

20 October, 2005

AIRISTO

TRIM AND

STABILITY

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Appendix: Report of Inclining experiment

Ship Consulting Ltd

SHIP'S NAME: Airisto

FLAG STATE: Finland

OWNER: Finnish Maritime Administration

MAIN DIMENSIONS:

Length over all	30.50 m
Breadth	8.90 m
Draught max	3.00 m

GENERAL

Excluding the fuel oil day tanks not more than one pair of tanks assigned to any consumable liquid on board the vessel should be slack at any time in order to minimise the undesirable effect of the free surface on stability.

Bilges shall be kept pumped minimum content at all times.

Tank required to ballasted with salt water be filled immediately and carried pressed up at all times if such ballast is necessary.

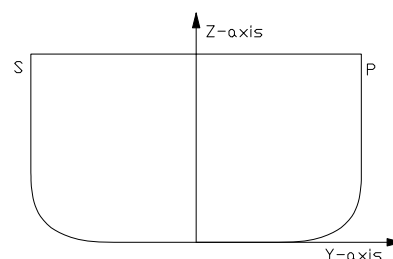
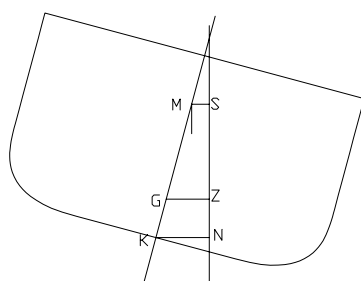
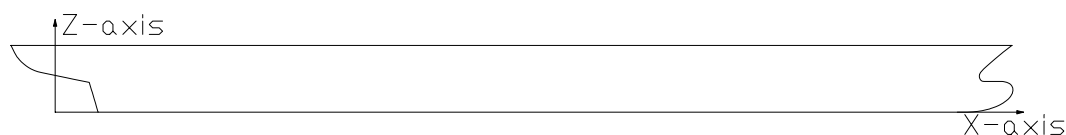
During ballasting reduction in the vessel's GM due to slack tank free surface will occur until tanks are pressed up. This temporary loss of GM is equal to salt water free surface of tank (or tanks) divided by the vessel's displacement at the time of boarding.

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

Calculations have been done by using seawater density 1.005 t/m³.

SYMBOLS

L/2	Denotes $L_{pp}/2$ (-/+ = aft/forw.)
BL	Base line
CL	Center line
TM	Mean draught
TFP	Draught at fore perpendicular
TAP	Draught at aft perpendicular
Tr	Trim (-/+ = stern/head)
KM	Vertical distance from base line to transverse metacentre
KG	Centre of gravity above base line
GM0	Transverse metacentric height
GMcorr	Free surface correction of GM
GM	Corrected GM
GZ	Righting lever
dGZ	Free surface correction of GZ
phi	Angle of inclination
e(phi)	Dynamic lever
MFS	Moment of free liquid surface
L.C.G.=cgx	Longitudinal centre of gravity from reference point
T.C.G.=cgy	Transversal centre of gravity from CL
V.C.G.=cgz	Vertical centre of gravity from BL
SWBM	Still water bending moment
RHO=DENS	Density



$$GZ = KN - KG \cdot \sin(\phi)$$

$$GZ = MS + GM \cdot \sin(\phi)$$

$$MS = KN - KM \cdot \sin(\phi)$$

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COMP. SUMMARY

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REFERENCE POINT 14.06 M FORWARD FROM FRAME
CAPACITY OF Water Ballast RHO=1.005 TON/M3

name	comp. description	CENTRES OF GRAVITY					Max. IY of surface
		net	mass	cgx of	cgy of	cgz of	
		volumeof	load	volume	volume	volume	
		m3	t	m	m	m	m4
T1	BALLAST WATER	23.3	23.5	23.12	0.00	2.06	23.94
T7	BALLAST WATER	24.3	24.4	1.36	0.00	2.41	77.72
T8BB	BALLAST WATER	12.5	12.6	13.73	-3.31	2.14	2.18
T8SB	BALLAST WATER	12.5	12.6	13.73	3.31	2.14	2.18

TOTAL OF Water Ballast		72.7	73.0	12.61	0.00	2.20	

CAPACITY OF Fresh Water RHO=1 TON/M3

name	comp. description	CENTRES OF GRAVITY					Max. IY of surface
		net	mass	cgx of	cgy of	cgz of	
		volumeof	load	volume	volume	volume	
		m3	t	m	m	m	m4
T6BB	FRESH WATER	16.3	16.3	4.29	-1.47	1.98	12.92
T6SB	FRESH WATER	16.3	16.3	4.29	1.47	1.98	12.92

TOTAL OF Fresh Water		32.7	32.7	4.29	0.00	1.98	

CAPACITY OF Diesel Oil RHO=0.86 TON/M3

name	comp. description	CENTRES OF GRAVITY					Max. IY of surface
		net	mass	cgx of	cgy of	cgz of	
		volumeof	load	volume	volume	volume	
		m3	t	m	m	m	m4
T2BB	FUEL OIL	8.3	7.1	16.25	-0.80	0.46	6.46
T2SB	FUEL OIL	8.3	7.1	16.25	0.80	0.46	6.46
T9	FO DAY TANK	2.0	1.7	5.70	1.52	1.83	0.19

TOTAL OF Diesel Oil		18.5	15.9	15.13	0.16	0.60	

CAPACITY OF Lubricating Oil RHO=0.9 TON/M3

name	comp. description	CENTRES OF GRAVITY					Max. IY of surface
		net	mass	cgx of	cgy of	cgz of	
		volumeof	load	volume	volume	volume	
		m3	t	m	m	m	m4
T10	LUBRICATING OIL	0.3	0.3	5.70	-0.75	2.40	0.01
T11	LUBRICATING OIL	0.3	0.3	5.70	-1.25	2.40	0.01

TOTAL OF Lubricating Oil		0.6	0.5	5.70	-1.00	2.40	

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CAPACITY OF Gray Water

RHO=1 TON/M3

name	comp. description	CENTRES OF GRAVITY					Max. IY of surface
		net	mass	cgx of	cgx of	cgz of	
		volumeof	load	volume	volume	volume	
		m3	t	m	m	m	m4
T3	SEWAGE TANK	9.9	9.9	10.72	-0.02	0.45	38.31

CAPACITY OF Sludge

RHO=1 TON/M3

name	comp. description	CENTRES OF GRAVITY					Max. IY of surface
		net	mass	cgx of	cgx of	cgz of	
		volumeof	load	volume	volume	volume	
		m3	t	m	m	m	m4
T4	DIRTY OIL TANK	1.1	1.1	6.60	0.00	0.38	0.22

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LOADING CONDITIONS

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LOADING CONDITION LC0, LIGHTSHIP

LOADING COMPONENTS

Name	Max. weight	Mass	Center of gravity			Free s. moment
			cgx	cgy	cgz	
Deadweight		0.0	0.00	0.00	0.00	0.0
Lightweight		229.5	11.74	0.06	3.86	
Displacement (rho=1.005)		229.5	11.74	0.06	3.86	0.0

FLOATING POSITION

Draught moulded	2.126	m	KM	4.39	m
Trim	-0.704	m	KG	3.86	m
Heel, SB=+	5.9	deg			
TA	2.478	m	GM0	0.53	m
TF	1.774	m	GMCORR	0.00	m
Trimming moment	-175	tonm	GM	0.53	m

HEEL degree	MS m	HPHI m	EPHI rad*m	FSMOM tm	DGZ m
0.0	-0.058	-0.06	0.000	0.0	0.000
10.0	-0.048	0.04	-0.001	0.0	0.000
20.0	-0.037	0.14	0.015	0.0	0.000
30.0	-0.024	0.24	0.049	0.0	0.000
40.0	-0.019	0.32	0.098	0.0	0.000
50.0	-0.022	0.38	0.161	0.0	0.000
60.0	-0.127	0.33	0.225	0.0	0.000

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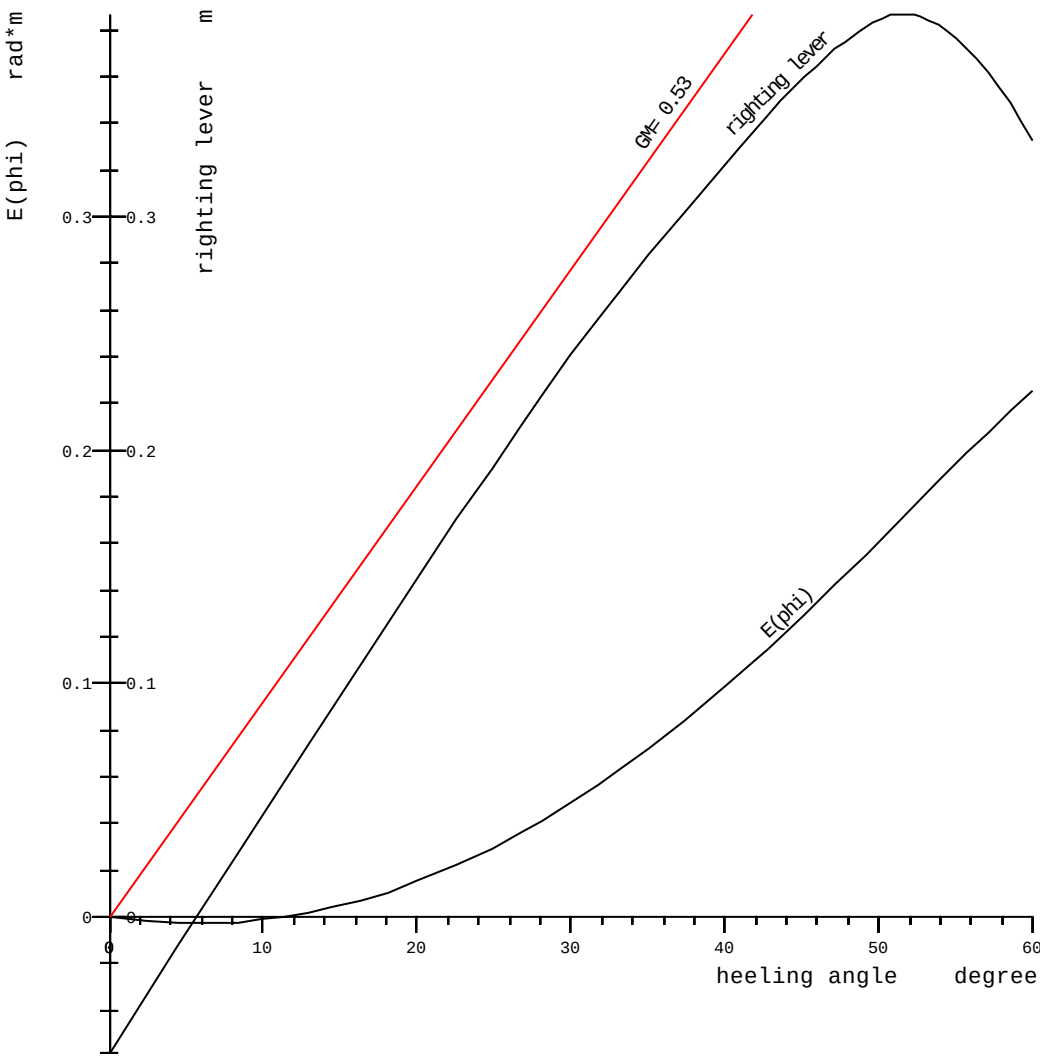
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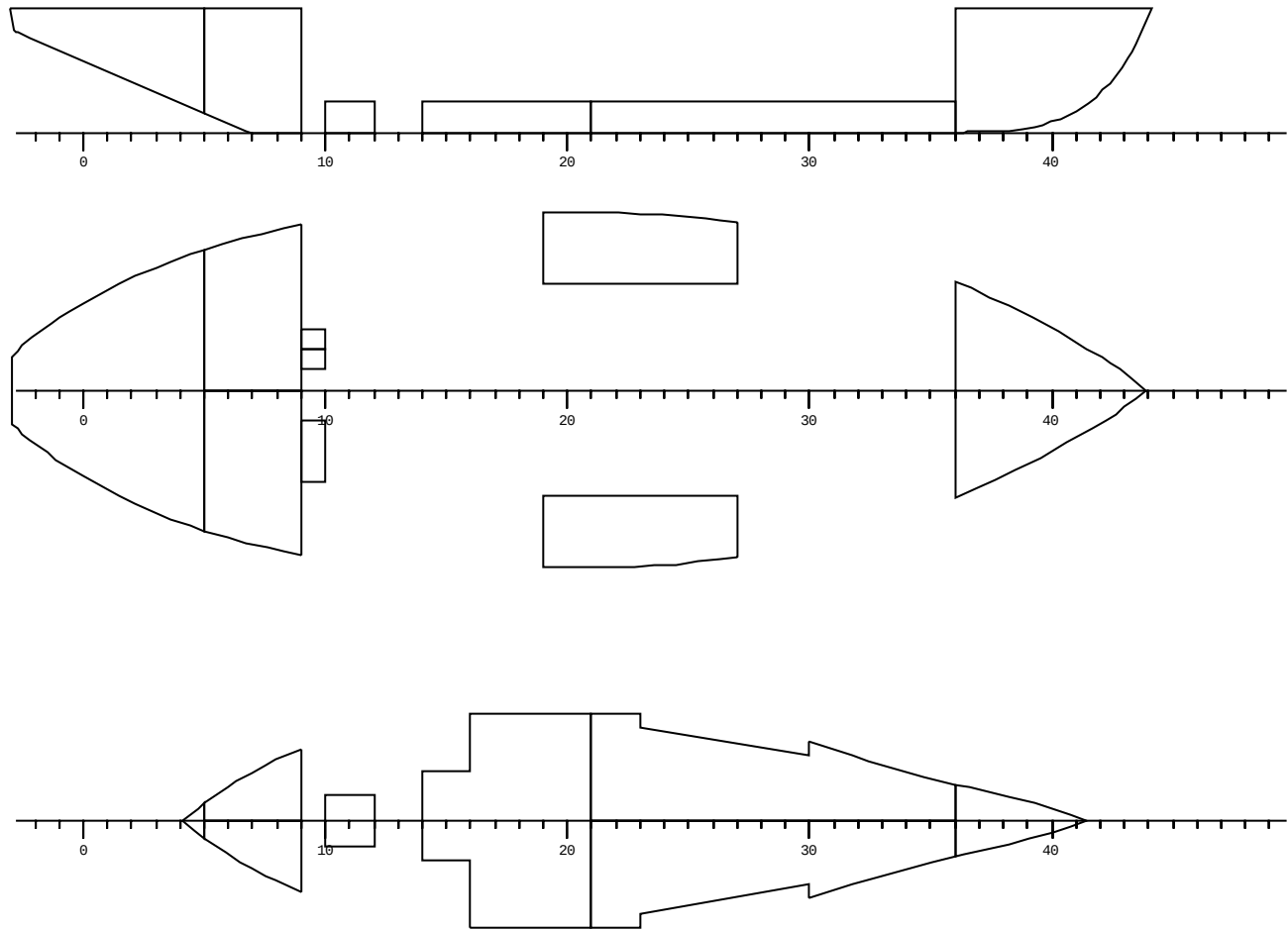
Loading condition: LIGHTSHIP

RCR	TEXT	REQ	ATTN	UNIT	STAT
AREA30	Area under GZ curve .	0.055	0.052	mrاد	NOT MET
AREA40	Area under GZ curve .	0.090	0.101	mrاد	OK
AREA3040	Area under GZ curve .	0.030	0.049	mrاد	OK
GZ0.2	Max GZ > 0.2	0.200	0.387	m	OK
MAXGZ25	Max. GZ at an angle .	25.000	51.583	deg	OK
GM0.15	GM > 0.15 m	0.150	0.531	m	OK

STABILITY CURVES

PROJECT	P197/A
DATE	2005-10-20
CONDITION	LC0
DISP.	230 TON
DRAUGHT	2.15 M
TRIM	-0.73





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LOADING CONDITIONS

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LOADING CONDITION LC1, DEPARTURE, FULL STORES

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

		Max.		Center of gravity			Free s.
Name		weight	Mass	cgx	cgy	cgz	moment

Water Ballast, RHO= 1.005							
T8BB	BALLAST WATER	12.6	12.6	13.73	-3.31	2.14	0.0
T8SB	BALLAST WATER	12.6	8.2	13.71	3.20	1.79	1.5

Total of Water Ballast		25.2	20.8	13.72	-0.74	2.00	1.5
Fresh Water, RHO= 1.000							
T6BB	FRESH WATER	16.3	15.5	4.29	-1.44	1.93	12.5
T6SB	FRESH WATER	16.3	15.5	4.29	1.44	1.93	12.5

Total of Fresh Water		32.7	31.0	4.29	0.00	1.93	24.9
Diesel Oil, RHO= 0.860							
T2BB	FUEL OIL	7.1	6.8	16.24	-0.79	0.44	5.4
T2SB	FUEL OIL	7.1	6.8	16.24	0.79	0.44	5.4
T9	FO DAY TANK	1.7	1.5	5.70	1.52	1.72	0.2

Total of Diesel Oil		15.9	15.1	15.17	0.15	0.57	10.9
Gray Water, RHO= 1.000							
T3	SEWAGE TANK	9.9	9.4	10.71	-0.02	0.43	37.5

Sludge, RHO= 1.000							
T4	DIRTY OIL TA.	1.1	1.0	6.60	0.00	0.34	0.2

CREW							
CREW		0.0	1.1	12.60	0.00	4.05	0.0

STORE

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STORE	0.0	0.6	22.60	0.00	1.75	0.0
MISC	0.0	1.0	4.80	0.00	5.90	0.0

Total of STORE	0.0	1.6	11.48	0.00	4.34	0.0
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Deadweight	80.0	9.83	-0.17	1.57	75.1
Lightweight	229.5	11.74	0.06	3.86	
Displacement (rho=1.005)	309.5	11.25	0.00	3.27	75.1

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

Draught moulded	2.558	m	KM	4.63	m
Trim	-1.112	m	KG	3.27	m
Heel, SB=+	0.0	deg			
TA	3.114	m	GM0	1.36	m
TF	2.002	m	GMCORR	-0.24	m
Trimming moment	-337	tonm	GM	1.12	m

HEEL	MS	HPHI	EPHI	FSMOM	DGZ
degree	m	m	rad*m	tm	m
0.0	-0.000	-0.00	0.000	0.0	0.000
10.0	-0.017	0.21	0.018	4.2	0.013
20.0	-0.060	0.39	0.070	4.9	0.016
30.0	-0.083	0.58	0.155	5.3	0.017
40.0	-0.101	0.76	0.272	5.5	0.018
50.0	-0.229	0.79	0.410	5.4	0.018
60.0	-0.431	0.73	0.543	5.3	0.017

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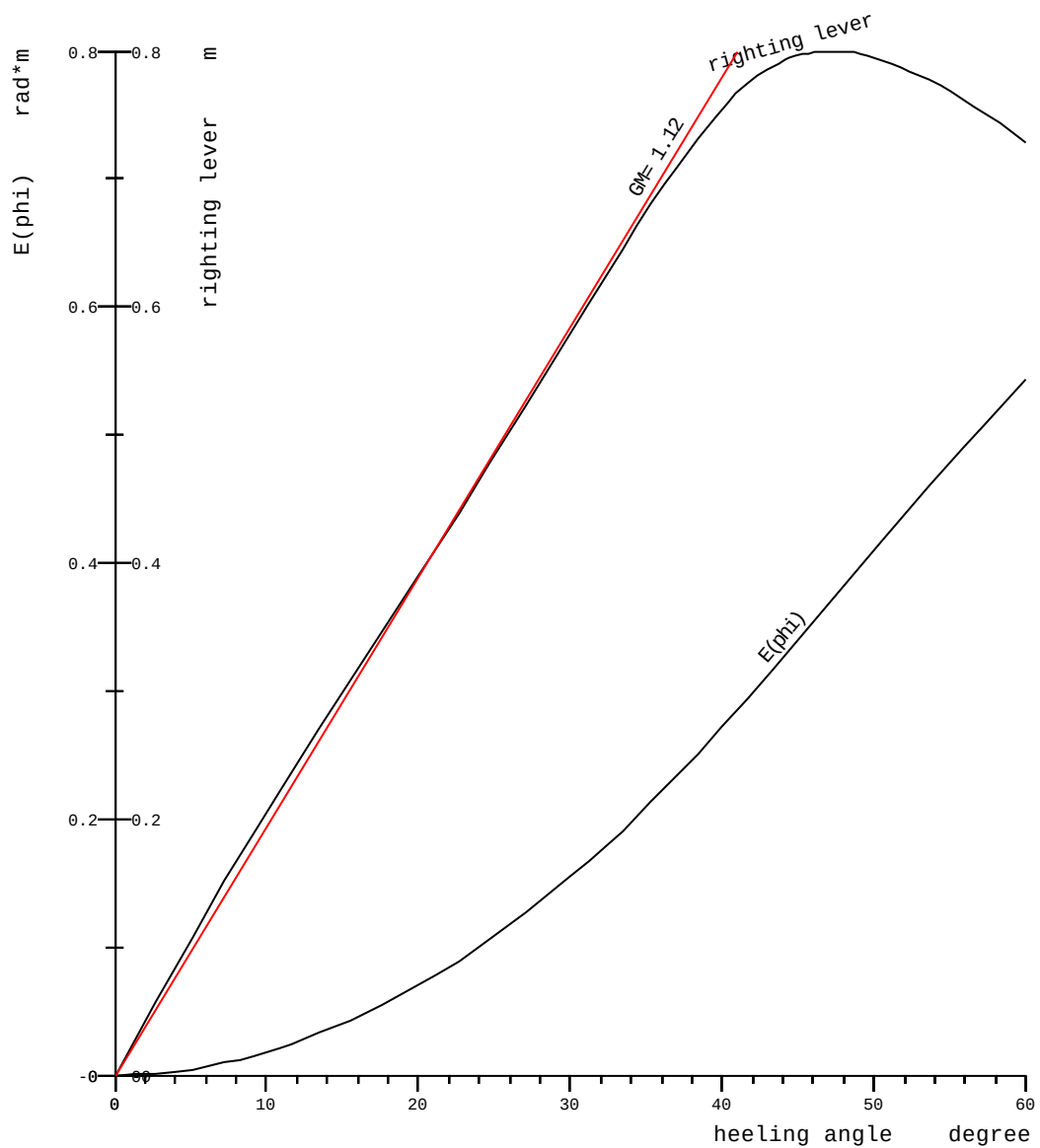
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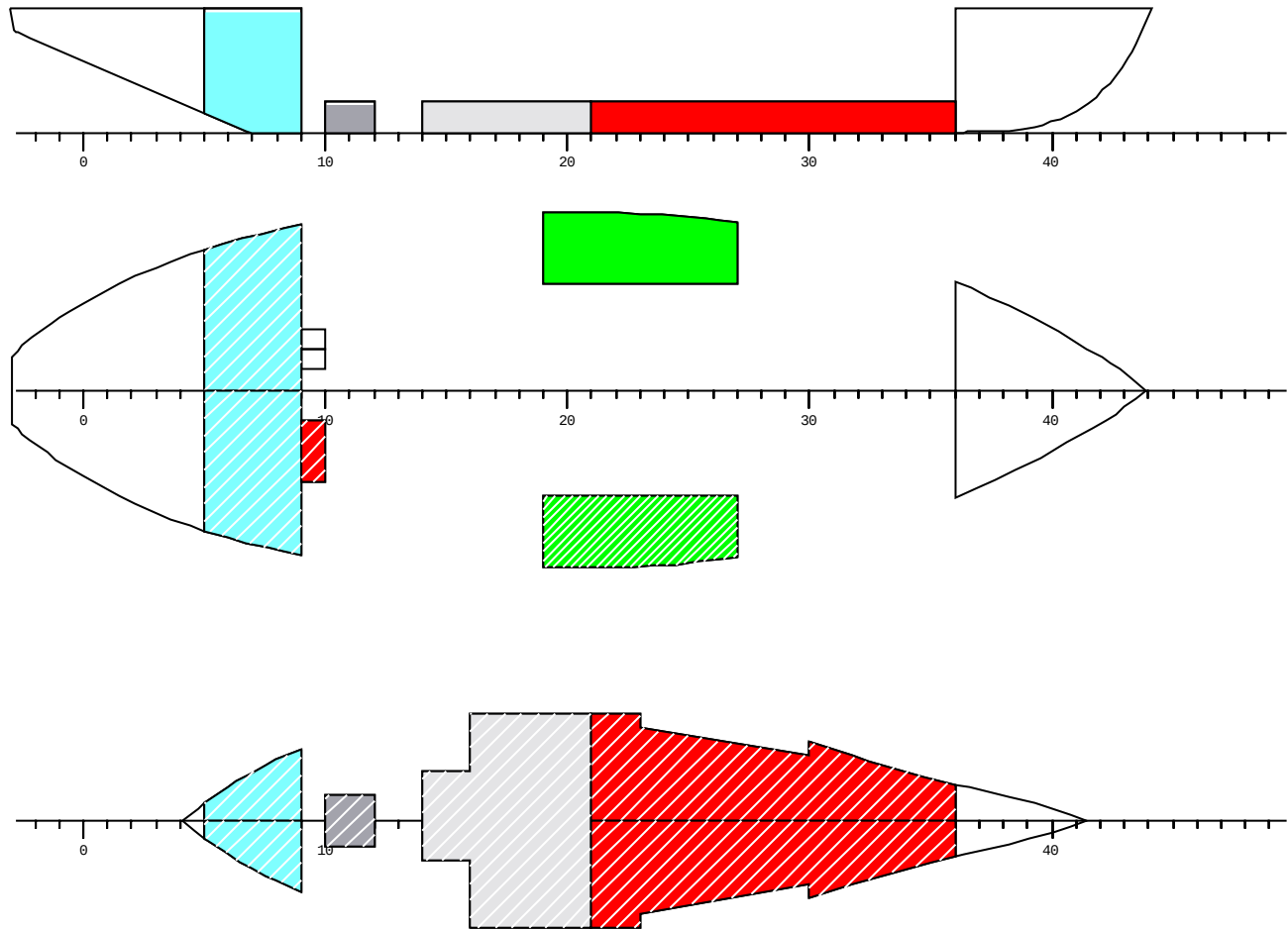
Loading condition: DEPARTURE, FULL STORES

RCR	TEXT	REQ	ATTN	UNIT	STAT
AREA30	Area under GZ curve .	0.055	0.155	mrاد	OK
AREA40	Area under GZ curve .	0.090	0.272	mrاد	OK
AREA3040	Area under GZ curve .	0.030	0.117	mrاد	OK
GZ0.2	Max GZ > 0.2	0.200	0.800	m	OK
MAXGZ25	Max. GZ at an angle .	25.000	47.190	deg	OK
GM0.15	GM > 0.15 m	0.150	1.117	m	OK

STABILITY CURVES

PROJECT	P197/A
DATE	2005-10-20
CONDITION	LC1
DISP.	309 TON
DRAUGHT	2.56 M
TRIM	-1.1





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LOADING CONDITIONS

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LOADING CONDITION LC2, ARRIVAL, 10% STORES

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

		Max.		Center of gravity			Free s.
Name		weight	Mass	cgx	cgy	cgz	moment

Water Ballast, RHO= 1.005							
T8BB	BALLAST WATER	12.6	12.6	13.73	-3.31	2.14	0.0
T8SB	BALLAST WATER	12.6	8.4	13.71	3.21	1.81	1.6

Total of Water Ballast		25.2	21.0	13.72	-0.69	2.01	1.6
Fresh Water, RHO= 1.000							
T6BB	FRESH WATER	16.3	15.5	4.29	-1.44	1.93	12.5
T6SB	FRESH WATER	16.3	15.5	4.29	1.44	1.93	12.5

Total of Fresh Water		32.7	31.0	4.29	0.00	1.93	24.9
Diesel Oil, RHO= 0.860							
T2BB	FUEL OIL	7.1	0.8	16.10	-0.35	0.11	0.6
T2SB	FUEL OIL	7.1	0.8	16.10	0.35	0.11	0.6
T9	FO DAY TANK	1.7	0.8	5.70	1.52	1.29	0.2

Total of Diesel Oil		15.9	2.4	12.51	0.53	0.51	1.4
Gray Water, RHO= 1.000							
T3	SEWAGE TANK	9.9	9.9	10.72	-0.02	0.45	0.0

Sludge, RHO= 1.000							
T4	DIRTY OIL TA.	1.1	1.0	6.60	0.00	0.34	0.2

CREW							
CREW		0.0	1.1	12.60	0.00	4.05	0.0

STORE

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STORE	0.0	0.1	22.60	0.00	1.75	0.0
MISC	0.0	1.0	4.80	0.00	5.90	0.0

Total of STORE	0.0	1.1	6.42	0.00	5.52	0.0
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Deadweight	67.6	8.67	-0.20	1.76	28.1
Lightweight	229.5	11.74	0.06	3.86	
Displacement (rho=1.005)	297.1	11.04	-0.00	3.38	28.1

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

Draught moulded	2.465	m	KM	4.63	m
Trim	-1.348	m	KG	3.38	m
Heel, SB=+	-0.0	deg			
TA	3.139	m	GM0	1.25	m
TF	1.791	m	GMCORR	-0.09	m
Trimming moment	-400	tonm	GM	1.16	m

HEEL	MS	HPHI	EPHI	FSMOM	DGZ
degree	m	m	rad*m	tm	m
0.0	0.000	0.00	0.000	0.0	0.000
10.0	-0.014	0.19	0.017	2.8	0.010
20.0	-0.054	0.36	0.066	4.3	0.014
30.0	-0.075	0.53	0.143	5.0	0.017
40.0	-0.094	0.69	0.251	5.3	0.018
50.0	-0.213	0.73	0.377	5.4	0.018
60.0	-0.410	0.66	0.499	5.5	0.018

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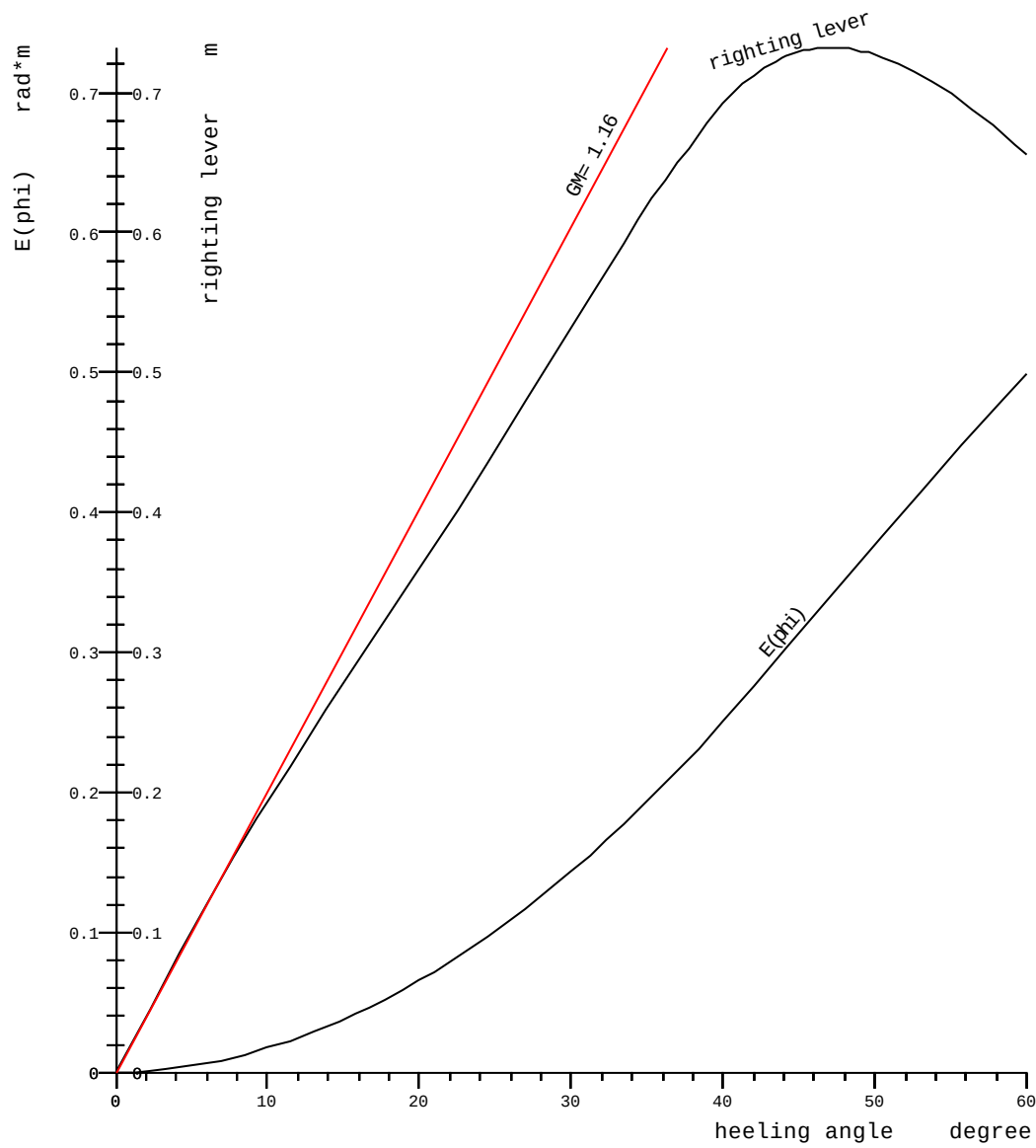
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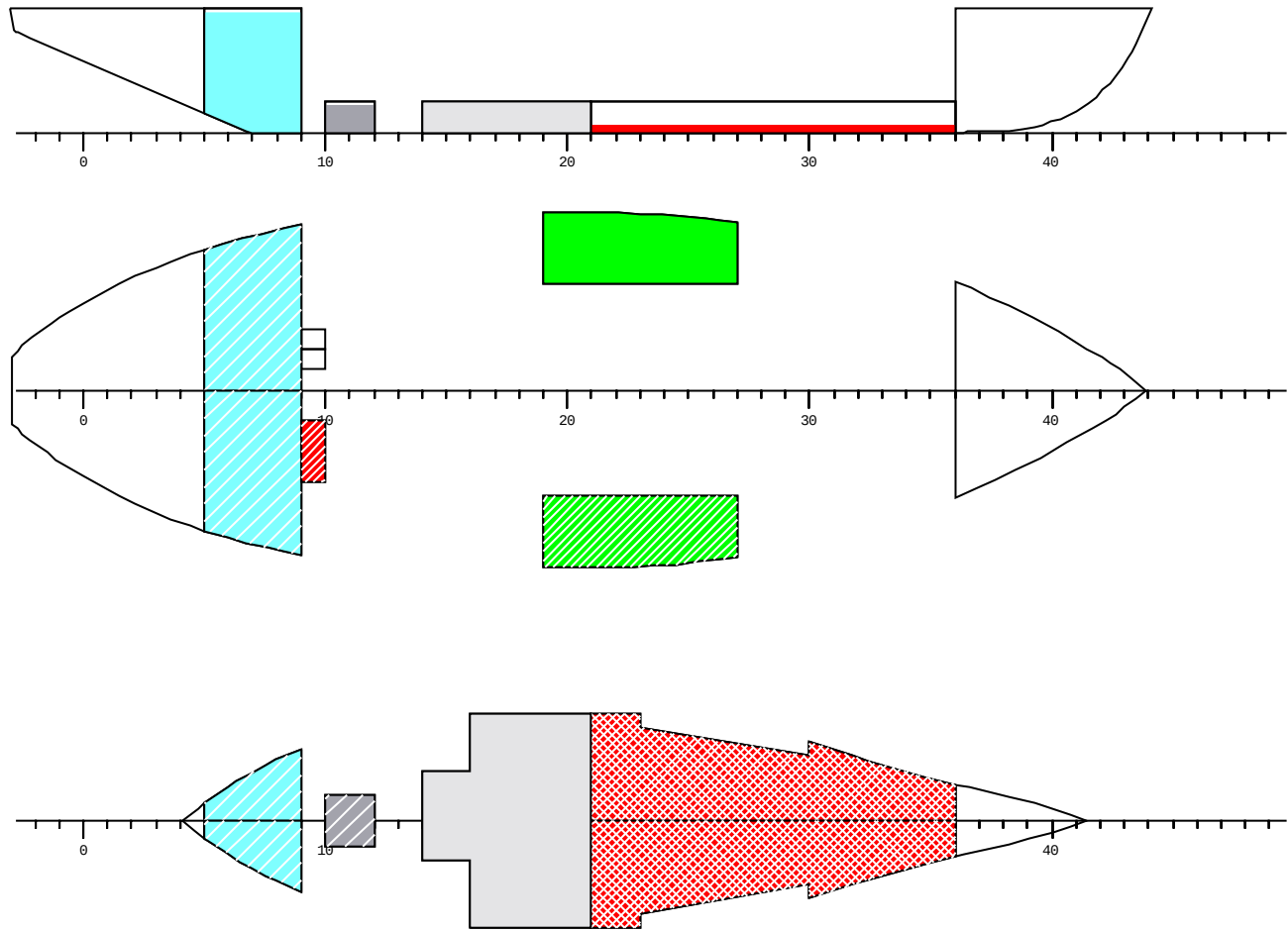
Loading condition: ARRIVAL, 10% STORES

RCR	TEXT	REQ	ATTN	UNIT	STAT
AREA30	Area under GZ curve .	0.055	0.143	mrاد	OK
AREA40	Area under GZ curve .	0.090	0.251	mrاد	OK
AREA3040	Area under GZ curve .	0.030	0.108	mrاد	OK
GZ0.2	Max GZ > 0.2	0.200	0.732	m	OK
MAXGZ25	Max. GZ at an angle .	25.000	47.087	deg	OK
GM0.15	GM > 0.15 m	0.150	1.157	m	OK

STABILITY CURVES

PROJECT P197/A
DATE 2005-10-20
CONDITION LC2
DISP. 297 TON
DRAUGHT 2.47 M
TRIM -1.33





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LOADING CONDITIONS

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LOADING CONDITION LC3, DEPARTURE, FULL STORES AND BALLAST

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

		Max. weight	Mass	Center of gravity			Free s.
Name				cgx	cgy	cgz	moment

Water Ballast, RHO= 1.005							
T1	BALLAST WATER	23.5	23.5	23.12	0.00	2.06	0.0
T7	BALLAST WATER	24.4	24.4	1.36	0.00	2.41	0.0
T8BB	BALLAST WATER	12.6	12.6	13.73	-3.31	2.14	0.0
T8SB	BALLAST WATER	12.6	8.2	13.71	3.20	1.79	1.5

Total of Water Ballast		73.0	68.6	12.54	-0.22	2.17	1.5
Fresh Water, RHO= 1.000							
T6BB	FRESH WATER	16.3	15.5	4.29	-1.44	1.93	12.5
T6SB	FRESH WATER	16.3	15.5	4.29	1.44	1.93	12.5

Total of Fresh Water		32.7	31.0	4.29	0.00	1.93	24.9
Diesel Oil, RHO= 0.860							
T2BB	FUEL OIL	7.1	7.1	16.25	-0.80	0.46	0.0
T2SB	FUEL OIL	7.1	7.1	16.25	0.80	0.46	0.0
T9	FO DAY TANK	1.7	1.5	5.70	1.52	1.72	0.2

Total of Diesel Oil		15.9	15.8	15.23	0.15	0.58	0.2
Gray Water, RHO= 1.000							
T3	SEWAGE TANK	9.9	9.9	10.72	-0.02	0.45	0.0

Sludge, RHO= 1.000							
T4	DIRTY OIL TA.	1.1	1.0	6.60	0.00	0.34	0.2

CREW							
CREW		0.0	1.1	12.60	0.00	4.05	0.0

STORE

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STORE	0.0	0.6	22.60	0.00	1.75	0.0
MISC	0.0	1.0	4.80	0.00	5.90	0.0

Total of STORE	0.0	1.6	11.48	0.00	4.34	0.0
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Deadweight	129.0	10.69	-0.10	1.81	26.8
Lightweight	229.5	11.74	0.06	3.86	
Displacement (rho=1.005)	358.5	11.36	0.00	3.12	26.8

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

Draught moulded	2.835	m	KM	4.58	m
Trim	-0.924	m	KG	3.12	m
Heel, SB=+	0.0	deg			
TA	3.296	m	GM0	1.46	m
TF	2.373	m	GMCORR	-0.07	m
Trimming moment	-299	tonm	GM	1.39	m

HEEL	MS	HPHI	EPHI	FSMOM	DGZ
degree	m	m	rad*m	tm	m
0.0	-0.000	-0.00	0.000	0.0	0.000
10.0	-0.013	0.23	0.021	2.5	0.007
20.0	-0.048	0.44	0.080	3.1	0.009
30.0	-0.062	0.66	0.176	3.6	0.010
40.0	-0.094	0.83	0.308	4.0	0.011
50.0	-0.249	0.86	0.457	4.1	0.012
60.0	-0.470	0.78	0.601	4.3	0.012

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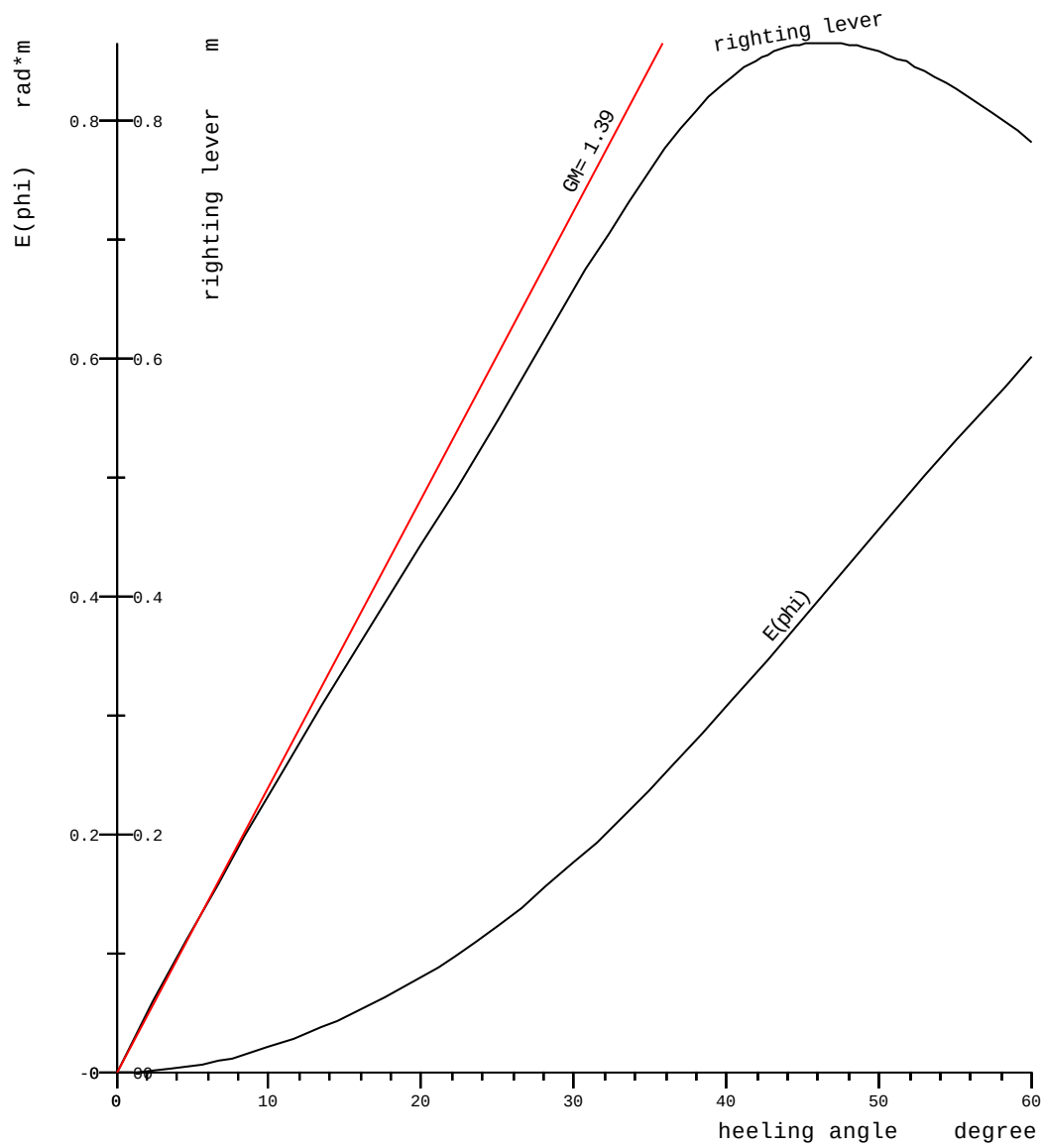
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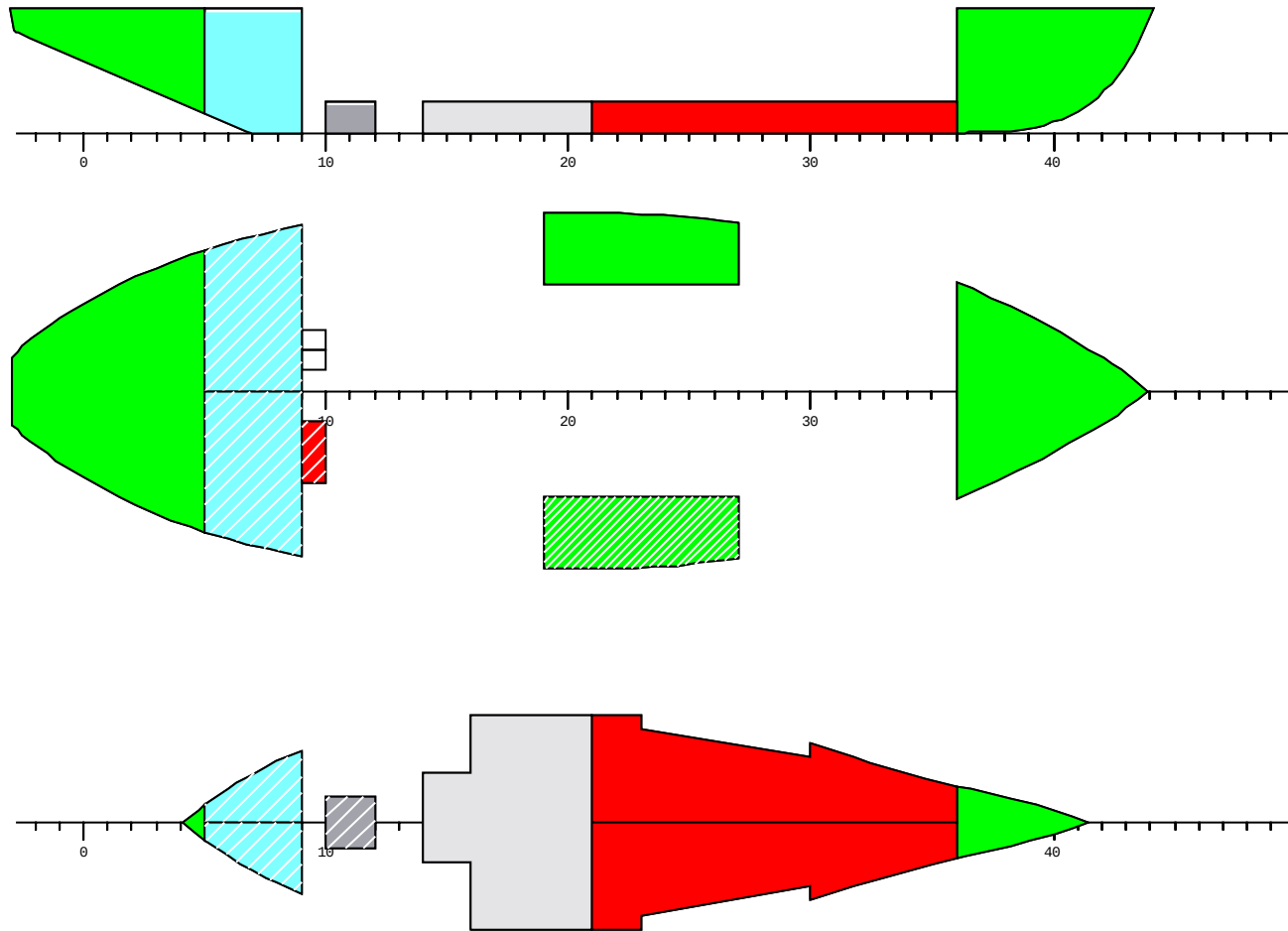
Loading condition: DEPARTURE, FULL STORES AND BALLAST

RCR	TEXT	REQ	ATTN	UNIT	STAT
AREA30	Area under GZ curve .	0.055	0.176	mrاد	OK
AREA40	Area under GZ curve .	0.090	0.308	mrاد	OK
AREA3040	Area under GZ curve .	0.030	0.132	mrاد	OK
GZ0.2	Max GZ > 0.2	0.200	0.866	m	OK
MAXGZ25	Max. GZ at an angle .	25.000	46.434	deg	OK
GM0.15	GM > 0.15 m	0.150	1.385	m	OK

STABILITY CURVES

PROJECT P197/A
DATE 2005-10-20
CONDITION LC3
DISP. 359 TON
DRAUGHT 2.83 M
TRIM -0.92





Ship Consulting
NAPA/D/LD/021119
P197/A
AIRISTO

LOADING CONDITIONS

DATE 2005-10-20
TIME 12:24
USER MT
Page 25

LOADING CONDITION LC4, ARRIVAL, 10% STORES, FULL BALLAST

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

		Max.		Center of gravity			Free s.
Name		weight	Mass	cgx	cgy	cgz	moment

Water Ballast, RHO= 1.005							
T1	BALLAST WATER	23.5	23.5	23.12	0.00	2.06	0.0
T7	BALLAST WATER	24.4	24.4	1.36	0.00	2.41	0.0
T8BB	BALLAST WATER	12.6	12.6	13.73	-3.31	2.14	0.0
T8SB	BALLAST WATER	12.6	8.8	13.71	3.22	1.85	1.7

Total of Water Ballast		73.0	69.3	12.55	-0.19	2.17	1.7
Fresh Water, RHO= 1.000							
T6BB	FRESH WATER	16.3	15.5	4.29	-1.44	1.93	12.5
T6SB	FRESH WATER	16.3	15.5	4.29	1.44	1.93	12.5

Total of Fresh Water		32.7	31.0	4.29	0.00	1.93	24.9
Diesel Oil, RHO= 0.860							
T2BB	FUEL OIL	7.1	1.6	16.13	-0.45	0.17	1.5
T9	FO DAY TANK	1.7	0.8	5.70	1.52	1.29	0.2

Total of Diesel Oil		8.8	2.4	12.53	0.23	0.56	1.6
Gray Water, RHO= 1.000							
T3	SEWAGE TANK	9.9	9.9	10.72	-0.02	0.45	0.0

Sludge, RHO= 1.000							
T4	DIRTY OIL TA.	1.1	1.0	6.60	0.00	0.34	0.2

CREW							
CREW		0.0	1.1	12.60	0.00	4.05	0.0

STORE

Ship Consulting
 NAPA/D/LD/021119
 P197/A
 AIRISTO

LOADING CONDITIONS

DATE 2005-10-20
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STORE	0.0	0.1	22.60	0.00	1.75	0.0
MISC	0.0	1.0	4.80	0.00	5.90	0.0

Total of STORE	0.0	1.1	6.42	0.00	5.52	0.0
----------------	-----	-----	------	------	------	-----

Deadweight	115.8	10.07	-0.11	1.96	28.5
Lightweight	229.5	11.74	0.06	3.86	
Displacement (rho=1.005)	345.3	11.18	0.00	3.22	28.5

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

Draught moulded	2.742	m	KM	4.60	m
Trim	-1.151	m	KG	3.22	m
Heel, SB=+	0.0	deg			
TA	3.318	m	GM0	1.38	m
TF	2.166	m	GMCORR	-0.08	m
Trimming moment	-365	tonm	GM	1.30	m

HEEL	MS	HPHI	EPHI	FSMOM	DGZ
degree	m	m	rad*m	tm	m
0.0	-0.001	-0.00	0.000	0.0	0.000
10.0	-0.015	0.22	0.019	2.7	0.008
20.0	-0.052	0.41	0.074	3.5	0.010
30.0	-0.068	0.61	0.163	4.0	0.012
40.0	-0.098	0.78	0.286	4.3	0.012
50.0	-0.249	0.80	0.425	4.5	0.013
60.0	-0.466	0.72	0.558	4.6	0.013

Ship Consulting
NAPA/D/LD/021119
P197/A
AIRISTO

LOADING CONDITIONS

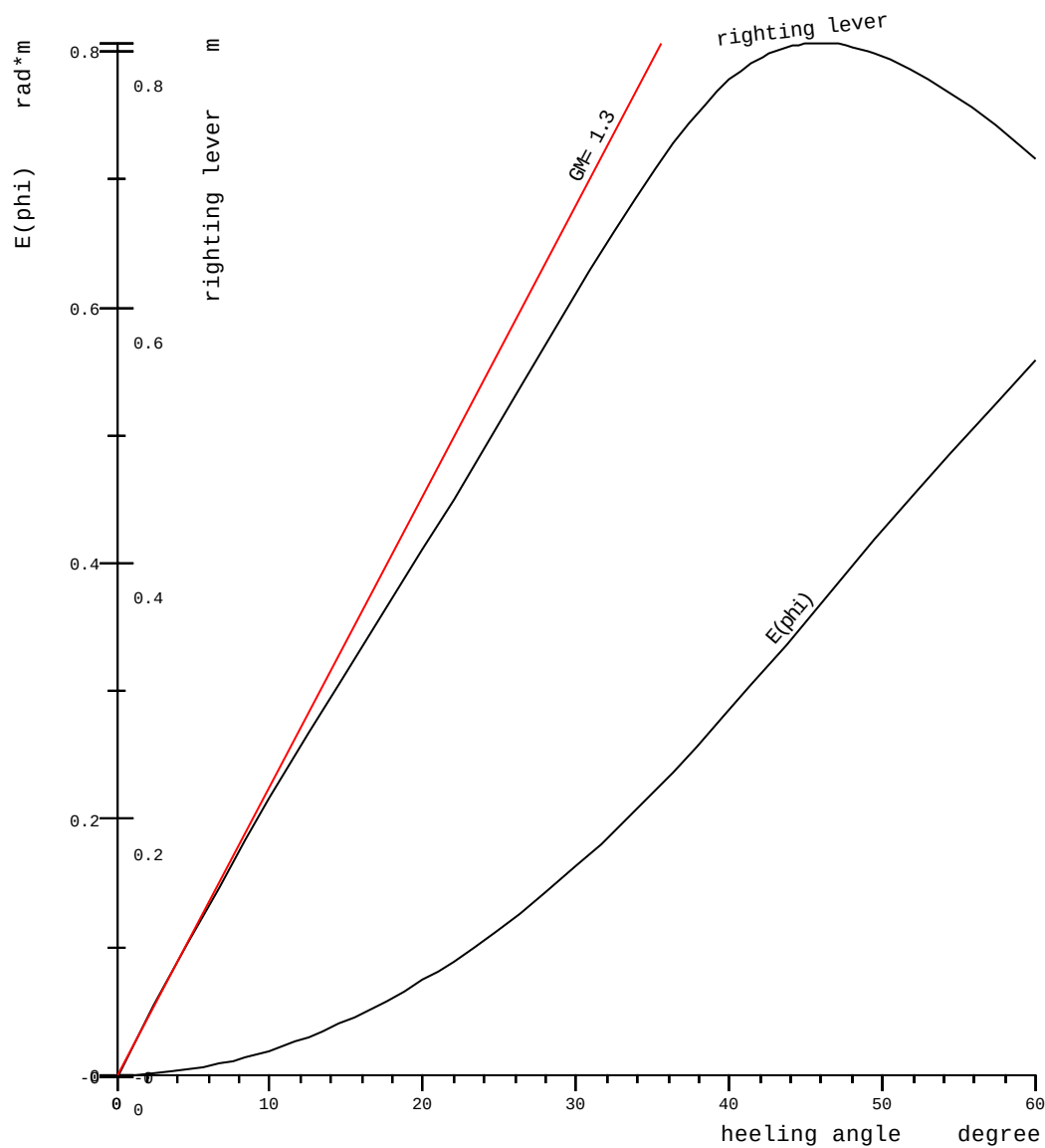
DATE 2005-10-20
TIME 12:24
USER MT
Page 27

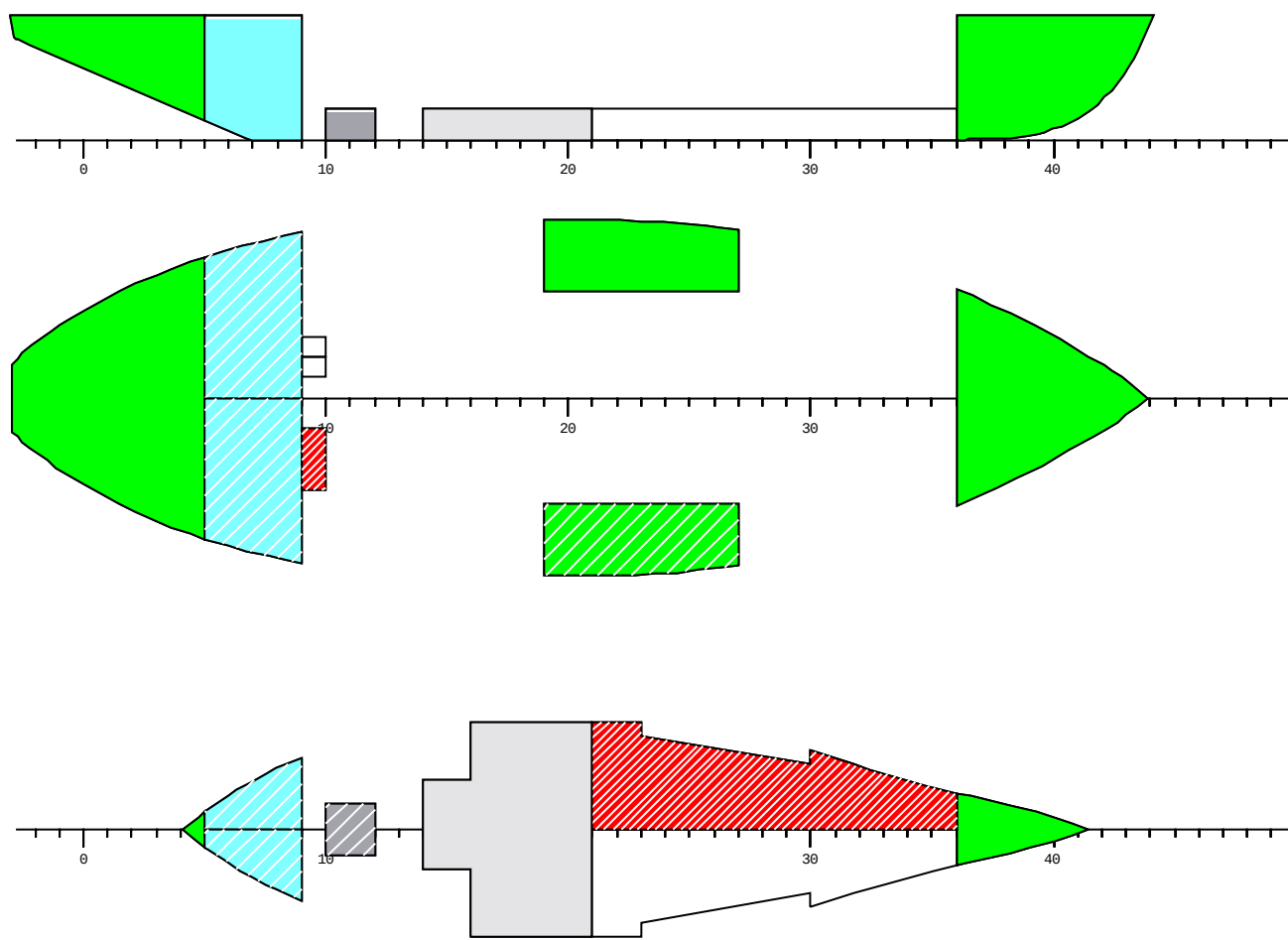
Loading condition: ARRIVAL, 10% STORES, FULL BALLAST

RCR	TEXT	REQ	ATTN	UNIT	STAT
AREA30	Area under GZ curve .	0.055	0.163	mrاد	OK
AREA40	Area under GZ curve .	0.090	0.286	mrاد	OK
AREA3040	Area under GZ curve .	0.030	0.123	mrاد	OK
GZ0.2	Max GZ > 0.2	0.200	0.807	m	OK
MAXGZ25	Max. GZ at an angle .	25.000	45.919	deg	OK
GM0.15	GM > 0.15 m	0.150	1.299	m	OK

STABILITY CURVES

PROJECT P197/A
DATE 2005-10-20
CONDITION LC4
DISP. 345 TON
DRAUGHT 2.74 M
TRIM -1.14





TK	m	2.000	2.050	2.100	2.150	2.200	2.250	2.300	2.350
VOLM	m3	192	199	207	215	223	231	239	247
DISP	t	195	202	210	218	226	234	242	251
LCB	m	12.495	12.483	12.471	12.458	12.444	12.430	12.415	12.399
VCB	m	1.215	1.245	1.275	1.305	1.336	1.366	1.397	1.428
KMT	m	4.212	4.225	4.240	4.257	4.276	4.298	4.321	4.346
KML	m	30.385	30.132	29.905	29.706	29.535	29.384	29.254	29.152
TCP	t/cm	1.5	1.5	1.6	1.6	1.6	1.6	1.7	1.7
MCT	tm/cm	2.0	2.1	2.1	2.2	2.3	2.3	2.4	2.5
CB		0.3852	0.3906	0.3959	0.4012	0.4065	0.4118	0.4170	0.4223
CP		0.5917	0.5947	0.5978	0.6009	0.6039	0.6069	0.6100	0.6130
CW		0.6015	0.6108	0.6203	0.6299	0.6396	0.6495	0.6595	0.6698
CM		0.6511	0.6567	0.6623	0.6678	0.6731	0.6784	0.6837	0.6888
WSA	m2	186	190	194	197	201	205	209	213
LCA	m	12.20	12.16	12.12	12.07	12.03	11.98	11.93	11.89
transv. metac. height m									
-1.400		4.489	4.515	4.540	4.564	4.585	4.603	4.615	4.625
-1.200		4.430	4.454	4.481	4.509	4.537	4.563	4.586	4.604
-1.000		4.379	4.400	4.424	4.451	4.480	4.511	4.542	4.569
-0.800		4.336	4.354	4.376	4.399	4.426	4.455	4.486	4.519
-0.600		4.298	4.315	4.334	4.356	4.380	4.406	4.435	4.466
-0.400		4.265	4.280	4.298	4.318	4.340	4.364	4.391	4.420
-0.200		4.237	4.251	4.267	4.285	4.306	4.329	4.353	4.380
0.000		4.212	4.225	4.240	4.257	4.276	4.298	4.321	4.346
0.200		4.191	4.203	4.216	4.233	4.251	4.271	4.293	4.317
0.400		4.173	4.184	4.197	4.212	4.229	4.248	4.269	4.292
0.600		4.159	4.169	4.181	4.195	4.211	4.230	4.249	4.271
0.800		4.148	4.156	4.167	4.181	4.196	4.214	4.233	4.254
1.000		4.138	4.147	4.157	4.170	4.184	4.201	4.220	4.240
TOTAL DISPLACEMENT t									
-1.400		214	223	231	240	249	257	266	275
-1.200		211	219	227	236	245	253	262	271
-1.000		207	216	224	232	241	249	258	267
-0.800		204	212	221	229	237	246	254	263
-0.600		202	210	218	226	234	242	251	260
-0.400		199	207	215	223	231	239	248	256
-0.200		197	204	212	220	228	237	245	253
0.000		195	202	210	218	226	234	242	251
0.200		193	200	208	216	224	232	240	248
0.400		191	199	206	214	222	230	238	246
0.600		190	197	205	212	220	228	236	244
0.800		188	196	203	211	218	226	234	242
1.000		187	194	202	209	217	225	233	241

TK	m	2.000	2.050	2.100	2.150	2.200	2.250	2.300	2.350
long. centre of buoy. m									
-1.400		10.938	10.933	10.928	10.922	10.916	10.911	10.906	10.901
-1.200		11.170	11.165	11.158	11.150	11.141	11.132	11.123	11.114
-1.000		11.400	11.394	11.386	11.377	11.367	11.355	11.343	11.331
-0.800		11.626	11.619	11.611	11.601	11.590	11.578	11.565	11.550
-0.600		11.848	11.841	11.832	11.822	11.810	11.797	11.783	11.768
-0.400		12.067	12.058	12.048	12.038	12.026	12.012	11.998	11.983
-0.200		12.282	12.272	12.261	12.250	12.237	12.223	12.208	12.193
0.000		12.495	12.483	12.471	12.458	12.444	12.430	12.415	12.399
0.200		12.705	12.692	12.678	12.664	12.648	12.633	12.617	12.600
0.400		12.913	12.898	12.882	12.866	12.850	12.833	12.816	12.798
0.600		13.119	13.102	13.084	13.067	13.049	13.031	13.012	12.994
0.800		13.320	13.302	13.284	13.264	13.245	13.225	13.206	13.186
1.000		13.519	13.498	13.478	13.459	13.439	13.418	13.397	13.375

TK	m	2.400	2.450	2.500	2.550	2.600	2.650	2.700	2.750
VOLM	m3	256	264	273	282	291	300	309	318
DISP	t	259	268	277	285	295	304	313	322
LCB	m	12.382	12.364	12.346	12.326	12.307	12.286	12.265	12.243
VCB	m	1.458	1.489	1.520	1.551	1.582	1.613	1.645	1.676
KMT	m	4.373	4.402	4.433	4.465	4.499	4.534	4.571	4.610
KML	m	29.073	29.002	28.952	28.905	28.862	28.822	28.763	28.692
TCP	t/cm	1.7	1.7	1.8	1.8	1.8	1.8	1.9	1.9
MCT	tm/cm	2.5	2.6	2.7	2.8	2.9	2.9	3.0	3.1
CB		0.4275	0.4328	0.4380	0.4433	0.4485	0.4538	0.4591	0.4644
CP		0.6161	0.6191	0.6222	0.6253	0.6284	0.6315	0.6347	0.6378
CW		0.6802	0.6907	0.7014	0.7123	0.7232	0.7342	0.7452	0.7561
CM		0.6939	0.6990	0.7039	0.7089	0.7137	0.7186	0.7234	0.7281
WSA	m2	217	220	224	228	233	237	241	245
LCA	m	11.84	11.78	11.73	11.68	11.63	11.57	11.52	11.47
transv. metac. height		m							
-1.400		4.630	4.633	4.632	4.629	4.623	4.616	4.606	4.597
-1.200		4.617	4.625	4.629	4.628	4.627	4.619	4.611	4.602
-1.000		4.593	4.610	4.621	4.627	4.627	4.625	4.618	4.608
-0.800		4.552	4.582	4.604	4.619	4.628	4.629	4.625	4.616
-0.600		4.499	4.534	4.569	4.599	4.619	4.630	4.632	4.626
-0.400		4.450	4.483	4.518	4.554	4.591	4.620	4.635	4.636
-0.200		4.409	4.439	4.472	4.506	4.542	4.579	4.618	4.642
0.000		4.373	4.402	4.433	4.465	4.499	4.534	4.571	4.610
0.200		4.343	4.370	4.399	4.430	4.462	4.495	4.531	4.567
0.400		4.317	4.343	4.371	4.400	4.430	4.462	4.496	4.529
0.600		4.295	4.320	4.346	4.374	4.404	4.435	4.466	4.495
0.800		4.276	4.300	4.326	4.353	4.381	4.410	4.438	4.465
1.000		4.262	4.285	4.309	4.335	4.362	4.388	4.414	4.437
TOTAL DISPLACEMENT		t							
-1.400		284	294	303	312	322	331	341	350
-1.200		280	289	299	308	317	327	336	346
-1.000		276	285	294	304	313	323	332	342
-0.800		272	281	290	300	309	319	328	338
-0.600		268	277	287	296	305	315	324	334
-0.400		265	274	283	292	301	311	320	330
-0.200		262	271	280	289	298	307	317	326
0.000		259	268	277	285	295	304	313	322
0.200		257	265	274	283	292	301	310	319
0.400		254	263	271	280	289	298	307	316
0.600		252	261	269	278	286	295	304	313
0.800		250	259	267	276	284	293	302	311
1.000		249	257	265	274	282	291	300	309

TK	m	2.400	2.450	2.500	2.550	2.600	2.650	2.700	2.750
long. centre of buoy. m									
-1.400		10.897	10.893	10.890	10.888	10.887	10.886	10.885	10.885
-1.200		11.106	11.098	11.091	11.085	11.080	11.076	11.072	11.069
-1.000		11.319	11.307	11.297	11.287	11.278	11.270	11.262	11.256
-0.800		11.535	11.520	11.506	11.492	11.479	11.468	11.457	11.447
-0.600		11.752	11.736	11.718	11.701	11.685	11.669	11.655	11.641
-0.400		11.966	11.949	11.931	11.912	11.893	11.874	11.856	11.839
-0.200		12.176	12.159	12.140	12.121	12.102	12.081	12.061	12.040
0.000		12.382	12.364	12.346	12.326	12.307	12.286	12.265	12.243
0.200		12.583	12.565	12.546	12.527	12.507	12.487	12.465	12.444
0.400		12.780	12.762	12.743	12.723	12.703	12.683	12.662	12.639
0.600		12.974	12.955	12.936	12.916	12.895	12.874	12.852	12.829
0.800		13.166	13.146	13.125	13.104	13.082	13.060	13.037	13.014
1.000		13.354	13.333	13.311	13.288	13.265	13.242	13.219	13.195

TK	m	2.800	2.850	2.900	2.950	3.000	3.050	3.100	3.150
VOLM	m3	328	338	347	357	367	376	386	396
DISP	t	332	342	352	361	371	381	391	401
LCB	m	12.221	12.200	12.179	12.159	12.139	12.121	12.103	12.087
VCB	m	1.707	1.739	1.770	1.801	1.832	1.862	1.893	1.923
KMT	m	4.650	4.624	4.594	4.567	4.542	4.520	4.500	4.483
KML	m	28.608	28.175	27.753	27.352	26.970	26.719	26.370	26.038
TCP	t/cm	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0
MCT	tm/cm	3.2	3.2	3.2	3.3	3.3	3.4	3.4	3.4
CB		0.4697	0.4749	0.4801	0.4851	0.4900	0.4948	0.4994	0.5040
CP		0.6409	0.6441	0.6471	0.6501	0.6530	0.6558	0.6586	0.6614
CW		0.7670	0.7710	0.7743	0.7776	0.7810	0.7852	0.7885	0.7918
CM		0.7328	0.7374	0.7419	0.7462	0.7504	0.7544	0.7583	0.7621
WSA	m2	249	252	255	258	261	264	267	270
LCA	m	11.43	11.43	11.44	11.44	11.44	11.43	11.44	11.44
transv. metac. height m									
-1.400		4.583	4.569	4.556	4.539	4.524	4.510	4.496	4.483
-1.200		4.587	4.573	4.558	4.540	4.524	4.508	4.493	4.479
-1.000		4.594	4.578	4.561	4.542	4.524	4.506	4.490	4.476
-0.800		4.603	4.586	4.566	4.545	4.525	4.506	4.489	4.474
-0.600		4.613	4.595	4.572	4.549	4.527	4.507	4.490	4.474
-0.400		4.625	4.604	4.579	4.553	4.530	4.510	4.491	4.475
-0.200		4.639	4.614	4.586	4.559	4.535	4.514	4.495	4.478
0.000		4.650	4.624	4.594	4.567	4.542	4.520	4.500	4.483
0.200		4.601	4.616	4.604	4.576	4.551	4.528	4.507	4.489
0.400		4.557	4.576	4.583	4.578	4.560	4.537	4.516	4.497
0.600		4.519	4.537	4.549	4.553	4.551	4.541	4.525	4.506
0.800		4.486	4.504	4.516	4.524	4.527	4.526	4.521	4.511
1.000		4.457	4.475	4.486	4.496	4.502	4.506	4.506	4.503
TOTAL DISPLACEMENT t									
-1.400		360	370	379	389	399	409	419	429
-1.200		356	365	375	385	395	405	415	425
-1.000		351	361	371	381	391	401	411	421
-0.800		347	357	367	377	387	396	406	416
-0.600		343	353	363	373	383	392	402	412
-0.400		339	349	359	369	379	389	398	408
-0.200		336	345	355	365	375	385	395	405
0.000		332	342	352	361	371	381	391	401
0.200		329	338	348	358	367	377	387	397
0.400		325	335	345	354	364	374	384	394
0.600		323	332	341	351	361	370	380	390
0.800		320	329	339	348	358	367	377	387
1.000		318	327	336	345	355	364	374	384

TK	m	2.800	2.850	2.900	2.950	3.000	3.050	3.100	3.150
long. centre of buoy. m									
-1.400		10.885	10.886	10.887	10.889	10.890	10.892	10.894	10.896
-1.200		11.066	11.064	11.063	11.061	11.061	11.060	11.060	11.060
-1.000		11.250	11.245	11.241	11.237	11.234	11.231	11.228	11.226
-0.800		11.438	11.430	11.423	11.416	11.410	11.404	11.399	11.394
-0.600		11.629	11.618	11.607	11.598	11.589	11.580	11.572	11.565
-0.400		11.823	11.809	11.795	11.782	11.770	11.759	11.748	11.737
-0.200		12.021	12.003	11.986	11.970	11.954	11.939	11.924	11.911
0.000		12.221	12.200	12.179	12.159	12.139	12.121	12.103	12.087
0.200		12.421	12.397	12.373	12.349	12.326	12.305	12.284	12.265
0.400		12.616	12.591	12.566	12.541	12.516	12.491	12.467	12.445
0.600		12.805	12.781	12.756	12.730	12.704	12.678	12.652	12.626
0.800		12.990	12.966	12.941	12.915	12.889	12.863	12.836	12.809
1.000		13.171	13.147	13.121	13.096	13.070	13.043	13.017	12.990

TK	m	3.200
VOLM	m3	406
DISP	t	411
LCB	m	12.071
VCB	m	1.953
KMT	m	4.467
KML	m	25.723
TCP	t/cm	2.0
MCT	tm/cm	3.5
CB		0.5085
CP		0.6641
CW		0.7952
CM		0.7658
WSA	m2	273
LCA	m	11.45

transv. metac. height	m
-1.400	4.472
-1.200	4.467
-1.000	4.463
-0.800	4.461
-0.600	4.460
-0.400	4.461
-0.200	4.463
0.000	4.467
0.200	4.473
0.400	4.480
0.600	4.489
0.800	4.498
1.000	4.497

TOTAL DISPLACEMENT	t
-1.400	439
-1.200	435
-1.000	431
-0.800	426
-0.600	422
-0.400	418
-0.200	415
0.000	411
0.200	407
0.400	403
0.600	400
0.800	397
1.000	393

TK m 3.200

long. centre of buoy. m	
-1.400	10.899
-1.200	11.060
-1.000	11.223
-0.800	11.389
-0.600	11.557
-0.400	11.726
-0.200	11.897
0.000	12.071
0.200	12.246
0.400	12.423
0.600	12.602
0.800	12.783
1.000	12.962

RESIDUARY STABILITY LEVER MS AS A FUNCTION OF DRAUGHT AND HEELING ANGLE
INITIAL TRIM: -1.40 M UNIT: m

INITIAL DRAUGHT	HEELING ANGLE (DEGREES)						
	0.0	10.0	20.0	30.0	40.0	50.0	60.0
2.000	0.000	0.005	0.009	0.003	-0.011	-0.026	-0.141
2.050	0.000	0.002	-0.002	-0.011	-0.025	-0.053	-0.179
2.100	0.000	-0.001	-0.012	-0.024	-0.039	-0.080	-0.216
2.150	0.000	-0.004	-0.022	-0.037	-0.052	-0.106	-0.252
2.200	0.000	-0.007	-0.031	-0.048	-0.063	-0.129	-0.286
2.250	0.000	-0.010	-0.038	-0.057	-0.073	-0.151	-0.317
2.300	0.000	-0.011	-0.044	-0.064	-0.081	-0.169	-0.344
2.350	0.000	-0.013	-0.048	-0.068	-0.086	-0.185	-0.367
2.400	0.000	-0.014	-0.051	-0.071	-0.090	-0.199	-0.388
2.450	0.000	-0.014	-0.052	-0.072	-0.092	-0.210	-0.406
2.500	0.000	-0.014	-0.052	-0.072	-0.093	-0.219	-0.421
2.550	0.000	-0.014	-0.052	-0.071	-0.094	-0.228	-0.435
2.600	0.000	-0.014	-0.050	-0.067	-0.093	-0.234	-0.444
2.650	0.000	-0.013	-0.048	-0.063	-0.092	-0.239	-0.453
2.700	0.000	-0.012	-0.045	-0.057	-0.091	-0.243	-0.460
2.750	0.000	-0.011	-0.041	-0.051	-0.090	-0.246	-0.466
2.800	0.000	-0.009	-0.037	-0.044	-0.087	-0.248	-0.469
2.850	0.000	-0.008	-0.032	-0.037	-0.085	-0.249	-0.471
2.900	0.000	-0.007	-0.027	-0.030	-0.084	-0.251	-0.474
2.950	0.000	-0.005	-0.021	-0.022	-0.082	-0.250	-0.475
3.000	0.000	-0.003	-0.015	-0.016	-0.081	-0.251	-0.476
3.050	0.000	-0.001	-0.010	-0.010	-0.081	-0.253	-0.478
3.100	0.000	-0.000	-0.004	-0.005	-0.082	-0.255	-0.480
3.150	0.000	0.001	0.001	-0.001	-0.084	-0.259	-0.483
3.200	0.000	0.002	0.006	0.002	-0.088	-0.263	-0.487

RESIDUARY STABILITY LEVER MS AS A FUNCTION OF DRAUGHT AND HEELING ANGLE

INITIAL TRIM: -1.20 M

UNIT: m

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INITIAL	HEELING ANGLE (DEGREES)						
DRAUGHT	0.0	10.0	20.0	30.0	40.0	50.0	60.0
2.000	0.000	0.009	0.023	0.025	0.015	0.015	-0.088
2.050	0.000	0.007	0.013	0.012	0.003	-0.011	-0.124
2.100	0.000	0.004	0.001	-0.003	-0.012	-0.038	-0.163
2.150	0.000	0.000	-0.010	-0.018	-0.029	-0.068	-0.204
2.200	0.000	-0.004	-0.022	-0.033	-0.044	-0.097	-0.244
2.250	0.000	-0.007	-0.032	-0.046	-0.058	-0.124	-0.281
2.300	0.000	-0.010	-0.040	-0.057	-0.070	-0.150	-0.316
2.350	0.000	-0.012	-0.047	-0.066	-0.080	-0.172	-0.347
2.400	0.000	-0.014	-0.052	-0.073	-0.088	-0.190	-0.374
2.450	0.000	-0.015	-0.055	-0.076	-0.093	-0.205	-0.396
2.500	0.000	-0.016	-0.057	-0.078	-0.096	-0.217	-0.415
2.550	0.000	-0.016	-0.057	-0.078	-0.098	-0.227	-0.430
2.600	0.000	-0.016	-0.057	-0.077	-0.099	-0.235	-0.444
2.650	0.000	-0.015	-0.054	-0.072	-0.097	-0.240	-0.452
2.700	0.000	-0.014	-0.051	-0.067	-0.095	-0.244	-0.459
2.750	0.000	-0.013	-0.048	-0.061	-0.094	-0.247	-0.465
2.800	0.000	-0.011	-0.042	-0.053	-0.090	-0.247	-0.468
2.850	0.000	-0.009	-0.037	-0.045	-0.087	-0.247	-0.469
2.900	0.000	-0.008	-0.031	-0.036	-0.083	-0.247	-0.470
2.950	0.000	-0.006	-0.025	-0.027	-0.080	-0.245	-0.470
3.000	0.000	-0.004	-0.019	-0.019	-0.077	-0.245	-0.470
3.050	0.000	-0.002	-0.013	-0.011	-0.075	-0.245	-0.470
3.100	0.000	-0.000	-0.007	-0.005	-0.075	-0.246	-0.471
3.150	0.000	0.001	-0.001	0.000	-0.076	-0.249	-0.473
3.200	0.000	0.002	0.004	0.004	-0.079	-0.253	-0.477

RESIDUARY STABILITY LEVER MS AS A FUNCTION OF DRAUGHT AND HEELING ANGLE

INITIAL TRIM: -1.00 M

UNIT: m

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INITIAL	HEELING ANGLE (DEGREES)						
DRAUGHT	0.0	10.0	20.0	30.0	40.0	50.0	60.0
2.000	0.000	0.012	0.035	0.043	0.038	0.049	-0.044
2.050	0.000	0.011	0.025	0.032	0.027	0.026	-0.077
2.100	0.000	0.008	0.015	0.018	0.014	0.001	-0.113
2.150	0.000	0.005	0.004	0.004	-0.001	-0.027	-0.152
2.200	0.000	0.002	-0.008	-0.011	-0.017	-0.057	-0.192
2.250	0.000	-0.003	-0.020	-0.028	-0.035	-0.088	-0.236
2.300	0.000	-0.007	-0.032	-0.043	-0.052	-0.120	-0.278
2.350	0.000	-0.010	-0.042	-0.057	-0.067	-0.149	-0.317
2.400	0.000	-0.014	-0.050	-0.069	-0.080	-0.175	-0.352
2.450	0.000	-0.016	-0.056	-0.077	-0.090	-0.196	-0.382
2.500	0.000	-0.017	-0.060	-0.082	-0.097	-0.213	-0.406
2.550	0.000	-0.018	-0.062	-0.084	-0.101	-0.226	-0.425
2.600	0.000	-0.018	-0.062	-0.084	-0.103	-0.235	-0.441
2.650	0.000	-0.018	-0.061	-0.082	-0.104	-0.242	-0.452
2.700	0.000	-0.017	-0.058	-0.077	-0.102	-0.247	-0.461
2.750	0.000	-0.015	-0.055	-0.072	-0.100	-0.250	-0.467
2.800	0.000	-0.013	-0.049	-0.063	-0.095	-0.249	-0.469
2.850	0.000	-0.011	-0.043	-0.054	-0.090	-0.247	-0.470
2.900	0.000	-0.009	-0.036	-0.044	-0.084	-0.245	-0.468
2.950	0.000	-0.006	-0.029	-0.033	-0.079	-0.242	-0.466
3.000	0.000	-0.004	-0.022	-0.023	-0.075	-0.240	-0.464
3.050	0.000	-0.002	-0.016	-0.014	-0.072	-0.239	-0.463
3.100	0.000	-0.000	-0.010	-0.006	-0.070	-0.239	-0.463
3.150	0.000	0.001	-0.004	0.000	-0.070	-0.241	-0.465
3.200	0.000	0.003	0.002	0.005	-0.072	-0.244	-0.468

RESIDUARY STABILITY LEVER MS AS A FUNCTION OF DRAUGHT AND HEELING ANGLE

INITIAL TRIM: -0.80 M

UNIT: m

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INITIAL	HEELING ANGLE (DEGREES)						
DRAUGHT	0.0	10.0	20.0	30.0	40.0	50.0	60.0
2.000	0.000	0.013	0.044	0.057	0.056	0.076	-0.007
2.050	0.000	0.013	0.036	0.047	0.047	0.057	-0.038
2.100	0.000	0.011	0.026	0.036	0.035	0.034	-0.072
2.150	0.000	0.009	0.016	0.023	0.022	0.008	-0.107
2.200	0.000	0.006	0.005	0.009	0.008	-0.019	-0.145
2.250	0.000	0.003	-0.007	-0.007	-0.007	-0.049	-0.187
2.300	0.000	-0.001	-0.019	-0.023	-0.025	-0.081	-0.229
2.350	0.000	-0.006	-0.031	-0.040	-0.044	-0.115	-0.274
2.400	0.000	-0.011	-0.043	-0.056	-0.063	-0.148	-0.317
2.450	0.000	-0.015	-0.053	-0.070	-0.080	-0.178	-0.357
2.500	0.000	-0.018	-0.060	-0.081	-0.093	-0.202	-0.390
2.550	0.000	-0.019	-0.065	-0.088	-0.102	-0.222	-0.417
2.600	0.000	-0.020	-0.068	-0.091	-0.108	-0.236	-0.438
2.650	0.000	-0.020	-0.068	-0.091	-0.110	-0.246	-0.454
2.700	0.000	-0.020	-0.065	-0.088	-0.110	-0.251	-0.464
2.750	0.000	-0.018	-0.062	-0.082	-0.107	-0.254	-0.471
2.800	0.000	-0.016	-0.056	-0.074	-0.102	-0.253	-0.472
2.850	0.000	-0.014	-0.050	-0.064	-0.095	-0.250	-0.471
2.900	0.000	-0.011	-0.042	-0.052	-0.087	-0.245	-0.468
2.950	0.000	-0.008	-0.034	-0.040	-0.080	-0.240	-0.464
3.000	0.000	-0.005	-0.026	-0.029	-0.074	-0.237	-0.460
3.050	0.000	-0.003	-0.019	-0.018	-0.069	-0.234	-0.458
3.100	0.000	-0.001	-0.012	-0.009	-0.067	-0.233	-0.457
3.150	0.000	0.001	-0.006	-0.002	-0.066	-0.234	-0.458
3.200	0.000	0.002	-0.001	0.004	-0.067	-0.237	-0.460

RESIDUARY STABILITY LEVER MS AS A FUNCTION OF DRAUGHT AND HEELING ANGLE

INITIAL TRIM: -0.60 M

UNIT: m

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INITIAL	HEELING ANGLE (DEGREES)						
DRAUGHT	0.0	10.0	20.0	30.0	40.0	50.0	60.0
2.000	0.000	0.014	0.051	0.069	0.071	0.099	0.023
2.050	0.000	0.014	0.044	0.060	0.064	0.082	-0.004
2.100	0.000	0.013	0.035	0.050	0.053	0.061	-0.036
2.150	0.000	0.011	0.025	0.038	0.042	0.037	-0.070
2.200	0.000	0.009	0.015	0.025	0.029	0.012	-0.107
2.250	0.000	0.006	0.004	0.011	0.015	-0.016	-0.145
2.300	0.000	0.003	-0.007	-0.003	0.000	-0.046	-0.185
2.350	0.000	-0.001	-0.018	-0.019	-0.017	-0.077	-0.227
2.400	0.000	-0.005	-0.030	-0.036	-0.036	-0.110	-0.271
2.450	0.000	-0.010	-0.043	-0.054	-0.057	-0.144	-0.316
2.500	0.000	-0.015	-0.055	-0.071	-0.078	-0.180	-0.361
2.550	0.000	-0.019	-0.065	-0.085	-0.096	-0.209	-0.400
2.600	0.000	-0.022	-0.071	-0.094	-0.109	-0.232	-0.431
2.650	0.000	-0.023	-0.073	-0.098	-0.115	-0.247	-0.453
2.700	0.000	-0.023	-0.073	-0.098	-0.118	-0.257	-0.468
2.750	0.000	-0.022	-0.070	-0.094	-0.116	-0.260	-0.475
2.800	0.000	-0.019	-0.064	-0.085	-0.110	-0.259	-0.478
2.850	0.000	-0.016	-0.057	-0.074	-0.102	-0.254	-0.475
2.900	0.000	-0.013	-0.048	-0.061	-0.092	-0.247	-0.469
2.950	0.000	-0.009	-0.039	-0.047	-0.083	-0.240	-0.462
3.000	0.000	-0.006	-0.031	-0.035	-0.075	-0.235	-0.457
3.050	0.000	-0.003	-0.023	-0.023	-0.069	-0.231	-0.454
3.100	0.000	-0.001	-0.016	-0.013	-0.065	-0.230	-0.453
3.150	0.000	0.001	-0.009	-0.005	-0.063	-0.229	-0.453
3.200	0.000	0.002	-0.004	0.002	-0.063	-0.231	-0.455

RESIDUARY STABILITY LEVER MS AS A FUNCTION OF DRAUGHT AND HEELING ANGLE

INITIAL TRIM: -0.40 M

UNIT: m

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INITIAL	HEELING ANGLE (DEGREES)						
DRAUGHT	0.0	10.0	20.0	30.0	40.0	50.0	60.0
2.000	0.000	0.014	0.057	0.079	0.084	0.118	0.048
2.050	0.000	0.014	0.050	0.071	0.077	0.102	0.021
2.100	0.000	0.013	0.041	0.061	0.068	0.082	-0.007
2.150	0.000	0.012	0.033	0.051	0.058	0.061	-0.041
2.200	0.000	0.011	0.023	0.039	0.047	0.037	-0.075
2.250	0.000	0.009	0.013	0.026	0.034	0.012	-0.111
2.300	0.000	0.006	0.003	0.013	0.021	-0.016	-0.148
2.350	0.000	0.003	-0.008	-0.002	0.005	-0.045	-0.187
2.400	0.000	-0.001	-0.019	-0.018	-0.012	-0.075	-0.229
2.450	0.000	-0.005	-0.031	-0.034	-0.031	-0.108	-0.272
2.500	0.000	-0.010	-0.043	-0.052	-0.052	-0.142	-0.316
2.550	0.000	-0.015	-0.055	-0.070	-0.075	-0.178	-0.363
2.600	0.000	-0.021	-0.067	-0.088	-0.098	-0.214	-0.408
2.650	0.000	-0.024	-0.076	-0.101	-0.116	-0.243	-0.445
2.700	0.000	-0.026	-0.079	-0.106	-0.125	-0.260	-0.470
2.750	0.000	-0.025	-0.078	-0.105	-0.126	-0.268	-0.482
2.800	0.000	-0.023	-0.073	-0.097	-0.121	-0.268	-0.485
2.850	0.000	-0.019	-0.064	-0.085	-0.110	-0.260	-0.480
2.900	0.000	-0.015	-0.054	-0.070	-0.098	-0.250	-0.471
2.950	0.000	-0.011	-0.044	-0.055	-0.086	-0.242	-0.463
3.000	0.000	-0.007	-0.035	-0.042	-0.077	-0.235	-0.457
3.050	0.000	-0.004	-0.027	-0.030	-0.071	-0.230	-0.453
3.100	0.000	-0.002	-0.020	-0.019	-0.066	-0.228	-0.450
3.150	0.000	0.000	-0.013	-0.009	-0.063	-0.227	-0.450
3.200	0.000	0.002	-0.007	-0.001	-0.062	-0.227	-0.451

RESIDUARY STABILITY LEVER MS AS A FUNCTION OF DRAUGHT AND HEELING ANGLE

INITIAL TRIM: -0.20 M

UNIT: m

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INITIAL	HEELING ANGLE (DEGREES)						
DRAUGHT	0.0	10.0	20.0	30.0	40.0	50.0	60.0
2.000	0.000	0.014	0.062	0.087	0.095	0.133	0.069
2.050	0.000	0.014	0.055	0.080	0.089	0.118	0.044
2.100	0.000	0.014	0.047	0.071	0.081	0.100	0.014
2.150	0.000	0.013	0.039	0.061	0.072	0.080	-0.016
2.200	0.000	0.012	0.030	0.050	0.062	0.058	-0.048
2.250	0.000	0.010	0.020	0.039	0.050	0.035	-0.082
2.300	0.000	0.008	0.011	0.026	0.038	0.010	-0.117
2.350	0.000	0.005	0.001	0.012	0.024	-0.018	-0.155
2.400	0.000	0.002	-0.010	-0.002	0.008	-0.046	-0.194
2.450	0.000	-0.001	-0.020	-0.018	-0.009	-0.078	-0.235
2.500	0.000	-0.006	-0.032	-0.034	-0.028	-0.110	-0.277
2.550	0.000	-0.010	-0.043	-0.051	-0.049	-0.143	-0.320
2.600	0.000	-0.015	-0.055	-0.069	-0.072	-0.179	-0.366
2.650	0.000	-0.021	-0.068	-0.088	-0.096	-0.216	-0.412
2.700	0.000	-0.027	-0.080	-0.106	-0.122	-0.253	-0.459
2.750	0.000	-0.029	-0.085	-0.115	-0.135	-0.276	-0.489
2.800	0.000	-0.028	-0.082	-0.110	-0.133	-0.279	-0.495
2.850	0.000	-0.022	-0.071	-0.095	-0.118	-0.267	-0.485
2.900	0.000	-0.017	-0.060	-0.079	-0.104	-0.255	-0.474
2.950	0.000	-0.013	-0.050	-0.063	-0.092	-0.245	-0.465
3.000	0.000	-0.009	-0.041	-0.049	-0.082	-0.237	-0.458
3.050	0.000	-0.006	-0.032	-0.036	-0.074	-0.231	-0.453
3.100	0.000	-0.003	-0.024	-0.025	-0.068	-0.228	-0.450
3.150	0.000	-0.001	-0.017	-0.014	-0.064	-0.226	-0.449
3.200	0.000	0.001	-0.010	-0.006	-0.062	-0.226	-0.449

RESIDUARY STABILITY LEVER MS AS A FUNCTION OF DRAUGHT AND HEELING ANGLE

INITIAL TRIM: 0.00 M

UNIT: m

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INITIAL	HEELING ANGLE (DEGREES)						
DRAUGHT	0.0	10.0	20.0	30.0	40.0	50.0	60.0
2.000	0.000	0.013	0.065	0.093	0.103	0.145	0.085
2.050	0.000	0.014	0.059	0.087	0.098	0.131	0.060
2.100	0.000	0.014	0.051	0.079	0.091	0.115	0.033
2.150	0.000	0.013	0.043	0.070	0.083	0.096	0.005
2.200	0.000	0.012	0.035	0.060	0.074	0.076	-0.026
2.250	0.000	0.011	0.026	0.049	0.063	0.054	-0.058
2.300	0.000	0.009	0.017	0.037	0.052	0.030	-0.092
2.350	0.000	0.007	0.008	0.024	0.039	0.005	-0.126
2.400	0.000	0.004	-0.002	0.010	0.025	-0.022	-0.165
2.450	0.000	0.001	-0.012	-0.004	0.009	-0.051	-0.204
2.500	0.000	-0.003	-0.023	-0.019	-0.009	-0.082	-0.243
2.550	0.000	-0.007	-0.034	-0.035	-0.028	-0.114	-0.285
2.600	0.000	-0.011	-0.045	-0.052	-0.049	-0.147	-0.328
2.650	0.000	-0.016	-0.056	-0.070	-0.072	-0.183	-0.372
2.700	0.000	-0.022	-0.068	-0.088	-0.096	-0.219	-0.418
2.750	0.000	-0.027	-0.081	-0.107	-0.123	-0.257	-0.465
2.800	0.000	-0.032	-0.091	-0.122	-0.146	-0.292	-0.507
2.850	0.000	-0.026	-0.078	-0.104	-0.128	-0.275	-0.492
2.900	0.000	-0.021	-0.067	-0.088	-0.112	-0.261	-0.479
2.950	0.000	-0.016	-0.056	-0.072	-0.098	-0.250	-0.469
3.000	0.000	-0.012	-0.046	-0.057	-0.088	-0.241	-0.461
3.050	0.000	-0.008	-0.037	-0.044	-0.079	-0.234	-0.456
3.100	0.000	-0.005	-0.029	-0.032	-0.072	-0.230	-0.452
3.150	0.000	-0.002	-0.021	-0.021	-0.067	-0.227	-0.450
3.200	0.000	0.000	-0.014	-0.011	-0.064	-0.226	-0.450

RESIDUARY STABILITY LEVER MS AS A FUNCTION OF DRAUGHT AND HEELING ANGLE

INITIAL TRIM: 0.20 M

UNIT: m

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INITIAL	HEELING ANGLE (DEGREES)						
DRAUGHT	0.0	10.0	20.0	30.0	40.0	50.0	60.0
2.000	0.000	0.013	0.068	0.097	0.110	0.153	0.097
2.050	0.000	0.013	0.062	0.092	0.106	0.142	0.074
2.100	0.000	0.013	0.055	0.085	0.100	0.127	0.049
2.150	0.000	0.013	0.047	0.077	0.092	0.110	0.021
2.200	0.000	0.012	0.039	0.067	0.084	0.091	-0.008
2.250	0.000	0.011	0.031	0.057	0.075	0.070	-0.039
2.300	0.000	0.010	0.022	0.046	0.064	0.047	-0.071
2.350	0.000	0.008	0.013	0.034	0.052	0.022	-0.105
2.400	0.000	0.005	0.004	0.021	0.039	-0.003	-0.140
2.450	0.000	0.003	-0.006	0.007	0.024	-0.030	-0.177
2.500	0.000	-0.000	-0.016	-0.007	0.008	-0.058	-0.215
2.550	0.000	-0.004	-0.026	-0.022	-0.010	-0.089	-0.256
2.600	0.000	-0.008	-0.036	-0.038	-0.030	-0.122	-0.297
2.650	0.000	-0.013	-0.047	-0.054	-0.051	-0.155	-0.339
2.700	0.000	-0.017	-0.058	-0.072	-0.074	-0.190	-0.383
2.750	0.000	-0.023	-0.070	-0.089	-0.099	-0.226	-0.428
2.800	0.000	-0.027	-0.079	-0.104	-0.121	-0.259	-0.468
2.850	0.000	-0.028	-0.081	-0.108	-0.130	-0.275	-0.489
2.900	0.000	-0.024	-0.074	-0.098	-0.122	-0.270	-0.487
2.950	0.000	-0.019	-0.063	-0.081	-0.107	-0.257	-0.476
3.000	0.000	-0.014	-0.052	-0.066	-0.095	-0.247	-0.467
3.050	0.000	-0.010	-0.043	-0.052	-0.085	-0.240	-0.460
3.100	0.000	-0.007	-0.034	-0.039	-0.077	-0.234	-0.455
3.150	0.000	-0.004	-0.026	-0.028	-0.072	-0.231	-0.453
3.200	0.000	-0.001	-0.019	-0.018	-0.068	-0.229	-0.451

RESIDUARY STABILITY LEVER MS AS A FUNCTION OF DRAUGHT AND HEELING ANGLE

INITIAL TRIM: 0.40 M

UNIT: m

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INITIAL	HEELING ANGLE (DEGREES)						
DRAUGHT	0.0	10.0	20.0	30.0	40.0	50.0	60.0
2.000	0.000	0.013	0.070	0.100	0.115	0.160	0.106
2.050	0.000	0.013	0.063	0.095	0.112	0.149	0.084
2.100	0.000	0.013	0.056	0.088	0.106	0.135	0.060
2.150	0.000	0.013	0.049	0.082	0.100	0.120	0.034
2.200	0.000	0.012	0.042	0.073	0.092	0.102	0.008
2.250	0.000	0.011	0.034	0.064	0.084	0.082	-0.024
2.300	0.000	0.010	0.026	0.053	0.074	0.061	-0.055
2.350	0.000	0.008	0.017	0.042	0.063	0.038	-0.086
2.400	0.000	0.006	0.009	0.030	0.050	0.013	-0.120
2.450	0.000	0.004	-0.001	0.017	0.036	-0.013	-0.156
2.500	0.000	0.001	-0.010	0.003	0.021	-0.041	-0.192
2.550	0.000	-0.002	-0.019	-0.011	0.004	-0.069	-0.232
2.600	0.000	-0.006	-0.030	-0.027	-0.015	-0.100	-0.271
2.650	0.000	-0.010	-0.040	-0.042	-0.035	-0.132	-0.312
2.700	0.000	-0.014	-0.050	-0.058	-0.056	-0.166	-0.353
2.750	0.000	-0.019	-0.060	-0.073	-0.078	-0.198	-0.394
2.800	0.000	-0.022	-0.068	-0.086	-0.096	-0.226	-0.430
2.850	0.000	-0.024	-0.072	-0.092	-0.109	-0.246	-0.456
2.900	0.000	-0.024	-0.072	-0.093	-0.114	-0.259	-0.473
2.950	0.000	-0.022	-0.067	-0.087	-0.112	-0.261	-0.479
3.000	0.000	-0.018	-0.059	-0.075	-0.103	-0.256	-0.475
3.050	0.000	-0.013	-0.049	-0.060	-0.093	-0.247	-0.467
3.100	0.000	-0.010	-0.040	-0.047	-0.084	-0.241	-0.461
3.150	0.000	-0.006	-0.031	-0.035	-0.078	-0.237	-0.457
3.200	0.000	-0.003	-0.024	-0.024	-0.074	-0.234	-0.455

RESIDUARY STABILITY LEVER MS AS A FUNCTION OF DRAUGHT AND HEELING ANGLE

INITIAL TRIM: 0.60 M

UNIT: m

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INITIAL	HEELING ANGLE (DEGREES)						
DRAUGHT	0.0	10.0	20.0	30.0	40.0	50.0	60.0
2.000	0.000	0.013	0.070	0.102	0.119	0.164	0.111
2.050	0.000	0.013	0.065	0.099	0.115	0.155	0.090
2.100	0.000	0.013	0.058	0.091	0.112	0.142	0.070
2.150	0.000	0.012	0.051	0.084	0.106	0.127	0.045
2.200	0.000	0.012	0.043	0.077	0.099	0.111	0.018
2.250	0.000	0.011	0.036	0.069	0.091	0.092	-0.010
2.300	0.000	0.010	0.029	0.059	0.082	0.072	-0.041
2.350	0.000	0.008	0.021	0.048	0.071	0.050	-0.072
2.400	0.000	0.006	0.012	0.037	0.060	0.027	-0.104
2.450	0.000	0.004	0.004	0.025	0.046	0.002	-0.140
2.500	0.000	0.002	-0.005	0.012	0.032	-0.026	-0.175
2.550	0.000	-0.001	-0.014	-0.002	0.016	-0.054	-0.212
2.600	0.000	-0.005	-0.024	-0.016	-0.002	-0.083	-0.250
2.650	0.000	-0.008	-0.033	-0.031	-0.021	-0.114	-0.289
2.700	0.000	-0.012	-0.043	-0.046	-0.041	-0.144	-0.328
2.750	0.000	-0.016	-0.051	-0.059	-0.059	-0.174	-0.365
2.800	0.000	-0.018	-0.058	-0.070	-0.076	-0.199	-0.397
2.850	0.000	-0.020	-0.062	-0.076	-0.088	-0.219	-0.424
2.900	0.000	-0.021	-0.064	-0.080	-0.096	-0.235	-0.446
2.950	0.000	-0.020	-0.063	-0.079	-0.101	-0.245	-0.460
3.000	0.000	-0.019	-0.059	-0.074	-0.102	-0.252	-0.468
3.050	0.000	-0.016	-0.054	-0.066	-0.099	-0.252	-0.471
3.100	0.000	-0.013	-0.046	-0.055	-0.093	-0.249	-0.468
3.150	0.000	-0.009	-0.037	-0.043	-0.086	-0.245	-0.463
3.200	0.000	-0.006	-0.029	-0.032	-0.081	-0.241	-0.460

RESIDUARY STABILITY LEVER MS AS A FUNCTION OF DRAUGHT AND HEELING ANGLE

INITIAL TRIM: 0.80 M

UNIT: m

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INITIAL	HEELING ANGLE (DEGREES)						
DRAUGHT	0.0	10.0	20.0	30.0	40.0	50.0	60.0
2.000	0.000	0.012	0.070	0.103	0.121	0.167	0.114
2.050	0.000	0.012	0.065	0.099	0.118	0.157	0.094
2.100	0.000	0.012	0.059	0.093	0.114	0.145	0.072
2.150	0.000	0.012	0.052	0.088	0.109	0.133	0.051
2.200	0.000	0.012	0.045	0.079	0.104	0.117	0.023
2.250	0.000	0.011	0.038	0.071	0.097	0.099	-0.004
2.300	0.000	0.010	0.030	0.063	0.088	0.080	-0.032
2.350	0.000	0.008	0.023	0.053	0.078	0.059	-0.061
2.400	0.000	0.006	0.015	0.042	0.067	0.037	-0.092
2.450	0.000	0.004	0.007	0.031	0.054	0.012	-0.127
2.500	0.000	0.002	-0.001	0.018	0.040	-0.013	-0.161
2.550	0.000	-0.001	-0.010	0.005	0.025	-0.040	-0.197
2.600	0.000	-0.004	-0.019	-0.008	0.008	-0.069	-0.233
2.650	0.000	-0.007	-0.028	-0.022	-0.009	-0.098	-0.270
2.700	0.000	-0.010	-0.036	-0.035	-0.027	-0.125	-0.306
2.750	0.000	-0.013	-0.044	-0.046	-0.044	-0.152	-0.340
2.800	0.000	-0.015	-0.049	-0.055	-0.057	-0.175	-0.370
2.850	0.000	-0.017	-0.053	-0.062	-0.070	-0.196	-0.397
2.900	0.000	-0.017	-0.055	-0.066	-0.079	-0.212	-0.418
2.950	0.000	-0.017	-0.056	-0.067	-0.086	-0.226	-0.435
3.000	0.000	-0.017	-0.055	-0.066	-0.091	-0.237	-0.450
3.050	0.000	-0.016	-0.052	-0.063	-0.094	-0.245	-0.459
3.100	0.000	-0.014	-0.047	-0.057	-0.094	-0.249	-0.465
3.150	0.000	-0.011	-0.041	-0.049	-0.092	-0.250	-0.467
3.200	0.000	-0.009	-0.034	-0.040	-0.089	-0.249	-0.467

RESIDUARY STABILITY LEVER MS AS A FUNCTION OF DRAUGHT AND HEELING ANGLE

INITIAL TRIM: 1.00 M

UNIT: m

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INITIAL	HEELING ANGLE (DEGREES)						
DRAUGHT	0.0	10.0	20.0	30.0	40.0	50.0	60.0
2.000	0.000	0.012	0.069	0.103	0.123	0.167	0.113
2.050	0.000	0.012	0.065	0.100	0.122	0.158	0.095
2.100	0.000	0.012	0.059	0.096	0.118	0.147	0.074
2.150	0.000	0.011	0.053	0.088	0.112	0.134	0.053
2.200	0.000	0.011	0.046	0.081	0.107	0.120	0.029
2.250	0.000	0.010	0.039	0.074	0.101	0.104	0.004
2.300	0.000	0.009	0.032	0.065	0.093	0.085	-0.024
2.350	0.000	0.008	0.024	0.056	0.083	0.065	-0.053
2.400	0.000	0.006	0.016	0.047	0.073	0.044	-0.083
2.450	0.000	0.004	0.009	0.036	0.060	0.020	-0.117
2.500	0.000	0.002	0.001	0.024	0.047	-0.004	-0.150
2.550	0.000	-0.001	-0.007	0.012	0.032	-0.031	-0.184
2.600	0.000	-0.003	-0.015	-0.001	0.017	-0.056	-0.218
2.650	0.000	-0.006	-0.023	-0.013	0.001	-0.083	-0.253
2.700	0.000	-0.009	-0.030	-0.025	-0.014	-0.109	-0.287
2.750	0.000	-0.011	-0.037	-0.035	-0.029	-0.134	-0.318
2.800	0.000	-0.013	-0.042	-0.043	-0.042	-0.155	-0.347
2.850	0.000	-0.014	-0.046	-0.050	-0.054	-0.176	-0.373
2.900	0.000	-0.015	-0.048	-0.053	-0.063	-0.193	-0.394
2.950	0.000	-0.015	-0.049	-0.056	-0.072	-0.208	-0.413
3.000	0.000	-0.015	-0.048	-0.056	-0.078	-0.221	-0.429
3.050	0.000	-0.014	-0.047	-0.055	-0.084	-0.232	-0.443
3.100	0.000	-0.013	-0.045	-0.052	-0.088	-0.240	-0.453
3.150	0.000	-0.012	-0.041	-0.048	-0.090	-0.246	-0.461
3.200	0.000	-0.010	-0.037	-0.043	-0.092	-0.251	-0.467

Compartment ident: T1

Compartment descr: BALLAST WATER

Contents : Water Ballast (WB, RHO = 1.005)

Extreme points of comp: Aft end at frame 36.00 (21.60 m)
Fore end at frame 44.18 (26.51 m)
Lowest point 0.00 m above BL
Highest point 3.05 m above BL

T	VNET	CGX	CGY	CGZ	TMX	TMY
m	m3	m	m	m	m4	m4
0.000	0.0	22.23	0.00	0.09	0.00	0.00
0.200	0.1	22.32	0.00	0.14	0.22	0.01
0.400	0.3	22.49	0.00	0.28	0.74	0.08
0.600	0.7	22.60	0.00	0.41	1.51	0.27
0.800	1.3	22.66	0.00	0.55	2.50	0.66
1.000	2.2	22.73	0.00	0.69	3.69	1.32
1.200	3.2	22.78	0.00	0.82	5.07	2.32
1.400	4.5	22.83	0.00	0.96	6.61	3.73
1.600	6.1	22.87	0.00	1.10	8.26	5.56
1.800	7.8	22.91	0.00	1.23	9.89	7.36
2.000	9.8	22.95	0.00	1.37	11.59	9.24
2.200	11.9	22.98	0.00	1.50	13.36	11.38
2.400	14.3	23.01	0.00	1.63	15.24	13.85
2.600	16.8	23.04	0.00	1.76	17.50	16.69
2.800	19.6	23.08	0.00	1.90	19.86	19.91
3.050	23.3	23.12	0.00	2.06	22.92	23.92

Compartment ident: T7

Compartment descr: BALLAST WATER

Contents : Water Ballast (WB, RHO = 1.005)

Extreme points of comp: Aft end at frame -3.02 (-1.81 m)
Fore end at frame 5.00 (3.00 m)
Lowest point 0.45 m above BL
Highest point 3.05 m above BL

T	VNET	CGX	CGY	CGZ	TMX	TMY
m	m3	m	m	m	m4	m4
0.454	0.0	2.82	0.00	0.61	0.00	0.00
0.654	0.0	2.85	0.00	0.59	0.00	0.01
0.854	0.1	2.77	0.00	0.74	0.03	0.06
1.054	0.3	2.65	0.00	0.90	0.15	0.26
1.254	0.7	2.52	0.00	1.06	0.49	0.83
1.454	1.3	2.42	0.00	1.20	1.20	1.94
1.654	2.3	2.29	0.00	1.35	2.53	3.92
1.854	3.6	2.16	0.00	1.51	4.82	7.28
2.054	5.4	2.03	0.00	1.66	8.49	12.59
2.254	7.8	1.90	0.00	1.81	14.14	20.68
2.454	10.9	1.76	0.00	1.96	22.76	32.73
2.654	14.7	1.61	0.00	2.12	33.59	50.42
2.854	19.3	1.47	0.00	2.27	41.91	69.96
3.050	24.3	1.36	0.00	2.41	47.08	77.68

Compartment ident: T8BB

Compartment descr: BALLAST WATER

Contents : Water Ballast (WB, RHO = 1.005)

Extreme points of comp: Aft end at frame 19.00 (11.40 m)
Fore end at frame 27.00 (16.20 m)
Lowest point 0.75 m above BL
Highest point 3.05 m above BL

T	VNET	CGX	CGY	CGZ	TMX	TMY
m	m3	m	m	m	m4	m4
0.750	0.0	13.55	-2.87	0.75	3.36	0.04
0.950	0.5	13.61	-2.90	0.85	4.76	0.07
1.150	1.0	13.64	-2.94	0.97	5.96	0.14
1.350	1.7	13.66	-2.97	1.08	7.16	0.22
1.550	2.6	13.67	-3.01	1.20	8.35	0.34
1.750	3.5	13.68	-3.05	1.32	9.54	0.50
1.950	4.6	13.69	-3.09	1.45	10.74	0.70
2.150	5.8	13.70	-3.13	1.57	11.93	0.95
2.350	7.1	13.71	-3.17	1.70	13.12	1.26
2.550	8.5	13.71	-3.21	1.82	14.32	1.62
2.750	10.1	13.72	-3.25	1.95	15.51	2.04
2.950	11.7	13.72	-3.29	2.08	15.87	2.17
3.050	12.5	13.73	-3.31	2.14	15.90	2.18

Compartment ident: T8SB

Compartment descr: BALLAST WATER

Contents : Water Ballast (WB, RHO = 1.005)

Extreme points of comp: Aft end at frame 19.00 (11.40 m)
Fore end at frame 27.00 (16.20 m)
Lowest point 0.75 m above BL
Highest point 3.05 m above BL

T	VNET	CGX	CGY	CGZ	TMX	TMY
m	m3	m	m	m	m4	m4
0.750	0.0	13.55	2.87	0.75	3.36	0.04
0.950	0.5	13.61	2.90	0.85	4.76	0.07
1.150	1.0	13.64	2.94	0.97	5.96	0.14
1.350	1.7	13.66	2.97	1.08	7.16	0.22
1.550	2.6	13.67	3.01	1.20	8.35	0.34
1.750	3.5	13.68	3.05	1.32	9.54	0.50
1.950	4.6	13.69	3.09	1.45	10.74	0.70
2.150	5.8	13.70	3.13	1.57	11.93	0.95
2.350	7.1	13.71	3.17	1.70	13.12	1.26
2.550	8.5	13.71	3.21	1.82	14.32	1.62
2.750	10.1	13.72	3.25	1.95	15.51	2.04
2.950	11.7	13.72	3.29	2.08	15.87	2.17
3.050	12.5	13.73	3.31	2.14	15.90	2.18

Compartment ident: T6BB
Compartment descr: FRESH WATER
Contents : Fresh Water (FW, RHO = 1)

Extreme points of comp: Aft end at frame 5.00 (3.00 m)
Fore end at frame 9.00 (5.40 m)
Lowest point -0.00 m above BL
Highest point 3.05 m above BL

T	VNET	CGX	CGY	CGZ	TMX	TMY
m	m3	m	m	m	m4	m4
-0.000	0.0	4.99	0.08	0.00	0.01	0.00
0.200	0.1	4.80	-0.21	0.12	0.16	0.03
0.400	0.3	4.71	-0.32	0.26	0.47	0.13
0.600	0.7	4.60	-0.42	0.39	0.94	0.35
0.800	1.3	4.53	-0.52	0.53	1.38	0.71
1.000	2.0	4.48	-0.63	0.66	1.82	1.32
1.200	2.8	4.44	-0.73	0.80	2.18	1.89
1.400	3.8	4.41	-0.82	0.93	2.49	2.55
1.600	4.9	4.38	-0.91	1.06	2.78	3.35
1.800	6.2	4.36	-0.99	1.18	3.08	4.30
2.000	7.5	4.35	-1.07	1.31	3.37	5.45
2.200	9.0	4.33	-1.15	1.44	3.66	6.81
2.400	10.5	4.32	-1.23	1.57	3.94	8.40
2.600	12.2	4.31	-1.30	1.70	4.23	10.25
2.800	14.0	4.30	-1.38	1.83	4.52	12.35
3.050	16.3	4.29	-1.47	1.98	4.59	12.92

Compartment ident: T6SB
Compartment descr: FRESH WATER
Contents : Fresh Water (FW, RHO = 1)

Extreme points of comp: Aft end at frame 5.00 (3.00 m)
Fore end at frame 9.00 (5.40 m)
Lowest point -0.00 m above BL
Highest point 3.05 m above BL

T	VNET	CGX	CGY	CGZ	TMX	TMY
m	m3	m	m	m	m4	m4
-0.000	0.0	4.99	0.08	0.00	0.01	0.00
0.200	0.1	4.80	0.21	0.12	0.16	0.03
0.400	0.3	4.71	0.32	0.26	0.47	0.13
0.600	0.7	4.60	0.42	0.39	0.94	0.35
0.800	1.3	4.53	0.52	0.53	1.38	0.71
1.000	2.0	4.48	0.63	0.66	1.82	1.32
1.200	2.8	4.44	0.73	0.80	2.18	1.89
1.400	3.8	4.41	0.82	0.93	2.49	2.55
1.600	4.9	4.38	0.91	1.06	2.78	3.35
1.800	6.2	4.36	0.99	1.18	3.08	4.30
2.000	7.5	4.35	1.07	1.31	3.37	5.45
2.200	9.0	4.33	1.15	1.44	3.66	6.81
2.400	10.5	4.32	1.23	1.57	3.94	8.40
2.600	12.2	4.31	1.30	1.70	4.23	10.25
2.800	14.0	4.30	1.38	1.83	4.52	12.35
3.050	16.3	4.29	1.47	1.98	4.59	12.92

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Compartment ident: T2BB

Compartment descr: FUEL OIL

Contents : Diesel Oil (D0, RHO = 0.86)

Extreme points of comp: Aft end at frame 21.00 (12.60 m)
Fore end at frame 36.00 (21.60 m)
Lowest point -0.00 m above BL
Highest point 0.75 m above BL

T	VNET	CGX	CGY	CGZ	TMX	TMY
m	m3	m	m	m	m4	m4
-0.000	0.0	16.00	-0.20	0.00	13.65	0.05
0.200	1.0	16.11	-0.36	0.12	42.68	0.82
0.400	3.0	16.15	-0.55	0.24	71.94	3.49
0.600	5.9	16.18	-0.72	0.37	96.36	6.20
0.750	8.3	16.25	-0.80	0.46	107.05	6.46

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Compartment ident: T2SB
Compartment descr: FUEL OIL
Contents : Diesel Oil (DO, RHO = 0.86)

Extreme points of comp: Aft end at frame 21.00 (12.60 m)
Fore end at frame 36.00 (21.60 m)
Lowest point -0.00 m above BL
Highest point 0.75 m above BL

T	VNET	CGX	CGY	CGZ	TMX	TMY
m	m3	m	m	m	m4	m4
-0.000	0.0	16.00	0.20	0.00	13.65	0.05
0.200	1.0	16.11	0.36	0.12	42.68	0.82
0.400	3.0	16.15	0.55	0.24	71.94	3.49
0.600	5.9	16.18	0.72	0.37	96.36	6.20
0.750	8.3	16.25	0.80	0.46	107.05	6.46

Compartment ident: T9
Compartment descr: FO DAY TANK
Contents : Diesel Oil (DO, RHO = 0.86)

Extreme points of comp: Aft end at frame 9.00 (5.40 m)
Fore end at frame 10.00 (6.00 m)
Lowest point 0.75 m above BL
Highest point 2.90 m above BL

T	VNET	CGX	CGY	CGZ	TMX	TMY
m	m3	m	m	m	m4	m4
0.750	0.0	5.70	1.52	0.75	0.03	0.19
0.950	0.2	5.70	1.52	0.85	0.03	0.19
1.150	0.4	5.70	1.52	0.95	0.03	0.19
1.350	0.5	5.70	1.52	1.05	0.03	0.19
1.550	0.7	5.70	1.52	1.15	0.03	0.19
1.750	0.9	5.70	1.52	1.25	0.03	0.19
1.950	1.1	5.70	1.52	1.35	0.03	0.19
2.150	1.3	5.70	1.52	1.45	0.03	0.19
2.350	1.5	5.70	1.52	1.55	0.03	0.19
2.550	1.6	5.70	1.52	1.65	0.03	0.19
2.750	1.8	5.70	1.52	1.75	0.03	0.19
2.900	2.0	5.70	1.52	1.83	0.03	0.19

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Compartment ident: T10

Compartment descr: LUBRICATING OIL

Contents : Lubricating Oil (LO, RHO = 0.9)

Extreme points of comp: Aft end at frame 9.00 (5.40 m)
 Fore end at frame 10.00 (6.00 m)
 Lowest point 1.90 m above BL
 Highest point 2.90 m above BL

T	VNET	CGX	CGY	CGZ	TMX	TMY
m	m3	m	m	m	m4	m4
1.900	0.0	5.70	-0.75	1.90	0.01	0.01
2.100	0.1	5.70	-0.75	2.00	0.01	0.01
2.300	0.1	5.70	-0.75	2.10	0.01	0.01
2.500	0.2	5.70	-0.75	2.20	0.01	0.01
2.700	0.2	5.70	-0.75	2.30	0.01	0.01
2.900	0.3	5.70	-0.75	2.40	0.01	0.01

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Compartment ident: T11

Compartment descr: LUBRICATING OIL

Contents : Lubricating Oil (LO, RHO = 0.9)

Extreme points of comp: Aft end at frame 9.00 (5.40 m)
Fore end at frame 10.00 (6.00 m)
Lowest point 1.90 m above BL
Highest point 2.90 m above BL

T	VNET	CGX	CGY	CGZ	TMX	TMY
m	m3	m	m	m	m4	m4
1.900	0.0	5.70	-1.25	1.90	0.01	0.01
2.100	0.1	5.70	-1.25	2.00	0.01	0.01
2.300	0.1	5.70	-1.25	2.10	0.01	0.01
2.500	0.2	5.70	-1.25	2.20	0.01	0.01
2.700	0.2	5.70	-1.25	2.30	0.01	0.01
2.900	0.3	5.70	-1.25	2.40	0.01	0.01

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Compartment ident: T3
Compartment descr: SEWAGE TANK
Contents : Gray Water (GWT, RHO = 1)

Extreme points of comp: Aft end at frame 14.00 (8.40 m)
Fore end at frame 21.00 (12.60 m)
Lowest point -0.00 m above BL
Highest point 0.75 m above BL

T	VNET	CGX	CGY	CGZ	TMX	TMY
m	m3	m	m	m	m4	m4
-0.000	0.0	10.50	-0.00	0.00	5.65	0.27
0.200	1.4	10.52	-0.00	0.12	14.48	4.93
0.400	3.8	10.61	-0.02	0.24	19.04	17.90
0.600	7.2	10.69	-0.02	0.36	22.23	38.31
0.750	9.9	10.72	-0.02	0.45	22.23	38.31

Compartment ident: T4
Compartment descr: DIRTY OIL TANK
Contents : Sludge (SLU, RHO = 1)

Extreme points of comp: Aft end at frame 10.00 (6.00 m)
Fore end at frame 12.00 (7.20 m)
Lowest point 0.00 m above BL
Highest point 0.75 m above BL

T	VNET	CGX	CGY	CGZ	TMX	TMY
m	m3	m	m	m	m4	m4
0.000	0.0	6.62	0.00	0.00	0.12	0.07
0.200	0.3	6.60	0.00	0.11	0.19	0.22
0.400	0.6	6.60	0.00	0.21	0.19	0.22
0.600	0.9	6.60	0.00	0.31	0.19	0.22
0.750	1.1	6.60	0.00	0.38	0.19	0.22

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I N C L I N I N G T E S T R E P O R T

Ship's name: Airisto

Main dimensions:

Length overall	30.50 m
Breadth	8.90 m
Draught max.	3.00 m

Date: 11.10.2005

Place: Turku Repair Yard, Naantali

Onboard:	Seppo Nousiainen	Finnish Maritime Administration
	Heikki Nuotio	Finnish Maritime Administration
	Veli-Matti Junnila	Ship Consulting Ltd
	Tuomas Junnila	Ship Consulting Ltd

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

Pendulum : P1
Pendulum description .. :
Pendulum length : 5.867 m
Pendulum weight factor. : 1

	OBS READING	DIST	ANGLE
	m	m	degree

0	0.817	0.000	0.000
1	0.749	-0.068	-0.664
2	0.685	-0.132	-1.289
3	0.752	-0.065	-0.635
4	0.817	0.000	0.000
5	0.888	0.071	0.693
6	0.957	0.140	1.367
7	0.887	0.070	0.684
8	0.819	0.002	0.020

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

Pendulum : P2
Pendulum description .. :
Pendulum length : 6.790 m
Pendulum weight factor. : 1

	OBS READING	DIST	ANGLE
	m	m	degree

0	0.000	0.000	0.000
1	-0.072	-0.072	-0.608
2	-0.146	-0.146	-1.232
3	-0.078	-0.078	-0.658
4	-0.003	-0.003	-0.025
5	0.078	0.078	0.658
6	0.154	0.154	1.299
7	0.080	0.080	0.675
8	0.004	0.004	0.034

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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		Inclining moment (tm)
			SB	PS	
0	0.00	0.00	0.500 0.500	0.500 0.500	-0.11
1	0.50	-7.89	0.500	0.500 0.500 0.500	-4.06
2	0.50	-7.80		0.500 0.500 0.500 0.500	-7.95
3	0.50	7.49	0.500	0.500 0.500 0.500	-4.21
4	0.50	7.80	0.500 0.500	0.500 0.500	-0.31
5	0.50	7.99	0.500 0.500 0.500	0.500	3.69
6	0.50	8.05	0.500 0.500 0.500 0.500		7.71
7	0.50	-7.90	0.500 0.500 0.500	0.500	3.76
8	0.50	-8.05	0.500 0.500	0.500 0.500	-0.26

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M A S S E S T O B E A D D E D

Mass (t)	CGX (m)	CGY (m)	CGZ (m)
1.300	9.000	-1.700	1.200

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
MISC	0.4	19.20	-1.50	6.00
MISC	0.1	6.60	-1.00	6.30
FLUID	0.2	3.30	0.00	5.90
MISC	0.1	1.80	-3.50	5.90
8 PERSONS	0.7	20.00	0.00	6.20
INC WEIGHTS	2.0	18.90	0.00	5.75
TOTAL	3.5			

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
T6BB	16.30	1.000	16.30	4.29	-1.47	1.98	0.0
T6SB	16.30	1.000	16.30	4.29	1.47	1.98	0.0
T1	23.30	1.005	23.42	23.11	0.00	2.06	0.0
T8SB	4.50	1.005	4.52	13.66	3.09	1.44	0.7
T8BB	9.00	1.005	9.05	13.70	-3.22	1.86	1.7
T2SB	1.40	0.860	1.20	15.75	0.43	0.14	1.2
T2BB	1.40	0.860	1.20	15.75	-0.43	0.14	1.2
T9	0.75	0.860	0.64	5.70	1.52	1.16	0.2
T10	0.07	0.900	0.06	5.70	-0.75	2.02	0.0
T11	0.07	0.900	0.06	5.70	-1.25	2.02	0.0
TOTAL	73.09		72.76	12.49	-0.20	1.89	4.9

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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..... : 2.616 m
Mean draught under keel..... : 2.626 m
Trim..... : -0.309 m
Initial heeling angle..... : 0.000 deg
Water density..... : 1.005 t/m3
Displacement..... : 304.5 t
Height of metacenter above BL... : 4.588 m

Obs Nr.	Inclining moment tm	total mom. tm	Inclining angle total degree	Metacentric height m
0	0.0	0.0	0.000	
1	-3.9	-3.9	-0.636	1.168
2	-3.9	-7.8	-0.625	1.175
3	3.7	-4.1	0.614	1.148
4	3.9	-0.2	0.634	1.158
5	4.0	3.8	0.688	1.092
6	4.0	7.8	0.657	1.152
7	-3.9	3.9	-0.654	1.136
8	-4.0	-0.2	-0.653	1.160

Metacentric height during experiment GM = 1.149 m
Free surface correction GMC= 0.016 m
Corrected metacentric height GM0= 1.165 m
Height of metacenter above baseline KM = 4.588 m

Center of gravity above BL KG = 3.423 m

L I G H T S H I P

	Weight (t)	Center of gravity		
		CGX (m)	CGY (m)	CGZ (m)
During experiment	304.5	11.998	0.000	3.423
Weights to be added	1.3	9.000	-1.700	1.200
Weights to be subtracted	-3.5	17.447	-0.305	5.899
Tanks to be subtracted	-72.8	12.492	-0.197	1.890
Light ship	229.5	11.740	0.058	3.859

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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	0.019	0.361
1-2	0.026	0.685
2-3	-0.001	0.001
3-4	0.009	0.086
4-5	-0.057	3.202
5-6	0.003	0.011
6-7	-0.012	0.146
7-8	0.012	0.141
Sum	-0.000	4.632

Probable absolute error= 0.009 m
Probable relative error= 0.781 %