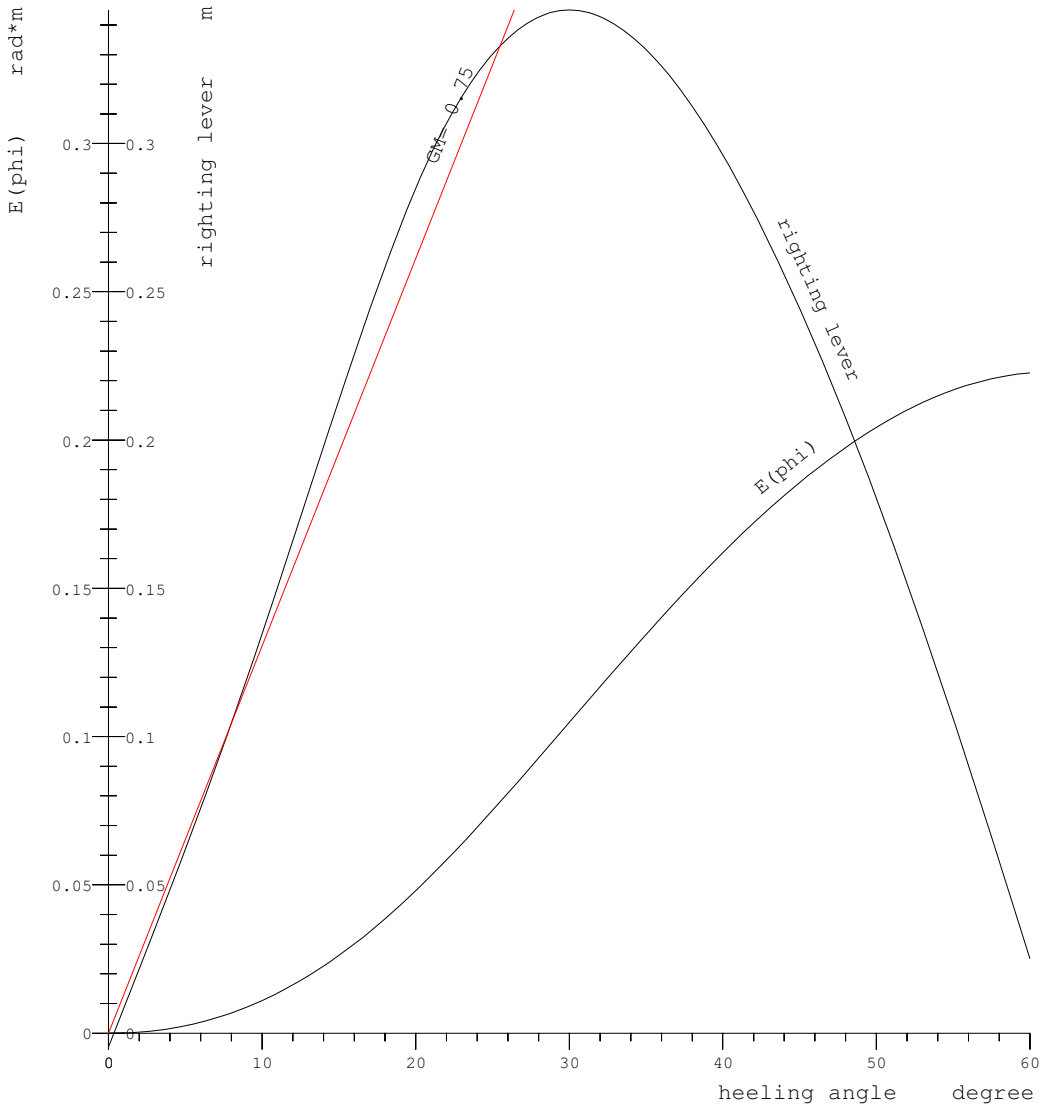
HEEL degree	MS m	HPHI m	EPHI rad*m	FSMOM tm	DGZ m
0.0	-0.005	-0.00	0.000	0.0	0.000
10.0	-0.001	0.13	0.011	2.0	0.007
20.0	0.014	0.28	0.048	3.1	0.011
30.0	-0.053	0.35	0.105	4.1	0.014
40.0	-0.217	0.30	0.162	4.8	0.016
50.0	-0.433	0.18	0.204	5.0	0.017
60.0	-0.671	0.03	0.223	5.0	0.017

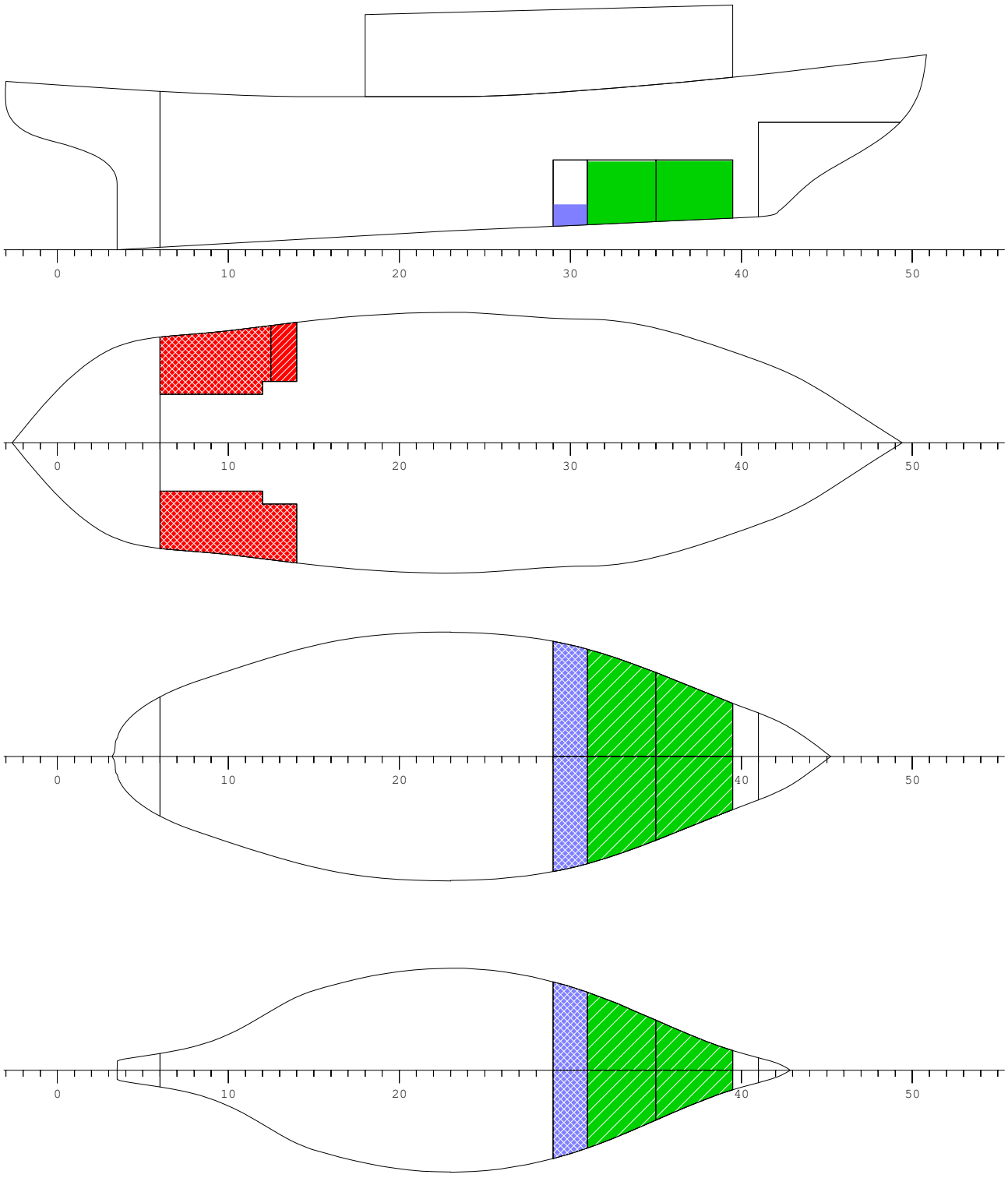
Loading condition: 10% STORES, ARRIVAL COND.

RCR	TEXT	REQ	ATTV	UNIT	STAT
AREA30	Area under GZ curve .	0.055	0.105	mrad	OK
AREA40	Area under GZ curve .	0.090	0.162	mrad	OK
AREA3040	Area under GZ curve .	0.030	0.057	mrad	OK
GZ0.2	Max GZ > 0.2	0.200	0.345	m	OK
MAXGZ25	Max. GZ at an angle .	25.000	30.007	deg	OK
GM0.15	GM > 0.15 m	0.150	0.748	m	OK

STABILITY CURVES

PROJECT	P322/A
DATE	2013-09-16
CONDITION	LC3
DISP.	292 TON
DRAUGHT	3.54 M
TRIM	-0.18

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LOADING CONDITION LC4, 10% STORES WITH ICE LOAD

L O A D I N G C O M P O N E N T S

Name	Max. weight	Mass	Center of gravity cgx	cgy	cgz	Free s. moment
Diesel Oil, RHO=0.860						
T2P DO PS	11.6	1.2	5.50	2.27	2.78	1.1
T2S DO SB	12.8	1.3	5.49	-2.28	2.79	1.1
T7 DO DAY TANK	1.2	0.6	7.03	2.79	4.00	0.3
Total of DO	25.6	3.0	5.79	0.45	3.02	2.5
Ballast Water, RHO=1.025						
T4P BW PS 2	9.0	8.7	17.43	1.23	1.97	5.7
T4S BW SB 2	9.0	8.7	17.43	-1.23	1.97	5.7
T5P BW PS 1	6.2	6.0	19.61	0.85	2.07	2.8
T5S BW SB 1	6.2	6.0	19.61	-0.85	2.07	2.8
Total of BW	30.5	29.4	18.32	0.00	2.01	16.9
Fresh Water, RHO=1.000						
T3P FW TK PS	5.2	1.0	15.88	0.92	1.17	1.3
T3S FW TK 3S	5.2	1.0	15.88	-0.92	1.17	1.3
Total of FW	10.4	2.0	15.88	0.00	1.17	2.5
CREW&STORES						
(CREW.	0.0	0.5	17.50	0.00	6.70	0.0
ICELOAD						
(ICEL.	0.0	4.8	14.82	0.00	6.01	0.0
Deadweight		39.8	16.81	0.03	2.59	22.0
Lightweight		257.0	11.19	0.00	3.96	
Displacement (rho=1.005)		296.8	11.94	0.00	3.77	22.0

F L O A T I N G P O S I T I O N

Draught moulded	3.575	m	KM	4.56 m
Trim	-0.115	m	KG	3.77 m
Heel, PS=+	0.4	deg		
TA	3.633	m	GM0	0.79 m
TF	3.518	m	GMCORR	-0.07 m
Trimming moment	-25	tonm	GM	0.71 m

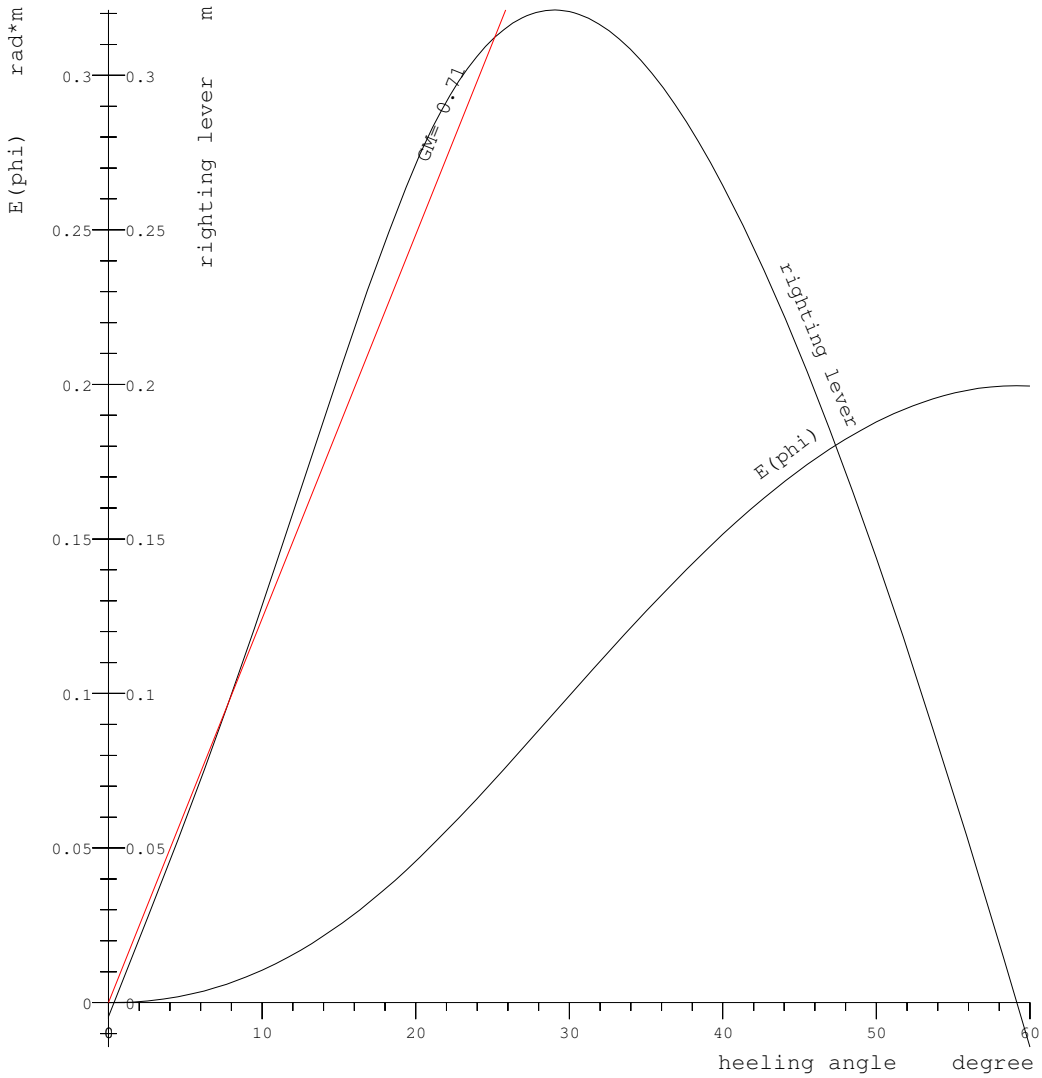
HEEL degree	MS m	HPHI m	EPHI rad*m	FSMOM tm	DGZ m
0.0	-0.005	-0.00	0.000	0.0	0.000
10.0	-0.001	0.13	0.010	2.0	0.007
20.0	0.013	0.27	0.046	3.1	0.010
30.0	-0.058	0.32	0.099	4.1	0.014
40.0	-0.225	0.26	0.151	4.8	0.016
50.0	-0.441	0.14	0.188	5.0	0.017
60.0	-0.678	-0.01	0.199	5.0	0.017

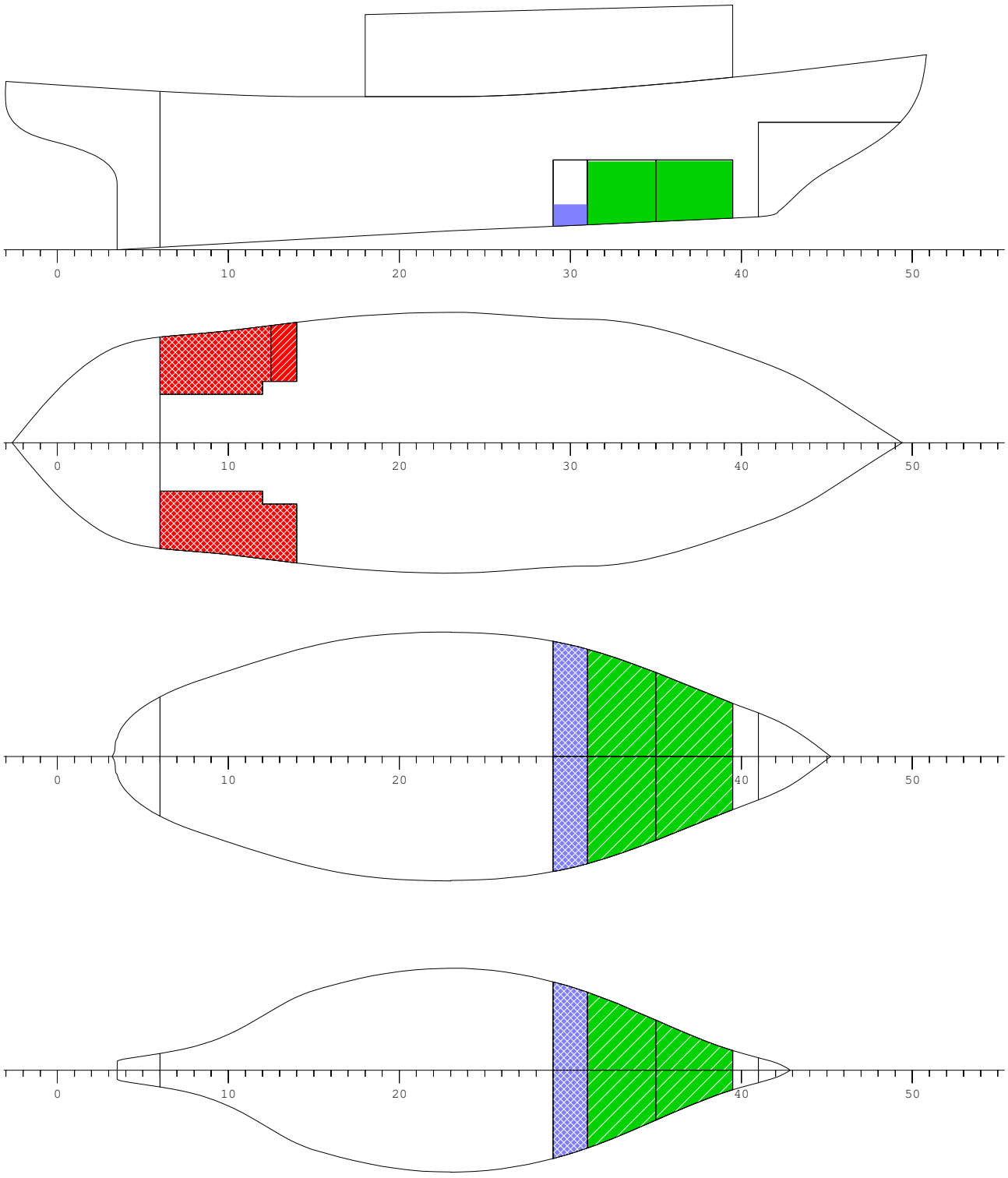
Loading condition: 10% STORES WITH ICE LOAD

RCR	TEXT	REQ	ATTV	UNIT	STAT
AREA30	Area under GZ curve .	0.055	0.099	mrad	OK
AREA40	Area under GZ curve .	0.090	0.152	mrad	OK
AREA3040	Area under GZ curve .	0.030	0.052	mrad	OK
GZ0.2	Max GZ > 0.2	0.200	0.321	m	OK
MAXGZ25	Max. GZ at an angle .	25.000	29.044	deg	OK
GM0.15	GM > 0.15 m	0.150	0.712	m	OK

STABILITY CURVES

PROJECT	P322/A
DATE	2013-09-16
CONDITION	LC4
DISP.	297 TON
DRAUGHT	3.58 M
TRIM	-0.12

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RESIDUARY STABILITY LEVER MS AS A FUNCTION OF DRAUGHT AND HEELING ANGLE
INITIAL TRIM: -1.00 M UNIT: m

INITIAL DRAUGHT	HEELING ANGLE (DEGREES) 0.0	5.0	10.0	15.0	20.0	30.0	40.0	50.0	60.0
3.200	0.000	0.000	0.002	0.006	0.015	-0.022	-0.171	-0.391	-0.637
3.250	0.000	0.000	0.002	0.007	0.016	-0.029	-0.183	-0.403	-0.649
3.300	0.000	0.000	0.002	0.007	0.016	-0.038	-0.196	-0.417	-0.662
3.350	0.000	0.000	0.002	0.008	0.016	-0.047	-0.210	-0.431	-0.675
3.400	0.000	0.000	0.002	0.008	0.015	-0.058	-0.225	-0.446	-0.688
3.450	0.000	0.000	0.002	0.009	0.012	-0.070	-0.241	-0.462	-0.703
3.500	0.000	0.000	0.003	0.009	0.008	-0.082	-0.257	-0.479	-0.718
3.550	0.000	0.000	0.003	0.010	0.004	-0.096	-0.275	-0.496	-0.733
3.600	0.000	0.000	0.003	0.010	-0.002	-0.111	-0.294	-0.515	-0.750
3.650	0.000	0.000	0.003	0.009	-0.009	-0.127	-0.313	-0.535	-0.767
3.700	0.000	0.000	0.003	0.007	-0.018	-0.143	-0.333	-0.555	-0.785
3.750	0.000	0.000	0.003	0.004	-0.027	-0.161	-0.355	-0.576	-0.803
3.800	0.000	0.000	0.004	-0.001	-0.038	-0.180	-0.377	-0.598	-0.823
3.850	0.000	0.000	0.004	-0.006	-0.050	-0.200	-0.400	-0.621	-0.843
3.900	0.000	0.000	0.004	-0.013	-0.062	-0.221	-0.424	-0.645	-0.864
3.950	0.000	0.000	0.003	-0.022	-0.077	-0.243	-0.449	-0.670	-0.887
4.000	0.000	0.000	0.000	-0.032	-0.092	-0.266	-0.475	-0.695	-0.910

RESIDUARY STABILITY LEVER MS AS A FUNCTION OF DRAUGHT AND HEELING ANGLE
INITIAL TRIM: -0.90 M UNIT: m

INITIAL DRAUGHT	HEELING ANGLE (DEGREES) 0.0	5.0	10.0	15.0	20.0	30.0	40.0	50.0	60.0
3.200	0.000	0.000	0.002	0.006	0.015	-0.017	-0.165	-0.383	-0.629
3.250	0.000	0.000	0.002	0.007	0.016	-0.024	-0.177	-0.395	-0.641
3.300	0.000	0.000	0.002	0.007	0.017	-0.033	-0.189	-0.409	-0.654
3.350	0.000	0.000	0.002	0.008	0.017	-0.042	-0.203	-0.423	-0.666
3.400	0.000	0.000	0.002	0.008	0.016	-0.052	-0.217	-0.438	-0.680
3.450	0.000	0.000	0.003	0.009	0.014	-0.064	-0.233	-0.453	-0.694
3.500	0.000	0.000	0.003	0.009	0.011	-0.076	-0.249	-0.470	-0.709
3.550	0.000	0.000	0.003	0.010	0.006	-0.090	-0.267	-0.487	-0.725
3.600	0.000	0.000	0.003	0.010	0.001	-0.104	-0.285	-0.506	-0.741
3.650	0.000	0.000	0.003	0.010	-0.006	-0.119	-0.304	-0.525	-0.758
3.700	0.000	0.000	0.003	0.008	-0.013	-0.135	-0.324	-0.545	-0.775
3.750	0.000	0.000	0.003	0.006	-0.022	-0.153	-0.345	-0.566	-0.794
3.800	0.000	0.000	0.004	0.002	-0.033	-0.171	-0.367	-0.588	-0.813
3.850	0.000	0.000	0.004	-0.003	-0.044	-0.191	-0.390	-0.610	-0.833
3.900	0.000	0.000	0.004	-0.010	-0.056	-0.211	-0.413	-0.634	-0.854
3.950	0.000	0.000	0.003	-0.018	-0.070	-0.233	-0.438	-0.658	-0.876
4.000	0.000	0.000	0.002	-0.027	-0.085	-0.256	-0.464	-0.683	-0.899

RESIDUARY STABILITY LEVER MS AS A FUNCTION OF DRAUGHT AND HEELING ANGLE
INITIAL TRIM: -0.80 M UNIT: m

INITIAL DRAUGHT	HEELING ANGLE (DEGREES) 0.0	5.0	10.0	15.0	20.0	30.0	40.0	50.0	60.0
3.200	0.000	0.000	0.002	0.006	0.015	-0.013	-0.158	-0.375	-0.621
3.250	0.000	0.000	0.002	0.007	0.016	-0.020	-0.170	-0.387	-0.633
3.300	0.000	0.000	0.002	0.007	0.017	-0.028	-0.182	-0.401	-0.646
3.350	0.000	0.000	0.002	0.008	0.018	-0.037	-0.196	-0.415	-0.658
3.400	0.000	0.000	0.002	0.008	0.017	-0.047	-0.210	-0.430	-0.672
3.450	0.000	0.000	0.003	0.009	0.015	-0.058	-0.225	-0.445	-0.686
3.500	0.000	0.000	0.003	0.009	0.013	-0.070	-0.241	-0.462	-0.701
3.550	0.000	0.000	0.003	0.010	0.009	-0.083	-0.259	-0.479	-0.716
3.600	0.000	0.000	0.003	0.010	0.004	-0.097	-0.277	-0.497	-0.732
3.650	0.000	0.000	0.003	0.010	-0.002	-0.112	-0.295	-0.516	-0.749
3.700	0.000	0.000	0.003	0.009	-0.010	-0.128	-0.315	-0.536	-0.767
3.750	0.000	0.000	0.003	0.007	-0.018	-0.145	-0.335	-0.556	-0.785
3.800	0.000	0.000	0.004	0.004	-0.028	-0.163	-0.357	-0.578	-0.804
3.850	0.000	0.000	0.004	-0.001	-0.039	-0.182	-0.380	-0.600	-0.824
3.900	0.000	0.000	0.004	-0.007	-0.051	-0.202	-0.403	-0.623	-0.844
3.950	0.000	0.000	0.004	-0.014	-0.064	-0.224	-0.427	-0.647	-0.866
4.000	0.000	0.000	0.003	-0.022	-0.078	-0.246	-0.453	-0.672	-0.888

RESIDUARY STABILITY LEVER MS AS A FUNCTION OF DRAUGHT AND HEELING ANGLE
INITIAL TRIM: -0.70 M UNIT: m

INITIAL DRAUGHT	HEELING ANGLE (DEGREES) 0.0	5.0	10.0	15.0	20.0	30.0	40.0	50.0	60.0
3.200	0.000	0.000	0.002	0.006	0.015	-0.010	-0.152	-0.367	-0.613
3.250	0.000	0.000	0.002	0.007	0.016	-0.016	-0.164	-0.380	-0.625
3.300	0.000	0.000	0.002	0.007	0.017	-0.023	-0.176	-0.393	-0.638
3.350	0.000	0.000	0.002	0.008	0.018	-0.032	-0.189	-0.407	-0.651
3.400	0.000	0.000	0.002	0.009	0.018	-0.042	-0.203	-0.422	-0.664
3.450	0.000	0.000	0.003	0.009	0.017	-0.053	-0.218	-0.437	-0.678
3.500	0.000	0.000	0.003	0.009	0.014	-0.064	-0.234	-0.454	-0.693
3.550	0.000	0.000	0.003	0.010	0.011	-0.077	-0.251	-0.471	-0.708
3.600	0.000	0.000	0.003	0.010	0.006	-0.091	-0.269	-0.489	-0.724
3.650	0.000	0.000	0.003	0.010	0.001	-0.106	-0.287	-0.507	-0.741
3.700	0.000	0.000	0.003	0.010	-0.006	-0.121	-0.306	-0.527	-0.758
3.750	0.000	0.000	0.003	0.008	-0.014	-0.138	-0.327	-0.547	-0.776
3.800	0.000	0.000	0.004	0.005	-0.024	-0.156	-0.348	-0.568	-0.795
3.850	0.000	0.000	0.004	0.001	-0.034	-0.174	-0.370	-0.590	-0.815
3.900	0.000	0.000	0.004	-0.004	-0.045	-0.194	-0.393	-0.613	-0.835
3.950	0.000	0.000	0.004	-0.011	-0.058	-0.215	-0.417	-0.637	-0.856
4.000	0.000	0.000	0.003	-0.019	-0.072	-0.237	-0.442	-0.662	-0.878

RESIDUARY STABILITY LEVER MS AS A FUNCTION OF DRAUGHT AND HEELING ANGLE
INITIAL TRIM: -0.60 M UNIT: m

INITIAL DRAUGHT	HEELING ANGLE (DEGREES) 0.0	5.0	10.0	15.0	20.0	30.0	40.0	50.0	60.0
3.200	0.000	0.000	0.002	0.006	0.015	-0.007	-0.146	-0.360	-0.605
3.250	0.000	0.000	0.002	0.007	0.016	-0.012	-0.157	-0.373	-0.617
3.300	0.000	0.000	0.002	0.008	0.017	-0.019	-0.170	-0.386	-0.630
3.350	0.000	0.000	0.002	0.008	0.018	-0.027	-0.183	-0.400	-0.643
3.400	0.000	0.000	0.003	0.009	0.018	-0.037	-0.196	-0.414	-0.657
3.450	0.000	0.000	0.003	0.009	0.018	-0.047	-0.211	-0.430	-0.671
3.500	0.000	0.000	0.003	0.010	0.016	-0.059	-0.227	-0.446	-0.685
3.550	0.000	0.000	0.003	0.010	0.013	-0.072	-0.244	-0.463	-0.700
3.600	0.000	0.000	0.003	0.010	0.008	-0.085	-0.261	-0.481	-0.716
3.650	0.000	0.000	0.003	0.011	0.003	-0.099	-0.279	-0.499	-0.733
3.700	0.000	0.000	0.003	0.010	-0.003	-0.115	-0.298	-0.518	-0.750
3.750	0.000	0.000	0.003	0.009	-0.011	-0.131	-0.318	-0.539	-0.768
3.800	0.000	0.000	0.004	0.007	-0.020	-0.149	-0.339	-0.559	-0.787
3.850	0.000	0.000	0.004	0.003	-0.029	-0.167	-0.361	-0.581	-0.806
3.900	0.000	0.000	0.004	-0.002	-0.041	-0.186	-0.384	-0.604	-0.826
3.950	0.000	0.000	0.004	-0.008	-0.053	-0.207	-0.408	-0.627	-0.847
4.000	0.000	0.000	0.004	-0.015	-0.066	-0.228	-0.432	-0.652	-0.869

RESIDUARY STABILITY LEVER MS AS A FUNCTION OF DRAUGHT AND HEELING ANGLE
INITIAL TRIM: -0.50 M UNIT: m

INITIAL DRAUGHT	HEELING ANGLE (DEGREES) 0.0	5.0	10.0	15.0	20.0	30.0	40.0	50.0	60.0
3.200	0.000	0.000	0.002	0.006	0.015	-0.004	-0.141	-0.354	-0.598
3.250	0.000	0.000	0.002	0.007	0.016	-0.009	-0.152	-0.366	-0.610
3.300	0.000	0.000	0.002	0.008	0.017	-0.016	-0.164	-0.379	-0.623
3.350	0.000	0.000	0.002	0.008	0.019	-0.023	-0.176	-0.393	-0.636
3.400	0.000	0.000	0.003	0.009	0.019	-0.032	-0.190	-0.407	-0.649
3.450	0.000	0.000	0.003	0.009	0.018	-0.043	-0.205	-0.423	-0.663
3.500	0.000	0.000	0.003	0.010	0.017	-0.054	-0.220	-0.439	-0.678
3.550	0.000	0.000	0.003	0.010	0.014	-0.066	-0.237	-0.456	-0.693
3.600	0.000	0.000	0.003	0.010	0.010	-0.079	-0.254	-0.473	-0.709
3.650	0.000	0.000	0.003	0.011	0.006	-0.094	-0.272	-0.491	-0.725
3.700	0.000	0.000	0.003	0.011	-0.000	-0.109	-0.291	-0.510	-0.742
3.750	0.000	0.000	0.003	0.010	-0.008	-0.125	-0.310	-0.530	-0.760
3.800	0.000	0.000	0.003	0.008	-0.016	-0.142	-0.331	-0.551	-0.779
3.850	0.000	0.000	0.004	0.005	-0.025	-0.160	-0.353	-0.573	-0.798
3.900	0.000	0.000	0.004	0.000	-0.036	-0.179	-0.375	-0.595	-0.818
3.950	0.000	0.000	0.004	-0.005	-0.048	-0.199	-0.399	-0.618	-0.839
4.000	0.000	0.000	0.004	-0.012	-0.061	-0.220	-0.423	-0.642	-0.860

RESIDUARY STABILITY LEVER MS AS A FUNCTION OF DRAUGHT AND HEELING ANGLE
INITIAL TRIM: -0.40 M UNIT: m

INITIAL DRAUGHT	HEELING ANGLE (DEGREES) 0.0	5.0	10.0	15.0	20.0	30.0	40.0	50.0	60.0
3.200	0.000	0.000	0.002	0.006	0.014	-0.001	-0.136	-0.347	-0.591
3.250	0.000	0.000	0.002	0.007	0.016	-0.006	-0.146	-0.359	-0.603
3.300	0.000	0.000	0.002	0.008	0.017	-0.012	-0.158	-0.372	-0.616
3.350	0.000	0.000	0.002	0.008	0.019	-0.020	-0.171	-0.386	-0.629
3.400	0.000	0.000	0.003	0.009	0.019	-0.028	-0.184	-0.401	-0.642
3.450	0.000	0.000	0.003	0.009	0.019	-0.038	-0.199	-0.416	-0.656
3.500	0.000	0.000	0.003	0.010	0.018	-0.049	-0.214	-0.432	-0.671
3.550	0.000	0.000	0.003	0.010	0.016	-0.061	-0.230	-0.449	-0.686
3.600	0.000	0.000	0.003	0.010	0.012	-0.074	-0.247	-0.466	-0.702
3.650	0.000	0.000	0.003	0.011	0.008	-0.088	-0.265	-0.484	-0.718
3.700	0.000	0.000	0.003	0.011	0.002	-0.103	-0.283	-0.503	-0.735
3.750	0.000	0.000	0.003	0.010	-0.005	-0.119	-0.303	-0.522	-0.753
3.800	0.000	0.000	0.004	0.009	-0.013	-0.136	-0.323	-0.543	-0.771
3.850	0.000	0.000	0.004	0.006	-0.022	-0.153	-0.345	-0.564	-0.790
3.900	0.000	0.000	0.004	0.002	-0.032	-0.172	-0.367	-0.587	-0.810
3.950	0.000	0.000	0.004	-0.003	-0.043	-0.192	-0.390	-0.610	-0.830
4.000	0.000	0.000	0.004	-0.009	-0.056	-0.212	-0.414	-0.634	-0.851

RESIDUARY STABILITY LEVER MS AS A FUNCTION OF DRAUGHT AND HEELING ANGLE
INITIAL TRIM: -0.30 M UNIT: m

INITIAL DRAUGHT	HEELING ANGLE (DEGREES) 0.0	5.0	10.0	15.0	20.0	30.0	40.0	50.0	60.0
3.200	0.000	0.000	0.002	0.007	0.015	0.002	-0.130	-0.340	-0.583
3.250	0.000	0.000	0.002	0.007	0.016	-0.004	-0.141	-0.353	-0.597
3.300	0.000	0.000	0.002	0.008	0.017	-0.009	-0.152	-0.366	-0.609
3.350	0.000	0.000	0.002	0.008	0.019	-0.016	-0.165	-0.380	-0.622
3.400	0.000	0.000	0.003	0.009	0.020	-0.024	-0.178	-0.394	-0.635
3.450	0.000	0.000	0.003	0.009	0.020	-0.034	-0.193	-0.409	-0.649
3.500	0.000	0.000	0.003	0.010	0.019	-0.045	-0.208	-0.425	-0.664
3.550	0.000	0.000	0.003	0.010	0.017	-0.056	-0.224	-0.442	-0.679
3.600	0.000	0.000	0.003	0.010	0.014	-0.069	-0.240	-0.459	-0.695
3.650	0.000	0.000	0.003	0.011	0.010	-0.083	-0.258	-0.477	-0.711
3.700	0.000	0.000	0.003	0.011	0.004	-0.098	-0.277	-0.495	-0.728
3.750	0.000	0.000	0.003	0.011	-0.002	-0.113	-0.296	-0.515	-0.746
3.800	0.000	0.000	0.004	0.009	-0.010	-0.130	-0.316	-0.535	-0.764
3.850	0.000	0.000	0.004	0.007	-0.018	-0.147	-0.337	-0.557	-0.783
3.900	0.000	0.000	0.004	0.003	-0.028	-0.166	-0.359	-0.579	-0.802
3.950	0.000	0.000	0.004	-0.001	-0.039	-0.185	-0.382	-0.602	-0.823
4.000	0.000	0.000	0.004	-0.007	-0.051	-0.205	-0.405	-0.625	-0.843

RESIDUARY STABILITY LEVER MS AS A FUNCTION OF DRAUGHT AND HEELING ANGLE
INITIAL TRIM: -0.20 M UNIT: m

INITIAL DRAUGHT	HEELING ANGLE (DEGREES) 0.0	5.0	10.0	15.0	20.0	30.0	40.0	50.0	60.0
3.200	0.000	0.000	0.002	0.006	0.015	0.004	-0.126	-0.335	-0.578
3.250	0.000	0.000	0.003	0.008	0.017	-0.000	-0.136	-0.346	-0.589
3.300	0.000	0.000	0.002	0.008	0.017	-0.007	-0.148	-0.361	-0.603
3.350	0.000	0.000	0.003	0.008	0.019	-0.013	-0.160	-0.374	-0.616
3.400	0.000	0.000	0.003	0.009	0.020	-0.021	-0.173	-0.388	-0.629
3.450	0.000	0.000	0.003	0.009	0.020	-0.030	-0.187	-0.403	-0.643
3.500	0.000	0.000	0.003	0.010	0.019	-0.040	-0.202	-0.418	-0.658
3.550	0.000	0.000	0.003	0.010	0.018	-0.052	-0.218	-0.435	-0.673
3.600	0.000	0.000	0.003	0.010	0.015	-0.064	-0.234	-0.452	-0.688
3.650	0.000	0.000	0.003	0.011	0.011	-0.078	-0.252	-0.470	-0.705
3.700	0.000	0.000	0.003	0.011	0.006	-0.093	-0.270	-0.489	-0.721
3.750	0.000	0.000	0.003	0.011	0.000	-0.108	-0.289	-0.508	-0.739
3.800	0.000	0.000	0.004	0.010	-0.007	-0.124	-0.309	-0.528	-0.757
3.850	0.000	0.000	0.004	0.008	-0.015	-0.142	-0.330	-0.549	-0.776
3.900	0.000	0.000	0.004	0.005	-0.025	-0.160	-0.352	-0.571	-0.795
3.950	0.000	0.000	0.004	0.000	-0.035	-0.179	-0.374	-0.594	-0.815
4.000	0.000	0.000	0.004	-0.005	-0.047	-0.199	-0.398	-0.617	-0.836

RESIDUARY STABILITY LEVER MS AS A FUNCTION OF DRAUGHT AND HEELING ANGLE
INITIAL TRIM: -0.10 M UNIT: m

INITIAL DRAUGHT	HEELING ANGLE (DEGREES) 0.0	5.0	10.0	15.0	20.0	30.0	40.0	50.0	60.0
3.200	0.000	0.000	0.001	0.006	0.014	0.005	-0.122	-0.330	-0.572
3.250	0.000	0.000	0.002	0.007	0.016	0.002	-0.132	-0.342	-0.584
3.300	0.000	0.000	0.003	0.008	0.018	-0.003	-0.142	-0.354	-0.595
3.350	0.000	0.000	0.003	0.008	0.019	-0.011	-0.155	-0.368	-0.610
3.400	0.000	0.000	0.003	0.009	0.020	-0.018	-0.168	-0.382	-0.623
3.450	0.000	0.000	0.003	0.009	0.020	-0.027	-0.182	-0.397	-0.637
3.500	0.000	0.000	0.003	0.010	0.020	-0.036	-0.196	-0.412	-0.651
3.550	0.000	0.000	0.003	0.010	0.019	-0.048	-0.212	-0.429	-0.667
3.600	0.000	0.000	0.003	0.011	0.016	-0.060	-0.228	-0.446	-0.682
3.650	0.000	0.000	0.003	0.011	0.013	-0.073	-0.246	-0.464	-0.698
3.700	0.000	0.000	0.003	0.011	0.008	-0.088	-0.264	-0.482	-0.715
3.750	0.000	0.000	0.004	0.011	0.002	-0.103	-0.283	-0.502	-0.732
3.800	0.000	0.000	0.004	0.010	-0.004	-0.119	-0.303	-0.522	-0.750
3.850	0.000	0.000	0.004	0.009	-0.012	-0.136	-0.324	-0.543	-0.769
3.900	0.000	0.000	0.004	0.006	-0.022	-0.154	-0.345	-0.564	-0.788
3.950	0.000	0.000	0.004	0.002	-0.032	-0.173	-0.367	-0.587	-0.808
4.000	0.000	0.000	0.004	-0.003	-0.044	-0.193	-0.391	-0.610	-0.829

RESIDUARY STABILITY LEVER MS AS A FUNCTION OF DRAUGHT AND HEELING ANGLE
INITIAL TRIM: 0.00 M UNIT: m

INITIAL DRAUGHT	HEELING ANGLE (DEGREES) 0.0	5.0	10.0	15.0	20.0	30.0	40.0	50.0	60.0
3.200	0.000	0.000	0.002	0.006	0.014	0.008	-0.118	-0.324	-0.566
3.250	0.000	0.000	0.002	0.006	0.015	0.003	-0.128	-0.337	-0.578
3.300	0.000	0.000	0.002	0.008	0.018	-0.001	-0.139	-0.349	-0.590
3.350	0.000	0.000	0.003	0.009	0.019	-0.007	-0.150	-0.362	-0.603
3.400	0.000	0.000	0.003	0.009	0.020	-0.015	-0.163	-0.377	-0.617
3.450	0.000	0.000	0.003	0.009	0.020	-0.024	-0.177	-0.391	-0.631
3.500	0.000	0.000	0.003	0.010	0.020	-0.033	-0.191	-0.407	-0.646
3.550	0.000	0.000	0.003	0.010	0.019	-0.044	-0.207	-0.423	-0.661
3.600	0.000	0.000	0.003	0.011	0.017	-0.056	-0.223	-0.440	-0.676
3.650	0.000	0.000	0.003	0.011	0.014	-0.069	-0.240	-0.458	-0.692
3.700	0.000	0.000	0.003	0.011	0.010	-0.083	-0.258	-0.476	-0.709
3.750	0.000	0.000	0.004	0.011	0.004	-0.098	-0.277	-0.496	-0.726
3.800	0.000	0.000	0.004	0.011	-0.002	-0.114	-0.297	-0.516	-0.744
3.850	0.000	0.000	0.004	0.009	-0.010	-0.131	-0.318	-0.536	-0.763
3.900	0.000	0.000	0.004	0.007	-0.019	-0.149	-0.339	-0.558	-0.782
3.950	0.000	0.000	0.004	0.003	-0.029	-0.167	-0.361	-0.580	-0.801
4.000	0.000	0.000	0.004	-0.002	-0.040	-0.187	-0.384	-0.603	-0.822

RESIDUARY STABILITY LEVER MS AS A FUNCTION OF DRAUGHT AND HEELING ANGLE
INITIAL TRIM: 0.10 M UNIT: m

INITIAL DRAUGHT	HEELING ANGLE (DEGREES) 0.0	5.0	10.0	15.0	20.0	30.0	40.0	50.0	60.0
3.200	0.000	0.000	0.002	0.006	0.014	0.009	-0.115	-0.320	-0.560
3.250	0.000	0.000	0.002	0.007	0.016	0.006	-0.124	-0.332	-0.572
3.300	0.000	0.000	0.002	0.007	0.017	0.000	-0.135	-0.345	-0.585
3.350	0.000	0.000	0.003	0.008	0.019	-0.005	-0.146	-0.357	-0.597
3.400	0.000	0.000	0.003	0.009	0.020	-0.012	-0.158	-0.371	-0.611
3.450	0.000	0.000	0.003	0.009	0.021	-0.021	-0.172	-0.386	-0.626
3.500	0.000	0.000	0.003	0.010	0.021	-0.030	-0.186	-0.401	-0.640
3.550	0.000	0.000	0.003	0.010	0.020	-0.041	-0.202	-0.417	-0.655
3.600	0.000	0.000	0.003	0.011	0.018	-0.052	-0.218	-0.434	-0.670
3.650	0.000	0.000	0.003	0.011	0.015	-0.065	-0.235	-0.452	-0.687
3.700	0.000	0.000	0.003	0.011	0.011	-0.079	-0.253	-0.470	-0.703
3.750	0.000	0.000	0.004	0.011	0.006	-0.094	-0.272	-0.490	-0.720
3.800	0.000	0.000	0.004	0.011	-0.000	-0.110	-0.291	-0.510	-0.738
3.850	0.000	0.000	0.004	0.010	-0.008	-0.126	-0.312	-0.530	-0.757
3.900	0.000	0.000	0.004	0.007	-0.016	-0.144	-0.333	-0.551	-0.776
3.950	0.000	0.000	0.004	0.004	-0.026	-0.162	-0.355	-0.573	-0.795
4.000	0.000	0.000	0.004	-0.000	-0.037	-0.181	-0.378	-0.596	-0.815

RESIDUARY STABILITY LEVER MS AS A FUNCTION OF DRAUGHT AND HEELING ANGLE
INITIAL TRIM: 0.20 M UNIT: m

INITIAL DRAUGHT	HEELING ANGLE (DEGREES) 0.0	5.0	10.0	15.0	20.0	30.0	40.0	50.0	60.0
3.200	0.000	0.000	0.002	0.006	0.014	0.009	-0.112	-0.316	-0.555
3.250	0.000	0.000	0.002	0.007	0.015	0.007	-0.121	-0.327	-0.567
3.300	0.000	0.000	0.002	0.007	0.017	0.003	-0.131	-0.339	-0.579
3.350	0.000	0.000	0.002	0.008	0.018	-0.004	-0.142	-0.353	-0.593
3.400	0.000	0.000	0.003	0.009	0.020	-0.010	-0.154	-0.366	-0.606
3.450	0.000	0.000	0.003	0.010	0.021	-0.018	-0.167	-0.380	-0.619
3.500	0.000	0.000	0.003	0.010	0.021	-0.027	-0.182	-0.396	-0.635
3.550	0.000	0.000	0.003	0.010	0.020	-0.038	-0.197	-0.412	-0.650
3.600	0.000	0.000	0.003	0.011	0.019	-0.049	-0.213	-0.429	-0.665
3.650	0.000	0.000	0.003	0.011	0.016	-0.061	-0.230	-0.447	-0.681
3.700	0.000	0.000	0.003	0.011	0.012	-0.075	-0.248	-0.465	-0.698
3.750	0.000	0.000	0.004	0.011	0.007	-0.090	-0.266	-0.484	-0.715
3.800	0.000	0.000	0.004	0.011	0.001	-0.105	-0.286	-0.504	-0.732
3.850	0.000	0.000	0.004	0.010	-0.006	-0.122	-0.306	-0.525	-0.751
3.900	0.000	0.000	0.004	0.008	-0.014	-0.139	-0.327	-0.546	-0.770
3.950	0.000	0.000	0.004	0.005	-0.023	-0.158	-0.349	-0.567	-0.789
4.000	0.000	0.000	0.004	0.001	-0.034	-0.177	-0.372	-0.589	-0.810

RESIDUARY STABILITY LEVER MS AS A FUNCTION OF DRAUGHT AND HEELING ANGLE
INITIAL TRIM: 0.30 M UNIT: m

INITIAL DRAUGHT	HEELING ANGLE (DEGREES) 0.0	5.0	10.0	15.0	20.0	30.0	40.0	50.0	60.0
3.200	0.000	0.000	0.002	0.006	0.014	0.010	-0.109	-0.312	-0.551
3.250	0.000	0.000	0.002	0.007	0.015	0.007	-0.118	-0.323	-0.563
3.300	0.000	0.000	0.002	0.007	0.017	0.004	-0.128	-0.335	-0.575
3.350	0.000	0.000	0.002	0.008	0.018	-0.001	-0.139	-0.348	-0.587
3.400	0.000	0.000	0.003	0.008	0.020	-0.008	-0.151	-0.362	-0.602
3.450	0.000	0.000	0.003	0.010	0.021	-0.016	-0.163	-0.376	-0.615
3.500	0.000	0.000	0.003	0.010	0.022	-0.024	-0.177	-0.391	-0.629
3.550	0.000	0.000	0.003	0.010	0.020	-0.035	-0.193	-0.408	-0.645
3.600	0.000	0.000	0.003	0.011	0.019	-0.046	-0.209	-0.424	-0.660
3.650	0.000	0.000	0.003	0.011	0.017	-0.058	-0.225	-0.442	-0.676
3.700	0.000	0.000	0.003	0.011	0.013	-0.071	-0.243	-0.460	-0.692
3.750	0.000	0.000	0.004	0.012	0.009	-0.086	-0.262	-0.479	-0.709
3.800	0.000	0.000	0.004	0.011	0.003	-0.101	-0.281	-0.499	-0.727
3.850	0.000	0.000	0.004	0.010	-0.004	-0.118	-0.301	-0.519	-0.745
3.900	0.000	0.000	0.004	0.009	-0.012	-0.135	-0.322	-0.540	-0.764
3.950	0.000	0.000	0.004	0.006	-0.021	-0.153	-0.344	-0.562	-0.784
4.000	0.000	0.000	0.004	0.002	-0.032	-0.172	-0.367	-0.584	-0.804

RESIDUARY STABILITY LEVER MS AS A FUNCTION OF DRAUGHT AND HEELING ANGLE
INITIAL TRIM: 0.40 M UNIT: m

INITIAL DRAUGHT	HEELING ANGLE (DEGREES) 0.0	5.0	10.0	15.0	20.0	30.0	40.0	50.0	60.0
3.200	0.000	0.000	0.002	0.006	0.014	0.011	-0.107	-0.309	-0.546
3.250	0.000	0.000	0.002	0.007	0.015	0.008	-0.116	-0.320	-0.558
3.300	0.000	0.000	0.002	0.007	0.017	0.005	-0.125	-0.331	-0.571
3.350	0.000	0.000	0.002	0.008	0.018	0.000	-0.136	-0.344	-0.583
3.400	0.000	0.000	0.002	0.008	0.020	-0.006	-0.147	-0.357	-0.596
3.450	0.000	0.000	0.003	0.009	0.020	-0.014	-0.160	-0.372	-0.611
3.500	0.000	0.000	0.003	0.010	0.022	-0.022	-0.173	-0.386	-0.624
3.550	0.000	0.001	0.003	0.011	0.021	-0.032	-0.188	-0.402	-0.639
3.600	0.000	0.000	0.003	0.011	0.019	-0.043	-0.205	-0.420	-0.655
3.650	0.000	0.000	0.003	0.011	0.017	-0.055	-0.221	-0.438	-0.671
3.700	0.000	0.000	0.003	0.011	0.014	-0.068	-0.239	-0.456	-0.687
3.750	0.000	0.000	0.004	0.012	0.010	-0.082	-0.257	-0.474	-0.704
3.800	0.000	0.000	0.004	0.011	0.004	-0.098	-0.277	-0.494	-0.722
3.850	0.000	0.000	0.004	0.011	-0.002	-0.114	-0.297	-0.514	-0.740
3.900	0.000	0.000	0.004	0.009	-0.010	-0.131	-0.318	-0.535	-0.759
3.950	0.000	0.000	0.004	0.006	-0.019	-0.149	-0.339	-0.556	-0.779
4.000	0.000	0.000	0.004	0.003	-0.029	-0.168	-0.362	-0.579	-0.799

RESIDUARY STABILITY LEVER MS AS A FUNCTION OF DRAUGHT AND HEELING ANGLE
INITIAL TRIM: 0.50 M UNIT: m

INITIAL DRAUGHT	HEELING ANGLE (DEGREES) 0.0	5.0	10.0	15.0	20.0	30.0	40.0	50.0	60.0
3.200	0.000	0.000	0.002	0.006	0.013	0.011	-0.105	-0.306	-0.543
3.250	0.000	0.000	0.002	0.007	0.015	0.009	-0.113	-0.316	-0.554
3.300	0.000	0.000	0.002	0.007	0.017	0.006	-0.123	-0.328	-0.567
3.350	0.000	0.000	0.002	0.008	0.018	0.001	-0.133	-0.340	-0.580
3.400	0.000	0.000	0.002	0.008	0.019	-0.005	-0.144	-0.354	-0.593
3.450	0.000	0.000	0.003	0.009	0.021	-0.012	-0.157	-0.368	-0.606
3.500	0.000	0.000	0.003	0.009	0.021	-0.021	-0.171	-0.383	-0.621
3.550	0.000	0.000	0.003	0.010	0.022	-0.030	-0.185	-0.399	-0.635
3.600	0.000	0.001	0.004	0.011	0.020	-0.041	-0.200	-0.415	-0.650
3.650	0.000	0.000	0.003	0.011	0.018	-0.053	-0.217	-0.433	-0.667
3.700	0.000	0.000	0.003	0.011	0.015	-0.066	-0.235	-0.451	-0.683
3.750	0.000	0.000	0.004	0.012	0.011	-0.079	-0.253	-0.470	-0.700
3.800	0.000	0.000	0.004	0.012	0.005	-0.094	-0.273	-0.489	-0.717
3.850	0.000	0.000	0.004	0.011	-0.001	-0.110	-0.293	-0.509	-0.736
3.900	0.000	0.000	0.004	0.009	-0.009	-0.127	-0.313	-0.530	-0.755
3.950	0.000	0.000	0.004	0.007	-0.017	-0.145	-0.335	-0.551	-0.774
4.000	0.000	0.000	0.004	0.003	-0.027	-0.164	-0.357	-0.574	-0.794

RESIDUARY STABILITY LEVER MS AS A FUNCTION OF DRAUGHT AND HEELING ANGLE
INITIAL TRIM: 0.60 M UNIT: m

INITIAL DRAUGHT	HEELING ANGLE (DEGREES) 0.0	5.0	10.0	15.0	20.0	30.0	40.0	50.0	60.0
3.200	0.000	0.000	0.002	0.006	0.013	0.011	-0.104	-0.303	-0.540
3.250	0.000	0.000	0.002	0.006	0.015	0.009	-0.112	-0.314	-0.551
3.300	0.000	0.000	0.002	0.007	0.016	0.006	-0.120	-0.325	-0.563
3.350	0.000	0.000	0.002	0.008	0.018	0.002	-0.131	-0.337	-0.576
3.400	0.000	0.000	0.002	0.008	0.019	-0.004	-0.142	-0.350	-0.589
3.450	0.000	0.000	0.003	0.009	0.020	-0.011	-0.154	-0.364	-0.602
3.500	0.000	0.000	0.003	0.009	0.021	-0.019	-0.167	-0.379	-0.616
3.550	0.000	0.000	0.003	0.010	0.021	-0.029	-0.182	-0.396	-0.631
3.600	0.000	0.000	0.003	0.011	0.021	-0.039	-0.197	-0.412	-0.646
3.650	0.000	0.001	0.004	0.011	0.019	-0.050	-0.213	-0.429	-0.662
3.700	0.000	0.000	0.003	0.011	0.015	-0.063	-0.231	-0.447	-0.679
3.750	0.000	0.000	0.004	0.012	0.011	-0.077	-0.250	-0.466	-0.696
3.800	0.000	0.000	0.004	0.012	0.006	-0.091	-0.269	-0.485	-0.713
3.850	0.000	0.000	0.004	0.011	0.000	-0.107	-0.289	-0.505	-0.732
3.900	0.000	0.000	0.004	0.010	-0.007	-0.124	-0.310	-0.526	-0.751
3.950	0.000	0.000	0.004	0.007	-0.016	-0.142	-0.331	-0.547	-0.770
4.000	0.000	0.000	0.004	0.004	-0.025	-0.161	-0.353	-0.569	-0.790

RESIDUARY STABILITY LEVER MS AS A FUNCTION OF DRAUGHT AND HEELING ANGLE
INITIAL TRIM: 0.70 M UNIT: m

INITIAL DRAUGHT	HEELING ANGLE (DEGREES) 0.0	5.0	10.0	15.0	20.0	30.0	40.0	50.0	60.0
3.200	0.000	0.000	0.002	0.005	0.013	0.011	-0.103	-0.301	-0.537
3.250	0.000	0.000	0.002	0.006	0.014	0.009	-0.110	-0.311	-0.548
3.300	0.000	0.000	0.002	0.007	0.016	0.007	-0.119	-0.322	-0.560
3.350	0.000	0.000	0.002	0.008	0.018	0.002	-0.129	-0.334	-0.572
3.400	0.000	0.000	0.002	0.008	0.019	-0.003	-0.140	-0.347	-0.585
3.450	0.000	0.000	0.003	0.009	0.020	-0.010	-0.152	-0.362	-0.599
3.500	0.000	0.000	0.003	0.009	0.021	-0.018	-0.165	-0.377	-0.613
3.550	0.000	0.000	0.003	0.010	0.021	-0.027	-0.179	-0.392	-0.627
3.600	0.000	0.000	0.003	0.010	0.021	-0.037	-0.195	-0.409	-0.643
3.650	0.000	0.000	0.003	0.011	0.019	-0.048	-0.210	-0.425	-0.658
3.700	0.000	0.000	0.003	0.011	0.016	-0.061	-0.228	-0.444	-0.675
3.750	0.000	0.000	0.004	0.012	0.012	-0.075	-0.246	-0.462	-0.692
3.800	0.000	0.000	0.004	0.012	0.007	-0.089	-0.266	-0.481	-0.709
3.850	0.000	0.000	0.004	0.011	0.001	-0.104	-0.285	-0.501	-0.728
3.900	0.000	0.000	0.004	0.010	-0.006	-0.121	-0.306	-0.522	-0.747
3.950	0.000	0.000	0.004	0.008	-0.014	-0.139	-0.327	-0.543	-0.766
4.000	0.000	0.000	0.004	0.005	-0.024	-0.157	-0.349	-0.565	-0.786

RESIDUARY STABILITY LEVER MS AS A FUNCTION OF DRAUGHT AND HEELING ANGLE
INITIAL TRIM: 0.80 M UNIT: m

INITIAL DRAUGHT	HEELING ANGLE (DEGREES) 0.0	5.0	10.0	15.0	20.0	30.0	40.0	50.0	60.0
3.200	0.000	0.000	0.002	0.005	0.012	0.011	-0.102	-0.299	-0.534
3.250	0.000	0.000	0.002	0.006	0.014	0.009	-0.109	-0.310	-0.546
3.300	0.000	0.000	0.002	0.007	0.016	0.006	-0.118	-0.321	-0.558
3.350	0.000	0.000	0.002	0.008	0.018	0.003	-0.127	-0.332	-0.570
3.400	0.000	0.000	0.002	0.008	0.019	-0.003	-0.138	-0.345	-0.582
3.450	0.000	0.000	0.003	0.009	0.020	-0.009	-0.150	-0.359	-0.596
3.500	0.000	0.000	0.003	0.009	0.021	-0.017	-0.163	-0.374	-0.610
3.550	0.000	0.000	0.003	0.010	0.021	-0.026	-0.177	-0.389	-0.624
3.600	0.000	0.000	0.003	0.010	0.020	-0.036	-0.192	-0.405	-0.639
3.650	0.000	0.000	0.003	0.011	0.019	-0.047	-0.208	-0.423	-0.655
3.700	0.000	0.000	0.004	0.012	0.017	-0.059	-0.225	-0.440	-0.671
3.750	0.000	0.000	0.004	0.012	0.012	-0.073	-0.244	-0.459	-0.689
3.800	0.000	0.000	0.004	0.012	0.008	-0.087	-0.263	-0.478	-0.706
3.850	0.000	0.000	0.004	0.011	0.002	-0.102	-0.282	-0.497	-0.724
3.900	0.000	0.000	0.004	0.010	-0.005	-0.119	-0.303	-0.518	-0.743
3.950	0.000	0.000	0.004	0.008	-0.013	-0.136	-0.324	-0.539	-0.762
4.000	0.000	0.000	0.004	0.005	-0.023	-0.155	-0.346	-0.562	-0.783

RESIDUARY STABILITY LEVER MS AS A FUNCTION OF DRAUGHT AND HEELING ANGLE
INITIAL TRIM: 0.90 M UNIT: m

INITIAL DRAUGHT	HEELING ANGLE (DEGREES) 0.0	5.0	10.0	15.0	20.0	30.0	40.0	50.0	60.0
3.200	0.000	0.000	0.002	0.005	0.012	0.011	-0.102	-0.298	-0.532
3.250	0.000	0.000	0.002	0.006	0.014	0.009	-0.109	-0.308	-0.543
3.300	0.000	0.000	0.002	0.007	0.016	0.006	-0.117	-0.319	-0.555
3.350	0.000	0.000	0.002	0.007	0.017	0.002	-0.126	-0.331	-0.567
3.400	0.000	0.000	0.002	0.008	0.019	-0.002	-0.137	-0.344	-0.580
3.450	0.000	0.000	0.003	0.009	0.020	-0.009	-0.149	-0.357	-0.593
3.500	0.000	0.000	0.003	0.009	0.021	-0.016	-0.162	-0.372	-0.607
3.550	0.000	0.000	0.003	0.010	0.021	-0.025	-0.175	-0.387	-0.621
3.600	0.000	0.000	0.003	0.010	0.020	-0.035	-0.190	-0.403	-0.636
3.650	0.000	0.000	0.003	0.011	0.019	-0.046	-0.206	-0.419	-0.651
3.700	0.000	0.000	0.003	0.011	0.017	-0.058	-0.223	-0.437	-0.668
3.750	0.000	0.000	0.004	0.012	0.013	-0.071	-0.241	-0.455	-0.685
3.800	0.000	0.000	0.004	0.012	0.008	-0.085	-0.260	-0.475	-0.703
3.850	0.000	0.000	0.004	0.011	0.002	-0.101	-0.280	-0.494	-0.721
3.900	0.000	0.000	0.004	0.010	-0.005	-0.117	-0.300	-0.515	-0.740
3.950	0.000	0.000	0.004	0.008	-0.013	-0.134	-0.321	-0.536	-0.759
4.000	0.000	0.000	0.004	0.005	-0.022	-0.152	-0.343	-0.558	-0.779

RESIDUARY STABILITY LEVER MS AS A FUNCTION OF DRAUGHT AND HEELING ANGLE
INITIAL TRIM: 1.00 M UNIT: m

INITIAL DRAUGHT	HEELING ANGLE (DEGREES) 0.0	5.0	10.0	15.0	20.0	30.0	40.0	50.0	60.0
3.200	0.000	0.000	0.001	0.005	0.012	0.010	-0.101	-0.296	-0.530
3.250	0.000	0.000	0.002	0.006	0.014	0.009	-0.109	-0.307	-0.541
3.300	0.000	0.000	0.002	0.007	0.015	0.006	-0.116	-0.318	-0.553
3.350	0.000	0.000	0.002	0.007	0.017	0.002	-0.126	-0.330	-0.565
3.400	0.000	0.000	0.002	0.008	0.019	-0.003	-0.136	-0.342	-0.578
3.450	0.000	0.000	0.002	0.009	0.020	-0.009	-0.148	-0.356	-0.591
3.500	0.000	0.000	0.003	0.009	0.021	-0.016	-0.160	-0.370	-0.604
3.550	0.000	0.000	0.003	0.010	0.021	-0.024	-0.174	-0.385	-0.619
3.600	0.000	0.000	0.003	0.010	0.020	-0.034	-0.189	-0.400	-0.633
3.650	0.000	0.000	0.003	0.011	0.019	-0.045	-0.204	-0.417	-0.649
3.700	0.000	0.000	0.003	0.011	0.017	-0.057	-0.221	-0.434	-0.665
3.750	0.000	0.000	0.003	0.011	0.013	-0.070	-0.239	-0.453	-0.682
3.800	0.000	0.000	0.004	0.012	0.009	-0.084	-0.257	-0.471	-0.700
3.850	0.000	0.000	0.004	0.011	0.003	-0.099	-0.277	-0.492	-0.719
3.900	0.000	0.000	0.004	0.010	-0.004	-0.115	-0.297	-0.512	-0.737
3.950	0.000	0.000	0.004	0.008	-0.012	-0.132	-0.318	-0.533	-0.757
4.000	0.000	0.000	0.004	0.005	-0.021	-0.150	-0.340	-0.556	-0.777

TK	m	3.200	3.300	3.400	3.500	3.600	3.700	3.800	3.900
VOLM	m3	234	248	263	279	294	310	326	342
DISP	t	237	252	267	282	298	314	330	347
LCB	m	12.015	12.024	12.029	12.026	12.021	12.015	12.007	12.000
VCB	m	2.196	2.258	2.320	2.381	2.442	2.503	2.564	2.625
KMT	m	4.561	4.556	4.555	4.554	4.557	4.562	4.569	4.579
KML	m	23.338	23.752	23.710	23.631	23.594	23.528	23.386	23.195
TCP	t/cm	1.5	1.5	1.5	1.6	1.6	1.6	1.6	1.7
MCT	tm/cm	1.8	2.0	2.1	2.2	2.3	2.4	2.5	2.6
CB		0.3269	0.3365	0.3461	0.3557	0.3651	0.3743	0.3834	0.3923
CP		0.5495	0.5550	0.5607	0.5668	0.5729	0.5791	0.5852	0.5913
CW		0.6412	0.6589	0.6728	0.6862	0.6995	0.7123	0.7241	0.7351
CM		0.5949	0.6064	0.6172	0.6275	0.6372	0.6464	0.6551	0.6634
WSA	m2	196	203	209	216	222	228	235	241
LCA	m	12.11	12.01	11.98	11.94	11.90	11.88	11.86	11.85
transv. metac. height	m								
-1.600		4.624	4.616	4.611	4.608	4.607	4.610	4.616	4.625
-1.500		4.620	4.612	4.607	4.604	4.603	4.606	4.612	4.620
-1.400		4.615	4.608	4.603	4.600	4.599	4.602	4.608	4.616
-1.300		4.611	4.603	4.598	4.596	4.596	4.598	4.604	4.612
-1.200		4.607	4.600	4.594	4.592	4.592	4.595	4.600	4.608
-1.100		4.603	4.596	4.590	4.588	4.588	4.591	4.597	4.605
-1.000		4.598	4.592	4.587	4.585	4.585	4.588	4.593	4.602
-0.900		4.594	4.588	4.583	4.581	4.582	4.585	4.590	4.599
-0.800		4.590	4.584	4.580	4.578	4.578	4.582	4.587	4.596
-0.700		4.586	4.580	4.576	4.574	4.575	4.579	4.585	4.593
-0.600		4.582	4.576	4.572	4.571	4.572	4.576	4.582	4.590
-0.500		4.578	4.572	4.569	4.568	4.570	4.573	4.579	4.588
-0.400		4.575	4.569	4.566	4.565	4.567	4.571	4.577	4.586
-0.300		4.570	4.566	4.563	4.562	4.564	4.568	4.575	4.584
-0.200		4.567	4.563	4.560	4.559	4.561	4.566	4.573	4.582
-0.100		4.565	4.558	4.557	4.557	4.559	4.564	4.571	4.580
0.000		4.561	4.556	4.555	4.554	4.557	4.562	4.569	4.579
0.100		4.559	4.554	4.550	4.552	4.554	4.560	4.567	4.577
0.200		4.557	4.551	4.549	4.550	4.552	4.558	4.566	4.576
0.300		4.555	4.549	4.547	4.546	4.551	4.556	4.564	4.575
0.400		4.554	4.548	4.544	4.545	4.549	4.555	4.563	4.574
0.500		4.553	4.546	4.543	4.544	4.547	4.554	4.562	4.573
0.600		4.553	4.546	4.542	4.542	4.545	4.553	4.561	4.572
0.700		4.553	4.545	4.542	4.542	4.545	4.551	4.560	4.571
0.800		4.553	4.546	4.541	4.541	4.544	4.550	4.560	4.571
0.900		4.553	4.546	4.542	4.541	4.544	4.550	4.558	4.571
1.000		4.554	4.547	4.542	4.541	4.544	4.549	4.558	4.571
1.100		4.555	4.548	4.543	4.542	4.544	4.550	4.559	4.570
1.200		4.557	4.549	4.545	4.543	4.545	4.550	4.559	4.570
1.300		4.559	4.551	4.546	4.545	4.546	4.551	4.560	4.571
1.400		4.561	4.553	4.548	4.546	4.548	4.553	4.561	4.572
1.500		4.564	4.555	4.550	4.548	4.550	4.554	4.562	4.573
1.600		4.567	4.558	4.552	4.551	4.552	4.556	4.564	4.575

TK m	3.200	3.300	3.400	3.500	3.600	3.700	3.800	3.900
TOTAL DISPLACEMENT t								
-1.600	257	273	288	304	320	336	353	370
-1.500	256	271	287	302	319	335	351	368
-1.400	254	270	285	301	317	333	350	366
-1.300	253	268	284	299	315	332	348	365
-1.200	251	267	282	298	314	330	347	363
-1.100	250	265	280	296	312	328	345	362
-1.000	248	264	279	295	311	327	343	360
-0.900	247	262	278	293	309	325	342	359
-0.800	246	261	276	292	308	324	340	357
-0.700	244	260	275	291	306	323	339	356
-0.600	243	258	274	289	305	321	338	354
-0.500	242	257	272	288	304	320	336	353
-0.400	241	256	271	287	303	319	335	352
-0.300	240	255	270	285	301	317	334	350
-0.200	239	254	269	284	300	316	332	349
-0.100	238	253	268	283	299	315	331	348
0.000	237	252	267	282	298	314	330	347
0.100	236	251	266	281	297	313	329	345
0.200	235	250	265	280	296	312	328	344
0.300	235	249	264	279	295	310	327	343
0.400	234	248	263	278	294	309	326	342
0.500	233	248	262	277	293	309	325	341
0.600	232	247	262	277	292	308	324	340
0.700	232	246	261	276	291	307	323	339
0.800	231	246	260	275	291	306	322	338
0.900	230	245	260	275	290	305	321	337
1.000	230	244	259	274	289	305	320	336
1.100	229	244	258	273	289	304	320	336
1.200	229	243	258	273	288	303	319	335
1.300	228	243	257	272	287	303	318	334
1.400	228	242	257	272	287	302	318	334
1.500	227	242	256	271	286	302	317	333
1.600	227	241	256	271	286	301	317	333
long. centre of buoy. m								
-1.600	10.765	10.773	10.782	10.791	10.801	10.811	10.822	10.835
-1.500	10.843	10.851	10.858	10.866	10.875	10.884	10.893	10.904
-1.400	10.922	10.928	10.935	10.941	10.949	10.957	10.965	10.974
-1.300	11.001	11.006	11.011	11.017	11.023	11.030	11.038	11.045
-1.200	11.080	11.084	11.089	11.093	11.099	11.104	11.110	11.117
-1.100	11.160	11.163	11.166	11.170	11.174	11.179	11.184	11.189
-1.000	11.239	11.242	11.244	11.247	11.250	11.254	11.257	11.262
-0.900	11.319	11.321	11.322	11.324	11.326	11.329	11.331	11.335
-0.800	11.398	11.400	11.401	11.402	11.403	11.404	11.406	11.408
-0.700	11.478	11.479	11.480	11.480	11.480	11.480	11.481	11.482
-0.600	11.557	11.558	11.559	11.558	11.557	11.556	11.556	11.555
-0.500	11.636	11.637	11.637	11.636	11.634	11.632	11.631	11.629
-0.400	11.716	11.716	11.716	11.714	11.712	11.709	11.706	11.703
-0.300	11.789	11.795	11.794	11.792	11.789	11.785	11.781	11.777
-0.200	11.866	11.874	11.873	11.870	11.867	11.862	11.856	11.851
-0.100	11.943	11.947	11.951	11.948	11.944	11.938	11.932	11.925
0.000	12.015	12.024	12.029	12.026	12.021	12.015	12.007	12.000

TK m	3.200	3.300	3.400	3.500	3.600	3.700	3.800	3.900
0.100	12.090	12.100	12.102	12.103	12.098	12.091	12.083	12.074
0.200	12.166	12.172	12.178	12.180	12.174	12.166	12.158	12.149
0.300	12.241	12.247	12.253	12.252	12.250	12.242	12.233	12.224
0.400	12.316	12.321	12.325	12.327	12.326	12.317	12.308	12.298
0.500	12.391	12.396	12.398	12.401	12.397	12.393	12.383	12.372
0.600	12.466	12.470	12.472	12.472	12.471	12.468	12.457	12.447
0.700	12.542	12.545	12.545	12.544	12.544	12.538	12.532	12.520
0.800	12.618	12.618	12.618	12.617	12.614	12.611	12.606	12.594
0.900	12.696	12.692	12.691	12.689	12.686	12.684	12.676	12.668
1.000	12.773	12.767	12.764	12.761	12.757	12.753	12.748	12.741
1.100	12.850	12.843	12.836	12.833	12.829	12.824	12.820	12.811
1.200	12.926	12.918	12.910	12.905	12.900	12.895	12.889	12.882
1.300	13.003	12.994	12.984	12.977	12.972	12.965	12.959	12.953
1.400	13.080	13.069	13.059	13.049	13.042	13.036	13.029	13.022
1.500	13.156	13.145	13.134	13.122	13.113	13.107	13.099	13.091
1.600	13.233	13.220	13.208	13.196	13.184	13.177	13.169	13.160

TK	m	4.000
VOLM	m3	359
DISP	t	363
LCB	m	11.993
VCB	m	2.685
KMT	m	4.590
KML	m	22.992
TCP	t/cm	1.7
MCT	tm/cm	2.7
CB		0.4010
CP		0.5973
CW		0.7455
CM		0.6713
WSA	m2	247
LCA	m	11.85

transv.	metac. height m
-1.600	4.637
-1.500	4.632
-1.400	4.628
-1.300	4.623
-1.200	4.620
-1.100	4.616
-1.000	4.613
-0.900	4.609
-0.800	4.607
-0.700	4.604
-0.600	4.601
-0.500	4.599
-0.400	4.597
-0.300	4.595
-0.200	4.593
-0.100	4.592
0.000	4.590
0.100	4.589
0.200	4.588
0.300	4.587
0.400	4.586
0.500	4.585
0.600	4.585
0.700	4.584
0.800	4.584
0.900	4.584
1.000	4.584
1.100	4.585
1.200	4.585
1.300	4.586
1.400	4.586
1.500	4.588
1.600	4.589

TK m 4.000

TOTAL DISPLACEMENT	t
-1.600	387
-1.500	385
-1.400	383
-1.300	382
-1.200	380
-1.100	379
-1.000	377
-0.900	376
-0.800	374
-0.700	373
-0.600	371
-0.500	370
-0.400	368
-0.300	367
-0.200	366
-0.100	364
0.000	363
0.100	362
0.200	361
0.300	360
0.400	359
0.500	358
0.600	357
0.700	356
0.800	355
0.900	354
1.000	353
1.100	352
1.200	351
1.300	351
1.400	350
1.500	349
1.600	349

long. centre of buoy.	m
-1.600	10.849
-1.500	10.917
-1.400	10.985
-1.300	11.054
-1.200	11.124
-1.100	11.195
-1.000	11.267
-0.900	11.338
-0.800	11.410
-0.700	11.482
-0.600	11.554
-0.500	11.627
-0.400	11.700
-0.300	11.773
-0.200	11.846
-0.100	11.919
0.000	11.993

TK m 4.000

0.100	12.066
0.200	12.140
0.300	12.214
0.400	12.288
0.500	12.362
0.600	12.435
0.700	12.509
0.800	12.582
0.900	12.656
1.000	12.729
1.100	12.802
1.200	12.874
1.300	12.946
1.400	13.014
1.500	13.084
1.600	13.152

Compartment ident: T1
Compartment descr: BW AFT PEAK
Contents : Ballast Water (BW, RHO = 1.005)

Extreme points of comp: Aft end at frame -3.04 (-1.61 m)
Fore end at frame 6.00 (3.18 m)
Lowest point 0.01 m above BL
Highest point 5.17 m above BL

T	VNET	CGX	CGY	CGZ	TMX	TMY
m	m3	m	m	m	m4	m4
0.007	0.0	0.00	0.00	0.00	0.00	0.00
0.207	0.0	2.49	0.00	0.14	0.04	0.00
0.407	0.1	2.53	0.00	0.25	0.05	0.00
0.607	0.2	2.54	0.00	0.37	0.07	0.01
0.807	0.3	2.55	0.00	0.49	0.08	0.01
1.007	0.5	2.55	0.00	0.61	0.09	0.02
1.207	0.6	2.56	0.00	0.73	0.11	0.03
1.407	0.8	2.56	0.00	0.86	0.13	0.05
1.607	1.0	2.56	0.00	1.00	0.16	0.10
1.807	1.3	2.56	0.00	1.15	0.22	0.27
2.007	1.7	2.57	0.00	1.32	0.29	0.60
2.207	2.2	2.57	0.00	1.49	0.36	1.07
2.407	2.8	2.57	0.00	1.66	0.46	2.01
2.607	3.6	2.57	0.00	1.84	0.64	3.84
2.807	4.5	2.57	0.00	2.03	1.36	7.45
3.007	5.9	2.52	0.00	2.25	2.42	12.75
3.207	7.7	2.45	0.00	2.45	4.54	18.74
3.407	9.9	2.36	0.00	2.65	8.23	25.29
3.607	12.7	2.24	0.00	2.84	14.41	32.63
3.807	16.0	2.12	0.00	3.02	19.78	40.37
4.007	19.7	2.01	0.00	3.18	23.87	47.71
4.207	23.7	1.91	0.00	3.34	27.56	54.16
4.407	28.0	1.83	0.00	3.49	31.01	59.87
4.607	32.5	1.76	0.00	3.63	34.16	65.16
4.807	37.2	1.69	0.00	3.77	36.49	70.35
5.174	42.5	1.58	0.00	3.91	0.22	3.37

Compartment ident: T4P
Compartment descr: BW PS 2
Contents : Ballast Water (BW, RHO = 1.005)

Extreme points of comp: Aft end at frame 31.00 (16.43 m)
Fore end at frame 35.00 (18.55 m)
Lowest point 0.77 m above BL
Highest point 2.78 m above BL

T	VNET	CGX	CGY	CGZ	TMX	TMY
m	m3	m	m	m	m4	m4
0.770	0.0	0.00	0.00	0.00	0.00	0.00
0.970	0.1	17.24	0.26	0.92	0.53	0.09
1.170	0.6	17.35	0.52	1.05	1.09	0.57
1.370	1.3	17.38	0.69	1.17	1.40	1.16
1.570	2.1	17.39	0.81	1.29	1.63	1.75
1.770	3.0	17.40	0.90	1.41	1.81	2.34
1.970	4.0	17.41	0.98	1.52	1.97	2.97
2.170	5.1	17.41	1.06	1.64	2.12	3.65
2.370	6.2	17.42	1.12	1.76	2.27	4.36
2.570	7.5	17.42	1.18	1.88	2.39	5.07
2.780	8.8	17.43	1.24	2.00	2.51	5.79

Compartment ident: T4S
Compartment descr: BW SB 2
Contents : Ballast Water (BW, RHO = 1.005)

Extreme points of comp: Aft end at frame 31.00 (16.43 m)
Fore end at frame 35.00 (18.55 m)
Lowest point 0.77 m above BL
Highest point 2.78 m above BL

T	VNET	CGX	CGY	CGZ	TMX	TMY
m	m3	m	m	m	m4	m4
0.770	0.0	0.00	0.00	0.00	0.00	0.00
0.970	0.1	17.24	-0.26	0.92	0.53	0.09
1.170	0.6	17.35	-0.52	1.05	1.09	0.57
1.370	1.3	17.38	-0.69	1.17	1.40	1.16
1.570	2.1	17.39	-0.81	1.29	1.63	1.75
1.770	3.0	17.40	-0.90	1.41	1.81	2.34
1.970	4.0	17.41	-0.98	1.52	1.97	2.97
2.170	5.1	17.41	-1.06	1.64	2.12	3.65
2.370	6.2	17.42	-1.12	1.76	2.27	4.36
2.570	7.5	17.42	-1.18	1.88	2.39	5.07
2.780	8.8	17.43	-1.24	2.00	2.51	5.79

Compartment ident: T5P
Compartment descr: BW PS 1
Contents : Ballast Water (BW, RHO = 1.005)

Extreme points of comp: Aft end at frame 35.00 (18.55 m)
Fore end at frame 39.50 (20.93 m)
Lowest point 0.86 m above BL
Highest point 2.78 m above BL

T	VNET	CGX	CGY	CGZ	TMX	TMY
m	m3	m	m	m	m4	m4
0.864	0.0	0.00	0.00	0.00	0.00	0.00
1.064	0.1	19.31	0.17	1.01	0.36	0.03
1.264	0.3	19.44	0.31	1.14	0.77	0.14
1.464	0.8	19.50	0.40	1.26	1.07	0.29
1.664	1.3	19.53	0.48	1.39	1.34	0.49
1.864	1.9	19.55	0.56	1.51	1.59	0.74
2.064	2.6	19.57	0.62	1.64	1.83	1.07
2.264	3.5	19.58	0.69	1.76	2.08	1.49
2.464	4.4	19.60	0.76	1.89	2.32	1.99
2.780	6.0	19.61	0.86	2.09	2.66	2.90

Compartment ident: T5S
Compartment descr: BW SB 1
Contents : Ballast Water (BW, RHO = 1.005)

Extreme points of comp: Aft end at frame 35.00 (18.55 m)
Fore end at frame 39.50 (20.93 m)
Lowest point 0.86 m above BL
Highest point 2.78 m above BL

T	VNET	CGX	CGY	CGZ	TMX	TMY
m	m3	m	m	m	m4	m4
0.864	0.0	0.00	0.00	0.00	0.00	0.00
1.064	0.1	19.31	-0.17	1.01	0.36	0.03
1.264	0.3	19.44	-0.31	1.14	0.77	0.14
1.464	0.8	19.50	-0.40	1.26	1.07	0.29
1.664	1.3	19.53	-0.48	1.39	1.34	0.49
1.864	1.9	19.55	-0.56	1.51	1.59	0.74
2.064	2.6	19.57	-0.62	1.64	1.83	1.07
2.264	3.5	19.58	-0.69	1.76	2.08	1.49
2.464	4.4	19.60	-0.76	1.89	2.32	1.99
2.780	6.0	19.61	-0.86	2.09	2.66	2.90

Compartment ident: T6
Compartment descr: BW FORE PEAK
Contents : Ballast Water (BW, RHO = 1.005)

Extreme points of comp: Aft end at frame 41.00 (21.73 m)
Fore end at frame 49.31 (26.13 m)
Lowest point 1.01 m above BL
Highest point 3.95 m above BL

T	VNET	CGX	CGY	CGZ	TMX	TMY
m	m3	m	m	m	m4	m4
1.009	0.0	0.00	0.00	0.00	0.00	0.00
1.209	0.0	21.94	0.00	1.14	0.00	0.00
1.409	0.0	22.02	0.00	1.30	0.02	0.00
1.609	0.1	22.09	0.00	1.45	0.05	0.03
1.809	0.3	22.14	0.00	1.60	0.11	0.10
2.009	0.6	22.20	0.00	1.75	0.22	0.25
2.209	1.0	22.26	0.00	1.89	0.42	0.52
2.409	1.5	22.31	0.00	2.04	0.75	0.92
2.609	2.1	22.37	0.00	2.19	1.32	1.53
2.809	3.0	22.46	0.00	2.34	2.18	2.41
3.009	4.1	22.53	0.00	2.49	3.41	3.59
3.209	5.4	22.61	0.00	2.64	4.89	5.13
3.409	7.0	22.69	0.00	2.79	6.54	7.00
3.609	8.8	22.76	0.00	2.94	8.51	9.22
3.950	12.4	22.88	0.00	3.19	12.63	13.84

Compartment ident: T3P
Compartment descr: FW TK PS
Contents : Fresh Water (FW, RHO = 1)

Extreme points of comp: Aft end at frame 29.00 (15.37 m)
Fore end at frame 31.00 (16.43 m)
Lowest point 0.72 m above BL
Highest point 2.78 m above BL

T	VNET	CGX	CGY	CGZ	TMX	TMY
m	m3	m	m	m	m4	m4
0.722	0.0	0.00	0.00	0.00	0.00	0.00
0.922	0.1	15.86	0.30	0.86	0.09	0.06
1.122	0.4	15.88	0.62	1.00	0.18	0.50
1.322	0.8	15.88	0.84	1.12	0.23	1.07
1.522	1.3	15.89	1.00	1.24	0.26	1.59
1.722	1.9	15.89	1.11	1.36	0.28	2.06
1.922	2.5	15.89	1.20	1.47	0.30	2.50
2.122	3.1	15.89	1.28	1.59	0.32	2.92
2.322	3.8	15.89	1.34	1.70	0.33	3.32
2.522	4.5	15.89	1.40	1.81	0.34	3.68
2.780	5.5	15.89	1.46	1.96	0.36	4.08

Compartment ident: T3S
Compartment descr: FW TK 3S
Contents : Fresh Water (FW, RHO = 1)

Extreme points of comp: Aft end at frame 29.00 (15.37 m)
Fore end at frame 31.00 (16.43 m)
Lowest point 0.72 m above BL
Highest point 2.78 m above BL

T	VNET	CGX	CGY	CGZ	TMX	TMY
m	m3	m	m	m	m4	m4
0.722	0.0	0.00	0.00	0.00	0.00	0.00
0.922	0.1	15.86	-0.30	0.86	0.09	0.06
1.122	0.4	15.88	-0.62	1.00	0.18	0.50
1.322	0.8	15.88	-0.84	1.12	0.23	1.07
1.522	1.3	15.89	-1.00	1.24	0.26	1.59
1.722	1.9	15.89	-1.11	1.36	0.28	2.06
1.922	2.5	15.89	-1.20	1.47	0.30	2.50
2.122	3.1	15.89	-1.28	1.59	0.32	2.92
2.322	3.8	15.89	-1.34	1.70	0.33	3.32
2.522	4.5	15.89	-1.40	1.81	0.34	3.68
2.780	5.5	15.89	-1.46	1.96	0.36	4.08

Compartment ident: T2P
Compartment descr: DO PS
Contents : Diesel Oil (DO, RHO = 0.86)

Extreme points of comp: Aft end at frame 6.00 (3.18 m)
Fore end at frame 14.00 (7.42 m)
Lowest point 2.65 m above BL
Highest point 4.91 m above BL

T	VNET	CGX	CGY	CGZ	TMX	TMY
m	m3	m	m	m	m4	m4
2.650	0.0	5.55	2.23	2.65	6.58	0.96
2.850	1.0	5.51	2.26	2.75	7.76	1.19
3.050	2.2	5.47	2.29	2.86	8.73	1.43
3.250	3.5	5.44	2.32	2.96	9.54	1.67
3.450	4.8	5.42	2.35	3.07	10.20	1.92
3.650	6.3	5.40	2.38	3.18	10.76	2.15
3.850	7.6	5.36	2.39	3.28	6.17	1.90
4.050	8.9	5.30	2.41	3.38	6.41	2.10
4.250	10.2	5.25	2.42	3.48	6.61	2.30
4.450	11.6	5.21	2.43	3.58	6.81	2.51
4.650	13.0	5.18	2.45	3.68	7.00	2.74
4.908	14.2	5.13	2.46	3.78	0.00	0.03

Compartment ident: T2S
Compartment descr: DO SB
Contents : Diesel Oil (DO, RHO = 0.86)

Extreme points of comp: Aft end at frame 6.00 (3.18 m)
Fore end at frame 14.00 (7.42 m)
Lowest point 2.65 m above BL
Highest point 4.91 m above BL

T	VNET	CGX	CGY	CGZ	TMX	TMY
m	m3	m	m	m	m4	m4
2.650	0.0	5.55	-2.23	2.65	6.58	0.96
2.850	1.0	5.51	-2.26	2.75	7.76	1.19
3.050	2.2	5.47	-2.29	2.86	8.74	1.43
3.250	3.5	5.44	-2.32	2.96	9.54	1.67
3.450	4.8	5.42	-2.35	3.07	10.20	1.92
3.650	6.3	5.40	-2.38	3.18	10.76	2.15
3.850	7.8	5.39	-2.40	3.29	11.23	2.37
4.050	9.3	5.37	-2.42	3.40	11.63	2.59
4.250	10.9	5.36	-2.44	3.51	11.98	2.80
4.450	12.6	5.35	-2.46	3.62	12.31	3.03
4.650	14.3	5.34	-2.48	3.73	12.63	3.28
4.908	15.7	5.30	-2.49	3.82	0.00	0.03

Compartment ident: T7
Compartment descr: DO DAY TANK
Contents : Diesel Oil (DO, RHO = 0.86)

Extreme points of comp: Aft end at frame 12.50 (6.62 m)
Fore end at frame 14.00 (7.42 m)
Lowest point 3.75 m above BL
Highest point 4.76 m above BL

T	VNET	CGX	CGY	CGZ	TMX	TMY
m	m3	m	m	m	m4	m4
3.750	0.0	7.03	2.76	3.75	0.07	0.34
3.950	0.3	7.03	2.77	3.85	0.07	0.37
4.150	0.6	7.03	2.78	3.95	0.08	0.39
4.350	0.8	7.03	2.79	4.05	0.08	0.41
4.550	1.1	7.03	2.80	4.16	0.08	0.44
4.757	1.4	7.02	2.81	4.26	0.00	0.05

HINAAJAN KOUKKU -- NYKÄISYKAAVAT

AT DEPARTURE

Vakiot		Lasketut vakiot		
L	27,7	C1	0,47220217	0,47
B	8,1	C4	0,94440433	0,94
D	4,8			
d	3,80			
DISP	333,2			
A	83	GM3	0,44	
r	2,13	GM4	0,32	
h	2,37			
fik	14,25			
l	6,54			
T	176,52			
V	2,5			

Kallistus-kulma	k1	k2	C2	C2	C3	C3	RADIANS
10	0,147	0,138	0,71050925	1,00	0,5403395	0,54	0,17453293
20	0,150	0,124	0,92101849	1,00	0,680679	0,68	0,34906585
30	0,170	0,109	1,13152774	1,13	0,82101849	0,82	0,52359878
40	0,181	0,092	1,34203699	1,34	0,96135799	0,85	0,6981317
50	0,178	0,074	1,55254623	1,55	1,10169749	0,85	0,87266463

	GZ	erotus	summa	pinta-ala	
10	0,14	-0,007	-0,007	-0,00062	
20	0,28	0,130	0,065	0,00569	
30	0,31	0,140	0,335	0,02927	
40	0,25	0,069	0,545	0,04752	>0,01
50	0,14	-0,038	0,576	0,05029	

AT ARRIVAL

Vakiot		Lasketut vakiot		
L	27,7	C1	0,47220217	0,47
B	8,1	C4	0,94440433	0,94
D	4,8			
d	3,54			
DISP	291,9			
A	77	GM3	0,39	
r	2,13	GM4	0,38	
h	2,63			
fik	18,13			
l	6,54			
T	176,52			
V	2,5			

Kallistus-kulma	k1	k2	C2	C2	C3	C3	RADIANS
10	0,155	0,162	0,66550625	1,00	0,5103375	0,50	0,17453293
20	0,153	0,146	0,8310125	1,00	0,620675	0,62	0,34906585
30	0,148	0,128	0,99651874	1,00	0,7310125	0,73	0,52359878
40	0,164	0,108	1,16202499	1,16	0,84134999	0,84	0,6981317
50	0,158	0,086	1,32753124	1,33	0,95168749	0,85	0,87266463

	GZ	erotus	summa	pinta-ala	
10	0,13	-0,025	-0,025	-0,00221	
20	0,28	0,127	0,127	0,01106	
30	0,35	0,202	0,455	0,03975	
40	0,30	0,136	0,794	0,06927	>0,01
50	0,18	0,022	0,951	0,08303	

KANSI	PINTA-ALA	JÄÄNPAINO	LCG	VCG	LMOM	VMOM
PÄÄKANSI	118	2360	14	4,8	33040	11328
1 K.	51	1020	15	7	15300	7140
2 K.	27	540	18	9,7	9720	5238
YHTEENSÄ	196	3920	14,811224	6,047449	58060	23706
LAITA	57	570	15	5,1	8550	2907
Kansirakennus 1k.	23	230	14,3	6	3289	1380
Kansirakennus 2k.	13	130	15,2	8,9	1976	1157
YHTEENSÄ	93	930	14,854839	5,853763	13815	5444
KAIKKI YHTEENSÄ		4850	14,819588	6,010309	71875	29150

INCLINING TEST REPORT

Ship's name:	Harald	
Main dimensions:	Length pp.	27.70 m
	Breadth moulded	8.10 m
	Draft	3.80 m
Date:	21.8.2014	
Place:	Helsinki, Finland	
Density of seawater:	1.004 t/m3	
Test performed by:	Mirva Tuominen	Ship Consulting
	Tuomas Junnila	

Ship Consulting Ltd Oy
Haihuntie 15
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Finland

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Telefax +358-21-230 2865
GSM +358-400-524 773
VAT FI0686836-1

A N G L E S O F I N C L I N A T I O N

Pendulum ..... : P1
Pendulum description .. : PS
Pendulum length ..... : 5.110 m
Pendulum weight factor. : 1

OBS	READING m	DIST m	ANGLE degree
0	0.000	0.000	0.188
1	-0.077	-0.077	-0.675
2	-0.142	-0.142	-1.403
3	-0.083	-0.083	-0.742
4	-0.012	-0.012	0.054
5	0.056	0.056	0.816
6	0.117	0.117	1.500
7	0.057	0.057	0.828
8	-0.012	-0.012	0.054

A N G L E S O F I N C L I N A T I O N

Pendulum ..... : P2
Pendulum description .. : SB
Pendulum length ..... : 5.135 m
Pendulum weight factor. : 1

OBS	READING m	DIST m	ANGLE degree
0	0.000	0.000	0.188
1	-0.079	-0.079	-0.693
2	-0.145	-0.145	-1.429
3	-0.084	-0.084	-0.749
4	-0.014	-0.014	0.032
5	0.058	0.058	0.836
6	0.120	0.120	1.527
7	0.059	0.059	0.847
8	-0.015	-0.015	0.021

I N C L I N I N G M O M E N T S

Obs	Weight shifted (t)	Distance shifted (m)	Location of weights PS	SB	Inclining moment (tm)
0	0.00	0.00	0.728 0.726	0.725 0.725	0.05
1	0.73	-6.39	0.726	0.728 0.725 0.725	-4.60
2	0.73	-5.64		0.728 0.726 0.725 0.725	-8.70
3	0.73	5.65	0.726	0.728 0.725 0.725	-4.60
4	0.73	6.55	0.728 0.726	0.725 0.725	0.17
5	0.73	6.07	0.728 0.726 0.725	0.725	4.57
6	0.73	5.71	0.728 0.726 0.725 0.725		8.71
7	0.73	-5.61	0.728 0.726 0.725	0.725	4.65
8	0.73	-6.18	0.728 0.726	0.725 0.725	0.17

M A S S E S T O B E S U B T R A C T E D

DES	MASS	XCG	YCG	ZCG
6 PERSONS	0.5	6.00	0.00	5.90
INC WEI 1	0.7	5.00	3.13	5.10
INC WEI 2	0.7	6.50	3.13	5.10
INC WEI 3	0.7	6.50	-3.16	5.10
INC WEI 4	0.7	5.00	-3.05	5.10
TOTAL	3.4			

T A N K S T O B E S U B T R A C T E D

NAME	VNET m3	DENS t/m3	MASS t	XM m	YM m	ZM m	IT*DENS tm
T1	42.50	1.005	42.71	1.58	0.00	3.91	0.0
T4P	8.80	1.005	8.84	17.42	1.24	2.00	0.0
T4S	8.80	1.005	8.84	17.42	-1.24	2.00	0.0
T5P	6.00	1.005	6.03	19.61	0.86	2.09	0.0
T5S	6.00	1.005	6.03	19.61	-0.86	2.09	0.0
T6	12.36	1.005	12.42	22.87	0.00	3.18	0.0
T3P	5.46	1.000	5.46	15.89	1.46	1.96	0.0
T3S	5.46	1.000	5.46	15.89	-1.46	1.96	0.0
T2P	4.80	0.860	4.13	5.31	2.34	3.07	1.6
T2S	5.40	0.860	4.64	5.31	-2.35	3.12	1.7
TOTAL	105.58		104.57	10.68	-0.01	3.02	3.3

M E T A C E N T R I C H E I G H T A N D C E N T E R O F G R A V I T Y

D U R I N G E X P E R I M E N T

Mean draught moulded..... : 3.878 m
Mean draught under keel..... : 3.888 m
Trim..... : -1.456 m
Initial heeling angle..... : 0.188 deg
Water density..... : 1.004 t/m3
Displacement..... : 365.0 t
Height of metacenter above BL... : 4.617 m

Obs Nr.	Inclining moment tm	total mom. tm	Inclining angle difference degree	total degree	Metacentric height m
0	0.0	0.0	0.188	0.188	
1	-4.7	-4.7	-0.872	-0.684	0.837
2	-4.1	-8.7	-0.732	-1.416	0.877
3	4.1	-4.6	0.671	-0.745	0.960
4	4.8	0.1	0.788	0.043	0.949
5	4.4	4.5	0.783	0.826	0.882
6	4.1	8.7	0.688	1.514	0.945
7	-4.1	4.6	-0.676	0.837	0.943
8	-4.5	0.1	-0.800	0.038	0.879

Metacentric height during experiment GM = 0.909 m
Free surface correction GMC= 0.009 m
Corrected metacentric height GM0= 0.918 m
Height of metacenter above baseline KM = 4.617 m

Center of gravity above BL KG = 3.699 m

L I G H T S H I P

	Weight	Center of gravity CGX	CGY	CGZ
	(t)	(m)	(m)	(m)
During experiment	365.0	10.985	0.003	3.699
Weights to be subtracted	-3.4	5.786	0.014	5.218
Tanks to be subtracted	-104.6	10.677	-0.012	3.017
Light ship	257.0	11.179	0.009	3.956

E S T I M A T I O N O F E R R O R S

P R O B A B L E E R R O R S I N G M

Case no	Error EI GMI-GM	EI^2 *1000
0-1	-0.072	5.196
1-2	-0.032	1.004
2-3	0.050	2.547
3-4	0.040	1.609
4-5	-0.027	0.719
5-6	0.035	1.256
6-7	0.034	1.172
7-8	-0.030	0.880
Sum	0.000	14.384

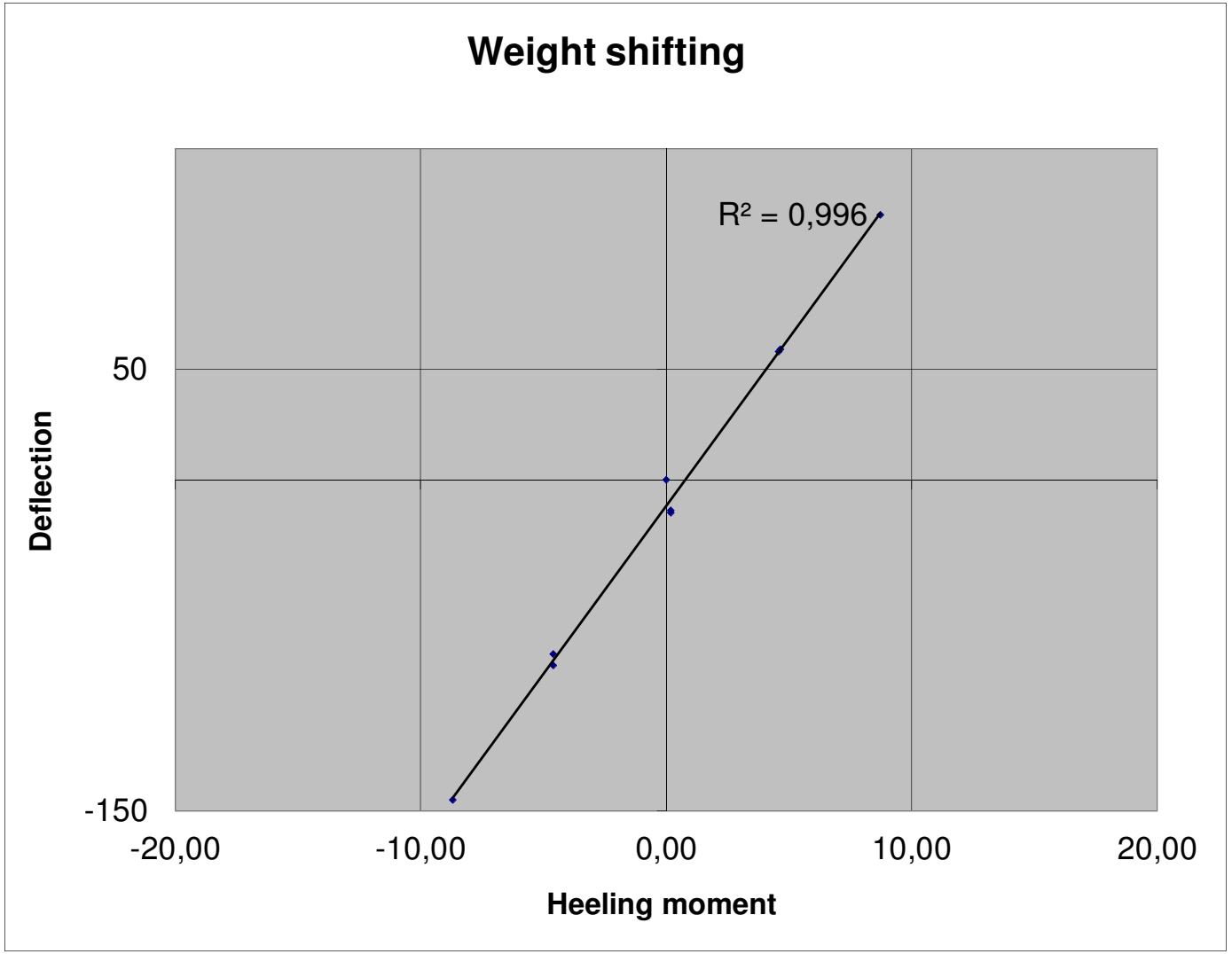
Probable absolute error= 0.016 m
Probable relative error= 1.746 %

	forecast	moment	deflection
1	-11,736	0,00	0
2	-81,684	-4,60	-79
3	-144,029	-8,70	-145
4	-81,684	-4,60	-84
5	-9,151	0,17	-14
6	57,756	4,57	58
7	120,709	8,71	120
8	58,972	4,65	59
9	-9,151	0,17	-15

GM- based on regression analyze

max	3029,486	200
min	-3052,959	-200
sum	6082,445	400

Pendulun	5135	mm
disp	365,0	t
GM	0,925	m



	forecast	moment	deflection
1	-11,277	0,00	0
2	-79,595	-4,60	-77
3	-140,487	-8,70	-142
4	-79,595	-4,60	-83
5	-8,752	0,17	-12
6	56,595	4,57	56
7	118,081	8,71	117
8	57,783	4,65	57
9	-8,752	0,17	-12

GM- based on regression analyze

max	2959,069	200
min	-2981,623	-200
sum	5940,692	400

Pendulun	5110	mm
disp	365,0	t
GM	0,943	m