



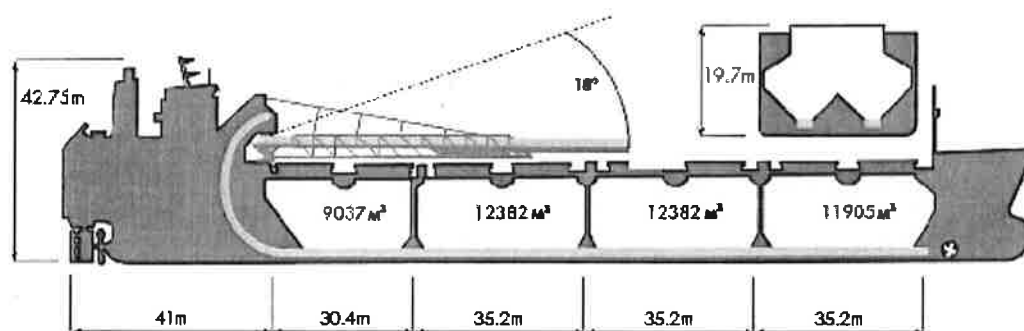
Transport
Canada

Transports
Canada



Ship Stability Booklet

GYPSUM CENTENNIAL



Book 1 of 2

Canada

DESIGN APPRAISAL DOCUMENT

Date

8 January 2002

Quote this reference on all future communications

KPA/HDC/SCK/D02/O-33717

"GYPSUM CENTENNIAL" LR No. 9228734
Hyundai Mipo Dockyard Co., Ltd. Hull No. 9927
**Final Trim & Stability Booklets (1/2 - 2/2), Final Grain Trim & Stability Booklet
and Damage Control Plan**

The documents below have been examined for compliance with Rules and Regulations for the Classification of Ships, Part 3, Chapter 4, Section 8.2 "Loading manual" for both stability and strength aspects and has been assigned an appraisal status, as indicated, in accordance with the following conditions:

1. The documents mentioned below have been examined for compliance with the requirements of :
 - 1.1 Chapter I General and Regulation 10(2) of Annex I of the International Convention on Load Lines 1966
 - 1.2 Regulation 25-8 of Chapter II-1, Part B-1 of the 1990 Amendments to the International Convention for the Safety of Life at Sea 1974
 - 1.3 Part C of the International Code for the Safe Carriage of Grain in Bulk (International Grain Code)

Dwg. No.	Rev.	Title	Status	Date
4A000B010	ORI	Final Trim & Stability Booklets (1/2, 2/2)	AM	8 January 2002
2A000B004	FINAL	Damage Control Plan	AM	AM on 27 December 2001
4A000B023	ORI	Final Grain Trim & Stability Booklet	A	8 January 2002

2. Intact Stability

The document "4A000B010" has been examined for compliance with the intact stability requirements of 1.1 above on the following basis, and found in order subject to the comments below.

Flag	Lightship Weight (t)	Lightship LCG (m)	Lightship VCG (m)	Maximum Summer Draught (mld/ext)
Bermuda	12398	12.47 After Midship	10.51 Above Baseline	11.50 / 11.52

DESIGN APPRAISAL DOCUMENT

Date 8 January 2002	Quote this reference on all future communications KPA/HDC/SCK/D02/O-33717
------------------------	--

2.1 Minor amendments have been made on page 109, 127, 128 and 129 of the Booklet (1/2).

2.2 As there are no statutory requirement for the approval of Loading/Unloading Sequence from stability aspect, these conditions included in the Booklet (2/2) have not been examined from stability aspect.

2.3 The Ballast Exchange Sequence conditions included in the Booklet (2/2) have been examined for compliance with intact stability criteria contained therein and found to comply.

3. Damage Stability

The ship has been examined for compliance with the requirements of 1.2 above and found in order based on the draft/GM parameters below:

Deepest Subdivision Draft moulded = 11.500m, GM = 1.870 m

Partial Draft moulded = 7.932 m, GM = 2.350 m

3.1 All sea-going conditions as shown in the "Final Trim and Stability Booklet" are found to comply with the SOLAS damage stability requirements.

4. Damage Control Plan

The plan "2A000B004" has been examined for compliance with the requirement of 1.2 above and found in order.

4.1 Minor amendment has been made to the Damage Stability Instructions.

4.2 This plan should be permanently exhibited, or readily available on the navigating bridge, for the guidance of the officer in charge of the ship.

5. Grain Stability

The document "4A000B023" has been examined for compliance with the requirement of above paragraph 1.3 and found in order.

6. The documents below have been examined for compliance with the requirements of the LR Ship Rules, Part 3, Chapter 4, Section 8.2 "Loading manual" for strength aspects and are assigned the status codes indicated, subject to the following comments:

DESIGN APPRAISAL DOCUMENT

Date 8 January 2002	Quote this reference on all future communications KPA/HDC/SCK/D02/O-33717
------------------------	--

6.1 Longitudinal Strength

6.1.1 The Final Trim & Stability Booklets (1/2 - 2/2) and Final Grain Stability Booklet have been examined and found to be in order on the basis of the information contained therein subject to the following comment:

6.1.1.1 Minor amendment has been made on page 5 of the Booklet (1/2).

6.1.2 The Typical Loading/Unloading Sequence

6.1.2.1 The Typical Loading/Unloading Sequence in the Final Trim & Stability Booklet (2/2) has been examined from the strength aspect only in compliance with the Rule requirements Pt. 3, Ch. 4, Sec. 8.2.5 and found to be in order.

6.1.3 Ballast Water Exchange conditions

6.1.3.1 With regard to the ballast water exchange procedure shown on in the Final Trim & Stability Booklet (2/2), it is advised that the current ballast exchange procedures have been examined and found to be in order from the longitudinal strength aspect only. (ie. still water bending moments and still water shear forces only).

Appraisal Status Key

A Approved - provided the construction is to Lloyd's Register's Surveyor's satisfaction and the remaining requirements of the Rules, Regulations and procedures are complied with.

AM Approved as amended - provided the installation is to the satisfaction of the attending Surveyor and the remaining requirements of the applicable Rules, Regulations, Codes and Standards are complied with.

pp DB/ace

B. Y. W. Lau
Lead Surveyor
Stability & Tonnage Group
Asia Region

H. Chung

H. D. Chung
Senior Surveyor (in charge of)
Hull Section
Korea Plan Approval Services

any part of this plan without the approval by Lloyd's Register

PLAN HISTORY

DATE	REV. NO	DESCRIPTION	CHECKED BY
2001.11.29	ORI	Originally prepared for approval	

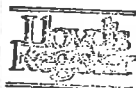
"Scantlings approved for a minimum draught forward of 5.37 metres. In heavy weather conditions the forward draught should not be less than this value. If, in the opinion of the Master, sea conditions are likely to cause regular slamming, then other appropriate measures such as change in speed, heading or increase in draught forward may also need to be taken."

"Any departures from these conditions in service are to be arranged on the basis of the loading instrument and the allowable local loadings shown in this manual."

FINISHED PLAN



APPROVED FROM THE STRENGTH ASPECT



This plan has been examined and given the approval status as shown in the Design Appraisal Document numbered below:

KPA 57977

Date: 08 JAN 2002 Initials: Hschy
Lloyd's Register of Shipping
Korea Plan Approval Services



FOR APPROVAL

TOTAL (288) SHEETS WITH A COVER

DEP'T NO 5600	SHIP DESIGN DEP'T BASIC DESIGN TEAM	SHIP TYPE 38000 DWT SELF UNLOADING BULK CARRIER	
TEL NO. 3903	SHIP NO. 9927	SHIP NAME GYPSUM CENTENNIAL	
DATE 2001. 11.29	APPROVED: S.K.LEE <i>S.K. Lee</i>	NAME OF DRAWING FINAL TRIM AND STABILITY BOOKLET(1/2) (INCL. LONGITUDINAL STRENGTH CALCULATION)	
	CHECKED : C.S.LIM <i>C.S. Lim</i>		
	DRAWN : Y.S.LEE <i>Y.S. Lee</i>		
 HYUNDAI Mipo Dockyard Co., Ltd. Ulsan Korea		SCALE CONSOLIDATED	DRAWING NO. 4A000B010 REV. NO. ORI



LR No. 9228734

APPROVED

for and on behalf of the Government of the vessel's Registration as complying with the Regulations stated below. No amendment is to be made to this document without the prior consent of Lloyd's Register of Shipping.

STABILITY INFORMATION

The information contained in this stability manual is in an approved form in accordance with the terms of Chapter I General and Regulation 10(2) of Annex I of the International Convention on Load Lines 1966 and Regulation 25-8 of Chapter II-1, Part B-1 of the 1990 Amendments to the International Convention for the Safety of Life at Sea 1974.

The sea-going conditions of loading incorporated in this document have been verified using the Ships basic data and meet the minimum stability criteria given herein.

THE PROVISION OF ADEQUATE STABILITY, AT ALL TIMES,
REMAINS THE MASTER'S RESPONSIBILITY.

NO ALTERATION OR REVISION SHALL BE MADE TO ANY PART
OF THIS PLAN WITHOUT PRIOR APPROVAL BY LLOYD'S
REGISTER.

Number of pages:-288

Associated documents:- Damage Control Plan
Drawing Number:- 2A000B004

Signed:-



for Lloyd's Register of Shipping

Place: Stability & Tonnage Group
Asia Region

Date:- 27 December 2001



INDEX

1. General	
1.1 Principal particulars	4
1.2 Abbreviation	6
1.3 Metric conversion table	7
1.4 Stowage factor conversion table	8
2. Hydrostatic data	
2.1 Draft correction table	10
2.2 Hydrostatic table	12
2.3 Displacement correction table due to trim	39
3. Instruction and data for loading calculation	
3.1 Trimming table due to added weight of 100MT	43
3.2 Frame distance table	48
3.3 Visibility table	51
3.4 Capacity table	52
☐ Tank Arrangement	
☐ Capacity Table	
3.5 Volume tables	56
3.6 Load Line mark and Deadweight scale	104
4. Data for stability	
4.1 Special notes regarding the stability and loading of the ship	105
4.2 Notes on use of the free surface moments	106
4.3 Example showing use of KN data	107
4.4 Table of KN value	114
4.5 Minimum allowable G'M table	117
4.6 Down flooding angle table	118
4.7 Wind area and "Z" Curve	121
4.8 Examination as to heeling due to strong beam wind and rolling for worst service condition	122



5. Standard loading condition

5.1	General information	130
5.2	Method of trim and stability calculation.....	131
	☐ How to obtain Displacement, LCF, LCB, MTC, and LCG from observed draft	
	☐ How to obtain drafts, trim, G'M, by loading weights	
	☐ Example : Calculation of displacement and draft (with Blank form)	
5.3	Allowable longitudinal strength.....	139
5.4	Plots of Optimum Trim Comparison of Effective Horse Power.....	140
5.5	Loading Criteria.....	144
5.6	Summary of loading condition	148
5.7	Calculation for standard condition	153
	☐ Consumables at Dep. and Arr. conditions.....	154
	☐ Cond. No.1 Lightship condition.....	156
	☐ Cond. No.2 Docking condition.....	158
	☐ Cond. No.11 Ballast condition Dep.....	163
	☐ Cond. No.12 Ballast condition Arr.....	168
	☐ Cond. No.13 Light ballast condition Dep.....	173
	☐ Cond. No.14 Light ballast condition Arr.....	178
	☐ Cond. No.21 Homo. Design Load Dep.(GYPSUM, SG 1.442).....	183
	☐ Cond. No.22 Homo. Design Load Arr.(GYPSUM, SG 1.442).....	188
	☐ Cond. No.23 Homo. Half Load Dep.(GYPSUM, SG 1.442).....	193
	☐ Cond. No.24 Homo. Half Load Arr.(GYPSUM, SG 1.442).....	198
	☐ Cond. No.25 Extreme Design Load Dep.(GYPSUM, SG 1.442).....	203
	☐ Cond. No.26 Extreme Design Load Arr.(GYPSUM, SG 1.442).....	208
	☐ Cond. No.27 Extreme Half Load Dep.(GYPSUM, SG 1.442).....	213
	☐ Cond. No.28 Extreme Half Load Arr.(GYPSUM, SG 1.442).....	218
	☐ Cond. No.29 Homo. Summer Load Dep. (GYPSUM, SG 1.442).....	223
	☐ Cond. No.30 Homo. Summer Load Arr. (GYPSUM, SG 1.442).....	228
	☐ Cond. No.31 Homo. Summer Load Dep. (HOT BRIQUETTED IRON, SG 2.857).....	233
	☐ Cond. No.32 Homo. Summer Load Arr. (HOT BRIQUETTED IRON, SG 2.857).....	238
	☐ Cond. No.33 Homo. COAL Load Dep. (COAL, SG 0.84).....	243
	☐ Cond. No.34 Homo. COAL Load Arr. (COAL, SG 0.84).....	248
	☐ Cond. No.35 Homo. Summer Load Dep. (FULLY FILLED CARGO IN HOLDS, SG 0.988).....	253
	☐ Cond. No.36 Homo. Summer Load Arr. (FULLY FILLED CARGO IN HOLDS, SG 0.988).....	258
	☐ Cond. No.37 Homo. COAL Load Dep. in fresh water (COAL, SG 0.84).....	263
	☐ Cond. No.38 Homo. COAL Load Arr. in fresh water (COAL, SG 0.84).....	268

Appendix. Result of Inclining experiment and deadweight measurement.....	273
--	-----



TRIM & STABILITY BOOKLET

REV.

STANDARD NO.

ORI

HDS-56-B002

1. GENERAL



TRIM & STABILITY BOOKLET

REV.

STANDARD NO.

ORI

HDS-56-B002

1.1 Principal particulars

1. General

Hull No.	.....	H.9927
Owner	.....	GYPSUM TRANSPOTATION LIMITED
Name of vessel	.....	GYPSUM CENTENNIAL
Nationality	.....	BERMUDA
Port of registry	.....	HAMILTON
Builder	.....	HYUNDAI MIPO DOCKYARD CO., LTD. KOREA
Classification	.....	Lloyd's Register of Shipping +100A1 Bulk Carrier, Strengthened for heavy cargoes ESP, Shipright(SDA,FDA,CM),Ice Class 1D,LI,*IWS +LMC UMS, CCS, ICC, NAV, IBS
Date of Build(K/L)	.....	Dec.26, 2000.
Official No.	.....	733699
IMO No.	.....	9228734
Gross Tonnage	.....	32881
Net Tonnage	.....	10246
Type of ship	.....	38,000 TON DWT SELF-UNLOADING BULK CARRIER
Type of freeboard	.....	" " B " "

2. Principal dimensions

Length, over all	.....	197.100	M
Length, between perpendiculars	.....	188.400	M
Breadth (moulded)	.....	32.200	M
Depth (moulded)	.....	17.750	M
Design draft (moulded)	.....	9.750	M
Scantling draft (ext.)	.....	11.520	M

3. Lightweight & deadweight

Lightweight :		12,398 MT	L.C.G. = -12.471 M	V.C.G = 10.507 M	
Draft (extreme)	Displacement (MT)	Deadweight (MT)	Cb	Cp	Cw
Summer load draft (11.52 M)	60159	47761	0.8404	0.8434	0.9504
Fresh water load draft (11.77 M)	60157	47759	0.8428	0.8457	0.9526



TRIM & STABILITY BOOKLET

REV.

STANDARD NO.

ORI

HDS-56-B002

4. Complement

30 P

5. Propelling machinery

Main engine

Type : SULZER 6RT FLEX 58T B

Output : M.C.R : 15,350 PS x 93.0 RPM @MAX. PITCH
N.C.R : 13,048 PS x 93.0 RPM @DESIGN PITCH

Propeller

TYPE : CONTROLLABLE PITCH PROPELLER

Number of blades : 4

Material : NICKEL ALUMINUM BRONZE

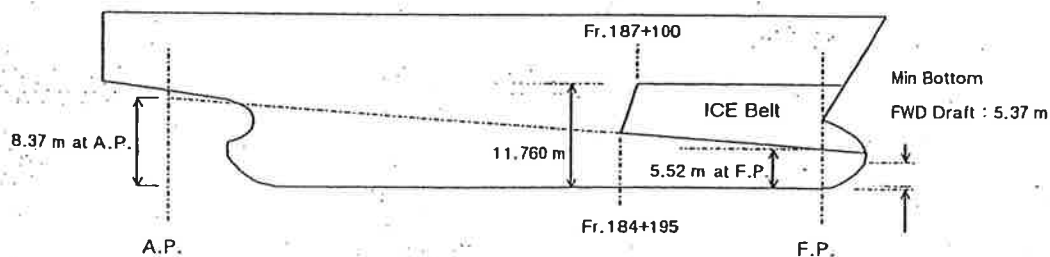
Diameter : 7200 mm

Pitch : 5089 mm

Pitch ratio : 0.7171 at 0.7R

✓ 6. Minimum bottom forward draft : 5.37 M
✓ : LEE GROUND PAKE.

7. ICE Belt



Note: Ship's master shall ensure that waterline in the ICE Belt to be within the ICE belt zone when navigating in ice sea.

8. Keel plate thickness

0.0105 M



TRIM & STABILITY BOOKLET

REV.

STANDARD NO.

ORI

HDS-56-B002

1.2 Abbreviation

DRAFT(EXT.)	: Draft from bottom of keel in meter
MOLDED VOL.	: Volume of naked body in cubic meter i.e. Volume(M^3) without shell and appendages
DISPL.(EXT.)	: Displacement with shell and appendages in metric ton
MT	: Metric ton
T	: Metric ton
M	: Meter
CM	: Centimeter
LBP	: Length between perpendiculars
F.P	: Fore perpendicular
A.P	: Aft perpendicular
Cb	: Block coefficient
Cp	: Prismatic coefficient
Cw	: Water plane area coefficient
Cm	: Midship sectional area coefficient
L.C.B	: Longitudinal center of buoyancy from midship in meter
L.C.G	: Longitudinal center of gravity from midship in meter
L.C.F	: Longitudinal center of floatation from midship in meter
KB	: Vertical center of buoyancy above base line in meter
KG	: Vertical center of gravity above base line in meter
KMT	: Transverse metacentric height above base line in meter
KML	: Longitudinal metacentric height above base line in meter
T.P.C	: Ton per one centimeter immersion in metric ton per centimeter (MT/CM)
M.T.C	: Moment to change trim one centimeter in metric ton-meter (MT-M)
GM	: Transverse metacentric height above vertical center of gravity Without the correction of the free surface effects
G'M	: GM corrected for the free surface effects of liquid in tanks
GG'	: Correction of free surface effect of liquid in tanks
KG'	: KG corrected for the free surface effects of liquid in tanks
S.G	: Specific gravity in metric ton per cubic meter (MT/ M^3)
KN	: Righting arm about base line
GZ	: Righting arm about vertical center of gravity
I, IT	: Inertia moment of free surface

Notes :

- 1) As for L.C.B and L.C.F, "-" (minus sign) means "after midship"
- 2) As for Trim, "-" (minus sign) means "trim by stern"
- 3) Specific gravity of sea water is assumed to be 1.025



TRIM & STABILITY BOOKLET

REV.

STANDARD NO.

ORI

HDS-56-B002

1.3 Metric conversion table

MULTIPLY BY	TO CONVERT FROM	TO OBTAIN	
0.03937	MILLIMETERS	INCHES	25.4
0.3937	CENTIMETERS	INCHES	2.54
3.2808	METERS	FEET	0.3048
2.2046	KILOGRAMS	POUNDS	0.45359
0.0009842	KILOGRAMS	TONS (2240 lbs.)	1016.047
0.9842	METRIC TONS (i.e. TONS OF 1000 KILOS)	TONS (2240 lbs.)	1.016
2.4998	METRIC TONS PER CENTIMETER (OF IMMERSION)	TONS PER INCH (OF IMMERSION)	0.4
8.2014	MOMENT TO CHANGE TRIM ONE CENTIMETER (MT-METER UNITS)	MOMENT TO CHANGE TRIM ONE INCH (LT-FOOT UNITS)	0.122
187.9767	METER RADIANS	FEET DEGREES	0.0053
	TO OBTAIN	TO CONVERT FROM	MULTIPLY BY

Relation between weight and volume

10 mm cubed = 1 cubic centimeter

1 cubic centimeter of fresh water (S.G. 1.0)

= 1 gram

1000 cubic centimeter of fresh water (S.G. 1.0)

= 1 kilogram

(1000 grams)

1 cubic meter of fresh water (S.G. 1.0)

= 1 MT (1000 kilos)

1 cubic meter of salt water (S.G. 1.025)

= 1.025 MT

1 metric ton of salt water (S.G. 1.025)

= 0.9756 Cubic meters

1 cubic meter = 35.315 cubic feet

1 cubic foot = 0.0283 cubic meters



TRIM & STABILITY BOOKLET

REV.

STANDARD NO.

ORI

HDS-56-B002

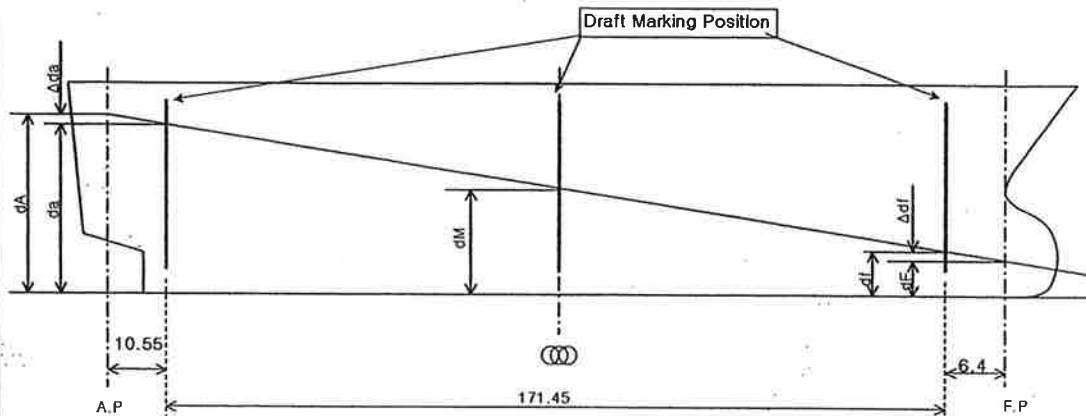
1.4 Stowage factor conversion table

FT ³ /LT	M ³ /T	T/M ³	FT ³ /LT	M ³ /T	T/M ³
10	0.2787	3.5880	45	1.2542	0.7973
11	0.3066	3.2618	46	1.2821	0.7800
12	0.3345	2.9900	47	1.3099	0.7634
14	0.3902	2.5628	48	1.3378	0.7475
15	0.4181	2.3920	49	1.3657	0.7322
16	0.4459	2.2425	50	1.3935	0.7176
18	0.5017	1.9933	52	1.4493	0.6900
20	0.5574	1.7940	54	1.5050	0.6644
22	0.6132	1.6309	55	1.5329	0.6524
24	0.6689	1.4950	56	1.5608	0.6407
25	0.6968	1.4352	58	1.6165	0.6186
26	0.7246	1.3800	60	1.6723	0.5980
28	0.7804	1.2814	62	1.7280	0.5787
30	0.8361	1.1960	65	1.8116	0.5520
32	0.8919	1.1212	67	1.8674	0.5355
34	0.9476	1.0553	70	1.9510	0.5126
35	0.9755	1.0251	72	2.0067	0.4983
36	1.0034	0.9967	74	2.0624	0.3816
38	1.0591	0.9442	75	2.0903	0.4784
40	1.1148	0.8970	76	2.1182	0.4721
41	1.1427	0.8751	78	2.1739	0.4600
42	1.1706	0.8543	80	2.2297	0.4485
43	1.1984	0.8344	82	2.2854	0.4376
44	1.2263	0.8154	84	2.3412	0.4271

	TRIM & STABILITY BOOKLET	REV.	STANDARD NO.
		ORI	HDS-56-B002
2. HYDROSTATIC DATA			



2.1 Draft correction table



○ Stern Correction (Δda)

$$\Delta da = \frac{10.55}{171.45} \times \text{Trim}$$

$$dA = da + \Delta da$$

Trim by Stern to be marked "-" (minus sign)

Trim by Head to be marked "+" (plus sign)

○ Stem Correction (Δdf)

$$\Delta df = \frac{6.4}{171.45} \times \text{Trim}$$

$$dF = df + \Delta df$$

Where,

Trim : Apparent trim, i.e. Difference between Fwd. Draft Mark and Aft. Draft Mark

dA , dF , dM = Draft at A.P, F.P, MidShip

da , df , dm = Draft at Aft, Fwd, MidShip Draft Mark

Δda , Δdf , Δdm = Aft, Fwd, Mid Correction by Trim



TRIM & STABILITY BOOKLET

REV.

STANDARD NO.

ORI

HDS-56-B002

DRAFT CORRECTION TABLE

APPARENT TRIM (M)	FORE DRAFT CORRECTION (M)	AFT DRAFT CORRECTION (M)	APPARENT TRIM (M)	FORE DRAFT CORRECTION (M)	AFT DRAFT CORRECTION (M)
2.00	0.075	-0.123	-1.10	-0.041	0.068
1.90	0.071	-0.117	-1.20	-0.045	0.074
1.80	0.067	-0.111	-1.30	-0.049	0.080
1.70	0.063	-0.105	-1.40	-0.052	0.086
1.60	0.060	-0.098	-1.50	-0.056	0.092
1.50	0.056	-0.092	-1.60	-0.060	0.098
1.40	0.052	-0.086	-1.70	-0.063	0.105
1.30	0.049	-0.080	-1.80	-0.067	0.111
1.20	0.045	-0.074	-1.90	-0.071	0.117
1.10	0.041	-0.068	-2.00	-0.075	0.123
1.00	0.037	-0.062	-2.10	-0.078	0.129
0.90	0.034	-0.055	-2.20	-0.082	0.135
0.80	0.030	-0.049	-2.30	-0.086	0.142
0.70	0.026	-0.043	-2.40	-0.090	0.148
0.60	0.022	-0.037	-2.50	-0.093	0.154
0.50	0.019	-0.031	-2.60	-0.097	0.160
0.40	0.015	-0.025	-2.70	-0.101	0.166
0.30	0.011	-0.018	-2.80	-0.105	0.172
0.20	0.007	-0.012	-2.90	-0.108	0.178
0.10	0.004	-0.006	-3.00	-0.112	0.185
0.00	0.000	0.000	-3.10	-0.116	0.191
-0.10	-0.004	0.006	-3.20	-0.119	0.197
-0.20	-0.007	0.012	-3.30	-0.123	0.203
-0.30	-0.011	0.018	-3.40	-0.127	0.209
-0.40	-0.015	0.025	-3.50	-0.131	0.215
-0.50	-0.019	0.031	-3.60	-0.134	0.222
-0.60	-0.022	0.037	-3.70	-0.138	0.228
-0.70	-0.026	0.043	-3.80	-0.142	0.234
-0.80	-0.030	0.049	-3.90	-0.146	0.240
-0.90	-0.034	0.055	-4.00	-0.149	0.246
-1.00	-0.037	0.062	-4.10	-0.153	0.252



2.2 Hydrostatic Table

1. Abbreviation

DRAFT(EXT.)	: Draft from bottom of keel in meter
MOLDED VOL.	: Volume of naked body in cubic meter i.e. Volume(M^3) without shell and appendages
DISPL.(EXT.)	: Displacement with shell and appendages in metric ton
T.P.C	: Ton per one centimeter immersion in metric ton per centimeter (MT/CM)
M.T.C	: Moment to change trim one centimeter in metric ton-meter (MT-M)
L.C.B	: Longitudinal center of buoyancy from midship in meter
L.C.G	: Longitudinal center of gravity from midship in meter
L.C.F	: Longitudinal center of floatation from midship in meter
KB	: Vertical center of buoyancy above base line in meter
KMT	: Transverse metacentric height above base line in meter
KML	: Longitudinal metacentric height above base line in meter
Cb	: Block coefficient
Cp	: Prismatic coefficient
Cw	: Water plane area coefficient
Cm	: Midship sectional area coefficient

Notes :

- 1) As for L.C.B and L.C.F, "-" (minus sign) means "after midship"
- 2) As for trim "-"(minus sign) means "trim by stern"
- 3) Specific gravity of sea water is assumed to be 1.025
- 4) Keel plate thickness is 16.5 mm

HYDROSTATIC PARTICULARS

DRAFT EXT.	MOULD VOL.	DISPL IN SEA WATER S.G. 1.025	T.P.C (T/CM)	M.T.C (TM)	DISPL IN FRESH WATER S.G. 1.000	T.P.C (T/CM)	M.T.C (TM)	L.C.B FR MID. (M)	L.C.F FR MID. (M)	K.B (M)	K.M.T (M)
2.00	8850	9128	48.28	499.4	8906	47.11	487.2	8.436	7.692	1.027	39.831
2.02	8944	9225	48.31	500.2	9000	47.14	488.0	8.429	7.686	1.037	39.476
2.04	9039	9322	48.35	501.0	9094	47.17	488.8	8.421	7.680	1.047	39.129
2.06	9134	9418	48.38	501.8	9188	47.20	489.5	8.413	7.674	1.056	38.788
2.08	9229	9515	48.41	502.5	9283	47.23	490.3	8.406	7.668	1.066	38.455
2.10	9324	9611	48.44	503.3	9377	47.26	491.0	8.399	7.662	1.075	38.128
2.12	9419	9708	48.47	504.1	9471	47.29	491.8	8.392	7.656	1.084	37.808
2.14	9514	9804	48.50	504.9	9565	47.32	492.6	8.385	7.650	1.093	37.494
2.16	9609	9901	48.53	505.7	9660	47.35	493.3	8.378	7.644	1.101	37.186
2.18	9704	9998	48.56	506.4	9754	47.38	494.1	8.372	7.638	1.110	36.884
2.20	9799	10094	48.60	507.2	9848	47.41	494.8	8.365	7.632	1.118	36.588
2.22	9894	10191	48.63	508.0	9942	47.44	495.6	8.359	7.626	1.126	36.298
2.24	9989	10288	48.66	508.7	10037	47.47	496.3	8.351	7.620	1.138	36.009
2.26	10086	10386	48.68	509.4	10133	47.49	497.0	8.344	7.612	1.150	35.724
2.28	10182	10484	48.71	510.1	10228	47.52	497.6	8.337	7.605	1.162	35.445
2.30	10278	10582	48.74	510.8	10324	47.55	498.3	8.329	7.598	1.174	35.171
2.32	10374	10680	48.76	511.4	10419	47.57	499.0	8.322	7.591	1.185	34.902
2.34	10470	10778	48.79	512.1	10515	47.60	499.6	8.315	7.584	1.197	34.638
2.36	10567	10876	48.82	512.8	10610	47.63	500.3	8.308	7.577	1.208	34.378
2.38	10663	10974	48.84	513.5	10706	47.65	501.0	8.301	7.570	1.219	34.123
2.40	10759	11071	48.87	514.2	10801	47.68	501.7	8.295	7.563	1.230	33.873
2.42	10855	11169	48.90	514.9	10897	47.70	502.3	8.288	7.556	1.240	33.627
2.44	10952	11267	48.92	515.6	10992	47.73	503.0	8.282	7.549	1.251	33.386
2.46	11048	11365	48.95	516.3	11088	47.76	503.7	8.275	7.542	1.261	33.148
2.48	11144	11463	48.98	516.9	11183	47.78	504.3	8.269	7.534	1.271	32.915
2.50	11240	11561	49.00	517.6	11279	47.81	505.0	8.263	7.527	1.281	32.685
2.52	11336	11659	49.03	518.3	11374	47.83	505.7	8.257	7.520	1.290	32.460
2.54	11433	11757	49.06	519.0	11470	47.86	506.3	8.251	7.513	1.300	32.238
2.56	11529	11855	49.08	519.7	11565	47.89	507.0	8.245	7.506	1.309	32.020
2.58	11625	11953	49.11	520.4	11661	47.91	507.7	8.240	7.499	1.319	31.805
2.60	11721	12050	49.14	521.1	11757	47.94	508.3	8.234	7.492	1.328	31.594
2.62	11817	12148	49.16	521.7	11852	47.97	509.0	8.229	7.485	1.337	31.386
2.64	11914	12246	49.19	522.4	11948	47.99	509.7	8.223	7.478	1.346	31.182
2.66	12010	12344	49.22	523.1	12043	48.02	510.4	8.218	7.471	1.354	30.981
2.68	12106	12442	49.24	523.8	12139	48.04	511.0	8.213	7.464	1.363	30.783
2.70	12203	12541	49.27	524.4	12235	48.07	511.6	8.206	7.457	1.374	30.586
2.72	12300	12640	49.29	525.0	12332	48.09	512.2	8.200	7.449	1.386	30.392
2.74	12398	12739	49.31	525.6	12428	48.11	512.8	8.193	7.442	1.398	30.200
2.76	12495	12838	49.34	526.2	12525	48.13	513.4	8.187	7.434	1.409	30.012
2.78	12592	12937	49.36	526.8	12621	48.16	514.0	8.181	7.427	1.421	29.827
2.80	12690	13036	49.38	527.4	12718	48.18	514.5	8.175	7.419	1.432	29.644
2.82	12787	13135	49.41	528.0	12815	48.20	515.1	8.169	7.412	1.443	29.465
2.84	12884	13234	49.43	528.6	12911	48.22	515.7	8.163	7.404	1.454	29.288
2.86	12982	13333	49.45	529.2	13008	48.25	516.3	8.157	7.397	1.465	29.113
2.88	13079	13432	49.48	529.8	13105	48.27	516.9	8.151	7.389	1.475	28.941

HYDROSTATIC PARTICULARS

DRAFT EXT.	K.M.L	IT	WP AREA	WETTED SURFACE	BLOCK COEFF.	PRISM. COEFF.	WP-A COEFF.	MID. COEFF.
(M)	(M)	(M4)	(M2)	(M2)	CB	CP	CW	CM
2.00	1031.76	345580.	4710.5	5097.0	0.7354	0.7506	0.7822	0.9798
2.02	1022.57	345953.	4713.6	5105.5	0.7359	0.7509	0.7827	0.9800
2.04	1013.57	346326.	4716.6	5114.1	0.7364	0.7513	0.7832	0.9802
2.06	1004.76	346699.	4719.7	5122.6	0.7368	0.7516	0.7837	0.9804
2.08	996.13	347072.	4722.8	5131.1	0.7373	0.7519	0.7842	0.9806
2.10	987.67	347444.	4725.8	5139.7	0.7377	0.7522	0.7847	0.9808
2.12	979.38	347817.	4728.9	5148.2	0.7381	0.7525	0.7852	0.9810
2.14	971.25	348190.	4731.9	5156.8	0.7385	0.7527	0.7857	0.9811
2.16	963.28	348563.	4735.0	5165.3	0.7389	0.7530	0.7862	0.9813
2.18	955.46	348936.	4738.0	5173.8	0.7393	0.7533	0.7867	0.9815
2.20	947.80	349309.	4741.1	5182.4	0.7397	0.7536	0.7872	0.9816
2.22	940.28	349681.	4744.2	5190.9	0.7401	0.7538	0.7877	0.9818
2.24	932.68	350016.	4746.9	5199.3	0.7406	0.7542	0.7882	0.9820
2.26	925.16	350339.	4749.5	5207.6	0.7410	0.7545	0.7886	0.9821
2.28	917.77	350661.	4752.1	5216.0	0.7415	0.7549	0.7891	0.9823
2.30	910.53	350984.	4754.7	5224.3	0.7419	0.7552	0.7895	0.9825
2.32	903.41	351307.	4757.3	5232.7	0.7424	0.7555	0.7899	0.9826
2.34	896.43	351629.	4759.9	5241.0	0.7428	0.7559	0.7903	0.9828
2.36	889.57	351952.	4762.6	5249.4	0.7433	0.7562	0.7908	0.9829
2.38	882.83	352275.	4765.2	5257.7	0.7437	0.7565	0.7912	0.9830
2.40	876.22	352597.	4767.8	5266.0	0.7441	0.7568	0.7916	0.9832
2.42	869.72	352920.	4770.4	5274.4	0.7445	0.7571	0.7921	0.9833
2.44	863.33	353242.	4773.0	5282.7	0.7449	0.7574	0.7925	0.9835
2.46	857.05	353565.	4775.6	5291.1	0.7453	0.7577	0.7929	0.9836
2.48	850.88	353888.	4778.2	5299.4	0.7457	0.7580	0.7934	0.9837
2.50	844.81	354210.	4780.9	5307.8	0.7461	0.7583	0.7938	0.9839
2.52	838.85	354533.	4783.5	5316.1	0.7464	0.7586	0.7942	0.9840
2.54	832.98	354856.	4786.1	5324.5	0.7468	0.7588	0.7947	0.9841
2.56	827.21	355178.	4788.7	5332.8	0.7472	0.7591	0.7951	0.9842
2.58	821.54	355501.	4791.3	5341.1	0.7475	0.7594	0.7955	0.9844
2.60	815.96	355824.	4793.9	5349.5	0.7479	0.7596	0.7960	0.9845
2.62	810.47	356146.	4796.5	5357.8	0.7482	0.7599	0.7964	0.9846
2.64	805.06	356469.	4799.1	5366.2	0.7486	0.7602	0.7968	0.9847
2.66	799.75	356791.	4801.8	5374.5	0.7489	0.7604	0.7973	0.9848
2.68	794.51	357114.	4804.4	5382.9	0.7492	0.7607	0.7977	0.9850
2.70	789.19	357402.	4806.7	5391.1	0.7496	0.7610	0.7981	0.9851
2.72	783.92	357683.	4808.9	5399.3	0.7500	0.7613	0.7984	0.9852
2.74	778.73	357964.	4811.2	5407.5	0.7504	0.7616	0.7988	0.9853
2.76	773.63	358245.	4813.4	5415.7	0.7507	0.7619	0.7992	0.9854
2.78	768.60	358527.	4815.6	5423.9	0.7511	0.7622	0.7995	0.9855
2.80	763.65	358808.	4817.9	5432.2	0.7515	0.7625	0.7999	0.9856
2.82	758.77	359089.	4820.1	5440.4	0.7518	0.7628	0.8003	0.9857
2.84	753.96	359370.	4822.4	5448.6	0.7522	0.7630	0.8007	0.9858
2.86	749.23	359651.	4824.6	5456.8	0.7526	0.7633	0.8010	0.9859
2.88	744.57	359932.	4826.8	5465.0	0.7529	0.7636	0.8014	0.9860

HYDROSTATIC PARTICULARS

DRAFT EXT.	MOULD VOL.	DISPL IN SEA WATER S.G. 1.025	T.P.C 1.025	M.T.C (TM)	DISPL IN FRESH WATER S.G. 1.000	T.P.C 1.000	M.T.C (TM)	L.C.B FR MID.	L.C.F FR MID.	K.B	K.M.T
(M)	(M3)	(TON)	(T/CM)	(TM)	(TON)	(T/CM)	(TM)	(M)	(M)	(M)	(M)
2.88	13079	13432	49.48	529.8	13105	48.27	516.9	8.151	7.389	1.475	28.941
2.90	13176	13531	49.50	530.4	13201	48.29	517.5	8.146	7.382	1.486	28.772
2.92	13274	13630	49.52	531.0	13290	48.31	518.0	8.140	7.374	1.496	28.605
2.94	13371	13729	49.54	531.6	13394	48.34	518.6	8.134	7.367	1.506	28.441
2.96	13468	13828	49.57	532.2	13491	48.36	519.2	8.129	7.359	1.516	28.279
2.98	13566	13927	49.59	532.8	13588	48.38	519.8	8.124	7.352	1.526	28.119
3.00	13663	14026	49.61	533.4	13684	48.40	520.4	8.118	7.345	1.535	27.961
3.02	13760	14125	49.64	534.0	13781	48.43	521.0	8.113	7.337	1.545	27.806
3.04	13857	14225	49.66	534.6	13878	48.45	521.5	8.108	7.330	1.554	27.653
3.06	13955	14324	49.68	535.2	13974	48.47	522.1	8.103	7.322	1.564	27.502
3.08	14052	14423	49.70	535.8	14071	48.49	522.7	8.098	7.315	1.573	27.353
3.10	14149	14522	49.73	536.4	14167	48.51	523.3	8.093	7.307	1.582	27.206
3.12	14247	14621	49.75	537.0	14264	48.54	523.9	8.088	7.300	1.591	27.061
3.14	14344	14720	49.77	537.6	14361	48.56	524.5	8.083	7.293	1.600	26.918
3.16	14442	14820	49.81	538.6	14459	48.60	525.5	8.080	7.310	1.611	26.780
3.18	14541	14921	49.85	539.7	14557	48.63	526.5	8.076	7.330	1.623	26.645
3.20	14639	15021	49.89	540.7	14655	48.67	527.5	8.072	7.349	1.634	26.511
3.22	14737	15121	49.93	541.8	14753	48.71	528.6	8.069	7.369	1.646	26.379
3.24	14835	15222	49.96	542.8	14851	48.75	529.6	8.065	7.388	1.657	26.249
3.26	14934	15322	50.00	543.9	14949	48.78	530.6	8.062	7.408	1.668	26.121
3.28	15032	15423	50.04	545.0	15047	48.82	531.7	8.058	7.427	1.679	25.994
3.30	15130	15523	50.08	546.0	15145	48.86	532.7	8.055	7.446	1.690	25.869
3.32	15228	15624	50.12	547.1	15243	48.89	533.7	8.052	7.466	1.701	25.746
3.34	15327	15724	50.15	548.1	15341	48.93	534.8	8.048	7.485	1.711	25.624
3.36	15425	15825	50.19	549.2	15439	48.97	535.8	8.045	7.504	1.722	25.504
3.38	15523	15925	50.23	550.3	15537	49.01	536.8	8.042	7.523	1.732	25.385
3.40	15622	16026	50.27	551.3	15635	49.04	537.9	8.039	7.542	1.742	25.268
3.42	15720	16126	50.31	552.4	15733	49.08	538.9	8.035	7.562	1.752	25.152
3.44	15818	16226	50.35	553.4	15831	49.12	539.9	8.032	7.581	1.762	25.037
3.46	15916	16327	50.38	554.5	15929	49.16	541.0	8.029	7.600	1.772	24.924
3.48	16015	16427	50.42	555.5	16027	49.19	542.0	8.026	7.619	1.782	24.813
3.50	16113	16528	50.46	556.6	16125	49.23	543.0	8.023	7.638	1.791	24.702
3.52	16211	16628	50.50	557.7	16223	49.27	544.1	8.020	7.657	1.801	24.593
3.54	16310	16729	50.54	558.7	16321	49.30	545.1	8.017	7.676	1.810	24.486
3.56	16408	16829	50.58	559.8	16419	49.34	546.1	8.014	7.695	1.819	24.379
3.58	16506	16930	50.61	560.8	16517	49.38	547.2	8.011	7.714	1.828	24.274
3.60	16604	17030	50.65	561.9	16615	49.42	548.2	8.009	7.733	1.837	24.170
3.62	16703	17132	50.67	562.4	16714	49.43	548.6	8.006	7.724	1.849	24.063
3.64	16803	17234	50.69	562.8	16813	49.45	549.1	8.004	7.715	1.861	23.958
3.66	16902	17335	50.70	563.3	16912	49.47	549.6	8.002	7.706	1.872	23.853
3.68	17001	17437	50.72	563.8	17012	49.49	550.0	8.000	7.697	1.884	23.750
3.70	17100	17539	50.74	564.2	17111	49.50	550.5	7.998	7.689	1.895	23.648
3.72	17199	17640	50.76	564.7	17210	49.52	550.9	7.996	7.680	1.906	23.547
3.74	17298	17742	50.78	565.2	17309	49.54	551.4	7.994	7.671	1.917	23.447
3.76	17397	17844	50.79	565.6	17409	49.55	551.8	7.992	7.662	1.928	23.348

HYDROSTATIC PARTICULARS

DRAFT EXT.	K.M.L	IT	WP AREA	WETTED SURFACE	BLOCK COEFF.	PRISM. COEFF.	WP-A COEFF.	MID. COEFF.
(M)	(M)	(M4)	(M2)	(M2)	CB	CP	CW	CM
2.88	744.57	359933.	4826.8	5465.0	0.7529	0.7636	0.8014	0.9860
2.90	739.97	360214.	4829.1	5473.2	0.7532	0.7639	0.8018	0.9861
2.92	735.44	360495.	4831.3	5481.4	0.7536	0.7641	0.8021	0.9862
2.94	730.98	360776.	4833.6	5489.6	0.7539	0.7644	0.8025	0.9863
2.96	726.58	361057.	4835.8	5497.9	0.7542	0.7646	0.8029	0.9864
2.98	722.24	361338.	4838.0	5506.1	0.7546	0.7649	0.8032	0.9865
3.00	717.97	361620.	4840.3	5514.3	0.7549	0.7652	0.8036	0.9866
3.02	713.75	361901.	4842.5	5522.5	0.7552	0.7654	0.8040	0.9867
3.04	709.60	362182.	4844.8	5530.7	0.7555	0.7657	0.8044	0.9867
3.06	705.50	362463.	4847.0	5538.9	0.7558	0.7659	0.8047	0.9868
3.08	701.46	362744.	4849.3	5547.1	0.7561	0.7661	0.8051	0.9869
3.10	697.47	363026.	4851.5	5555.3	0.7564	0.7664	0.8055	0.9870
3.12	693.53	363307.	4853.7	5563.6	0.7567	0.7666	0.8058	0.9871
3.14	689.65	363588.	4856.0	5571.8	0.7570	0.7668	0.8062	0.9872
3.16	686.31	363910.	4859.6	5579.9	0.7573	0.7671	0.8065	0.9873
3.18	683.05	364235.	4863.3	5588.0	0.7577	0.7674	0.8069	0.9873
3.20	679.83	364559.	4867.1	5596.1	0.7580	0.7677	0.8072	0.9874
3.22	676.66	364884.	4870.8	5604.1	0.7583	0.7679	0.8075	0.9875
3.24	673.52	365209.	4874.5	5612.2	0.7586	0.7682	0.8078	0.9876
3.26	670.43	365534.	4878.2	5620.3	0.7590	0.7684	0.8081	0.9876
3.28	667.38	365859.	4882.0	5628.4	0.7593	0.7687	0.8085	0.9877
3.30	664.37	366184.	4885.7	5636.5	0.7596	0.7690	0.8088	0.9878
3.32	661.40	366509.	4889.4	5644.6	0.7599	0.7692	0.8091	0.9879
3.34	658.46	366834.	4893.2	5652.7	0.7602	0.7695	0.8094	0.9879
3.36	655.56	367159.	4896.9	5660.8	0.7605	0.7697	0.8097	0.9880
3.38	652.70	367484.	4900.6	5668.9	0.7608	0.7699	0.8101	0.9881
3.40	649.88	367809.	4904.4	5677.0	0.7611	0.7702	0.8104	0.9882
3.42	647.09	368134.	4908.1	5685.1	0.7614	0.7704	0.8107	0.9882
3.44	644.33	368459.	4911.8	5693.2	0.7616	0.7707	0.8110	0.9883
3.46	641.61	368784.	4915.5	5701.2	0.7619	0.7709	0.8113	0.9884
3.48	638.92	369109.	4919.3	5709.3	0.7622	0.7711	0.8117	0.9884
3.50	636.27	369433.	4923.0	5717.4	0.7625	0.7713	0.8120	0.9885
3.52	633.64	369758.	4926.7	5725.5	0.7627	0.7716	0.8123	0.9886
3.54	631.05	370083.	4930.5	5733.6	0.7630	0.7718	0.8126	0.9886
3.56	628.49	370408.	4934.2	5741.7	0.7633	0.7720	0.8130	0.9887
3.58	625.96	370733.	4937.9	5749.8	0.7635	0.7722	0.8133	0.9888
3.60	623.45	371057.	4941.6	5757.9	0.7638	0.7724	0.8136	0.9888
3.62	620.29	371288.	4943.4	5765.9	0.7641	0.7727	0.8139	0.9889
3.64	617.16	371520.	4945.1	5773.9	0.7644	0.7729	0.8142	0.9889
3.66	614.06	371751.	4946.8	5782.0	0.7647	0.7732	0.8145	0.9890
3.68	611.00	371982.	4948.6	5790.0	0.7650	0.7734	0.8147	0.9891
3.70	607.98	372213.	4950.3	5798.0	0.7652	0.7737	0.8150	0.9891
3.72	604.99	372444.	4952.0	5806.0	0.7655	0.7739	0.8153	0.9892
3.74	602.04	372675.	4953.7	5814.0	0.7658	0.7741	0.8156	0.9892
3.76	599.12	372906.	4955.5	5822.1	0.7661	0.7744	0.8159	0.9893

HYDROSTATIC PARTICULARS

DRAFT EXT.	MOULD VOL.	DISPL IN SEA WATER S.G. 1.025	T.P.C 1.025 (T/CM)	M.T.C (TM)	DISPL IN FRESH WATER S.G. 1.000	T.P.C 1.000 (T/CM)	M.T.C (TM)	L.C.B FR MID. (M)	L.C.F FR MID. (M)	K.B (M)	K.M.T (M)
3.76	17397	17844	50.79	565.6	17409	49.55	551.8	7.992	7.662	1.928	23.348
3.78	17496	17946	50.81	566.1	17508	49.57	552.3	7.990	7.654	1.938	23.251
3.80	17596	18047	50.83	566.6	17607	49.59	552.7	7.988	7.645	1.949	23.154
3.82	17695	18149	50.85	567.0	17706	49.61	553.2	7.986	7.636	1.959	23.059
3.84	17794	18251	50.86	567.5	17806	49.62	553.6	7.984	7.627	1.970	22.965
3.86	17893	18353	50.88	567.9	17905	49.64	554.1	7.982	7.619	1.980	22.871
3.88	17992	18454	50.90	568.4	18004	49.66	554.5	7.980	7.610	1.990	22.779
3.90	18091	18556	50.92	568.9	18103	49.68	555.0	7.978	7.601	2.000	22.688
3.92	18190	18658	50.94	569.3	18203	49.69	555.5	7.976	7.592	2.010	22.598
3.94	18289	18759	50.95	569.8	18302	49.71	555.9	7.974	7.584	2.020	22.509
3.96	18389	18861	50.97	570.3	18401	49.73	556.4	7.972	7.575	2.029	22.420
3.98	18488	18963	50.99	570.7	18500	49.75	556.8	7.970	7.566	2.039	22.333
4.00	18587	19065	51.01	571.2	18600	49.76	557.3	7.969	7.558	2.048	22.247
4.02	18686	19166	51.02	571.7	18699	49.78	557.7	7.967	7.549	2.058	22.161
4.04	18785	19268	51.04	572.1	18798	49.80	558.2	7.965	7.540	2.067	22.077
4.06	18884	19370	51.06	572.6	18897	49.81	558.6	7.963	7.532	2.076	21.993
4.08	18984	19472	51.07	573.0	18997	49.83	559.0	7.960	7.522	2.088	21.911
4.10	19084	19575	51.09	573.4	19097	49.84	559.4	7.958	7.513	2.099	21.829
4.12	19184	19677	51.11	573.8	19197	49.86	559.8	7.955	7.504	2.111	21.748
4.14	19284	19780	51.12	574.2	19297	49.87	560.2	7.952	7.495	2.122	21.669
4.16	19383	19882	51.14	574.6	19397	49.89	560.6	7.949	7.486	2.133	21.590
4.18	19483	19985	51.15	575.0	19497	49.90	561.0	7.947	7.476	2.144	21.511
4.20	19583	20087	51.17	575.4	19597	49.92	561.4	7.944	7.467	2.155	21.434
4.22	19683	20190	51.18	575.8	19697	49.93	561.8	7.942	7.458	2.165	21.357
4.24	19783	20292	51.20	576.2	19797	49.95	562.2	7.939	7.449	2.176	21.282
4.26	19883	20395	51.21	576.6	19897	49.97	562.6	7.936	7.440	2.187	21.207
4.28	19983	20497	51.23	577.0	19997	49.98	563.0	7.934	7.431	2.197	21.132
4.30	20082	20599	51.25	577.5	20097	50.00	563.4	7.931	7.422	2.207	21.059
4.32	20182	20702	51.26	577.9	20197	50.01	563.8	7.929	7.413	2.218	20.986
4.34	20282	20804	51.28	578.3	20297	50.03	564.2	7.926	7.403	2.228	20.914
4.36	20382	20907	51.29	578.7	20397	50.04	564.6	7.924	7.394	2.238	20.842
4.38	20482	21009	51.31	579.1	20497	50.06	564.9	7.922	7.385	2.248	20.772
4.40	20582	21112	51.32	579.5	20597	50.07	565.3	7.919	7.376	2.257	20.701
4.42	20682	21214	51.34	579.9	20697	50.09	565.7	7.917	7.367	2.267	20.632
4.44	20781	21317	51.35	580.3	20797	50.10	566.1	7.914	7.358	2.277	20.563
4.46	20881	21419	51.37	580.7	20897	50.12	566.5	7.912	7.349	2.286	20.495
4.48	20981	21522	51.38	581.1	20997	50.13	566.9	7.910	7.340	2.296	20.428
4.50	21081	21624	51.40	581.5	21097	50.15	567.3	7.908	7.331	2.305	20.361
4.52	21181	21727	51.41	581.9	21197	50.16	567.7	7.905	7.321	2.315	20.295
4.54	21282	21830	51.43	582.3	21298	50.17	568.1	7.902	7.311	2.326	20.231
4.56	21382	21933	51.44	582.6	21398	50.19	568.4	7.899	7.301	2.338	20.167
4.58	21483	22036	51.46	583.0	21499	50.20	568.8	7.895	7.290	2.349	20.104
4.60	21583	22139	51.47	583.4	21599	50.22	569.2	7.892	7.280	2.360	20.041
4.62	21684	22243	51.49	583.8	21700	50.23	569.5	7.889	7.269	2.371	19.979
4.64	21784	22346	51.50	584.1	21801	50.24	569.9	7.886	7.259	2.382	19.917

HYDROSTATIC PARTICULARS

DRAFT EXT.	K.M.L	IT	WP AREA	WETTED SURFACE	BLOCK COEFF.	PRISM. COEFF.	WP-A COEFF.	MID. COEFF.
(M)	(M)	(M4)	(M2)	(M2)	CB	CP	CW	CM
3.76	599.12	372906.	4955.5	5822.1	0.7661	0.7744	0.8159	0.9893
3.78	596.24	373138.	4957.2	5830.1	0.7663	0.7746	0.8162	0.9894
3.80	593.38	373369.	4958.9	5838.1	0.7666	0.7748	0.8164	0.9894
3.82	590.56	373600.	4960.7	5846.1	0.7669	0.7750	0.8167	0.9895
3.84	587.77	373831.	4962.4	5854.2	0.7671	0.7753	0.8170	0.9895
3.86	585.01	374062.	4964.1	5862.2	0.7674	0.7755	0.8173	0.9896
3.88	582.28	374293.	4965.9	5870.2	0.7676	0.7757	0.8176	0.9896
3.90	579.58	374524.	4967.6	5878.2	0.7679	0.7759	0.8179	0.9897
3.92	576.91	374756.	4969.3	5886.3	0.7682	0.7761	0.8182	0.9897
3.94	574.27	374987.	4971.0	5894.3	0.7684	0.7763	0.8184	0.9898
3.96	571.66	375218.	4972.8	5902.3	0.7686	0.7765	0.8187	0.9898
3.98	569.08	375449.	4974.5	5910.3	0.7689	0.7767	0.8190	0.9899
4.00	566.52	375680.	4976.2	5918.3	0.7691	0.7769	0.8193	0.9899
4.02	563.99	375911.	4978.0	5926.4	0.7694	0.7772	0.8196	0.9900
4.04	561.49	376142.	4979.7	5934.4	0.7696	0.7773	0.8199	0.9900
4.06	559.01	376371.	4981.4	5942.4	0.7698	0.7776	0.8202	0.9901
4.08	556.48	376578.	4982.9	5950.4	0.7701	0.7778	0.8204	0.9901
4.10	553.98	376785.	4984.4	5958.4	0.7704	0.7780	0.8207	0.9902
4.12	551.50	376993.	4985.9	5966.4	0.7706	0.7782	0.8209	0.9902
4.14	549.05	377200.	4987.4	5974.3	0.7709	0.7784	0.8212	0.9903
4.16	546.63	377407.	4989.0	5982.3	0.7711	0.7787	0.8214	0.9903
4.18	544.23	377614.	4990.5	5990.3	0.7714	0.7789	0.8217	0.9904
4.20	541.85	377821.	4992.0	5998.3	0.7716	0.7791	0.8219	0.9904
4.22	539.50	378028.	4993.5	6006.3	0.7719	0.7793	0.8221	0.9905
4.24	537.18	378235.	4995.0	6014.2	0.7721	0.7795	0.8224	0.9905
4.26	534.87	378442.	4996.5	6022.2	0.7724	0.7797	0.8226	0.9906
4.28	532.59	378649.	4998.0	6030.2	0.7726	0.7799	0.8229	0.9906
4.30	530.34	378856.	4999.5	6038.2	0.7728	0.7801	0.8231	0.9906
4.32	528.10	379063.	5001.0	6046.2	0.7731	0.7803	0.8234	0.9907
4.34	525.89	379270.	5002.5	6054.2	0.7733	0.7805	0.8236	0.9907
4.36	523.69	379477.	5004.0	6062.1	0.7735	0.7807	0.8239	0.9908
4.38	521.52	379684.	5005.6	6070.1	0.7737	0.7809	0.8241	0.9908
4.40	519.37	379891.	5007.1	6078.1	0.7740	0.7811	0.8244	0.9909
4.42	517.25	380098.	5008.6	6086.1	0.7742	0.7813	0.8246	0.9909
4.44	515.14	380306.	5010.1	6094.1	0.7744	0.7815	0.8249	0.9909
4.46	513.05	380513.	5011.6	6102.1	0.7746	0.7817	0.8251	0.9910
4.48	510.98	380720.	5013.1	6110.0	0.7749	0.7819	0.8254	0.9910
4.50	508.93	380927.	5014.6	6118.0	0.7751	0.7821	0.8256	0.9911
4.52	506.90	381131.	5016.1	6126.0	0.7753	0.7822	0.8259	0.9911
4.54	504.85	381324.	5017.5	6134.0	0.7755	0.7824	0.8261	0.9911
4.56	502.82	381517.	5018.9	6142.0	0.7758	0.7827	0.8263	0.9912
4.58	500.80	381710.	5020.2	6149.9	0.7760	0.7829	0.8266	0.9912
4.60	498.81	381902.	5021.6	6157.9	0.7762	0.7831	0.8268	0.9913
4.62	496.83	382095.	5023.0	6165.9	0.7764	0.7833	0.8270	0.9913
4.64	494.88	382288.	5024.4	6173.9	0.7767	0.7835	0.8272	0.9913

HYDROSTATIC PARTICULARS

DRAFT EXT.	MOULD VOL.	DISPL IN SEA WATER S.G. 1.025	T.P.C 1.025	M.T.C	DISPL IN FRESH WATER S.G. 1.000	T.P.C 1.000	M.T.C	L.C.B FR MID.	L.C.F FR MID.	K.B	K.M.T
(M)	(M3)	(TON)	(T/CM)	(TM)	(TON)	(T/CM)	(TM)	(M)	(M)	(M)	(M)
4.64	21784	22346	51.50	584.1	21801	50.24	569.9	7.886	7.259	2.382	19.917
4.66	21885	22449	51.51	584.5	21901	50.26	570.3	7.883	7.248	2.392	19.856
4.60	21985	22552	51.53	584.9	22002	50.27	570.6	7.880	7.238	2.403	19.796
4.70	22086	22655	51.54	585.3	22103	50.29	571.0	7.877	7.228	2.414	19.736
4.72	22186	22758	51.56	585.6	22203	50.30	571.4	7.874	7.217	2.424	19.677
4.74	22287	22862	51.57	586.0	22304	50.31	571.7	7.871	7.207	2.435	19.618
4.76	22387	22965	51.58	586.4	22405	50.33	572.1	7.868	7.196	2.445	19.560
4.78	22488	23068	51.60	586.8	22505	50.34	572.4	7.865	7.186	2.455	19.502
4.80	22588	23171	51.61	587.1	22606	50.35	572.8	7.862	7.176	2.465	19.445
4.82	22689	23274	51.63	587.5	22706	50.37	573.2	7.859	7.165	2.475	19.388
4.84	22789	23377	51.64	587.9	22807	50.38	573.5	7.856	7.155	2.485	19.332
4.86	22890	23480	51.66	588.2	22908	50.40	573.9	7.853	7.145	2.495	19.276
4.88	22990	23584	51.67	588.6	23008	50.41	574.3	7.850	7.134	2.505	19.221
4.90	23091	23687	51.68	589.0	23109	50.42	574.6	7.848	7.124	2.515	19.166
4.92	23191	23790	51.70	589.4	23210	50.44	575.0	7.845	7.114	2.524	19.112
4.94	23292	23893	51.71	589.7	23310	50.45	575.4	7.842	7.103	2.534	19.058
4.96	23392	23996	51.73	590.1	23411	50.46	575.7	7.839	7.093	2.543	19.004
4.98	23493	24100	51.74	590.5	23512	50.48	576.1	7.836	7.082	2.553	18.952
5.00	23594	24203	51.75	590.9	23613	50.49	576.5	7.832	7.068	2.564	18.900
5.02	23695	24307	51.77	591.3	23714	50.51	576.8	7.829	7.054	2.576	18.849
5.04	23797	24411	51.78	591.7	23816	50.52	577.2	7.825	7.040	2.587	18.799
5.06	23898	24515	51.80	592.0	23917	50.53	577.6	7.821	7.027	2.598	18.749
5.08	23999	24618	51.81	592.4	24018	50.55	578.0	7.817	7.013	2.609	18.699
5.10	24100	24722	51.82	592.8	24119	50.56	578.4	7.813	6.999	2.619	18.650
5.12	24201	24826	51.84	593.2	24221	50.57	578.7	7.810	6.985	2.630	18.601
5.14	24302	24930	51.85	593.6	24322	50.59	579.1	7.806	6.972	2.641	18.553
5.16	24403	25034	51.87	594.0	24423	50.60	579.5	7.803	6.958	2.651	18.505
5.18	24505	25137	51.88	594.4	24524	50.61	579.9	7.799	6.944	2.662	18.457
5.20	24606	25241	51.89	594.8	24626	50.63	580.3	7.795	6.930	2.672	18.410
5.22	24707	25345	51.91	595.2	24727	50.64	580.6	7.792	6.917	2.683	18.363
5.24	24808	25449	51.92	595.6	24828	50.65	581.0	7.788	6.903	2.693	18.316
5.26	24909	25553	51.93	595.9	24929	50.67	581.4	7.785	6.889	2.703	18.270
5.28	25010	25656	51.95	596.3	25031	50.68	581.8	7.781	6.876	2.713	18.225
5.30	25111	25760	51.96	596.7	25132	50.70	582.2	7.778	6.862	2.723	18.179
5.32	25213	25864	51.98	597.1	25233	50.71	582.5	7.775	6.848	2.733	18.134
5.34	25314	25968	51.99	597.5	25334	50.72	582.9	7.771	6.835	2.743	18.090
5.36	25415	26072	52.00	597.9	25436	50.74	583.3	7.768	6.821	2.752	18.045
5.38	25516	26175	52.02	598.3	25537	50.75	583.7	7.765	6.807	2.762	18.001
5.40	25617	26279	52.03	598.7	25638	50.76	584.1	7.761	6.794	2.772	17.958
5.42	25718	26383	52.05	599.1	25740	50.78	584.4	7.758	6.780	2.781	17.915
5.44	25820	26487	52.06	599.4	25841	50.79	584.8	7.754	6.766	2.791	17.872
5.46	25921	26591	52.07	599.8	25943	50.80	585.2	7.750	6.750	2.802	17.831
5.48	26023	26696	52.09	600.2	26045	50.82	585.6	7.745	6.735	2.813	17.790
5.50	26125	26800	52.10	600.6	26147	50.83	586.0	7.741	6.720	2.825	17.749
5.52	26227	26905	52.11	601.0	26248	50.84	586.4	7.736	6.704	2.835	17.709

HYDROSTATIC PARTICULARS

DRAFT EXT.	K.M.L	IT	WP AREA	WETTED SURFACE	BLOCK COEFF.	PRISM. COEFF.	WP-A COEFF.	MID. COEFF.
(M)	(M)	(M4)	(M2)	(M2)	CB	CP	CW	CM
4.64	494.88	382288.	5024.4	6173.9	0.7767	0.7835	0.8272	0.9913
4.66	492.94	382481.	5025.8	6181.9	0.7769	0.7836	0.8275	0.9914
4.68	491.02	382673.	5027.1	6189.9	0.7771	0.7838	0.8277	0.9914
4.70	489.11	382866.	5028.5	6197.8	0.7773	0.7840	0.8279	0.9914
4.72	487.23	383059.	5029.9	6205.8	0.7775	0.7842	0.8282	0.9915
4.74	485.36	383252.	5031.3	6213.8	0.7778	0.7844	0.8284	0.9915
4.76	483.51	383445.	5032.7	6221.8	0.7780	0.7846	0.8286	0.9916
4.78	481.67	383637.	5034.0	6229.8	0.7782	0.7848	0.8288	0.9916
4.80	479.85	383830.	5035.4	6237.8	0.7784	0.7850	0.8291	0.9916
4.82	478.05	384023.	5036.8	6245.7	0.7786	0.7852	0.8293	0.9917
4.84	476.26	384216.	5038.2	6253.7	0.7788	0.7853	0.8295	0.9917
4.86	474.49	384408.	5039.6	6261.7	0.7790	0.7855	0.8298	0.9917
4.88	472.73	384601.	5040.9	6269.7	0.7792	0.7857	0.8300	0.9918
4.90	470.99	384794.	5042.3	6277.7	0.7794	0.7859	0.8302	0.9918
4.92	469.26	384987.	5043.7	6285.7	0.7796	0.7860	0.8304	0.9918
4.94	467.55	385179.	5045.1	6293.6	0.7798	0.7862	0.8307	0.9919
4.96	465.86	385372.	5046.5	6301.6	0.7800	0.7864	0.8309	0.9919
4.98	464.18	385562.	5047.8	6309.6	0.7802	0.7866	0.8311	0.9919
5.00	462.51	385742.	5049.2	6317.5	0.7804	0.7868	0.8313	0.9920
5.02	460.86	385923.	5050.6	6325.5	0.7806	0.7869	0.8316	0.9920
5.04	459.22	386103.	5051.9	6333.4	0.7809	0.7871	0.8318	0.9920
5.06	457.60	386283.	5053.3	6341.4	0.7811	0.7873	0.8320	0.9921
5.08	455.99	386464.	5054.6	6349.3	0.7813	0.7875	0.8322	0.9921
5.10	454.39	386644.	5056.0	6357.3	0.7815	0.7877	0.8325	0.9921
5.12	452.81	386824.	5057.3	6365.2	0.7817	0.7879	0.8327	0.9921
5.14	451.24	387005.	5058.7	6373.2	0.7819	0.7880	0.8329	0.9922
5.16	449.68	387185.	5060.0	6381.1	0.7821	0.7882	0.8331	0.9922
5.18	448.14	387365.	5061.4	6389.1	0.7823	0.7884	0.8333	0.9922
5.20	446.61	387546.	5062.8	6397.0	0.7825	0.7886	0.8336	0.9923
5.22	445.09	387726.	5064.1	6405.0	0.7827	0.7888	0.8338	0.9923
5.24	443.58	387906.	5065.5	6412.9	0.7829	0.7889	0.8340	0.9923
5.26	442.09	388087.	5066.8	6420.8	0.7831	0.7891	0.8342	0.9924
5.28	440.61	388267.	5068.2	6428.8	0.7833	0.7893	0.8345	0.9924
5.30	439.14	388448.	5069.5	6436.7	0.7835	0.7894	0.8347	0.9924
5.32	437.68	388628.	5070.9	6444.7	0.7836	0.7896	0.8349	0.9924
5.34	436.24	388808.	5072.2	6452.6	0.7838	0.7898	0.8351	0.9925
5.36	434.80	388989.	5073.6	6460.6	0.7840	0.7899	0.8354	0.9925
5.38	433.38	389169.	5075.0	6468.5	0.7842	0.7901	0.8356	0.9925
5.40	431.96	389349.	5076.3	6476.5	0.7844	0.7903	0.8358	0.9926
5.42	430.56	389530.	5077.7	6484.4	0.7846	0.7904	0.8360	0.9926
5.44	429.17	389707.	5079.0	6492.4	0.7848	0.7906	0.8363	0.9926
5.46	427.79	389880.	5080.4	6500.3	0.7850	0.7908	0.8365	0.9926
5.48	426.42	390052.	5081.7	6508.3	0.7851	0.7910	0.8367	0.9927
5.50	425.06	390224.	5083.0	6516.3	0.7853	0.7911	0.8369	0.9927
5.52	423.71	390397.	5084.4	6524.2	0.7855	0.7913	0.8371	0.9927

HYDROSTATIC PARTICULARS

DRAFT EXT.	MOULD VOL.	DISPL IN SEA WATER S.G. 1.025	T.P.C 1.025 (T/CM)	M.T.C (TM)	DISPL IN FRESH WATER S.G. 1.000	T.P.C 1.000 (T/CM)	M.T.C (TM)	L.C.B FR MID. (M)	L.C.F FR MID. (M)	K.B (M)	K.M.T (M)
5.52	26227	26905	52.11	601.0	26248	50.84	586.4	7.736	6.704	2.835	17.709
5.54	26328	27009	52.13	601.4	26350	50.86	586.8	7.732	6.689	2.846	17.668
5.56	26430	27114	52.14	601.8	26452	50.87	587.2	7.728	6.674	2.857	17.629
5.58	26532	27218	52.16	602.2	26554	50.88	587.5	7.723	6.658	2.868	17.589
5.60	26634	27322	52.17	602.6	26656	50.90	587.9	7.719	6.643	2.878	17.550
5.62	26735	27427	52.18	603.0	26758	50.91	588.3	7.715	6.628	2.889	17.511
5.64	26837	27531	52.20	603.4	26860	50.92	588.7	7.710	6.612	2.899	17.473
5.66	26939	27636	52.21	603.8	26962	50.94	589.1	7.706	6.597	2.910	17.434
5.68	27041	27740	52.22	604.2	27064	50.95	589.5	7.702	6.582	2.920	17.396
5.70	27143	27845	52.24	604.6	27165	50.96	589.9	7.698	6.566	2.930	17.359
5.72	27244	27949	52.25	605.0	27267	50.98	590.3	7.694	6.551	2.940	17.321
5.74	27346	28053	52.27	605.4	27369	50.99	590.7	7.690	6.536	2.951	17.284
5.76	27448	28158	52.28	605.8	27471	51.00	591.0	7.686	6.520	2.961	17.247
5.78	27550	28262	52.29	606.2	27573	51.02	591.4	7.682	6.505	2.970	17.210
5.80	27651	28367	52.31	606.6	27675	51.03	591.8	7.678	6.490	2.980	17.174
5.82	27753	28471	52.32	607.0	27777	51.04	592.2	7.674	6.475	2.990	17.138
5.84	27855	28575	52.33	607.4	27879	51.06	592.6	7.670	6.459	3.000	17.102
5.86	27957	28680	52.35	607.8	27980	51.07	593.0	7.666	6.444	3.009	17.067
5.88	28058	28784	52.36	608.2	28082	51.08	593.4	7.662	6.429	3.019	17.031
5.90	28160	28889	52.38	608.6	28184	51.10	593.8	7.658	6.412	3.029	16.997
5.92	28263	28994	52.39	609.1	28287	51.11	594.2	7.652	6.394	3.040	16.964
5.94	28365	29099	52.40	609.5	28389	51.13	594.6	7.647	6.376	3.051	16.931
5.96	28468	29204	52.42	609.9	28492	51.14	595.1	7.642	6.357	3.062	16.898
5.98	28570	29309	52.43	610.4	28594	51.15	595.5	7.637	6.339	3.073	16.865
6.00	28672	29414	52.45	610.8	28697	51.17	595.9	7.632	6.321	3.084	16.833
6.02	28775	29519	52.46	611.2	28799	51.18	596.3	7.627	6.302	3.095	16.801
6.04	28877	29624	52.48	611.7	28902	51.20	596.7	7.622	6.284	3.106	16.769
6.06	28979	29730	52.49	612.1	29004	51.21	597.2	7.617	6.266	3.116	16.737
6.08	29082	29835	52.51	612.5	29107	51.23	597.6	7.612	6.248	3.127	16.706
6.10	29184	29940	52.52	613.0	29209	51.24	598.0	7.607	6.229	3.137	16.674
6.12	29287	30045	52.53	613.4	29312	51.25	598.4	7.602	6.211	3.148	16.643
6.14	29389	30150	52.55	613.8	29414	51.27	598.9	7.597	6.193	3.158	16.612
6.16	29491	30255	52.56	614.3	29517	51.28	599.3	7.593	6.175	3.168	16.582
6.18	29594	30360	52.58	614.7	29619	51.30	599.7	7.588	6.156	3.178	16.552
6.20	29696	30465	52.59	615.1	29722	51.31	600.1	7.583	6.138	3.188	16.521
6.22	29799	30570	52.61	615.6	29824	51.32	600.6	7.579	6.120	3.198	16.491
6.24	29901	30675	52.62	616.0	29927	51.34	601.0	7.574	6.102	3.208	16.462
6.26	30003	30780	52.64	616.4	30029	51.35	601.4	7.569	6.084	3.218	16.432
6.28	30106	30885	52.65	616.9	30132	51.37	601.8	7.565	6.065	3.228	16.403
6.30	30208	30990	52.66	617.3	30234	51.38	602.3	7.560	6.047	3.238	16.374
6.32	30310	31095	52.68	617.7	30337	51.39	602.7	7.556	6.029	3.247	16.345
6.34	30413	31200	52.69	618.2	30439	51.41	603.1	7.551	6.011	3.257	16.316
6.36	30516	31306	52.71	618.6	30542	51.42	603.5	7.546	5.991	3.267	16.288
6.38	30619	31412	52.72	619.1	30646	51.44	604.0	7.540	5.968	3.279	16.261
6.40	30722	31517	52.74	619.6	30749	51.45	604.5	7.534	5.946	3.290	16.235

HYDROSTATIC PARTICULARS

DRAFT EXT.	K.M.L	IT	WP AREA	WETTED SURFACE	BLOCK COEFF.	PRISM. COEFF.	WP-A COEFF.	MID. COEFF.
(M)	(M)	(M4)	(M2)	(M2)	CB	CP	CW	CM
5.52	423.71	390397.	5084.4	6524.2	0.7855	0.7913	0.8371	0.9927
5.54	422.38	390569.	5085.7	6532.2	0.7857	0.7915	0.8374	0.9927
5.56	421.05	390741.	5087.1	6540.2	0.7859	0.7916	0.8376	0.9928
5.58	419.73	390914.	5088.4	6548.1	0.7861	0.7918	0.8378	0.9928
5.60	418.42	391086.	5089.7	6556.1	0.7863	0.7920	0.8380	0.9928
5.62	417.12	391258.	5091.1	6564.1	0.7865	0.7922	0.8382	0.9928
5.64	415.84	391431.	5092.4	6572.0	0.7867	0.7923	0.8385	0.9929
5.66	414.56	391603.	5093.7	6580.0	0.7869	0.7925	0.8387	0.9929
5.68	413.29	391775.	5095.1	6588.0	0.7870	0.7926	0.8389	0.9929
5.70	412.03	391948.	5096.4	6595.9	0.7872	0.7928	0.8391	0.9930
5.72	410.78	392120.	5097.8	6603.9	0.7874	0.7930	0.8393	0.9930
5.74	409.54	392292.	5099.1	6611.9	0.7876	0.7931	0.8396	0.9930
5.76	408.31	392465.	5100.4	6619.8	0.7878	0.7933	0.8398	0.9930
5.78	407.08	392637.	5101.8	6627.8	0.7879	0.7935	0.8400	0.9930
5.80	405.87	392809.	5103.1	6635.8	0.7881	0.7936	0.8402	0.9931
5.82	404.67	392982.	5104.5	6643.7	0.7883	0.7938	0.8404	0.9931
5.84	403.47	393154.	5105.8	6651.7	0.7885	0.7939	0.8407	0.9931
5.86	402.29	393326.	5107.1	6659.7	0.7886	0.7941	0.8409	0.9931
5.88	401.11	393499.	5108.5	6667.6	0.7888	0.7942	0.8411	0.9932
5.90	399.94	393672.	5109.8	6675.6	0.7890	0.7944	0.8413	0.9932
5.92	398.80	393846.	5111.3	6683.6	0.7892	0.7946	0.8416	0.9932
5.94	397.66	394020.	5112.7	6691.7	0.7894	0.7947	0.8418	0.9932
5.96	396.53	394194.	5114.1	6699.7	0.7895	0.7949	0.8420	0.9933
5.98	395.41	394368.	5115.5	6707.7	0.7897	0.7951	0.8423	0.9933
6.00	394.30	394543.	5116.9	6715.8	0.7899	0.7952	0.8425	0.9933
6.02	393.20	394717.	5118.3	6723.8	0.7901	0.7954	0.8427	0.9933
6.04	392.10	394891.	5119.7	6731.8	0.7903	0.7955	0.8430	0.9933
6.06	391.01	395065.	5121.1	6739.9	0.7904	0.7957	0.8432	0.9934
6.08	389.93	395239.	5122.5	6747.9	0.7906	0.7959	0.8434	0.9934
6.10	388.86	395414.	5123.9	6755.9	0.7908	0.7960	0.8436	0.9934
6.12	387.79	395588.	5125.3	6764.0	0.7910	0.7962	0.8439	0.9934
6.14	386.73	395762.	5126.7	6772.0	0.7911	0.7963	0.8441	0.9935
6.16	385.68	395936.	5128.1	6780.0	0.7913	0.7965	0.8443	0.9935
6.18	384.64	396110.	5129.6	6788.1	0.7915	0.7967	0.8446	0.9935
6.20	383.60	396284.	5131.0	6796.1	0.7916	0.7968	0.8448	0.9935
6.22	382.57	396458.	5132.4	6804.1	0.7918	0.7970	0.8450	0.9935
6.24	381.55	396633.	5133.8	6812.2	0.7920	0.7971	0.8453	0.9936
6.26	380.53	396807.	5135.2	6820.2	0.7921	0.7973	0.8455	0.9936
6.28	379.52	396981.	5136.6	6828.2	0.7923	0.7974	0.8457	0.9936
6.30	378.52	397155.	5138.0	6836.3	0.7925	0.7976	0.8460	0.9936
6.32	377.52	397329.	5139.4	6844.3	0.7926	0.7977	0.8462	0.9936
6.34	376.54	397503.	5140.8	6852.4	0.7928	0.7979	0.8464	0.9937
6.36	375.56	397681.	5142.3	6860.4	0.7930	0.7980	0.8467	0.9937
6.38	374.60	397861.	5143.8	6868.6	0.7931	0.7982	0.8469	0.9937
6.40	373.65	398041.	5145.2	6876.8	0.7933	0.7983	0.8472	0.9937

HYDROSTATIC PARTICULARS

DRAFT EXT.	MOULD VOL.	DISPL IN SEA WATER S.G. 1.025	T.P.C (T/CM)	M.T.C (TM)	DISPL IN FRESH WATER S.G. 1.000	T.P.C (T/CM)	M.T.C (TM)	L.C.B FR MID. (M)	L.C.F FR MID. (M)	K.B (M)	K.M.T (M)
6.40	30722	31517	52.74	619.6	30749	51.45	604.5	7.534	5.946	3.290	16.235
6.42	30825	31623	52.75	620.0	30852	51.47	604.9	7.528	5.924	3.300	16.208
6.44	30928	31729	52.77	620.5	30955	51.48	605.4	7.522	5.902	3.311	16.182
6.46	31031	31835	52.78	621.0	31058	51.50	605.8	7.516	5.879	3.322	16.156
6.48	31134	31940	52.80	621.5	31161	51.51	606.3	7.510	5.857	3.333	16.130
6.50	31237	32046	52.82	621.9	31265	51.53	606.8	7.504	5.835	3.344	16.104
6.52	31340	32152	52.83	622.4	31368	51.54	607.2	7.499	5.813	3.354	16.078
6.54	31443	32258	52.85	622.9	31471	51.56	607.7	7.493	5.790	3.365	16.053
6.56	31546	32363	52.86	623.4	31574	51.57	608.2	7.487	5.768	3.375	16.027
6.58	31649	32469	52.88	623.8	31677	51.59	608.6	7.482	5.746	3.385	16.002
6.60	31752	32575	52.89	624.3	31780	51.60	609.1	7.476	5.724	3.396	15.977
6.62	31855	32681	52.91	624.8	31884	51.62	609.5	7.470	5.702	3.406	15.952
6.64	31958	32786	52.92	625.2	31987	51.63	610.0	7.465	5.680	3.416	15.928
6.66	32061	32892	52.94	625.7	32090	51.65	610.5	7.459	5.657	3.426	15.903
6.68	32164	32998	52.95	626.2	32193	51.66	610.9	7.454	5.635	3.436	15.879
6.70	32267	33104	52.97	626.7	32296	51.68	611.4	7.448	5.613	3.446	15.855
6.72	32370	33209	52.98	627.1	32399	51.69	611.8	7.443	5.591	3.456	15.831
6.74	32473	33315	53.00	627.6	32503	51.71	612.3	7.438	5.569	3.466	15.807
6.76	32577	33421	53.01	628.1	32606	51.72	612.8	7.432	5.547	3.476	15.783
6.78	32680	33527	53.03	628.5	32709	51.74	613.2	7.427	5.525	3.486	15.760
6.80	32783	33632	53.04	629.0	32812	51.75	613.7	7.422	5.503	3.495	15.736
6.82	32886	33739	53.06	629.5	32916	51.77	614.1	7.416	5.479	3.506	15.714
6.84	32990	33845	53.08	630.0	33020	51.78	614.6	7.409	5.455	3.517	15.692
6.86	33094	33951	53.09	630.5	33123	51.80	615.1	7.402	5.431	3.528	15.670
6.88	33197	34058	53.11	631.0	33227	51.81	615.6	7.395	5.407	3.539	15.649
6.90	33301	34164	53.12	631.4	33331	51.83	616.0	7.388	5.382	3.550	15.627
6.92	33405	34271	53.14	631.9	33435	51.84	616.5	7.381	5.358	3.560	15.606
6.94	33509	34377	53.15	632.4	33539	51.86	617.0	7.375	5.334	3.571	15.585
6.96	33612	34484	53.17	632.9	33643	51.87	617.5	7.368	5.310	3.582	15.564
6.98	33716	34590	53.18	633.4	33747	51.89	617.9	7.361	5.285	3.592	15.543
7.00	33820	34697	53.20	633.9	33850	51.90	618.4	7.355	5.261	3.603	15.522
7.02	33923	34803	53.21	634.3	33954	51.92	618.9	7.348	5.237	3.613	15.502
7.04	34027	34910	53.23	634.8	34058	51.93	619.3	7.342	5.213	3.624	15.481
7.06	34131	35016	53.25	635.3	34162	51.95	619.8	7.335	5.189	3.634	15.461
7.08	34235	35123	53.26	635.8	34266	51.96	620.3	7.329	5.165	3.644	15.441
7.10	34338	35229	53.28	636.3	34370	51.98	620.8	7.323	5.140	3.655	15.421
7.12	34442	35335	53.29	636.8	34474	51.99	621.2	7.316	5.116	3.665	15.401
7.14	34546	35442	53.31	637.3	34577	52.01	621.7	7.310	5.092	3.675	15.381
7.16	34650	35548	53.32	637.7	34681	52.02	622.2	7.304	5.068	3.685	15.361
7.18	34753	35655	53.34	638.2	34785	52.04	622.7	7.297	5.044	3.695	15.342
7.20	34857	35761	53.35	638.7	34889	52.05	623.1	7.291	5.020	3.705	15.322
7.22	34961	35868	53.37	639.2	34993	52.07	623.6	7.285	4.996	3.715	15.303
7.24	35065	35974	53.39	639.7	35097	52.08	624.1	7.279	4.972	3.724	15.283
7.26	35168	36081	53.40	640.2	35201	52.10	624.6	7.273	4.948	3.734	15.264
7.28	35273	36188	53.42	640.8	35305	52.12	625.2	7.265	4.916	3.745	15.246

HYDROSTATIC PARTICULARS

DRAFT EXT.	K.M.L	IT	WP AREA	WETTED SURFACE	BLOCK COEFF.	PRISM. COEFF.	WP-A COEFF.	MID. COEFF.
(M)	(M)	(M4)	(M2)	(M2)	CB	CP	CW	CM
6.40	373.65	398041.	5145.2	6876.8	0.7933	0.7983	0.8472	0.9937
6.42	372.70	398222.	5146.7	6884.9	0.7935	0.7985	0.8474	0.9937
6.44	371.76	398402.	5148.2	6893.1	0.7937	0.7987	0.8476	0.9938
6.46	370.83	398582.	5149.7	6901.3	0.7938	0.7988	0.8479	0.9938
6.48	369.90	398762.	5151.2	6909.4	0.7940	0.7990	0.8481	0.9938
6.50	368.98	398943.	5152.7	6917.6	0.7942	0.7991	0.8484	0.9938
6.52	368.07	399123.	5154.2	6925.7	0.7944	0.7993	0.8486	0.9938
6.54	367.16	399303.	5155.7	6933.9	0.7945	0.7994	0.8489	0.9939
6.56	366.25	399483.	5157.2	6942.1	0.7947	0.7996	0.8491	0.9939
6.58	365.36	399664.	5158.7	6950.2	0.7949	0.7997	0.8494	0.9939
6.60	364.46	399844.	5160.2	6958.4	0.7950	0.7999	0.8496	0.9939
6.62	363.58	400024.	5161.7	6966.5	0.7952	0.8000	0.8499	0.9939
6.64	362.70	400205.	5163.2	6974.7	0.7954	0.8002	0.8501	0.9940
6.66	361.82	400385.	5164.6	6982.9	0.7955	0.8003	0.8503	0.9940
6.68	360.96	400565.	5166.1	6991.0	0.7957	0.8005	0.8506	0.9940
6.70	360.09	400745.	5167.6	6999.2	0.7958	0.8006	0.8508	0.9940
6.72	359.23	400926.	5169.1	7007.3	0.7960	0.8008	0.8511	0.9940
6.74	358.38	401106.	5170.6	7015.5	0.7962	0.8009	0.8513	0.9940
6.76	357.54	401286.	5172.1	7023.7	0.7963	0.8011	0.8516	0.9941
6.78	356.69	401466.	5173.6	7031.8	0.7965	0.8012	0.8518	0.9941
6.80	355.86	401647.	5175.1	7040.0	0.7966	0.8014	0.8521	0.9941
6.82	355.03	401829.	5176.6	7048.2	0.7968	0.8015	0.8523	0.9941
6.84	354.20	402013.	5178.1	7056.5	0.7970	0.8017	0.8526	0.9941
6.86	353.38	402196.	5179.6	7064.7	0.7971	0.8018	0.8528	0.9941
6.88	352.57	402380.	5181.1	7073.0	0.7973	0.8020	0.8531	0.9942
6.90	351.76	402563.	5182.6	7081.2	0.7975	0.8021	0.8533	0.9942
6.92	350.95	402747.	5184.2	7089.5	0.7976	0.8023	0.8536	0.9942
6.94	350.15	402930.	5185.7	7097.7	0.7978	0.8024	0.8538	0.9942
6.96	349.36	403114.	5187.2	7106.0	0.7980	0.8026	0.8540	0.9942
6.98	348.57	403297.	5188.7	7114.2	0.7981	0.8027	0.8543	0.9942
7.00	347.79	403481.	5190.2	7122.5	0.7983	0.8029	0.8545	0.9943
7.02	347.01	403664.	5191.7	7130.8	0.7985	0.8030	0.8548	0.9943
7.04	346.23	403848.	5193.2	7139.0	0.7986	0.8032	0.8550	0.9943
7.06	345.46	404032.	5194.7	7147.3	0.7988	0.8033	0.8553	0.9943
7.08	344.69	404215.	5196.2	7155.5	0.7989	0.8035	0.8555	0.9943
7.10	343.93	404399.	5197.7	7163.8	0.7991	0.8036	0.8558	0.9943
7.12	343.18	404582.	5199.3	7172.0	0.7992	0.8038	0.8560	0.9944
7.14	342.42	404766.	5200.8	7180.3	0.7994	0.8039	0.8563	0.9944
7.16	341.68	404949.	5202.3	7188.5	0.7996	0.8041	0.8565	0.9944
7.18	340.93	405133.	5203.8	7196.8	0.7997	0.8042	0.8568	0.9944
7.20	340.20	405316.	5205.3	7205.1	0.7999	0.8044	0.8570	0.9944
7.22	339.46	405500.	5206.8	7213.3	0.8000	0.8045	0.8573	0.9944
7.24	338.73	405684.	5208.3	7221.6	0.8002	0.8046	0.8575	0.9945
7.26	338.01	405867.	5209.8	7229.8	0.8003	0.8048	0.8578	0.9945
7.28	337.37	406061.	5211.7	7238.5	0.8005	0.8049	0.8581	0.9945

HYDROSTATIC PARTICULARS

DRAFT EXT.	MOULD VOL.	DISPL IN SEA WATER S.G. 1.025	T.P.C (T/CM)	M.T.C (TM)	DISPL IN FRESH WATER S.G. 1.000	T.P.C (T/CM)	M.T.C (TM)	L.C.B FR MID. (M)	L.C.F FR MID. (M)	K.B (M)	K.M.T (M)
7.28	35273	36188	53.42	640.8	35305	52.12	625.2	7.265	4.916	3.745	15.246
7.30	35377	36295	53.44	641.6	35410	52.14	625.9	7.257	4.880	3.756	15.229
7.32	35482	36402	53.46	642.3	35514	52.16	626.6	7.249	4.844	3.767	15.212
7.34	35586	36509	53.48	643.0	35619	52.18	627.4	7.242	4.808	3.778	15.194
7.36	35691	36617	53.51	643.8	35724	52.20	628.1	7.234	4.772	3.788	15.177
7.38	35795	36724	53.53	644.5	35828	52.22	628.8	7.226	4.736	3.799	15.160
7.40	35900	36831	53.55	645.3	35933	52.24	629.5	7.218	4.700	3.810	15.144
7.42	36004	36939	53.57	646.0	36038	52.26	630.2	7.210	4.664	3.821	15.127
7.44	36109	37046	53.59	646.7	36142	52.28	631.0	7.203	4.628	3.831	15.110
7.46	36213	37153	53.61	647.5	36247	52.30	631.7	7.195	4.593	3.842	15.094
7.48	36318	37260	53.63	648.2	36352	52.33	632.4	7.187	4.557	3.852	15.077
7.50	36422	37368	53.66	649.0	36456	52.35	633.1	7.180	4.521	3.863	15.061
7.52	36527	37475	53.68	649.7	36561	52.37	633.9	7.172	4.485	3.873	15.044
7.54	36632	37582	53.70	650.4	36666	52.39	634.6	7.165	4.450	3.883	15.028
7.56	36736	37690	53.72	651.2	36770	52.41	635.3	7.157	4.414	3.894	15.012
7.58	36841	37797	53.74	651.9	36875	52.43	636.0	7.150	4.378	3.904	14.996
7.60	36945	37904	53.76	652.7	36980	52.45	636.7	7.143	4.343	3.914	14.980
7.62	37050	38011	53.78	653.4	37084	52.47	637.5	7.135	4.307	3.924	14.964
7.64	37154	38119	53.80	654.1	37189	52.49	638.2	7.128	4.272	3.934	14.949
7.66	37259	38226	53.83	654.9	37294	52.51	638.9	7.121	4.236	3.944	14.933
7.68	37363	38333	53.85	655.6	37398	52.53	639.6	7.113	4.201	3.954	14.918
7.70	37468	38441	53.87	656.4	37503	52.56	640.3	7.106	4.165	3.964	14.902
7.72	37572	38548	53.89	657.1	37608	52.58	641.1	7.099	4.130	3.973	14.887
7.74	37678	38656	53.92	658.0	37713	52.60	641.9	7.090	4.087	3.984	14.873
7.76	37783	38764	53.94	658.9	37819	52.63	642.8	7.080	4.041	3.995	14.860
7.78	37889	38873	53.97	659.8	37925	52.65	643.7	7.071	3.996	4.006	14.847
7.80	37994	38981	53.99	660.7	38030	52.68	644.6	7.061	3.950	4.017	14.835
7.82	38100	39089	54.02	661.6	38136	52.70	645.5	7.052	3.905	4.028	14.822
7.84	38206	39198	54.05	662.5	38242	52.73	646.4	7.042	3.859	4.039	14.809
7.86	38311	39306	54.07	663.4	38347	52.75	647.3	7.033	3.814	4.050	14.797
7.88	38417	39415	54.10	664.4	38453	52.78	648.2	7.023	3.769	4.060	14.784
7.90	38522	39523	54.12	665.3	38559	52.80	649.0	7.014	3.724	4.071	14.772
7.92	38628	39631	54.15	666.2	38665	52.83	649.9	7.005	3.679	4.081	14.759
7.94	38734	39740	54.18	667.1	38770	52.85	650.8	6.995	3.633	4.092	14.747
7.96	38839	39848	54.20	668.0	38876	52.88	651.7	6.986	3.588	4.102	14.735
7.98	38945	39956	54.23	668.9	38982	52.90	652.6	6.977	3.543	4.113	14.723
8.00	39050	40065	54.25	669.8	39088	52.93	653.5	6.968	3.498	4.123	14.710
8.02	39156	40173	54.28	670.7	39193	52.96	654.4	6.959	3.453	4.133	14.698
8.04	39262	40282	54.31	671.7	39299	52.98	655.3	6.950	3.408	4.144	14.686
8.06	39367	40390	54.33	672.6	39405	53.01	656.2	6.941	3.364	4.154	14.674
8.08	39473	40498	54.36	673.5	39511	53.03	657.1	6.932	3.319	4.164	14.663
8.10	39578	40607	54.38	674.4	39616	53.06	658.0	6.923	3.274	4.174	14.651
8.12	39684	40715	54.41	675.3	39722	53.08	658.8	6.915	3.229	4.184	14.639
8.14	39789	40823	54.44	676.2	39828	53.11	659.7	6.906	3.185	4.194	14.627
8.16	39895	40932	54.46	677.1	39933	53.13	660.6	6.897	3.140	4.204	14.616

HYDROSTATIC PARTICULARS

DRAFT EXT.	K.M.L	IT	WP AREA	WETTED SURFACE	BLOCK COEFF.	PRISM. COEFF.	WP-A COEFF.	MID. COEFF.
(M)	(M)	(M4)	(M2)	(M2)	CB	CP	CW	CM
7.28	337.37	406061.	5211.7	7238.5	0.8005	0.8049	0.8581	0.9945
7.30	336.78	406259.	5213.8	7247.3	0.8007	0.8051	0.8584	0.9945
7.32	336.19	406457.	5215.9	7256.1	0.8008	0.8052	0.8588	0.9945
7.34	335.61	406656.	5218.0	7265.0	0.8010	0.8054	0.8591	0.9945
7.36	335.03	406854.	5220.1	7273.8	0.8012	0.8055	0.8594	0.9945
7.38	334.45	407052.	5222.2	7282.7	0.8013	0.8057	0.8598	0.9946
7.40	333.87	407251.	5224.2	7291.5	0.8015	0.8059	0.8601	0.9946
7.42	333.30	407449.	5226.3	7300.3	0.8016	0.8060	0.8605	0.9946
7.44	332.74	407647.	5228.4	7309.2	0.8018	0.8062	0.8608	0.9946
7.46	332.17	407846.	5230.5	7318.0	0.8020	0.8063	0.8611	0.9946
7.48	331.61	408044.	5232.6	7326.8	0.8021	0.8065	0.8615	0.9946
7.50	331.05	408242.	5234.7	7335.7	0.8023	0.8066	0.8618	0.9946
7.52	330.50	408441.	5236.7	7344.5	0.8024	0.8068	0.8622	0.9947
7.54	329.95	408639.	5238.8	7353.3	0.8026	0.8069	0.8625	0.9947
7.56	329.40	408837.	5240.9	7362.2	0.8028	0.8070	0.8628	0.9947
7.58	328.85	409036.	5243.0	7371.0	0.8029	0.8072	0.8632	0.9947
7.60	328.31	409234.	5245.1	7379.9	0.8031	0.8073	0.8635	0.9947
7.62	327.77	409432.	5247.2	7388.7	0.8032	0.8075	0.8639	0.9947
7.64	327.24	409631.	5249.2	7397.5	0.8034	0.8076	0.8642	0.9947
7.66	326.70	409829.	5251.3	7406.4	0.8035	0.8078	0.8645	0.9948
7.68	326.17	410027.	5253.4	7415.2	0.8037	0.8079	0.8649	0.9948
7.70	325.65	410226.	5255.5	7424.0	0.8038	0.8080	0.8652	0.9948
7.72	325.12	410424.	5257.6	7432.9	0.8040	0.8082	0.8656	0.9948
7.74	324.66	410657.	5260.0	7442.1	0.8041	0.8083	0.8659	0.9948
7.76	324.22	410901.	5262.6	7451.5	0.8043	0.8085	0.8664	0.9948
7.78	323.78	411145.	5265.1	7460.9	0.8045	0.8087	0.8668	0.9948
7.80	323.34	411389.	5267.6	7470.3	0.8047	0.8088	0.8672	0.9949
7.82	322.91	411633.	5270.2	7479.7	0.8048	0.8090	0.8676	0.9949
7.84	322.48	411877.	5272.7	7489.1	0.8050	0.8091	0.8680	0.9949
7.86	322.05	412121.	5275.3	7498.5	0.8052	0.8093	0.8684	0.9949
7.88	321.62	412365.	5277.8	7507.9	0.8053	0.8094	0.8689	0.9949
7.90	321.19	412609.	5280.3	7517.3	0.8055	0.8096	0.8693	0.9949
7.92	320.77	412853.	5282.9	7526.7	0.8056	0.8098	0.8697	0.9949
7.94	320.35	413097.	5285.4	7536.1	0.8058	0.8099	0.8701	0.9949
7.96	319.93	413341.	5288.0	7545.5	0.8060	0.8101	0.8705	0.9950
7.98	319.52	413585.	5290.5	7554.9	0.8061	0.8102	0.8709	0.9950
8.00	319.10	413830.	5293.0	7564.3	0.8063	0.8104	0.8713	0.9950
8.02	318.69	414074.	5295.6	7573.7	0.8065	0.8105	0.8718	0.9950
8.04	318.28	414318.	5298.1	7583.1	0.8066	0.8107	0.8722	0.9950
8.06	317.88	414562.	5300.7	7592.5	0.8068	0.8108	0.8726	0.9950
8.08	317.47	414806.	5303.2	7601.9	0.8069	0.8110	0.8730	0.9950
8.10	317.07	415050.	5305.7	7611.3	0.8071	0.8111	0.8734	0.9950
8.12	316.67	415294.	5308.3	7620.7	0.8072	0.8113	0.8738	0.9951
8.14	316.27	415538.	5310.8	7630.1	0.8074	0.8114	0.8743	0.9951
8.16	315.88	415782.	5313.4	7639.6	0.8076	0.8115	0.8747	0.9951

HYDROSTATIC PARTICULARS

DRAFT EXT.	MOULD VOL.	DISPL IN SEA WATER S.G. 1.025	T.P.C 1.025	M.T.C	DISPL IN FRESH WATER S.G. 1.000	T.P.C 1.000	M.T.C	L.C.B FR MID.	L.C.F FR MID.	K.B	K.M.T
(M)	(M3)	(TON)	(T/CM)	(TM)	(TON)	(T/CM)	(TM)	(M)	(M)	(M)	(M)
8.16	39895	40932	54.46	677.1	39933	53.13	660.6	6.897	3.140	4.204	14.616
8.18	40001	41040	54.49	678.1	40039	53.16	661.5	6.889	3.095	4.214	14.604
8.20	40107	41150	54.52	679.1	40146	53.19	662.5	6.877	3.044	4.225	14.594
8.22	40214	41259	54.55	680.1	40253	53.21	663.5	6.866	2.991	4.236	14.585
8.24	40321	41369	54.57	681.2	40360	53.24	664.6	6.854	2.939	4.247	14.575
8.26	40428	41478	54.60	682.2	40467	53.27	665.6	6.843	2.886	4.258	14.566
8.28	40534	41588	54.63	683.3	40574	53.30	666.6	6.831	2.833	4.269	14.556
8.30	40641	41698	54.66	684.3	40681	53.33	667.6	6.820	2.781	4.280	14.547
8.32	40748	41807	54.69	685.3	40788	53.36	668.6	6.809	2.729	4.290	14.537
8.34	40855	41917	54.72	686.4	40894	53.38	669.6	6.798	2.676	4.301	14.528
8.36	40962	42026	54.75	687.4	41001	53.41	670.7	6.787	2.624	4.312	14.519
8.38	41068	42136	54.78	688.5	41108	53.44	671.7	6.775	2.572	4.322	14.509
8.40	41175	42246	54.81	689.5	41215	53.47	672.7	6.764	2.519	4.333	14.500
8.42	41282	42355	54.83	690.6	41322	53.50	673.7	6.753	2.467	4.344	14.491
8.44	41389	42465	54.86	691.6	41429	53.52	674.7	6.743	2.415	4.354	14.482
8.46	41496	42575	54.89	692.7	41536	53.55	675.8	6.732	2.363	4.364	14.473
8.48	41602	42684	54.92	693.7	41643	53.58	676.8	6.721	2.311	4.375	14.464
8.50	41709	42794	54.95	694.7	41750	53.61	677.8	6.710	2.259	4.385	14.455
8.52	41816	42903	54.98	695.8	41857	53.64	678.8	6.699	2.207	4.395	14.446
8.54	41923	43013	55.01	696.8	41964	53.67	679.8	6.689	2.156	4.405	14.437
8.56	42030	43123	55.04	697.9	42071	53.69	680.9	6.678	2.104	4.416	14.428
8.58	42136	43232	55.07	698.9	42178	53.72	681.9	6.668	2.052	4.426	14.420
8.60	42243	43342	55.09	700.0	42285	53.75	682.9	6.657	2.001	4.436	14.411
8.62	42350	43451	55.12	701.0	42392	53.78	683.9	6.647	1.949	4.446	14.402
8.64	42457	43561	55.15	702.1	42499	53.81	684.9	6.636	1.897	4.456	14.393
8.66	42565	43672	55.20	704.1	42607	53.86	686.9	6.622	1.811	4.467	14.387
8.68	42674	43784	55.26	706.2	42716	53.91	689.0	6.608	1.722	4.478	14.382
8.70	42782	43895	55.31	708.3	42824	53.96	691.0	6.594	1.633	4.489	14.376
8.72	42891	44006	55.36	710.4	42933	54.01	693.0	6.579	1.545	4.500	14.370
8.74	42999	44118	55.41	712.5	43042	54.06	695.1	6.565	1.456	4.511	14.365
8.76	43108	44229	55.46	714.6	43151	54.11	697.1	6.551	1.368	4.522	14.359
8.78	43216	44341	55.52	716.7	43259	54.16	699.2	6.537	1.280	4.533	14.353
8.80	43325	44452	55.57	718.8	43368	54.21	701.2	6.523	1.192	4.544	14.348
8.82	43433	44563	55.62	720.9	43477	54.26	703.3	6.509	1.104	4.555	14.342
8.84	43542	44675	55.67	723.0	43585	54.32	705.3	6.496	1.017	4.565	14.337
8.86	43650	44786	55.73	725.1	43694	54.37	707.4	6.482	0.929	4.576	14.331
8.88	43759	44898	55.78	727.2	43803	54.42	709.4	6.468	0.842	4.587	14.326
8.90	43867	45009	55.83	729.3	43911	54.47	711.5	6.455	0.755	4.597	14.320
8.92	43976	45120	55.88	731.4	44020	54.52	713.5	6.441	0.668	4.608	14.315
8.94	44084	45232	55.94	733.5	44129	54.57	715.6	6.428	0.581	4.618	14.309
8.96	44193	45343	55.99	735.6	44237	54.62	717.6	6.414	0.495	4.629	14.304
8.98	44301	45455	56.04	737.7	44346	54.67	719.7	6.401	0.408	4.639	14.299
9.00	44410	45566	56.09	739.7	44455	54.72	721.7	6.388	0.322	4.649	14.293
9.02	44518	45677	56.15	741.8	44563	54.78	723.8	6.374	0.236	4.659	14.288
9.04	44627	45789	56.20	743.9	44672	54.83	725.8	6.361	0.150	4.670	14.283

HYDROSTATIC PARTICULARS

DRAFT EXT.	K.M.L	IT	WP AREA	WETTED SURFACE	BLOCK COEFF.	PRISM. COEFF.	WP-A COEFF.	MID. COEFF.
(M)	(M)	(M4)	(M2)	(M2)	CB	CP	CW	CM
8.16	315.88	415782.	5313.4	7639.5	0.8076	0.8115	0.8747	0.9951
8.18	315.48	416026.	5315.9	7648.9	0.8077	0.8117	0.8751	0.9951
8.20	315.13	416296.	5318.7	7658.7	0.8079	0.8119	0.8755	0.9951
8.22	314.80	416571.	5321.5	7668.6	0.8081	0.8120	0.8760	0.9951
8.24	314.46	416845.	5324.3	7678.5	0.8082	0.8122	0.8765	0.9951
8.26	314.13	417120.	5327.1	7688.4	0.8084	0.8124	0.8769	0.9951
8.28	313.79	417395.	5329.9	7698.2	0.8086	0.8125	0.8774	0.9952
8.30	313.46	417670.	5332.8	7708.1	0.8088	0.8127	0.8779	0.9952
8.32	313.13	417945.	5335.6	7718.0	0.8089	0.8128	0.8783	0.9952
8.34	312.81	418219.	5338.4	7727.9	0.8091	0.8130	0.8788	0.9952
8.36	312.48	418494.	5341.2	7737.7	0.8093	0.8132	0.8793	0.9952
8.38	312.16	418769.	5344.0	7747.6	0.8094	0.8133	0.8797	0.9952
8.40	311.83	419044.	5346.9	7757.5	0.8096	0.8135	0.8802	0.9952
8.42	311.51	419319.	5349.7	7767.4	0.8098	0.8137	0.8807	0.9952
8.44	311.19	419593.	5352.5	7777.2	0.8099	0.8138	0.8812	0.9952
8.46	310.88	419868.	5355.3	7787.1	0.8101	0.8140	0.8816	0.9953
8.48	310.56	420143.	5358.1	7797.0	0.8103	0.8141	0.8821	0.9953
8.50	310.25	420418.	5361.0	7806.8	0.8104	0.8143	0.8826	0.9953
8.52	309.93	420693.	5363.8	7816.7	0.8106	0.8144	0.8830	0.9953
8.54	309.62	420967.	5366.6	7826.6	0.8108	0.8146	0.8835	0.9953
8.56	309.31	421242.	5369.4	7836.5	0.8109	0.8147	0.8840	0.9953
8.58	309.01	421517.	5372.2	7846.3	0.8111	0.8149	0.8844	0.9953
8.60	308.70	421792.	5375.0	7856.2	0.8112	0.8151	0.8849	0.9953
8.62	308.40	422067.	5377.9	7866.1	0.8114	0.8152	0.8854	0.9953
8.64	308.09	422341.	5380.7	7876.0	0.8116	0.8154	0.8858	0.9954
8.66	308.20	422691.	5385.6	7887.9	0.8118	0.8155	0.8866	0.9954
8.68	308.34	423046.	5390.7	7900.0	0.8119	0.8157	0.8875	0.9954
8.70	308.48	423401.	5395.8	7912.1	0.8121	0.8159	0.8883	0.9954
8.72	308.62	423756.	5400.9	7924.1	0.8123	0.8161	0.8891	0.9954
8.74	308.76	424111.	5406.1	7936.2	0.8125	0.8163	0.8900	0.9954
8.76	308.90	424466.	5411.2	7948.3	0.8127	0.8164	0.8908	0.9954
8.78	309.04	424821.	5416.3	7960.4	0.8129	0.8166	0.8917	0.9954
8.80	309.18	425176.	5421.4	7972.5	0.8131	0.8168	0.8925	0.9954
8.82	309.31	425531.	5426.5	7984.6	0.8133	0.8170	0.8933	0.9954
8.84	309.45	425886.	5431.6	7996.7	0.8134	0.8172	0.8942	0.9955
8.86	309.58	426241.	5436.7	8008.8	0.8136	0.8173	0.8950	0.9955
8.88	309.72	426596.	5441.8	8020.8	0.8138	0.8175	0.8959	0.9955
8.90	309.85	426952.	5446.9	8032.9	0.8140	0.8177	0.8967	0.9955
8.92	309.98	427307.	5452.0	8045.0	0.8142	0.8178	0.8975	0.9955
8.94	310.12	427662.	5457.1	8057.1	0.8143	0.8180	0.8984	0.9955
8.96	310.25	428017.	5462.2	8069.2	0.8145	0.8182	0.8992	0.9955
8.98	310.38	428372.	5467.3	8081.3	0.8147	0.8184	0.9001	0.9955
9.00	310.51	428727.	5472.5	8093.4	0.8149	0.8185	0.9009	0.9955
9.02	310.64	429082.	5477.6	8105.5	0.8151	0.8187	0.9017	0.9955
9.04	310.77	429437.	5482.7	8117.5	0.8152	0.8189	0.9026	0.9956

HYDROSTATIC PARTICULARS

DRAFT EXT.	MOULD VOL.	DISPL IN SEA WATER S.G. 1.025	T.P.C 1.025 (T/CM)	M.T.C (TM)	DISPL IN FRESH WATER S.G. 1.000	T.P.C 1.000 (T/CM)	M.T.C (TM)	L.C.B FR MID. (M)	L.C.F FR MID. (M)	K.B (M)	K.M.T (M)
9.04	44626	45789	56.20	743.9	44672	54.83	725.8	6.361	0.150	4.670	14.283
9.06	44735	45900	56.25	746.0	44781	54.88	727.8	6.348	0.064	4.680	14.278
9.08	44843	46012	56.30	748.1	44889	54.93	729.9	6.335	-0.021	4.690	14.272
9.10	44952	46123	56.35	750.2	44998	54.98	731.9	6.322	-0.107	4.700	14.267
9.12	45063	46237	56.39	751.9	45109	55.02	733.5	6.305	-0.171	4.711	14.262
9.14	45173	46350	56.44	753.5	45220	55.06	735.1	6.287	-0.235	4.723	14.257
9.16	45284	46464	56.48	755.1	45331	55.10	736.7	6.270	-0.300	4.734	14.252
9.18	45395	46577	56.52	756.8	45441	55.14	738.3	6.252	-0.364	4.745	14.247
9.20	45505	46691	56.56	758.4	45552	55.18	739.9	6.235	-0.428	4.756	14.242
9.22	45616	46805	56.60	760.0	45663	55.22	741.5	6.218	-0.492	4.767	14.237
9.24	45727	46918	56.64	761.7	45774	55.26	743.1	6.201	-0.555	4.778	14.232
9.26	45838	47032	56.68	763.3	45885	55.30	744.7	6.184	-0.619	4.789	14.227
9.28	45948	47146	56.72	764.9	45996	55.33	746.3	6.167	-0.683	4.800	14.222
9.30	46059	47259	56.76	766.6	46107	55.37	747.9	6.150	-0.746	4.811	14.217
9.32	46170	47373	56.80	768.2	46217	55.41	749.5	6.133	-0.810	4.822	14.212
9.34	46280	47486	56.84	769.8	46328	55.45	751.1	6.117	-0.873	4.832	14.207
9.36	46391	47600	56.88	771.5	46439	55.49	752.7	6.100	-0.937	4.843	14.202
9.38	46502	47714	56.92	773.1	46550	55.53	754.2	6.084	-1.000	4.854	14.198
9.40	46612	47827	56.96	774.7	46661	55.57	755.8	6.067	-1.063	4.864	14.193
9.42	46723	47941	57.00	776.4	46772	55.61	757.4	6.051	-1.126	4.875	14.188
9.44	46834	48055	57.04	778.0	46883	55.65	759.0	6.034	-1.189	4.885	14.183
9.46	46945	48168	57.08	779.6	46993	55.69	760.6	6.018	-1.252	4.896	14.179
9.48	47055	48282	57.12	781.3	47104	55.73	762.2	6.002	-1.315	4.906	14.174
9.50	47166	48396	57.16	782.9	47215	55.77	763.8	5.986	-1.377	4.917	14.169
9.52	47277	48509	57.20	784.5	47326	55.81	765.4	5.970	-1.440	4.927	14.165
9.54	47387	48623	57.24	786.2	47437	55.85	767.0	5.954	-1.502	4.937	14.160
9.56	47498	48737	57.28	787.8	47548	55.89	768.5	5.938	-1.563	4.947	14.155
9.58	47610	48852	57.31	788.8	47660	55.91	769.6	5.919	-1.602	4.959	14.151
9.60	47723	48967	57.34	789.9	47773	55.94	770.6	5.900	-1.642	4.970	14.147
9.62	47835	49082	57.36	791.0	47885	55.97	771.7	5.882	-1.681	4.981	14.142
9.64	47947	49198	57.39	792.1	47998	55.99	772.7	5.863	-1.721	4.993	14.138
9.66	48060	49313	57.42	793.1	48110	56.02	773.8	5.845	-1.760	5.004	14.133
9.68	48172	49428	57.45	794.2	48222	56.05	774.8	5.826	-1.800	5.015	14.129
9.70	48284	49543	57.48	795.3	48335	56.07	775.9	5.808	-1.839	5.026	14.125
9.72	48397	49659	57.50	796.4	48447	56.10	777.0	5.790	-1.879	5.037	14.120
9.74	48509	49774	57.53	797.5	48560	56.13	778.0	5.771	-1.918	5.048	14.116
9.76	48621	49889	57.56	798.5	48672	56.15	779.1	5.753	-1.957	5.059	14.112
9.78	48733	50004	57.59	799.6	48785	56.18	780.1	5.735	-1.996	5.070	14.108
9.80	48846	50120	57.61	800.7	48897	56.21	781.2	5.717	-2.036	5.081	14.103
9.82	48958	50235	57.64	801.8	49010	56.23	782.2	5.700	-2.075	5.091	14.099
9.84	49070	50350	57.67	802.8	49122	56.26	783.3	5.682	-2.114	5.102	14.095
9.86	49183	50465	57.70	803.9	49234	56.29	784.3	5.664	-2.153	5.113	14.091
9.88	49295	50581	57.72	805.0	49347	56.32	785.4	5.647	-2.192	5.123	14.087
9.90	49407	50696	57.75	806.1	49459	56.34	786.4	5.629	-2.231	5.134	14.082
9.92	49519	50811	57.78	807.2	49572	56.37	787.5	5.612	-2.270	5.144	14.078

HYDROSTATIC PARTICULARS

DRAFT EXT.	K.M.L	IT	WP AREA	WETTED SURFACE	BLOCK COEFF.	PRISM. COEFF.	WP-A COEFF.	MID. COEFF.
(M)	(M)	(M4)	(M2)	(M2)	CB	CP	CW	CM
9.04	310.77	429437.	5482.7	8117.5	0.8152	0.8189	0.9026	0.9956
9.06	310.90	429792.	5487.8	8129.6	0.8154	0.8190	0.9034	0.9956
9.08	311.03	430147.	5492.9	8141.7	0.8156	0.8192	0.9042	0.9956
9.10	311.15	430502.	5498.0	8153.8	0.8158	0.8194	0.9051	0.9956
9.12	311.08	430820.	5501.9	8164.6	0.8160	0.8196	0.9057	0.9956
9.14	311.00	431138.	5505.9	8175.4	0.8162	0.8198	0.9064	0.9956
9.16	310.92	431456.	5509.8	8186.3	0.8164	0.8200	0.9070	0.9956
9.18	310.85	431774.	5513.7	8197.1	0.8166	0.8202	0.9077	0.9956
9.20	310.77	432093.	5517.7	8207.9	0.8168	0.8204	0.9083	0.9956
9.22	310.70	432411.	5521.6	8218.7	0.8170	0.8206	0.9090	0.9956
9.24	310.63	432729.	5525.6	8229.5	0.8172	0.8208	0.9096	0.9957
9.26	310.55	433047.	5529.5	8240.4	0.8174	0.8210	0.9103	0.9957
9.28	310.48	433365.	5533.5	8251.2	0.8176	0.8212	0.9109	0.9957
9.30	310.41	433683.	5537.4	8262.0	0.8178	0.8214	0.9116	0.9957
9.32	310.33	434002.	5541.3	8272.8	0.8180	0.8216	0.9122	0.9957
9.34	310.26	434320.	5545.3	8283.7	0.8182	0.8218	0.9129	0.9957
9.36	310.19	434638.	5549.2	8294.5	0.8184	0.8220	0.9135	0.9957
9.38	310.12	434956.	5553.2	8305.3	0.8186	0.8222	0.9142	0.9957
9.40	310.05	435274.	5557.1	8316.1	0.8188	0.8224	0.9149	0.9957
9.42	309.98	435593.	5561.0	8326.9	0.8190	0.8225	0.9155	0.9957
9.44	309.90	435911.	5565.0	8337.8	0.8192	0.8227	0.9162	0.9957
9.46	309.83	436229.	5568.9	8348.6	0.8194	0.8229	0.9168	0.9958
9.48	309.76	436547.	5572.9	8359.4	0.8196	0.8231	0.9175	0.9958
9.50	309.69	436865.	5576.8	8370.2	0.8198	0.8233	0.9181	0.9958
9.52	309.63	437183.	5580.7	8381.1	0.8200	0.8235	0.9188	0.9958
9.54	309.56	437502.	5584.7	8391.9	0.8202	0.8237	0.9194	0.9958
9.56	309.47	437816.	5588.5	8402.6	0.8204	0.8239	0.9200	0.9958
9.58	309.18	438097.	5591.2	8412.1	0.8206	0.8241	0.9205	0.9958
9.60	308.89	438378.	5593.9	8421.7	0.8209	0.8243	0.9209	0.9958
9.62	308.60	438658.	5596.6	8431.2	0.8211	0.8245	0.9214	0.9958
9.64	308.31	438939.	5599.3	8440.7	0.8213	0.8247	0.9218	0.9958
9.66	308.02	439220.	5602.0	8450.3	0.8215	0.8249	0.9223	0.9958
9.68	307.74	439500.	5604.6	8459.8	0.8217	0.8251	0.9227	0.9959
9.70	307.46	439781.	5607.3	8469.3	0.8219	0.8253	0.9232	0.9959
9.72	307.17	440061.	5610.0	8478.9	0.8221	0.8256	0.9236	0.9959
9.74	306.89	440342.	5612.7	8488.4	0.8224	0.8258	0.9240	0.9959
9.76	306.61	440623.	5615.4	8497.9	0.8226	0.8260	0.9245	0.9959
9.78	306.34	440903.	5618.1	8507.5	0.8228	0.8262	0.9249	0.9959
9.80	306.06	441184.	5620.8	8517.0	0.8230	0.8264	0.9254	0.9959
9.82	305.78	441465.	5623.5	8526.5	0.8232	0.8266	0.9258	0.9959
9.84	305.51	441745.	5626.1	8536.1	0.8234	0.8268	0.9263	0.9959
9.86	305.24	442026.	5628.8	8545.6	0.8236	0.8270	0.9267	0.9959
9.88	304.97	442307.	5631.5	8555.1	0.8238	0.8272	0.9272	0.9959
9.90	304.70	442587.	5634.2	8564.7	0.8240	0.8274	0.9276	0.9959
9.92	304.43	442868.	5636.9	8574.2	0.8242	0.8276	0.9281	0.9960

HYDROSTATIC PARTICULARS

DRAFT EXT.	MOULD VOL.	DISPL IN SEA WATER S.G. 1.025	T.P.C 1.025 (T/CM)	M.T.C (TM)	DISPL IN FRESH WATER S.G. 1.000	T.P.C 1.000 (T/CM)	M.T.C (TM)	L.C.B FR MID. (M)	L.C.F FR MID. (M)	K.B (M)	K.M.T (M)
9.92	49519	50811	57.78	807.2	49572	56.37	787.5	5.612	-2.270	5.144	14.078
9.94	49632	50926	57.81	808.2	49684	56.40	788.5	5.594	-2.309	5.155	14.074
9.96	49744	51041	57.83	809.3	49796	56.42	789.6	5.577	-2.348	5.165	14.070
9.98	49856	51157	57.86	810.4	49909	56.45	790.6	5.560	-2.387	5.176	14.066
10.00	49968	51272	57.89	811.5	50021	56.48	791.7	5.543	-2.426	5.186	14.062
10.02	50081	51387	57.91	812.5	50134	56.50	792.7	5.525	-2.463	5.196	14.058
10.04	50194	51504	57.94	813.3	50247	56.52	793.4	5.506	-2.490	5.208	14.055
10.06	50308	51620	57.96	814.1	50361	56.54	794.2	5.488	-2.518	5.219	14.051
10.08	50421	51736	57.98	814.9	50474	56.56	795.0	5.469	-2.546	5.230	14.048
10.10	50534	51853	58.00	815.7	50588	56.58	795.8	5.451	-2.574	5.242	14.045
10.12	50648	51969	58.02	816.4	50701	56.60	796.5	5.432	-2.602	5.253	14.041
10.14	50761	52085	58.04	817.2	50815	56.62	797.3	5.414	-2.629	5.264	14.038
10.16	50874	52202	58.06	818.0	50928	56.65	798.1	5.396	-2.657	5.275	14.035
10.18	50988	52318	58.08	818.8	51042	56.67	798.8	5.377	-2.685	5.286	14.032
10.20	51101	52434	58.10	819.6	51155	56.69	799.6	5.359	-2.712	5.297	14.028
10.22	51215	52551	58.12	820.4	51269	56.71	800.4	5.341	-2.740	5.308	14.025
10.24	51328	52667	58.15	821.2	51382	56.73	801.2	5.323	-2.768	5.319	14.022
10.26	51441	52783	58.17	822.0	51496	56.75	801.9	5.305	-2.795	5.330	14.019
10.28	51555	52900	58.19	822.8	51609	56.77	802.7	5.288	-2.823	5.340	14.015
10.30	51668	53016	58.21	823.6	51723	56.79	803.5	5.270	-2.850	5.351	14.012
10.32	51781	53132	58.23	824.3	51836	56.81	804.2	5.252	-2.878	5.362	14.009
10.34	51895	53249	58.25	825.1	51950	56.83	805.0	5.235	-2.905	5.372	14.006
10.36	52008	53365	58.27	825.9	52063	56.85	805.8	5.217	-2.933	5.383	14.003
10.38	52121	53481	58.29	826.7	52177	56.87	806.5	5.200	-2.960	5.394	14.000
10.40	52235	53597	58.31	827.5	52290	56.89	807.3	5.182	-2.988	5.404	13.997
10.42	52348	53714	58.33	828.3	52404	56.91	808.1	5.165	-3.015	5.414	13.993
10.44	52461	53830	58.36	829.1	52517	56.93	808.9	5.148	-3.043	5.425	13.990
10.46	52575	53946	58.38	829.9	52631	56.95	809.6	5.131	-3.070	5.435	13.987
10.48	52688	54063	58.40	830.6	52744	56.97	810.4	5.113	-3.096	5.446	13.984
10.50	52803	54180	58.41	831.2	52859	56.99	811.0	5.095	-3.115	5.457	13.982
10.52	52917	54297	58.43	831.8	52973	57.00	811.6	5.077	-3.135	5.468	13.979
10.54	53031	54415	58.45	832.5	53087	57.02	812.1	5.059	-3.154	5.480	13.976
10.56	53145	54532	58.46	833.1	53202	57.04	812.7	5.041	-3.174	5.491	13.974
10.58	53259	54649	58.48	833.7	53316	57.05	813.3	5.023	-3.194	5.502	13.971
10.60	53374	54766	58.50	834.3	53430	57.07	813.9	5.005	-3.213	5.513	13.968
10.62	53488	54883	58.51	834.9	53545	57.08	814.5	4.987	-3.233	5.524	13.966
10.64	53602	55000	58.53	835.5	53659	57.10	815.1	4.970	-3.252	5.535	13.963
10.66	53716	55118	58.54	836.1	53773	57.12	815.7	4.952	-3.272	5.546	13.961
10.68	53830	55235	58.56	836.7	53888	57.13	816.3	4.934	-3.291	5.557	13.958
10.70	53944	55352	58.58	837.4	54002	57.15	816.9	4.917	-3.311	5.568	13.955
10.72	54059	55469	58.59	838.0	54116	57.17	817.5	4.899	-3.330	5.579	13.953
10.74	54173	55586	58.61	838.6	54231	57.18	818.1	4.882	-3.350	5.589	13.950
10.76	54287	55703	58.63	839.2	54345	57.20	818.7	4.865	-3.369	5.600	13.948
10.78	54401	55821	58.64	839.8	54459	57.21	819.3	4.848	-3.389	5.611	13.945
10.80	54515	55938	58.66	840.4	54573	57.23	819.9	4.830	-3.408	5.622	13.943

HYDROSTATIC PARTICULARS

DRAFT EXT.	K.M.L	IT	WP AREA	WETTED SURFACE	BLOCK COEFF.	PRISM. COEFF.	WP-A COEFF.	MID. COEFF.
(M)	(M)	(M4)	(M2)	(M2)	CB	CP	CW	CM
9.92	304.43	442868.	5636.9	8574.2	0.8242	0.8276	0.9281	0.9960
9.94	304.16	443148.	5639.6	8583.7	0.8244	0.8278	0.9285	0.9960
9.96	303.89	443429.	5642.3	8593.3	0.8246	0.8280	0.9289	0.9960
9.98	303.63	443709.	5645.0	8602.8	0.8248	0.8282	0.9294	0.9960
10.00	303.36	443990.	5647.6	8612.3	0.8250	0.8284	0.9298	0.9960
10.02	303.08	444268.	5650.2	8621.8	0.8252	0.8286	0.9303	0.9960
10.04	302.71	444533.	5652.3	8630.7	0.8255	0.8288	0.9306	0.9960
10.06	302.34	444798.	5654.3	8639.7	0.8257	0.8290	0.9309	0.9960
10.08	301.97	445064.	5656.4	8648.6	0.8259	0.8292	0.9313	0.9960
10.10	301.60	445329.	5658.4	8657.5	0.8261	0.8294	0.9316	0.9960
10.12	301.23	445594.	5660.4	8666.5	0.8263	0.8296	0.9320	0.9960
10.14	300.87	445859.	5662.5	8675.4	0.8265	0.8298	0.9323	0.9960
10.16	300.51	446124.	5664.5	8684.4	0.8268	0.8300	0.9326	0.9960
10.18	300.15	446389.	5666.6	8693.3	0.8270	0.8302	0.9330	0.9961
10.20	299.79	446655.	5668.6	8702.2	0.8272	0.8304	0.9333	0.9961
10.22	299.43	446920.	5670.7	8711.2	0.8274	0.8306	0.9337	0.9961
10.24	299.07	447185.	5672.7	8720.1	0.8276	0.8308	0.9340	0.9961
10.26	298.72	447450.	5674.8	8729.1	0.8278	0.8311	0.9343	0.9961
10.28	298.36	447715.	5676.8	8738.0	0.8280	0.8313	0.9347	0.9961
10.30	298.01	447980.	5678.9	8746.9	0.8282	0.8315	0.9350	0.9961
10.32	297.66	448246.	5680.9	8755.9	0.8284	0.8317	0.9354	0.9961
10.34	297.31	448511.	5683.0	8764.8	0.8286	0.8319	0.9357	0.9961
10.36	296.97	448776.	5685.0	8773.8	0.8288	0.8321	0.9360	0.9961
10.38	296.62	449041.	5687.0	8782.7	0.8290	0.8323	0.9364	0.9961
10.40	296.28	449306.	5689.1	8791.6	0.8292	0.8324	0.9367	0.9961
10.42	295.94	449572.	5691.1	8800.6	0.8294	0.8326	0.9371	0.9961
10.44	295.60	449837.	5693.2	8809.5	0.8296	0.8328	0.9374	0.9962
10.46	295.26	450102.	5695.2	8818.5	0.8298	0.8330	0.9377	0.9962
10.48	294.90	450359.	5697.2	8827.3	0.8300	0.8332	0.9381	0.9962
10.50	294.50	450594.	5698.8	8835.9	0.8303	0.8334	0.9383	0.9962
10.52	294.10	450829.	5700.4	8844.4	0.8305	0.8336	0.9386	0.9962
10.54	293.70	451065.	5702.0	8853.0	0.8307	0.8339	0.9389	0.9962
10.56	293.30	451300.	5703.6	8861.6	0.8309	0.8341	0.9391	0.9962
10.58	292.91	451535.	5705.2	8870.2	0.8311	0.8343	0.9394	0.9962
10.60	292.52	451770.	5706.9	8878.7	0.8313	0.8345	0.9397	0.9962
10.62	292.12	452005.	5708.5	8887.3	0.8315	0.8347	0.9399	0.9962
10.64	291.73	452240.	5710.1	8895.9	0.8317	0.8349	0.9402	0.9962
10.66	291.35	452475.	5711.7	8904.4	0.8319	0.8351	0.9405	0.9962
10.68	290.96	452710.	5713.3	8913.0	0.8321	0.8353	0.9407	0.9962
10.70	290.57	452946.	5714.9	8921.6	0.8323	0.8355	0.9410	0.9962
10.72	290.19	453181.	5716.5	8930.1	0.8325	0.8357	0.9413	0.9963
10.74	289.81	453416.	5718.2	8938.7	0.8327	0.8359	0.9415	0.9963
10.76	289.43	453651.	5719.8	8947.3	0.8329	0.8361	0.9418	0.9963
10.78	289.05	453886.	5721.4	8955.8	0.8331	0.8363	0.9421	0.9963
10.80	288.67	454121.	5723.0	8964.4	0.8333	0.8364	0.9423	0.9963

HYDROSTATIC PARTICULARS

DRAFT EXT.	MOULD VOL.	DISPL IN SEA WATER S.G. 1.025	T.P.C 1.025 (T/CM)	M.T.C (TM)	DISPL IN FRESH WATER S.G. 1.000	T.P.C 1.000 (T/CM)	M.T.C (TM)	L.C.B FR MID. (M)	L.C.F FR MID. (M)	K.B (M)	K.M.T (M)
(M)	(M3)	(TON)	(T/CM)	(TM)	(TON)	(T/CM)	(TM)	(M)	(M)	(M)	(M)
10.80	54515	55938	58.66	840.4	54573	57.23	819.9	4.830	-3.408	5.622	13.943
10.82	54630	56055	58.68	841.0	54688	57.25	820.5	4.813	-3.428	5.632	13.940
10.84	54744	56172	58.69	841.6	54802	57.26	821.1	4.796	-3.447	5.643	13.938
10.86	54858	56289	58.71	842.2	54916	57.28	821.7	4.780	-3.467	5.653	13.935
10.88	54972	56406	58.73	842.9	55031	57.29	822.3	4.763	-3.486	5.664	13.933
10.90	55086	56524	58.74	843.5	55145	57.31	822.9	4.746	-3.505	5.674	13.930
10.92	55201	56641	58.76	844.1	55259	57.33	823.5	4.729	-3.525	5.684	13.928
10.94	55315	56758	58.78	844.7	55374	57.34	824.1	4.712	-3.542	5.695	13.926
10.96	55430	56876	58.79	845.2	55489	57.36	824.6	4.695	-3.555	5.706	13.924
10.98	55545	56994	58.80	845.7	55604	57.37	825.0	4.677	-3.568	5.718	13.921
11.00	55660	57112	58.82	846.2	55719	57.38	825.5	4.660	-3.582	5.729	13.919
11.02	55774	57230	58.83	846.7	55834	57.40	826.0	4.643	-3.595	5.740	13.917
11.04	55889	57348	58.84	847.2	55949	57.41	826.5	4.626	-3.608	5.751	13.915
11.06	56004	57465	58.86	847.7	56064	57.42	827.0	4.609	-3.621	5.762	13.913
11.08	56119	57583	58.87	848.2	56179	57.44	827.5	4.592	-3.634	5.773	13.911
11.10	56234	57701	58.89	848.7	56294	57.45	828.0	4.575	-3.648	5.784	13.909
11.12	56349	57819	58.90	849.2	56409	57.46	828.5	4.558	-3.661	5.795	13.907
11.14	56464	57937	58.91	849.7	56524	57.48	829.0	4.541	-3.674	5.806	13.905
11.16	56578	58055	58.93	850.2	56639	57.49	829.5	4.524	-3.687	5.817	13.903
11.18	56693	58173	58.94	850.8	56754	57.50	830.0	4.508	-3.700	5.828	13.901
11.20	56808	58290	58.95	851.3	56869	57.52	830.5	4.491	-3.713	5.838	13.899
11.22	56923	58408	58.97	851.8	56984	57.53	831.0	4.475	-3.726	5.849	13.897
11.24	57038	58526	58.98	852.3	57099	57.54	831.5	4.458	-3.740	5.860	13.895
11.26	57153	58644	58.99	852.8	57214	57.56	832.0	4.442	-3.753	5.870	13.893
11.28	57268	58762	59.01	853.3	57329	57.57	832.5	4.425	-3.766	5.881	13.891
11.30	57383	58880	59.02	853.8	57444	57.58	833.0	4.409	-3.779	5.891	13.889
11.32	57497	58998	59.04	854.3	57559	57.60	833.5	4.393	-3.792	5.902	13.887
11.34	57612	59116	59.05	854.8	57674	57.61	834.0	4.377	-3.805	5.912	13.885
11.36	57727	59233	59.06	855.3	57789	57.62	834.5	4.361	-3.818	5.923	13.883
11.38	57842	59351	59.08	855.8	57904	57.64	835.0	4.345	-3.831	5.933	13.881
11.40	57957	59469	59.09	856.3	58019	57.65	835.4	4.329	-3.843	5.944	13.879
11.42	58073	59588	59.10	856.7	58134	57.66	835.8	4.312	-3.852	5.955	13.878
11.44	58188	59706	59.11	857.1	58250	57.67	836.2	4.296	-3.861	5.966	13.876
11.46	58303	59825	59.12	857.5	58366	57.68	836.6	4.279	-3.870	5.978	13.875
11.48	58419	59943	59.13	858.0	58481	57.69	837.0	4.263	-3.879	5.989	13.873
11.50	58534	60062	59.15	858.4	58597	57.70	837.4	4.247	-3.888	6.000	13.872
11.52	58650	60180	59.16	858.8	58712	57.71	837.8	4.231	-3.898	6.011	13.870
11.54	58765	60298	59.17	859.2	58828	57.73	838.2	4.215	-3.907	6.022	13.869
11.56	58881	60417	59.18	859.6	58943	57.74	838.7	4.199	-3.916	6.033	13.867
11.58	58996	60535	59.19	860.0	59059	57.75	839.1	4.183	-3.925	6.044	13.866
11.60	59111	60654	59.20	860.5	59174	57.76	839.5	4.167	-3.934	6.055	13.864
11.62	59227	60772	59.21	860.9	59290	57.77	839.9	4.151	-3.943	6.065	13.863
11.64	59342	60891	59.22	861.3	59406	57.78	840.3	4.135	-3.952	6.076	13.861
11.66	59458	61009	59.24	861.7	59521	57.79	840.7	4.120	-3.961	6.087	13.860
11.68	59573	61128	59.25	862.1	59637	57.80	841.1	4.104	-3.971	6.098	13.858

HYDROSTATIC PARTICULARS

DRAFT EXT.	K.M.L	IT	WP AREA	WETTED SURFACE	BLOCK COEFF.	PRISM. COEFF.	WP-A COEFF.	MID. COEFF.
(M)	(M)	(M4)	(M2)	(M2)	CB	CP	CW	CM
10.80	288.67	454121.	5723.0	8964.4	0.8333	0.8364	0.9423	0.9963
10.82	288.30	454356.	5724.6	8973.0	0.8335	0.8366	0.9426	0.9963
10.84	287.93	454591.	5726.2	8981.5	0.8337	0.8368	0.9429	0.9963
10.86	287.55	454826.	5727.9	8990.1	0.8339	0.8370	0.9431	0.9963
10.88	287.18	455061.	5729.5	8998.7	0.8341	0.8372	0.9434	0.9963
10.90	286.81	455297.	5731.1	9007.3	0.8343	0.8374	0.9437	0.9963
10.92	286.45	455532.	5732.7	9015.8	0.8345	0.8376	0.9439	0.9963
10.94	286.07	455756.	5734.2	9024.3	0.8347	0.8378	0.9442	0.9963
10.96	285.67	455959.	5735.6	9032.7	0.8349	0.8380	0.9444	0.9963
10.98	285.27	456161.	5736.9	9041.0	0.8351	0.8382	0.9446	0.9963
11.00	284.87	456364.	5738.2	9049.4	0.8353	0.8384	0.9449	0.9964
11.02	284.47	456567.	5739.6	9057.7	0.8355	0.8386	0.9451	0.9964
11.04	284.08	456770.	5740.9	9066.0	0.8357	0.8388	0.9453	0.9964
11.06	283.68	456973.	5742.2	9074.4	0.8359	0.8390	0.9455	0.9964
11.08	283.29	457175.	5743.6	9082.7	0.8361	0.8392	0.9457	0.9964
11.10	282.90	457378.	5744.9	9091.1	0.8363	0.8394	0.9460	0.9964
11.12	282.51	457581.	5746.2	9099.4	0.8365	0.8396	0.9462	0.9964
11.14	282.12	457784.	5747.6	9107.8	0.8367	0.8398	0.9464	0.9964
11.16	281.74	457987.	5748.9	9116.1	0.8369	0.8400	0.9466	0.9964
11.18	281.36	458190.	5750.3	9124.5	0.8371	0.8401	0.9469	0.9964
11.20	280.97	458392.	5751.6	9132.8	0.8373	0.8403	0.9471	0.9964
11.22	280.59	458595.	5752.9	9141.2	0.8375	0.8405	0.9473	0.9964
11.24	280.21	458798.	5754.3	9149.5	0.8377	0.8407	0.9475	0.9964
11.26	279.84	459001.	5755.6	9157.8	0.8379	0.8409	0.9477	0.9964
11.28	279.46	459204.	5756.9	9166.2	0.8381	0.8411	0.9480	0.9964
11.30	279.08	459406.	5758.3	9174.5	0.8383	0.8413	0.9482	0.9964
11.32	278.71	459609.	5759.6	9182.9	0.8385	0.8415	0.9484	0.9965
11.34	278.34	459812.	5760.9	9191.2	0.8387	0.8417	0.9486	0.9965
11.36	277.97	460015.	5762.3	9199.6	0.8389	0.8418	0.9488	0.9965
11.38	277.60	460218.	5763.6	9207.9	0.8391	0.8420	0.9491	0.9965
11.40	277.22	460408.	5764.8	9216.2	0.8393	0.8422	0.9493	0.9965
11.42	276.82	460580.	5765.9	9224.4	0.8395	0.8424	0.9495	0.9965
11.44	276.43	460753.	5767.0	9232.6	0.8396	0.8426	0.9496	0.9965
11.46	276.03	460926.	5768.1	9240.8	0.8398	0.8428	0.9498	0.9965
11.48	275.64	461099.	5769.2	9248.9	0.8400	0.8430	0.9500	0.9965
11.50	275.25	461271.	5770.3	9257.1	0.8402	0.8432	0.9502	0.9965
11.52	274.86	461444.	5771.4	9265.3	0.8404	0.8434	0.9504	0.9965
11.54	274.48	461617.	5772.5	9273.5	0.8406	0.8436	0.9505	0.9965
11.56	274.09	461790.	5773.6	9281.7	0.8408	0.8437	0.9507	0.9965
11.58	273.71	461962.	5774.7	9289.9	0.8410	0.8439	0.9509	0.9965
11.60	273.32	462135.	5775.8	9298.1	0.8412	0.8441	0.9511	0.9965
11.62	272.94	462308.	5776.9	9306.2	0.8414	0.8443	0.9513	0.9965
11.64	272.56	462480.	5778.0	9314.4	0.8416	0.8445	0.9514	0.9966
11.66	272.18	462653.	5779.1	9322.6	0.8418	0.8447	0.9516	0.9966
11.68	271.81	462826.	5780.2	9330.8	0.8419	0.8448	0.9518	0.9966

HYDROSTATIC PARTICULARS

DRAFT EXT.	MOULD VOL.	DISPL IN SEA WATER S.G. 1.025	T.P.C 1.025	M.T.C (TM)	DISPL IN FRESH WATER S.G. 1.000	T.P.C 1.000	M.T.C (TM)	L.C.B FR MID. (M)	L.C.F FR MID. (M)	K.B (M)	K.M.T (M)
(M)	(M3)	(TON)	(T/CM)	(TM)	(TON)	(T/CM)	(TM)	(M)	(M)	(M)	(M)
11.68	59573	61127	59.25	862.1	59637	57.80	841.1	4.104	-3.971	6.098	13.858
11.70	59689	61246	59.26	862.5	59752	57.81	841.5	4.088	-3.980	6.108	13.857
11.72	59004	61364	59.27	862.9	59868	57.82	841.9	4.073	-3.989	6.119	13.855
11.74	59919	61483	59.28	863.4	59983	57.83	842.3	4.057	-3.998	6.129	13.854
11.76	60035	61601	59.29	863.8	60099	57.85	842.7	4.042	-4.007	6.140	13.852
11.78	60150	61720	59.30	864.2	60214	57.86	843.1	4.027	-4.016	6.150	13.851
11.80	60266	61838	59.31	864.6	60330	57.87	843.5	4.011	-4.025	6.161	13.850
11.82	60381	61957	59.33	865.0	60445	57.88	843.9	3.996	-4.034	6.171	13.848
11.84	60497	62075	59.34	865.4	60561	57.89	844.3	3.981	-4.043	6.182	13.847
11.86	60612	62194	59.35	865.8	60677	57.90	844.7	3.966	-4.051	6.192	13.846
11.88	60728	62313	59.36	866.2	60793	57.91	845.0	3.950	-4.058	6.204	13.845
11.90	60844	62431	59.37	866.5	60909	57.92	845.4	3.935	-4.065	6.215	13.844
11.92	60960	62550	59.38	866.9	61025	57.93	845.7	3.920	-4.072	6.226	13.843
11.94	61076	62669	59.38	867.2	61141	57.94	846.1	3.904	-4.079	6.237	13.842
11.96	61192	62788	59.39	867.6	61257	57.95	846.4	3.889	-4.085	6.248	13.841
11.98	61308	62907	59.40	867.9	61373	57.95	846.7	3.874	-4.092	6.259	13.840
12.00	61423	63026	59.41	868.3	61489	57.96	847.1	3.859	-4.099	6.270	13.839
12.02	61539	63145	59.42	868.6	61605	57.97	847.4	3.844	-4.106	6.281	13.838
12.04	61655	63264	59.43	869.0	61721	57.98	847.8	3.829	-4.113	6.292	13.837
12.06	61771	63383	59.44	869.3	61837	57.99	848.1	3.814	-4.120	6.302	13.836
12.08	61887	63502	59.45	869.7	61953	58.00	848.4	3.799	-4.126	6.313	13.835
12.10	62003	63621	59.46	870.0	62069	58.01	848.8	3.784	-4.133	6.324	13.835
12.12	62119	63739	59.47	870.4	62185	58.02	849.1	3.769	-4.140	6.335	13.834
12.14	62235	63858	59.48	870.7	62301	58.03	849.5	3.755	-4.147	6.345	13.833
12.16	62351	63977	59.49	871.1	62417	58.04	849.8	3.740	-4.154	6.356	13.832
12.18	62466	64096	59.50	871.4	62533	58.05	850.2	3.725	-4.160	6.367	13.831
12.20	62582	64215	59.51	871.8	62649	58.06	850.5	3.711	-4.167	6.377	13.830
12.22	62698	64334	59.52	872.1	62765	58.07	850.8	3.696	-4.174	6.388	13.829
12.24	62814	64453	59.53	872.5	62881	58.07	851.2	3.682	-4.181	6.398	13.828
12.26	62930	64572	59.54	872.8	62997	58.08	851.5	3.668	-4.188	6.409	13.827
12.28	63046	64691	59.55	873.2	63113	58.09	851.9	3.653	-4.194	6.419	13.827
12.30	63162	64810	59.55	873.5	63229	58.10	852.2	3.639	-4.201	6.429	13.826
12.32	63278	64929	59.56	873.8	63345	58.11	852.5	3.625	-4.207	6.440	13.825
12.34	63394	65048	59.57	874.1	63462	58.12	852.8	3.610	-4.211	6.451	13.825
12.36	63510	65167	59.58	874.4	63578	58.13	853.1	3.596	-4.215	6.462	13.824
12.38	63627	65287	59.59	874.7	63694	58.13	853.4	3.581	-4.219	6.473	13.824
12.40	63743	65406	59.59	875.0	63811	58.14	853.7	3.567	-4.223	6.485	13.823
12.42	63859	65525	59.60	875.3	63927	58.15	854.0	3.553	-4.228	6.496	13.823
12.44	63976	65645	59.61	875.6	64044	58.16	854.3	3.539	-4.232	6.506	13.822
12.46	64092	65764	59.62	875.9	64160	58.16	854.6	3.524	-4.236	6.517	13.822
12.48	64208	65883	59.63	876.2	64276	58.17	854.8	3.510	-4.240	6.528	13.822
12.50	64324	66003	59.63	876.5	64393	58.18	855.1	3.496	-4.244	6.539	13.821
12.52	64441	66122	59.64	876.8	64509	58.19	855.4	3.482	-4.249	6.550	13.821
12.54	64557	66241	59.65	877.1	64625	58.20	855.7	3.468	-4.253	6.561	13.820
12.56	64673	66360	59.66	877.4	64742	58.20	856.0	3.455	-4.257	6.571	13.820

HYDROSTATIC PARTICULARS

DRAFT EXT.	K.M.L	IT	WP AREA	WETTED SURFACE	BLOCK COEFF.	PRISM. COEFF.	WP-A COEFF.	MID. COEFF.
(M)	(M)	(M4)	(M2)	(M2)	CB	CP	CW	CM
11.68	271.81	462826.	5780.2	9330.8	0.8419	0.8448	0.9518	0.9966
11.70	271.43	462998.	5781.3	9339.0	0.8421	0.8450	0.9520	0.9966
11.72	271.06	463171.	5782.4	9347.2	0.8423	0.8452	0.9522	0.9966
11.74	270.69	463344.	5783.5	9355.3	0.8425	0.8454	0.9524	0.9966
11.76	270.31	463517.	5784.6	9363.5	0.8427	0.8456	0.9525	0.9966
11.78	269.95	463689.	5785.7	9371.7	0.8429	0.8458	0.9527	0.9966
11.80	269.58	463862.	5786.7	9379.9	0.8431	0.8459	0.9529	0.9966
11.82	269.21	464035.	5787.8	9388.1	0.8432	0.8461	0.9531	0.9966
11.84	268.84	464208.	5788.9	9396.3	0.8434	0.8463	0.9533	0.9966
11.86	268.47	464369.	5789.9	9404.4	0.8436	0.8465	0.9534	0.9966
11.88	268.09	464519.	5790.9	9412.5	0.8438	0.8467	0.9536	0.9966
11.90	267.70	464669.	5791.8	9420.6	0.8440	0.8468	0.9537	0.9966
11.92	267.32	464819.	5792.7	9428.7	0.8442	0.8470	0.9539	0.9966
11.94	266.94	464969.	5793.6	9436.7	0.8444	0.8472	0.9540	0.9966
11.96	266.57	465119.	5794.5	9444.8	0.8445	0.8474	0.9542	0.9966
11.98	266.19	465268.	5795.5	9452.9	0.8447	0.8476	0.9543	0.9967
12.00	265.81	465418.	5796.4	9461.0	0.8449	0.8477	0.9545	0.9967
12.02	265.44	465568.	5797.3	9469.1	0.8451	0.8479	0.9546	0.9967
12.04	265.07	465718.	5798.2	9477.2	0.8453	0.8481	0.9548	0.9967
12.06	264.70	465868.	5799.1	9485.2	0.8455	0.8483	0.9549	0.9967
12.08	264.33	466018.	5800.1	9493.3	0.8456	0.8485	0.9551	0.9967
12.10	263.96	466168.	5801.0	9501.4	0.8458	0.8486	0.9553	0.9967
12.12	263.59	466318.	5801.9	9509.5	0.8460	0.8488	0.9554	0.9967
12.14	263.23	466468.	5802.8	9517.6	0.8462	0.8490	0.9556	0.9967
12.16	262.86	466618.	5803.8	9525.7	0.8464	0.8492	0.9557	0.9967
12.18	262.50	466768.	5804.7	9533.7	0.8465	0.8493	0.9559	0.9967
12.20	262.14	466918.	5805.6	9541.8	0.8467	0.8495	0.9560	0.9967
12.22	261.78	467068.	5806.5	9549.9	0.8469	0.8497	0.9562	0.9967
12.24	261.42	467218.	5807.4	9558.0	0.8471	0.8499	0.9563	0.9967
12.26	261.06	467368.	5808.4	9566.1	0.8473	0.8500	0.9565	0.9967
12.28	260.71	467518.	5809.3	9574.2	0.8474	0.8502	0.9566	0.9967
12.30	260.35	467668.	5810.2	9582.2	0.8476	0.8504	0.9568	0.9967
12.32	259.99	467802.	5811.0	9590.3	0.8478	0.8506	0.9569	0.9967
12.34	259.62	467925.	5811.8	9598.3	0.8480	0.8507	0.9570	0.9967
12.36	259.26	468049.	5812.6	9606.3	0.8481	0.8509	0.9572	0.9968
12.38	258.89	468172.	5813.3	9614.3	0.8483	0.8511	0.9573	0.9968
12.40	258.53	468295.	5814.1	9622.3	0.8485	0.8513	0.9574	0.9968
12.42	258.17	468419.	5814.9	9630.4	0.8487	0.8514	0.9575	0.9968
12.44	257.81	468542.	5815.7	9638.4	0.8489	0.8516	0.9577	0.9968
12.46	257.45	468666.	5816.4	9646.4	0.8490	0.8518	0.9578	0.9968
12.48	257.09	468789.	5817.2	9654.4	0.8492	0.8519	0.9579	0.9968
12.50	256.73	468912.	5818.0	9662.4	0.8494	0.8521	0.9581	0.9968
12.52	256.38	469036.	5818.7	9670.4	0.8496	0.8523	0.9582	0.9968
12.54	256.02	469159.	5819.5	9678.5	0.8497	0.8525	0.9583	0.9968
12.56	255.67	469282.	5820.3	9686.5	0.8499	0.8526	0.9584	0.9968

HYDROSTATIC PARTICULARS

DRAFT EXT.	MOULD VOL.	DISPL. IN SEA WATER S.G. 1.025	T.P.C 1.025	M.T.C	DISPL IN FRESH WATER S.G. 1.000	T.P.C 1.000	M.T.C	L.C.B FR MID.	L.C.F FR MID.	K.B	K.M.T
(M)	(M3)	(TON)	(T/CM)	(TM)	(TON)	(T/CM)	(TM)	(M)	(M)	(M)	(M)
12.56	64673	66360	59.66	877.4	64742	58.20	856.0	3.455	-4.257	6.571	13.820
12.58	64789	66480	59.67	877.7	64858	58.21	856.3	3.441	-4.261	6.582	13.819
12.60	64906	66599	59.67	878.0	64975	58.22	856.6	3.427	-4.265	6.593	13.819
12.62	65022	66718	59.68	878.3	65091	58.23	856.9	3.413	-4.270	6.603	13.819
12.64	65138	66838	59.69	878.6	65207	58.23	857.2	3.399	-4.274	6.614	13.818
12.66	65254	66957	59.70	878.9	65324	58.24	857.5	3.386	-4.278	6.624	13.818
12.68	65371	67076	59.71	879.2	65440	58.25	857.8	3.372	-4.282	6.635	13.817
12.70	65487	67195	59.71	879.5	65557	58.26	858.1	3.359	-4.286	6.645	13.817
12.72	65603	67315	59.72	879.8	65673	58.26	858.3	3.345	-4.291	6.656	13.816
12.74	65720	67434	59.73	880.1	65789	58.27	858.6	3.332	-4.295	6.666	13.816
12.76	65836	67553	59.74	880.4	65906	58.28	858.9	3.318	-4.299	6.676	13.816
12.78	65952	67673	59.74	880.7	66022	58.29	859.2	3.305	-4.302	6.687	13.816
12.80	66069	67793	59.75	880.9	66139	58.29	859.4	3.291	-4.304	6.698	13.816
12.82	66186	67912	59.76	881.2	66256	58.30	859.7	3.278	-4.306	6.709	13.816
12.84	66302	68032	59.76	881.4	66373	58.31	859.9	3.265	-4.308	6.720	13.816
12.86	66419	68151	59.77	881.7	66489	58.31	860.2	3.251	-4.311	6.731	13.816
12.88	66535	68271	59.78	882.0	66606	58.32	860.5	3.238	-4.313	6.742	13.816
12.90	66652	68391	59.78	882.2	66723	58.33	860.7	3.225	-4.315	6.753	13.816
12.92	66769	68510	59.79	882.5	66839	58.33	861.0	3.212	-4.317	6.764	13.816
12.94	66885	68630	59.80	882.7	66956	58.34	861.2	3.198	-4.320	6.775	13.816
12.96	67002	68750	59.80	883.0	67073	58.35	861.5	3.185	-4.322	6.786	13.816
12.98	67118	68869	59.81	883.3	67190	58.35	861.7	3.172	-4.324	6.797	13.816
13.00	67235	68989	59.82	883.5	67306	58.36	862.0	3.159	-4.326	6.807	13.816
13.02	67352	69109	59.82	883.8	67423	58.37	862.2	3.146	-4.328	6.818	13.816

HYDROSTATIC PARTICULARS

DRAFT EXT.	K.M.L	IT	WP AREA	WETTED SURFACE	BLOCK COEFF.	PRISM. COEFF.	WP-A COEFF.	MID. COEFF.
(M)	(M)	(M4)	(M2)	(M2)	CB	CP	CW	CM
12.56	255.67	469282.	5820.3	9686.5	0.8499	0.8526	0.9584	0.9968
12.58	255.32	469405.	5821.1	9694.5	0.8501	0.8528	0.9586	0.9968
12.60	254.97	469529.	5821.8	9702.5	0.8502	0.8530	0.9587	0.9968
12.62	254.62	469652.	5822.6	9710.5	0.8504	0.8531	0.9588	0.9968
12.64	254.27	469775.	5823.4	9718.5	0.8506	0.8533	0.9590	0.9968
12.66	253.93	469899.	5824.1	9726.5	0.8508	0.8535	0.9591	0.9968
12.68	253.58	470022.	5824.9	9734.6	0.8509	0.8536	0.9592	0.9968
12.70	253.24	470145.	5825.7	9742.6	0.8511	0.8538	0.9593	0.9968
12.72	252.89	470269.	5826.5	9750.6	0.8513	0.8540	0.9595	0.9968
12.74	252.55	470392.	5827.2	9758.6	0.8514	0.8541	0.9596	0.9969
12.76	252.21	470515.	5828.0	9766.6	0.8516	0.8543	0.9597	0.9969
12.78	251.86	470623.	5828.7	9774.6	0.8518	0.8545	0.9598	0.9969
12.80	251.51	470724.	5829.3	9782.6	0.8519	0.8546	0.9599	0.9969
12.82	251.17	470824.	5830.0	9790.6	0.8521	0.8548	0.9600	0.9969
12.84	250.82	470924.	5830.7	9798.5	0.8523	0.8550	0.9602	0.9969
12.86	250.47	471025.	5831.3	9806.5	0.8525	0.8551	0.9603	0.9969
12.88	250.13	471125.	5832.0	9814.5	0.8526	0.8553	0.9604	0.9969
12.90	249.78	471226.	5832.6	9822.4	0.8528	0.8555	0.9605	0.9969
12.92	249.44	471326.	5833.3	9830.4	0.8530	0.8556	0.9606	0.9969
12.94	249.10	471426.	5833.9	9838.4	0.8531	0.8558	0.9607	0.9969
12.96	248.76	471527.	5834.6	9846.4	0.8533	0.8559	0.9608	0.9969
12.98	248.42	471627.	5835.2	9854.3	0.8535	0.8561	0.9609	0.9969
13.00	248.08	471727.	5835.9	9862.3	0.8536	0.8563	0.9610	0.9969
13.02	247.75	471828.	5836.5	9870.3	0.8538	0.8564	0.9611	0.9969



TRIM & STABILITY BOOKLET

REV.

STANDARD NO.

ORI

HDS-56-B002

2.3 Displacement correction table due to trim

S.W :1.025
UNIT IN MT
SHIP NAME : 38K DWT S/U B/C

CORRECTION OF DISPLACEMENT DUE TO TRIM

DRAFT (M)	(-) : TRIM BY STERN						(+) : TRIM BY STEM		
	-3.00	-2.50	-2.00	-1.50	-1.00	-0.50	0.00	0.50	1.00
2.00	-521.06	-445.87	-363.79	-277.41	-187.27	-95.68	0.00	102.19	209.25
2.10	-520.19	-443.63	-361.13	-275.25	-185.99	-95.10	0.00	101.96	208.79
2.20	-518.39	-441.03	-358.48	-273.25	-184.90	-94.63	0.00	101.76	208.42
2.30	-516.96	-439.16	-356.89	-272.24	-184.53	-94.46	0.00	101.26	207.50
2.40	-515.28	-437.42	-355.65	-271.58	-184.42	-94.42	0.00	100.77	206.61
2.50	-513.43	-435.78	-354.66	-271.16	-184.46	-94.46	0.00	100.36	205.89
2.60	-511.57	-434.33	-353.92	-270.93	-184.57	-94.54	0.00	100.07	205.43
2.70	-509.93	-433.16	-353.37	-270.68	-184.51	-94.55	0.00	100.05	205.56
2.80	-508.71	-432.36	-352.96	-270.28	-184.05	-94.37	0.00	100.44	206.51
2.90	-507.84	-431.90	-352.83	-270.05	-183.68	-94.25	0.00	100.97	207.74
3.00	-507.40	-431.84	-353.01	-270.08	-183.50	-94.23	0.00	101.62	209.14
3.10	-507.46	-432.21	-353.52	-270.42	-183.62	-94.35	0.00	102.35	210.62
3.20	-508.53	-433.29	-354.51	-271.49	-184.63	-94.95	0.00	103.14	212.03
3.30	-510.29	-434.91	-355.91	-273.02	-186.16	-95.80	0.00	103.94	213.30
3.40	-512.51	-436.94	-357.66	-274.85	-187.91	-96.74	0.00	104.66	214.37
3.50	-515.11	-439.33	-359.73	-276.90	-189.78	-97.71	0.00	105.25	215.15
3.60	-518.03	-442.09	-362.22	-279.17	-191.64	-98.62	0.00	105.62	215.46
3.70	-521.26	-445.44	-365.48	-281.75	-193.33	-99.34	0.00	105.50	214.85
3.80	-524.58	-448.87	-368.81	-284.27	-194.85	-99.92	0.00	105.21	213.90
3.90	-527.87	-452.22	-372.00	-286.57	-196.11	-100.36	0.00	104.77	212.72
4.00	-531.01	-455.33	-374.86	-288.50	-197.03	-100.62	0.00	104.25	211.38
4.10	-533.85	-457.82	-376.77	-289.50	-197.21	-100.52	0.00	103.74	210.17
4.20	-536.29	-459.66	-377.79	-289.66	-196.75	-100.12	0.00	103.25	209.07
4.30	-538.24	-460.92	-378.19	-289.31	-195.94	-99.58	0.00	102.73	207.96
4.40	-539.64	-461.60	-378.02	-288.54	-194.91	-98.94	0.00	102.18	206.81
4.50	-540.38	-461.62	-377.27	-287.40	-193.71	-98.23	0.00	101.61	205.64
4.60	-540.00	-460.56	-375.71	-285.98	-192.70	-97.69	0.00	101.05	204.45
4.70	-538.85	-458.84	-373.66	-284.29	-191.61	-97.13	0.00	100.46	203.23
4.80	-537.00	-456.54	-371.22	-282.37	-190.44	-96.54	0.00	99.84	201.96
4.90	-534.44	-453.73	-368.46	-280.27	-189.18	-95.92	0.00	99.19	200.63
5.00	-531.11	-450.50	-365.61	-278.12	-187.83	-95.25	0.00	98.49	199.21
5.10	-527.00	-446.91	-362.76	-275.96	-186.39	-94.53	0.00	97.75	197.72
5.20	-522.33	-442.96	-359.71	-273.67	-184.85	-93.75	0.00	96.96	196.15
5.30	-517.17	-438.68	-356.48	-271.27	-183.24	-92.95	0.00	96.14	194.52
5.40	-511.59	-434.11	-353.04	-268.72	-181.53	-92.09	0.00	95.29	192.82
5.50	-505.95	-429.45	-349.37	-266.01	-179.76	-91.22	0.00	94.41	191.08
5.60	-500.00	-424.54	-345.47	-263.14	-177.89	-90.30	0.00	93.51	189.29
5.70	-493.69	-419.39	-341.38	-260.14	-175.94	-89.34	0.00	92.57	187.42
5.80	-486.98	-413.94	-337.06	-256.97	-173.88	-88.34	0.00	91.59	185.47
5.90	-479.88	-408.21	-332.55	-253.66	-171.72	-87.28	0.00	90.57	183.46
6.00	-472.39	-402.20	-327.85	-250.21	-169.45	-86.16	0.00	89.51	181.37
6.10	-464.42	-395.86	-322.93	-246.60	-167.08	-85.00	0.00	88.40	179.17
6.20	-455.92	-389.13	-317.76	-242.83	-164.59	-83.78	0.00	87.23	176.88
6.30	-446.84	-382.01	-312.32	-238.89	-162.01	-82.52	0.00	86.02	174.49
6.40	-437.17	-374.50	-306.69	-234.85	-159.38	-81.24	0.00	84.73	171.95
6.50	-426.82	-366.53	-300.79	-230.64	-156.66	-79.90	0.00	83.39	169.29
6.60	-415.76	-358.02	-294.51	-226.18	-153.79	-78.51	0.00	81.99	166.53
6.70	-403.90	-348.92	-287.79	-221.45	-150.78	-77.05	0.00	80.52	163.66
6.80	-391.23	-339.21	-280.57	-216.39	-147.59	-75.53	0.00	79.02	160.70
6.90	-377.89	-328.90	-272.70	-210.92	-144.25	-73.95	0.00	77.51	157.73
7.00	-363.51	-317.80	-264.24	-205.05	-140.68	-72.29	0.00	75.94	154.66
7.10	-347.96	-305.83	-255.19	-198.76	-136.83	-70.48	0.00	74.29	151.46
7.20	-331.14	-292.93	-245.53	-192.06	-132.71	-68.56	0.00	72.54	148.07
7.30	-312.64	-278.94	-235.30	-184.91	-128.16	-66.42	0.00	70.70	144.55
7.40	-292.41	-263.78	-224.46	-177.27	-123.17	-64.05	0.00	68.73	140.82
7.50	-270.73	-247.49	-212.86	-169.12	-117.88	-61.55	0.00	66.62	136.82
7.60	-247.62	-229.98	-200.38	-160.39	-112.27	-58.91	0.00	64.36	132.56
7.70	-223.09	-211.21	-186.94	-151.04	-106.36	-56.14	0.00	61.93	127.98
7.80	-196.49	-190.58	-172.28	-141.16	-100.52	-53.45	0.00	59.24	122.84
7.90	-168.67	-168.72	-156.55	-130.60	-94.36	-50.63	0.00	56.36	117.34
8.00	-139.91	-145.75	-139.73	-119.20	-87.71	-47.58	0.00	53.32	111.55

S.W -1.025

UNIT IN MT

SHIP NAME : 38K DWT S/U B/C

CORRECTION OF DISPLACEMENT DUE TO TRIM

DRAFT (M)	(-) : TRIM BY STERN						(+) : TRIM BY STEM		
	-3.00	-2.50	-2.00	-1.50	-1.00	-0.50	0.00	0.50	1.00
8.10	-110.45	-121.79	-121.80	-106.90	-80.51	-44.26	0.00	50.12	105.50
8.20	-80.50	-96.79	-102.37	-93.31	-72.46	-40.57	0.00	46.83	99.34
8.30	-50.31	-70.64	-81.09	70.11	-63.37	-36.40	0.00	43.52	93.20
8.40	-20.15	-44.14	-59.12	-62.16	-53.63	-31.89	0.00	40.01	86.73
8.50	9.71	-17.58	-36.73	-45.62	-43.29	-27.05	0.00	36.28	79.88
8.60	39.06	8.77	-14.27	-28.70	-32.41	-21.88	0.00	32.30	72.58
8.70	67.42	34.31	7.76	-11.37	-20.48	-16.03	0.00	27.86	64.47
8.80	94.70	58.97	29.20	5.95	-8.12	-9.88	0.00	23.04	55.71
8.90	120.84	82.66	49.91	22.90	4.23	-3.63	0.00	18.01	46.45
9.00	145.68	105.20	69.66	39.23	16.27	2.51	0.00	12.78	36.71
9.10	168.85	126.16	87.99	54.41	27.52	8.33	0.00	7.35	26.40
9.20	189.69	144.77	104.05	67.54	37.11	13.42	0.00	1.59	15.12
9.30	209.01	161.98	118.80	79.59	45.89	18.16	0.00	-4.14	3.71
9.40	226.91	177.84	132.34	90.59	53.92	22.53	0.00	-9.76	-7.61
9.50	243.48	192.45	144.75	100.64	61.22	26.55	0.00	-15.13	-18.59
9.60	258.83	205.92	156.11	109.71	67.68	30.09	0.00	-19.86	-28.48
9.70	273.05	218.34	166.52	117.89	73.41	33.23	0.00	-23.96	-37.32
9.80	286.23	229.79	176.05	125.36	78.61	36.06	0.00	-27.69	-45.50
9.90	298.47	240.39	184.84	132.18	83.33	38.64	0.00	-31.09	-53.03
10.00	309.85	250.21	192.95	138.48	87.66	41.00	0.00	-34.18	-59.94
10.10	320.64	259.54	200.72	144.58	91.96	43.30	0.00	-36.95	-66.05
10.20	330.72	268.24	207.94	150.28	95.96	45.46	0.00	-39.48	-71.62
10.30	340.09	276.31	214.66	155.58	99.71	47.46	0.00	-41.77	-76.70
10.40	348.84	283.86	220.93	160.53	103.21	49.33	0.00	-43.87	-81.33
10.50	356.98	290.88	226.79	165.16	106.49	51.08	0.00	-45.84	-85.68
10.60	364.55	297.41	232.24	169.48	109.55	52.71	0.00	-47.71	-89.76
10.70	371.57	303.48	237.34	173.50	112.41	54.25	0.00	-49.46	-93.54
10.80	378.09	309.13	242.06	177.26	115.06	55.65	0.00	-51.07	-97.04
10.90	384.15	314.38	246.46	180.74	117.53	56.98	0.00	-52.55	-100.27
11.00	389.79	319.26	250.55	183.95	119.79	58.17	0.00	-53.94	-103.27
11.10	395.04	323.81	254.34	186.93	121.88	59.29	0.00	-55.23	-106.08
11.20	399.90	328.03	257.88	189.71	123.82	60.32	0.00	-56.40	-108.66
11.30	404.35	331.89	261.11	192.24	125.58	61.26	0.00	-57.52	-111.07
11.40	408.46	335.45	264.08	194.57	127.20	62.13	0.00	-58.55	-113.33
11.50	412.29	338.77	266.85	196.71	128.68	62.92	0.00	-59.52	-115.45
11.60	415.79	341.81	269.38	198.71	130.06	63.66	0.00	-60.41	-117.41
11.70	418.98	344.58	271.70	200.52	131.33	64.34	0.00	-61.26	-119.25
11.80	421.91	347.14	273.84	202.20	132.50	64.98	0.00	-62.04	-120.95
11.90	424.59	349.48	275.82	203.78	133.64	65.59	0.00	-62.77	-122.53
12.00	426.98	351.60	277.62	205.25	134.71	66.18	0.00	-63.43	-123.98
12.10	429.15	353.51	279.26	206.59	135.70	66.71	0.00	-64.05	-125.34
12.20	431.12	355.25	280.76	207.84	136.64	67.23	0.00	-64.62	-126.59
12.30	432.84	356.78	282.10	208.95	137.46	67.67	0.00	-65.17	-127.75
12.40	434.32	358.13	283.29	209.95	138.20	68.08	0.00	-65.66	-128.83
12.50	435.62	359.32	284.34	210.80	138.84	68.44	0.00	-66.12	-129.87
12.60	436.78	360.40	285.30	211.60	139.41	68.76	0.00	-66.54	-130.77
12.70	437.78	361.34	286.14	212.31	139.94	69.05	0.00	-66.92	-131.59
12.80	438.64	362.12	286.88	212.91	140.39	69.31	0.00	-67.25	-132.33
12.90	439.42	362.86	287.50	213.45	140.79	69.53	0.00	-67.52	-132.95

	TRIM & STABILITY BOOKLET	REV.	STANDARD NO.
		ORI	HDS-56-B002
3. INSTRUCTION AND DATA FOR LOADING CALCULATION			



3.1 Trimming Table due to added weight of 100MT

The value mentioned on this booklet shows the variations of the fore and aft draft when the weight of 100MT is loaded in each tank and hold.

In case "Unloading", the value should be used the figure on this booklet with the reverse sign(+ or -).

Example :

The assumed drafts before loading are as follows ;

Fore : $df = 7.500m$

Aft : $da = 8.500m$

Mean : $dm = 8.000m$

When the water ballast of 300MT is loaded in F.P.T.(C) (W.B), the variation of draft is,

	Fore draft	Aft draft
Draft before loading	7.500	8.500
Variation of draft	$0.082 \times 3 = 0.246$	$-0.049 \times 3 = -0.147$
Final draft	$7.500 + 0.246 = 7.746$	$8.500 - 0.147 = 8.353$

=====

TRIM TABLE: CHANGE OF DRAFT DUE TO 100. MT IN EACH HOLD AND TANK

=====

SHIP NAME : 38K DWT S/U B/C		S.G =											
COMPTMENT NAME		DRAFT	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00	6.50	7.00
		DISPL	9128.	11561.	14026.	16528.	19065.	21624.	24203.	26800.	29414.	32046.	34697.
NO.1 CARGO HOLD (C)	FOR'D		0.070	0.068	0.067	0.065	0.063	0.063	0.062	0.062	0.061	0.061	0.061
	AFT'D		-0.038	-0.036	-0.035	-0.033	-0.031	-0.031	-0.030	-0.030	-0.029	-0.029	-0.028
NO.2 CARGO HOLD (C)	FOR'D		0.038	0.037	0.036	0.035	0.035	0.034	0.034	0.034	0.034	0.034	0.034
	AFT'D		0.001	0.001	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.001
NO.3 CARGO HOLD (C)	FOR'D		0.004	0.005	0.005	0.006	0.005	0.006	0.006	0.006	0.007	0.007	0.007
	AFT'D		0.040	0.039	0.038	0.037	0.036	0.036	0.035	0.034	0.033	0.032	0.031
NO.4 CARGO HOLD (C)	FOR'D		-0.025	-0.023	-0.022	-0.021	-0.020	-0.019	-0.019	-0.018	-0.018	-0.017	-0.016
	AFT'D		0.074	0.072	0.070	0.068	0.066	0.065	0.064	0.062	0.061	0.059	0.058
F.P.T.	FOR'D		0.097	0.095	0.093	0.089	0.087	0.086	0.085	0.085	0.084	0.083	0.083
	AFT'D		-0.070	-0.067	-0.065	-0.061	-0.059	-0.058	-0.057	-0.056	-0.055	-0.054	-0.053
NO.1 L.W.W.B.T. (P)	FOR'D		0.068	0.066	0.065	0.063	0.061	0.061	0.060	0.060	0.060	0.059	0.059
	AFT'D		-0.035	-0.034	-0.032	-0.030	-0.029	-0.029	-0.028	-0.028	-0.027	-0.027	-0.026
NO.1 W.B.T. (C)	FOR'D		0.071	0.069	0.068	0.065	0.064	0.063	0.062	0.062	0.062	0.061	0.061
	AFT'D		-0.038	-0.037	-0.035	-0.033	-0.032	-0.031	-0.031	-0.030	-0.030	-0.029	-0.029
NO.1 U.W.W.B.T. (P)	FOR'D		0.071	0.069	0.068	0.065	0.064	0.063	0.063	0.062	0.062	0.062	0.062
	AFT'D		-0.039	-0.037	-0.036	-0.033	-0.032	-0.032	-0.031	-0.031	-0.030	-0.030	-0.029
NO.2 L.W.W.B.T. (P)	FOR'D		0.038	0.037	0.037	0.036	0.035	0.035	0.035	0.034	0.034	0.035	0.035
	AFT'D		0.000	0.001	0.001	0.002	0.002	0.002	0.002	0.001	0.001	0.001	0.001
NO.2 W.B.T. (C)	FOR'D		0.038	0.037	0.037	0.036	0.035	0.035	0.035	0.034	0.034	0.035	0.035
	AFT'D		0.000	0.001	0.001	0.002	0.002	0.002	0.002	0.001	0.001	0.001	0.001
NO.2 U.W.W.B.T. (P)	FOR'D		0.038	0.037	0.037	0.036	0.035	0.035	0.035	0.034	0.034	0.035	0.035
	AFT'D		0.000	0.001	0.001	0.002	0.002	0.002	0.002	0.001	0.001	0.001	0.001
NO.3 L.W.W.B.T. (P)	FOR'D		0.005	0.005	0.006	0.006	0.006	0.006	0.006	0.007	0.007	0.007	0.008
	AFT'D		0.039	0.038	0.037	0.036	0.036	0.035	0.034	0.034	0.033	0.032	0.031

=====

TRIM TABLE: CHANGE OF DRAFT DUE TO 100. MT IN EACH HOLD AND TANK

=====

SHIP NAME : 38K DWT S/U B/C

SHIP NAME : 38K DWT S/U B/C												
COMPONENT NAME	DRAFT DISPL	S.G =										
		2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00	6.50	7.00
		9128.	11561.	14026.	16528.	19065.	21624.	24203.	26800.	29414.	32046.	34697.
NO.3 W.B.T. (C)	FOR'D	0.004	0.005	0.005	0.006	0.006	0.006	0.006	0.006	0.007	0.007	0.007
	AFT'D	0.040	0.039	0.038	0.037	0.036	0.036	0.035	0.034	0.033	0.032	0.031
NO.3 U.W.W.B.T. (P)	FOR'D	0.005	0.005	0.006	0.006	0.006	0.006	0.006	0.007	0.007	0.007	0.008
	AFT'D	0.039	0.038	0.037	0.036	0.036	0.035	0.034	0.034	0.033	0.032	0.031
NO.4 L.W.W.B.T. (P)	FOR'D	-0.027	-0.026	-0.025	-0.023	-0.022	-0.022	-0.021	-0.020	-0.020	-0.019	-0.018
	AFT'D	0.077	0.075	0.073	0.070	0.069	0.068	0.066	0.065	0.063	0.062	0.060
NO.4 U.W.W.B.T. (P)	FOR'D	-0.026	-0.025	-0.024	-0.022	-0.022	-0.021	-0.020	-0.020	-0.019	-0.018	-0.018
	AFT'D	0.076	0.074	0.072	0.069	0.068	0.067	0.065	0.064	0.063	0.061	0.059
E/R DB.W.B.T. (C)	FOR'D	-0.049	-0.047	-0.045	-0.043	-0.042	-0.041	-0.040	-0.039	-0.038	-0.037	-0.036
	AFT'D	0.103	0.100	0.097	0.094	0.092	0.090	0.088	0.086	0.084	0.082	0.080
A.P.T.	FOR'D	-0.070	-0.067	-0.065	-0.062	-0.060	-0.059	-0.058	-0.057	-0.055	-0.054	-0.053
	AFT'D	0.128	0.123	0.120	0.116	0.113	0.111	0.109	0.107	0.104	0.102	0.099
F.O.T. (P)	FOR'D	-0.041	-0.039	-0.038	-0.036	-0.035	-0.034	-0.033	-0.032	-0.031	-0.031	-0.030
	AFT'D	0.094	0.091	0.088	0.085	0.083	0.082	0.080	0.079	0.077	0.075	0.073
L.O.SUMP.T. (C)	FOR'D	-0.055	-0.052	-0.050	-0.048	-0.046	-0.045	-0.044	-0.043	-0.043	-0.042	-0.040
	AFT'D	0.109	0.106	0.103	0.099	0.097	0.095	0.093	0.091	0.089	0.087	0.085

=====

TRIM TABLE: CHANGE OF DRAFT DUE TO 100. MT IN EACH HOLD AND TANK

=====

SHIP NAME : 38K DWT S/U B/C		S.G. =										1.025 MT/M**3	
COMPTMENT NAME	DRAFT DISPL	7.50	8.00	8.50	9.00	9.50	10.00	10.50	11.00	11.50	12.00		
		37368.	40065.	42794.	45566.	48395.	51272.	54180.	57112.	60062.	63026.		
NO.1 CARGO HOLD (C)	FOR'D	0.061	0.060	0.060	0.059	0.058	0.058	0.057	0.057	0.057	0.056		
	AFT'D	-0.027	-0.027	-0.025	-0.023	-0.022	-0.021	-0.021	-0.020	-0.020	-0.020		
NO.2 CARGO HOLD (C)	FOR'D	0.034	0.035	0.035	0.035	0.035	0.036	0.035	0.035	0.035	0.035		
	AFT'D	0.001	0.001	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000		
NO.3 CARGO HOLD (C)	FOR'D	0.008	0.009	0.010	0.011	0.012	0.013	0.013	0.013	0.013	0.013		
	AFT'D	0.030	0.029	0.027	0.025	0.023	0.022	0.021	0.021	0.020	0.020		
NO.4 CARGO HOLD (C)	FOR'D	-0.015	-0.014	-0.013	-0.011	-0.009	-0.007	-0.007	-0.006	-0.006	-0.006		
	AFT'D	0.056	0.053	0.051	0.047	0.043	0.041	0.039	0.039	0.038	0.037		
F.P.T.	FOR'D	0.082	0.082	0.081	0.079	0.078	0.077	0.076	0.075	0.075	0.074		
	AFT'D	-0.051	-0.049	-0.047	-0.043	-0.041	-0.039	-0.038	-0.037	-0.036	-0.036		
NO.1 L.W.W.B.T. (P)	FOR'D	0.059	0.059	0.058	0.057	0.057	0.057	0.056	0.056	0.055	0.055		
	AFT'D	-0.026	-0.025	-0.024	-0.022	-0.021	-0.020	-0.019	-0.019	-0.019	-0.018		
NO.1 W.B.T. (C)	FOR'D	0.061	0.061	0.060	0.059	0.059	0.058	0.058	0.057	0.057	0.057		
	AFT'D	-0.028	-0.027	-0.026	-0.024	-0.022	-0.022	-0.021	-0.020	-0.020	-0.020		
NO.1 U.W.W.B.T. (P)	FOR'D	0.061	0.061	0.061	0.060	0.059	0.059	0.058	0.058	0.057	0.057		
	AFT'D	-0.028	-0.027	-0.026	-0.024	-0.023	-0.022	-0.021	-0.021	-0.020	-0.020		
NO.2 L.W.W.B.T. (P)	FOR'D	0.035	0.035	0.035	0.035	0.036	0.036	0.036	0.035	0.035	0.035		
	AFT'D	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		
NO.2 W.B.T. (C)	FOR'D	0.035	0.035	0.035	0.035	0.036	0.036	0.036	0.035	0.035	0.035		
	AFT'D	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		
NO.2 U.W.W.B.T. (P)	FOR'D	0.035	0.035	0.035	0.035	0.036	0.036	0.036	0.035	0.035	0.035		
	AFT'D	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		

=====

TRIM TABLE: CHANGE OF DRAFT DUE TO 100. MT IN EACH HOLD AND TANK

=====

SHIP NAME : 38K DWT S/U B/C		S.G =									
COMPIMENT NAME		7.50	8.00	8.50	9.00	9.50	10.00	10.50	11.00	11.50	1.025 MT/M**3
NO.3 L.W.W.B.T. (P)	DRAFT DISPL	37368.	40065.	42794.	45566.	48395.	51272.	54180.	57112.	60062.	63026.
	FOR'D	0.008	0.009	0.010	0.011	0.012	0.013	0.013	0.013	0.014	0.014
	AFT'D	0.030	0.029	0.027	0.025	0.023	0.021	0.021	0.020	0.020	0.020
NO.3 W.B.T. (C)	FOR'D	0.008	0.009	0.010	0.011	0.012	0.013	0.013	0.013	0.013	0.013
	AFT'D	0.030	0.029	0.027	0.025	0.023	0.022	0.021	0.021	0.020	0.020
NO.3 U.W.W.B.T. (P)	FOR'D	0.008	0.009	0.010	0.011	0.012	0.013	0.013	0.013	0.014	0.014
	AFT'D	0.030	0.029	0.027	0.025	0.023	0.021	0.021	0.020	0.020	0.020
NO.4 L.W.W.B.T. (P)	FOR'D	-0.017	-0.016	-0.015	-0.012	-0.010	-0.009	-0.009	-0.008	-0.008	-0.007
	AFT'D	0.058	0.056	0.053	0.049	0.045	0.042	0.041	0.040	0.040	0.039
NO.4 U.W.W.B.T. (P)	FOR'D	-0.017	-0.015	-0.014	-0.012	-0.010	-0.008	-0.008	-0.007	-0.007	-0.007
	AFT'D	0.057	0.055	0.052	0.048	0.044	0.042	0.041	0.040	0.039	0.038
E/R DB.W.B.T. (C)	FOR'D	-0.035	-0.033	-0.032	-0.029	-0.026	-0.024	-0.024	-0.023	-0.022	-0.022
	AFT'D	0.078	0.074	0.070	0.065	0.060	0.057	0.055	0.054	0.053	0.052
A.P.T.	FOR'D	-0.052	-0.050	-0.048	-0.044	-0.041	-0.039	-0.038	-0.037	-0.036	-0.035
	AFT'D	0.096	0.092	0.087	0.080	0.074	0.071	0.068	0.067	0.066	0.065
F.O.T. (P)	FOR'D	-0.029	-0.027	-0.025	-0.023	-0.020	-0.019	-0.018	-0.018	-0.017	-0.017
	AFT'D	0.071	0.067	0.064	0.059	0.054	0.052	0.050	0.049	0.048	0.047
L.O.SUMP.T. (C)	FOR'D	-0.039	-0.037	-0.036	-0.032	-0.030	-0.028	-0.027	-0.026	-0.026	-0.025
	AFT'D	0.082	0.079	0.075	0.069	0.063	0.060	0.058	0.057	0.056	0.055



TRIM & STABILITY BOOKLET

REV.

STANDARD NO.

ORI

HDS-56-B002

3.2 Frame distance table

FRAME			FR.19			FR.229		
SPACE			600			800		
FR.	DIST.	DIST.	FR.	DIST.	DIST.	FR.	DIST.	DIST.
	(A.P.)	(MID)		(A.P.)	(MID)		(A.P.)	(MID)
-8	-4.80	-99.00	25	16.20	-78.00	58	42.60	-51.60
-7	-4.20	-98.40	26	17.00	-77.20	59	43.40	-50.80
-6	-3.60	-97.80	27	17.80	-76.40	60	44.20	-50.00
-5	-3.00	-97.20	28	18.60	-75.60	61	45.00	-49.20
-4	-2.40	-96.60	29	19.40	-74.80	62	45.80	-48.40
-3	-1.80	-96.00	30	20.20	-74.00	63	46.60	-47.60
-2	-1.20	-95.40	31	21.00	-73.20	64	47.40	-46.80
-1	-0.60	-94.80	32	21.80	-72.40	65	48.20	-46.00
0	0.00	-94.20	33	22.60	-71.60	66	49.00	-45.20
1	0.60	-93.60	34	23.40	-70.80	67	49.80	-44.40
2	1.20	-93.00	35	24.20	-70.00	68	50.60	-43.60
3	1.80	-92.40	36	25.00	-69.20	69	51.40	-42.80
4	2.40	-91.80	37	25.80	-68.40	70	52.20	-42.00
5	3.00	-91.20	38	26.60	-67.60	71	53.00	-41.20
6	3.60	-90.60	39	27.40	-66.80	72	53.80	-40.40
7	4.20	-90.00	40	28.20	-66.00	73	54.60	-39.60
8	4.80	-89.40	41	29.00	-65.20	74	55.40	-38.80
9	5.40	-88.80	42	29.80	-64.40	75	56.20	-38.00
10	6.00	-88.20	43	30.60	-63.60	76	57.00	-37.20
11	6.60	-87.60	44	31.40	-62.80	77	57.80	-36.40
12	7.20	-87.00	45	32.20	-62.00	78	58.60	-35.60
13	7.80	-86.40	46	33.00	-61.20	79	59.40	-34.80
14	8.40	-85.80	47	33.80	-60.40	80	60.20	-34.00
15	9.00	-85.20	48	34.60	-59.60	81	61.00	-33.20
16	9.60	-84.60	49	35.40	-58.80	82	61.80	-32.40
17	10.20	-84.00	50	36.20	-58.00	83	62.60	-31.60
18	10.80	-83.40	51	37.00	-57.20	84	63.40	-30.80
19	11.40	-82.80	52	37.80	-56.40	85	64.20	-30.00
20	12.20	-82.00	53	38.60	-55.60	86	65.00	-29.20
21	13.00	-81.20	54	39.40	-54.80	87	65.80	-28.40
22	13.80	-80.40	55	40.20	-54.00	88	66.60	-27.60
23	14.60	-79.60	56	41.00	-53.20	89	67.40	-26.80
24	15.40	-78.80	57	41.80	-52.40	90	68.20	-26.00



TRIM & STABILITY BOOKLET

REV.

STANDARD NO.

ORI

HDS-56-B002

FRAME			FR.19			FR.229		
SPACE			600			800		
FR.	DIST.	DIST.	FR.	DIST.	DIST.	FR.	DIST.	DIST.
	(A.P.)	(MID)		(A.P.)	(MID)		(A.P.)	(MID)
91	69.00	-25.20	127	97.80	3.60	162	125.80	31.60
92	69.80	-24.40	128	98.60	4.40	163	126.60	32.40
93	70.60	-23.60	129	99.40	5.20	164	127.40	33.20
94	71.40	-22.80	130	100.20	6.00	165	128.20	34.00
95	72.20	-22.00	131	101.00	6.80	166	129.00	34.80
96	73.00	-21.20	132	101.80	7.60	167	129.80	35.60
97	73.80	-20.40	133	102.60	8.40	168	130.60	36.40
98	74.60	-19.60	134	103.40	9.20	169	131.40	37.20
99	75.40	-18.80	135	104.20	10.00	170	132.20	38.00
100	76.20	-18.00	136	105.00	10.80	171	133.00	38.80
101	77.00	-17.20	137	105.80	11.60	172	133.80	39.60
102	77.80	-16.40	138	106.60	12.40	173	134.60	40.40
103	78.60	-15.60	139	107.40	13.20	174	135.40	41.20
104	79.40	-14.80	140	108.20	14.00	175	136.20	42.00
105	80.20	-14.00	141	109.00	14.80	176	137.00	42.80
106	81.00	-13.20	142	109.80	15.60	177	137.80	43.60
107	81.80	-12.40	143	110.60	16.40	178	138.60	44.40
108	82.60	-11.60	144	111.40	17.20	179	139.40	45.20
109	83.40	-10.80	145	112.20	18.00	180	140.20	46.00
110	84.20	-10.00	146	113.00	18.80	181	141.00	46.80
111	85.00	-9.20	147	113.80	19.60	182	141.80	47.60
112	85.80	-8.40	148	114.60	20.40	183	142.60	48.40
113	86.60	-7.60	149	115.40	21.20	184	143.40	49.20
114	87.40	-6.80	150	116.20	22.00	185	144.20	50.00
115	88.20	-6.00	151	117.00	22.80	186	145.00	50.80
116	89.00	-5.20	152	117.80	23.60	187	145.80	51.60
117	89.80	-4.40	153	118.60	24.40	188	146.60	52.40
118	90.60	-3.60	154	119.40	25.20	189	147.40	53.20
119	91.40	-2.80	155	120.20	26.00	190	148.20	54.00
120	92.20	-2.00	156	121.00	26.80	191	149.00	54.80
121	93.00	-1.20	157	121.80	27.60	192	149.80	55.60
122	93.80	-0.40	158	122.60	28.40	193	150.60	56.40
123	94.60	0.40	159	123.40	29.20	194	151.40	57.20
124	95.40	1.20	160	124.20	30.00	195	152.20	58.00
125	96.20	2.00	161	125.00	30.80	196	153.00	58.80
126	97.00	2.80	162	125.80	31.60	197	153.80	59.60



TRIM & STABILITY BOOKLET

REV.

STANDARD NO.

ORI

HDS-56-B002

FRAME SPACE			→ FR.19	← FR.229	←
600			800		
600			600		
FR.	DIST. (A.P.)	DIST. (MID)	FR.	DIST. (A.P.)	DIST. (MID)
198	154.60	60.40	234	182.40	88.20
199	155.40	61.20	235	183.00	88.80
200	156.20	62.00	236	183.60	89.40
201	157.00	62.80	237	184.20	90.00
202	157.80	63.60	238	184.80	90.60
203	158.60	64.40	239	185.40	91.20
204	159.40	65.20	240	186.00	91.80
205	160.20	66.00	241	186.60	92.40
206	161.00	66.80	242	187.20	93.00
207	161.80	67.60	243	187.80	93.60
208	162.60	68.40	244	188.40	94.20
209	163.40	69.20	245	189.00	94.80
210	164.20	70.00	246	189.60	95.40
211	165.00	70.80	247	190.20	96.00
212	165.80	71.60	248	190.80	96.60
213	166.60	72.40	249	191.40	97.20
214	167.40	73.20	250	192.00	97.80
215	168.20	74.00	251	192.60	98.40
216	169.00	74.80	252	193.20	99.00
217	169.80	75.60	253	193.80	99.60
218	170.60	76.40	254	194.40	100.20
219	171.40	77.20	255	195.00	100.80
220	172.20	78.00	256	195.60	101.40
221	173.00	78.80	257	196.20	102.00
222	173.80	79.60	258	196.80	102.60
223	174.60	80.40	259	197.40	103.20
224	175.40	81.20	260	198.00	103.80
225	176.20	82.00	261	198.60	104.40
226	177.00	82.80	262	199.20	105.00
227	177.80	83.60	263	199.80	105.60
228	178.60	84.40	264	200.40	106.20
229	179.40	85.20	265	201.00	106.80
230	180.00	85.80	266	201.60	107.40
231	180.60	86.40	267	202.20	108.00
232	181.20	87.00	268	202.80	108.60
233	181.80	87.60	269	203.40	109.20



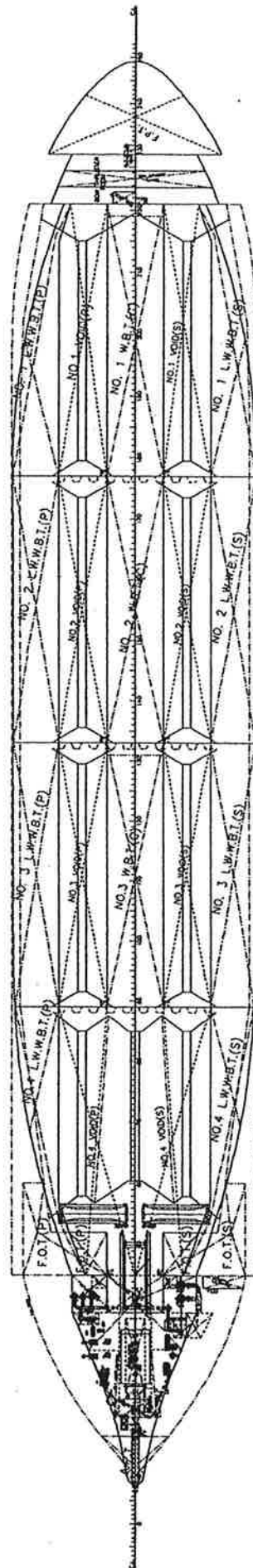
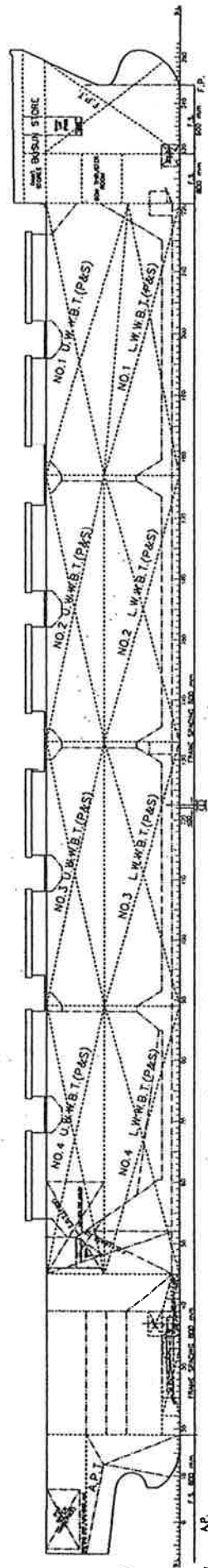
3.3 Visibility table

UNIT : M

					CONNING POSITION FROM		
					B.L	A.P	C.L
					34.35	25.85	1.7
TRIM \ DRAFT	6.5	7.0	7.5	8.0	8.5	9.0	
-3.0	325.0	315.9	306.7	297.5	288.3	279.1	
-2.5	305.3	296.6	287.8	279.0	270.2	261.5	
-2.0	287.3	278.9	270.6	262.2	253.8	245.4	
-1.5	270.9	262.8	254.8	246.8	238.8	230.8	
-1.0	255.7	248.0	240.3	232.7	225.0	217.3	
-0.5	241.8	234.4	227.0	219.6	212.2	204.8	
0.0	228.9	221.8	214.7	207.6	200.5	193.4	
0.5	216.9	210.1	203.2	196.4	189.5	182.7	
1.0	205.8	199.2	192.6	186.0	179.4	172.8	
1.5	195.5	189.1	182.7	176.3	169.9	163.6	
TRIM \ DRAFT	9.5	10.0	10.5	11.0	11.5		
-3.0	297.1	260.7	251.5	242.3	233.1		
-2.5	252.7	243.9	235.2	226.4	217.6		
-2.0	237.1	228.7	220.3	211.9	203.5		
-1.5	222.7	214.7	206.7	198.7	190.7		
-1.0	209.6	201.9	194.2	186.5	178.8		
-0.5	197.5	190.1	182.7	175.3	167.9		
0.0	186.2	179.1	172.0	164.9	157.8		
0.5	175.8	169.0	162.2	155.3	148.5		
1.0	166.2	159.6	153.0	146.4	139.8		
1.5	157.2	150.8	144.4	138.0	131.6		

	TRIM & STABILITY BOOKLET	REV.	STANDARD NO.
		ORI	HDS-56-B002
3.4 Capacity table			

CARGO & TANK ARRANGEMENT



CAPACITY TABLE

COMPARTMENT -----	LOCATION (FRAMES)	CAPACITIES		CENTER OF GRAVITY		
		VOLUME 100% (CUB.M)	WEIGHT (TONN- ES)	V.C.G ABOVE B.L (METER)	L.C.G FROM MIDSHIP (METER)	FREE SURFACE MOMENT (M4)
HOLD		SG*FILL RATIO =1.442*100%				
=====						
NO.1 CARGO HOLD (C)	176.0-221.0	11905.7	17168.1	11.669	60.34	70848.
NO.2 CARGO HOLD (C)	132.0-177.0	12382.8	17856.0	11.686	25.62	81981.
NO.3 CARGO HOLD (C)	88.0-133.0	12382.8	17856.0	11.686	-9.58	81981.
NO.4 CARGO HOLD (C)	51.0- 89.0	9037.2	13031.7	12.133	-40.50	45601.
TOTAL		45708.6	65911.8	11.770	12.06	
WBT		SG*FILL RATIO =1.025*100%				
=====						
F.P.T.	229.0-251.5	2176.3	2230.7	9.706	89.24	4255.
NO.1 L.W.W.B.T. (P)	177.0-221.0	1274.9	1306.8	4.299	58.11	495.
NO.1 L.W.W.B.T. (S)	177.0-221.0	1274.9	1306.8	4.299	58.11	495.
NO.1 W.B.T. (C)	177.0-221.0	1775.1	1819.5	3.575	60.83	1238.
NO.1 U.W.W.B.T. (P)	177.0-221.0	769.0	788.2	15.065	61.23	700.
NO.1 U.W.W.B.T. (S)	177.0-221.0	769.0	788.2	15.065	61.23	700.
NO.2 L.W.W.B.T. (P)	133.0-177.0	1669.2	1710.9	4.217	26.00	656.
NO.2 L.W.W.B.T. (S)	133.0-177.0	1669.2	1710.9	4.217	26.00	656.
NO.2 W.B.T. (C)	133.0-177.0	1813.8	1859.2	3.554	26.00	1238.
NO.2 U.W.W.B.T. (P)	133.0-177.0	752.2	771.0	15.519	26.00	806.
NO.2 U.W.W.B.T. (S)	133.0-177.0	752.2	771.0	15.519	26.00	806.
NO.3 L.W.W.B.T. (P)	89.0-133.0	1668.1	1709.8	4.219	-9.19	656.
NO.3 L.W.W.B.T. (S)	89.0-133.0	1668.1	1709.8	4.219	-9.19	656.
NO.3 W.B.T. (C)	89.0-133.0	1775.1	1819.5	3.575	-9.57	1238.
NO.3 U.W.W.B.T. (P)	89.0-133.0	752.2	771.0	15.519	-9.20	806.
NO.3 U.W.W.B.T. (S)	89.0-133.0	752.2	771.0	15.519	-9.20	806.
NO.4 L.W.W.B.T. (P)	45.0- 89.0	1606.8	1647.0	5.321	-43.35	537.
NO.4 L.W.W.B.T. (S)	45.0- 89.0	1606.8	1647.0	5.321	-43.35	537.
NO.4 U.W.W.B.T. (P)	45.0- 89.0	797.4	817.3	14.608	-42.34	645.
NO.4 U.W.W.B.T. (S)	45.0- 89.0	797.4	817.3	14.608	-42.34	645.
E/R DB.W.B.T. (C)	33.0- 45.0	175.8	180.2	1.169	-66.83	1617.
A.P.T.	-7.0- 19.0	1351.2	1384.9	10.149	-88.99	20527.
TOTAL		27646.8	28337.9	7.363	11.48	
F.O.		SG*FILL RATIO =0.990* 98%				
=====						
F.O.T. (P)	45.0- 59.0	905.3	878.3	11.205	-58.32	831.
F.O.T. (S)	45.0- 59.0	823.6	799.1	11.330	-58.07	819.
NO.1 FO SETT.T (P)	42.0- 45.0	48.8	47.4	12.112	-63.20	2.
NO.2 FO SETT.T (P)	42.0- 45.0	48.8	47.4	12.112	-63.20	2.
NO.1 FO SERV.T. (P)	42.0- 45.0	46.0	44.6	12.112	-63.20	2.
NO.2 FO SERV.T (P)	42.0- 45.0	46.0	44.6	12.112	-63.20	2.
TOTAL		1918.6	1861.4	11.349	-58.69	
M.D.O.		SG*FILL RATIO =0.850* 98%				
=====						
NO.1 M.D.O.SERV. (S)	45.0- 48.0	37.9	31.5	9.888	-60.80	6.
NO.2 M.D.O.SERV. (S)	45.0- 48.0	43.8	36.4	9.994	-60.80	11.
TOTAL		81.6	68.0	9.944	-60.80	

CAPACITY TABLE

COMPARTMENT -----	LOCATION (FRAMES)	CAPACITIES		CENTER OF GRAVITY		
		VOLUME 100% (CUB.M)	WEIGHT (TONN- ES)	V.C.G ABOVE B.L (METER)	L.C.G FROM MIDSHIP (METER)	FREE SURFACE MOMENT (M4)
POT. WATER		SG*FILL RATIO =1.000*100%				
POT.W.T. (P)	-6.0- 7.0	161.4	161.4	15.597	-93.46	75.
POT.W.T. (S)	-6.0- 7.0	161.4	161.4	15.597	-93.46	75.
TOTAL		322.8	322.8	15.597	-93.46	
L.O.		SG*FILL RATIO =0.924* 98%				
LO HOLDING T. (S)	41.0- 44.0	21.1	19.1	14.725	-64.00	2.
LO STOR. T. (S)	41.0- 44.0	21.1	19.1	14.725	-64.00	2.
CYL. LO STOR.T. (S)	39.0- 44.0	42.3	38.3	14.725	-64.80	5.
SSDG LO HOLDING T. (S)	39.0- 41.0	7.0	6.4	14.725	-66.00	0.
SSDG LO STOR. T. (S)	39.0- 41.0	7.0	6.4	14.725	-66.00	0.
L.O. SUMP.T. (C)	26.0- 38.0	22.0	19.9	1.285	-72.40	14.
TOTAL		120.7	109.3	12.276	-66.04	
MISC.		SG*FILL RATIO =0.924* 98%				
P.A.T. (S)	42.0- 45.0	38.7	35.0	12.507	-63.13	1.
WASTE O.T. (S)	24.0- 33.0	28.3	25.6	1.480	-74.40	16.
TOTAL		67.0	60.6	7.848	-67.89	
MISC. DRAIN T.		SG*FILL RATIO =1.000* 98%				
OILY W.T. (P)	24.0- 33.0	28.3	27.7	1.480	-74.40	16.
CLEAN W.T. (C)	22.0- 25.0	27.0	26.5	1.314	-79.23	37.
TOTAL		55.3	54.2	1.399	-76.76	
FO OVER.F.T.		SG*FILL RATIO =0.990* 98%				
FO OVER.F.T. (P)	40.0- 45.0	20.2	19.6	0.952	-64.21	23.
TOTAL		20.2	19.6	0.952	-64.21	

	TRIM & STABILITY BOOKLET	REV.	STANDARD NO.
		ORI	HDS-56-B002
3.5 Tank Volume table			

38K DWT S/U B/C
NO.1 CARGO HOLD (C)
COMP. NO 101

LEVEL	FROM	VOLUME	CENTRE OF GRAVITY FROM	INERTIA
BL	BOTTOM	CUBM	LPP/2	MOMENT
2.375	0.000	0.0		
2.875	0.500	45.1	59.785	2.651 0.000 5719.
3.375	1.000	119.6	59.894	2.957 0.000 8658.
3.875	1.500	224.4	60.018	3.274 0.000 11791.
4.375	2.000	358.9	60.090	3.597 0.000 14911.
4.875	2.500	527.7	59.980	3.929 0.000 18986.
5.375	3.000	729.5	59.860	4.261 0.000 22586.
5.875	3.500	972.0	59.951	4.603 0.000 27647.
6.375	4.000	1247.7	60.025	4.940 0.000 31903.
6.875	4.500	1557.4	60.057	5.277 0.000 37381.
7.375	5.000	1903.7	60.046	5.614 0.000 43057.
7.875	5.500	2288.3	60.077	5.952 0.000 48278.
8.375	6.000	2708.2	60.115	6.290 0.000 54055.
8.875	6.500	3162.5	60.151	6.626 0.000 59674.
9.375	7.000	3638.6	60.179	6.953 0.000 64135.
9.875	7.500	4129.4	60.202	7.271 0.000 69362.
10.375	8.000	4630.8	60.221	7.580 0.000 70670.
10.875	8.500	5134.5	60.242	7.878 0.000 70848.
11.375	9.000	5638.4	60.259	8.169 0.000 70848.
11.875	9.500	6142.2	60.273	8.452 0.000 70848.
12.375	10.000	6646.1	60.285	8.731 0.000 70848.
12.875	10.500	7149.9	60.296	9.005 0.000 70848.
13.375	11.000	7653.8	60.305	9.276 0.000 70848.
13.875	11.500	8157.0	60.314	9.545 0.000 69014.
14.375	12.000	8647.7	60.332	9.804 0.000 61109.
14.875	12.500	9110.8	60.346	10.049 0.000 51201.
15.375	13.000	9546.4	60.361	10.281 0.000 42505.
15.875	13.500	9927.4	60.362	10.485 0.000 28738.
16.375	14.000	10239.3	60.340	10.657 0.000 20253.
16.875	14.500	10502.8	60.333	10.807 0.000 20930.
17.375	15.000	10838.4	60.360	11.002 0.000 20762.
17.875	15.500	11173.9	60.385	11.201 0.000 20264.
18.375	16.000	11379.9	60.375	11.326 0.000 9048.
18.875	16.500	11564.4	60.362	11.442 0.000 9048.
19.375	17.000	11748.8	60.350	11.563 0.000 9048.
19.801	17.426	11905.7	60.339	11.669 0.000

38K DWT S/U B/C
NO.2 CARGO HOLD (C)
COMP. NO 102

LEVEL FROM		VOLUME CUBM	CENTRE OF GRAVITY FROM		INERTIA MOMENT
BL	BOTTOM		LPP/2	BL CL	
2.375	0.000	0.0			
2.875	0.500	48.3	25.600	2.651 0.000	6121.
3.375	1.000	127.0	25.600	2.955 0.000	9145.
3.875	1.500	236.3	25.600	3.270 0.000	12263.
4.375	2.000	376.2	25.600	3.591 0.000	15505.
4.875	2.500	556.5	25.600	3.930 0.000	20518.
5.375	3.000	774.5	25.600	4.268 0.000	24408.
5.875	3.500	1025.7	25.600	4.602 0.000	28532.
6.375	4.000	1310.0	25.600	4.933 0.000	32922.
6.875	4.500	1631.3	25.600	5.268 0.000	39476.
7.375	5.000	1994.2	25.600	5.607 0.000	44835.
7.875	5.500	2391.6	25.600	5.943 0.000	50583.
8.375	6.000	2823.5	25.600	6.277 0.000	56754.
8.875	6.500	3289.8	25.600	6.610 0.000	63384.
9.375	7.000	3780.1	25.600	6.937 0.000	70504.
9.875	7.500	4287.7	25.600	7.255 0.000	78134.
10.375	8.000	4810.2	25.600	7.567 0.000	81981.
10.875	8.500	5334.7	25.600	7.867 0.000	81981.
11.375	9.000	5859.3	25.600	8.159 0.000	81980.
11.875	9.500	6383.8	25.600	8.444 0.000	81979.
12.375	10.000	6908.3	25.600	8.723 0.000	81978.
12.875	10.500	7432.8	25.600	8.999 0.000	81978.
13.375	11.000	7957.3	25.600	9.271 0.000	81977.
13.875	11.500	8479.9	25.600	9.539 0.000	76991.
14.375	12.000	8978.6	25.600	9.794 0.000	64208.
14.875	12.500	9447.2	25.600	10.033 0.000	52911.
15.375	13.000	9885.9	25.600	10.259 0.000	43008.
15.875	13.500	10276.5	25.600	10.463 0.000	30927.
16.375	14.000	10610.3	25.599	10.640 0.000	21162.
16.875	14.500	10885.5	25.597	10.792 0.000	20454.
17.375	15.000	11213.5	25.597	10.977 0.000	20290.
17.875	15.500	11541.4	25.597	11.166 0.000	20290.
18.375	16.000	11774.2	25.603	11.303 0.000	13212.
18.875	16.500	11987.8	25.610	11.433 0.000	13212.
19.375	17.000	12201.3	25.617	11.568 0.000	13212.
19.800	17.425	12382.8	25.623	11.686 0.000	

38K DWT S/U B/C
NO.3 CARGO HOLD (C)
COMP. NO 103

LEVEL	FROM	VOLUME	CENTRE OF GRAVITY FROM	INERTIA
BL	BOTTOM	CUBM	LPP/2	MOMENT
2.375	0.000	0.0		
2.875	0.500	48.3	-9.600	2.651 0.000 6121.
3.375	1.000	127.0	-9.600	2.955 0.000 9145.
3.875	1.500	236.3	-9.600	3.270 0.000 12263.
4.375	2.000	376.2	-9.600	3.591 0.000 15505.
4.875	2.500	556.5	-9.600	3.930 0.000 20518.
5.375	3.000	774.5	-9.600	4.268 0.000 24408.
5.875	3.500	1025.7	-9.600	4.602 0.000 28532.
6.375	4.000	1310.0	-9.600	4.933 0.000 32922.
6.875	4.500	1631.3	-9.600	5.268 0.000 39476.
7.375	5.000	1994.2	-9.600	5.607 0.000 44835.
7.875	5.500	2391.6	-9.600	5.943 0.000 50583.
8.375	6.000	2823.5	-9.600	6.277 0.000 56754.
8.875	6.500	3289.8	-9.600	6.610 0.000 63384.
9.375	7.000	3780.1	-9.600	6.937 0.000 70504.
9.875	7.500	4287.7	-9.600	7.255 0.000 78134.
10.375	8.000	4810.2	-9.600	7.567 0.000 81981.
10.875	8.500	5334.7	-9.600	7.867 0.000 81981.
11.375	9.000	5859.3	-9.600	8.159 0.000 81980.
11.875	9.500	6383.8	-9.600	8.444 0.000 81979.
12.375	10.000	6908.3	-9.600	8.723 0.000 81978.
12.875	10.500	7432.8	-9.600	8.999 0.000 81978.
13.375	11.000	7957.3	-9.600	9.271 0.000 81977.
13.875	11.500	8479.9	-9.600	9.539 0.000 76991.
14.375	12.000	8978.6	-9.600	9.794 0.000 64208.
14.875	12.500	9447.2	-9.600	10.033 0.000 52911.
15.375	13.000	9885.9	-9.600	10.259 0.000 43008.
15.875	13.500	10276.5	-9.600	10.463 0.000 30927.
16.375	14.000	10610.3	-9.601	10.640 0.000 21162.
16.875	14.500	10885.5	-9.603	10.792 0.000 20454.
17.375	15.000	11213.5	-9.603	10.977 0.000 20290.
17.875	15.500	11541.4	-9.603	11.166 0.000 20290.
18.375	16.000	11774.2	-9.597	11.303 0.000 13212.
18.875	16.500	11987.8	-9.590	11.433 0.000 13212.
19.375	17.000	12201.3	-9.583	11.568 0.000 13212.
19.800	17.425	12382.8	-9.577	11.686 0.000

38K DWT S/U B/C
NO.4 CARGO HOLD (C)
COMP. NO 104

LEVEL	FROM	VOLUME	CENTRE OF GRAVITY FROM	INERTIA
BL	BOTTOM	CUBM	LPP/2	MOMENT
2.375	0.000	0.0		
2.875	0.500	13.2	-38.131	205.
3.375	1.000	41.2	-38.541	405.
3.875	1.500	88.6	-38.266	1718.
4.375	2.000	160.5	-37.813	3412.
4.875	2.500	265.5	-37.738	5561.
5.375	3.000	401.1	-37.799	8024.
5.875	3.500	573.8	-37.915	11174.
6.375	4.000	782.3	-38.119	14320.
6.875	4.500	1019.8	-38.340	17905.
7.375	5.000	1279.4	-38.529	20969.
7.875	5.500	1554.1	-38.686	24071.
8.375	6.000	1841.5	-38.805	27465.
8.875	6.500	2148.8	-38.947	32145.
9.375	7.000	2476.2	-39.103	36310.
9.875	7.500	2817.0	-39.229	40821.
10.375	8.000	3172.6	-39.349	43955.
10.875	8.500	3536.6	-39.474	43955.
11.375	9.000	3900.5	-39.576	43954.
11.875	9.500	4264.4	-39.661	43954.
12.375	10.000	4640.8	-39.776	45412.
12.875	10.500	5022.4	-39.890	45412.
13.375	11.000	5403.9	-39.988	45411.
13.875	11.500	5786.7	-40.077	45601.
14.375	12.000	6170.6	-40.167	43600.
14.875	12.500	6547.0	-40.256	39073.
15.375	13.000	6904.5	-40.331	34246.
15.875	13.500	7231.6	-40.408	24012.
16.375	14.000	7495.2	-40.430	17454.
16.875	14.500	7722.2	-40.447	16014.
17.375	15.000	7974.0	-40.456	15571.
17.875	15.500	8225.6	-40.463	15571.
18.375	16.000	8441.8	-40.474	12927.
18.875	16.500	8650.7	-40.484	12927.
19.375	17.000	8859.6	-40.494	12927.
19.800	17.425	9037.2	-40.502	

38K DWT S/U B/C

F.P.T.

COMP. NO 200

LEVEL BL	FROM BOTTOM	VOLUME CUBM	CENTRE LPP/2	OF GRAVITY BL	FROM CL	INERTIA MOMENT
0.000	0.000	0.0				
0.500	0.500	24.4	88.646	0.278	0.000	337.
1.000	1.000	60.2	88.878	0.565	0.000	607.
1.500	1.500	103.3	89.024	0.853	0.000	876.
2.000	2.000	151.9	89.123	1.142	0.000	1135.
2.500	2.500	204.8	89.193	1.429	0.000	1379.
3.000	3.000	261.3	89.247	1.715	0.000	1601.
3.500	3.500	320.6	89.290	1.999	0.000	1795.
4.000	4.000	382.2	89.325	2.282	0.000	1955.
4.500	4.500	445.6	89.354	2.562	0.000	2078.
5.000	5.000	510.1	89.378	2.839	0.000	2162.
5.500	5.500	575.2	89.396	3.112	0.000	2201.
6.000	6.000	640.5	89.410	3.381	0.000	2223.
6.500	6.500	705.7	89.419	3.646	0.000	2214.
7.000	7.000	770.1	89.423	3.905	0.000	2178.
7.500	7.500	833.3	89.420	4.159	0.000	2130.
8.000	8.000	894.7	89.409	4.405	0.000	2068.
8.500	8.500	953.7	89.390	4.643	0.000	2018.
9.000	9.000	1009.7	89.358	4.871	0.000	1991.
9.500	9.500	1063.4	89.320	5.091	0.000	1988.
10.000	10.000	1116.4	89.283	5.313	0.000	2005.
10.500	10.500	1169.5	89.248	5.537	0.000	2036.
11.000	11.000	1223.1	89.217	5.765	0.000	2085.
11.500	11.500	1277.8	89.190	6.000	0.000	2150.
12.000	12.000	1333.9	89.168	6.242	0.000	2229.
12.500	12.500	1392.8	89.156	6.496	0.000	2319.
13.000	13.000	1453.4	89.147	6.757	0.000	2423.
13.500	13.500	1515.6	89.141	7.023	0.000	2543.
14.000	14.000	1579.3	89.137	7.295	0.000	2678.
14.500	14.500	1645.3	89.138	7.574	0.000	2833.
15.000	15.000	1713.7	89.142	7.860	0.000	3008.
15.500	15.500	1784.3	89.149	8.153	0.000	3207.
16.000	16.000	1857.5	89.158	8.452	0.000	3429.
16.500	16.500	1933.7	89.172	8.760	0.000	3677.
17.000	17.000	2013.1	89.190	9.075	0.000	3950.
17.500	17.500	2095.9	89.211	9.398	0.000	4255.
18.000	18.000	2176.3	89.238	9.706	0.000	162.
18.000	18.000	2176.3	89.238	9.706	0.000	

38K DWT S/U B/C
 NO.1 L.W.W.B.T. (P)
 COMP. NO 211

LEVEL FROM		VOLUME CUBM	CENTRE OF GRAVITY FROM		INERTIA MOMENT
BL	BOTTOM		LPP/2	BL CL	
0.000	0.000	0.0			
0.500	0.500	48.4	54.193	0.267 -12.129	249.
1.000	1.000	112.1	55.309	0.546 -12.241	365.
1.500	1.500	184.4	56.019	0.823 -12.322	398.
2.000	2.000	261.3	56.490	1.097 -12.385	418.
2.500	2.500	341.9	56.869	1.369 -12.433	441.
3.000	3.000	425.6	57.188	1.641 -12.471	457.
3.500	3.500	511.6	57.459	1.911 -12.503	469.
4.000	4.000	599.4	57.689	2.181 -12.530	480.
4.500	4.500	688.7	57.886	2.449 -12.553	488.
5.000	5.000	779.1	58.056	2.716 -12.574	495.
5.500	5.500	866.8	58.189	2.972 -12.601	391.
6.000	6.000	946.3	58.280	3.205 -12.645	294.
6.500	6.500	1017.7	58.337	3.418 -12.697	214.
7.000	7.000	1080.6	58.369	3.612 -12.753	150.
7.500	7.500	1134.7	58.370	3.785 -12.809	97.
8.000	8.000	1179.4	58.339	3.935 -12.864	58.
8.500	8.500	1215.1	58.289	4.062 -12.913	32.
9.000	9.000	1242.3	58.228	4.164 -12.954	16.
9.500	9.500	1261.9	58.169	4.243 -12.988	6.
10.000	10.000	1273.8	58.118	4.294 -13.010	1.
10.115	10.115	1274.9	58.109	4.299 -13.012	

38K DWT S/U B/C
 NO.1 L.W.W.B.T. (S)
 COMP. NO 212

LEVEL FROM		VOLUME CUBM	CENTRE OF GRAVITY FROM LPP/2	OF GRAVITY FROM		INERTIA MOMENT
BL	BOTTOM			BL	CL	
0.000	0.000	0.0				
0.500	0.500	48.4	54.193	0.267	12.129	249.
1.000	1.000	112.1	55.309	0.546	12.241	365.
1.500	1.500	184.4	56.019	0.823	12.322	398.
2.000	2.000	261.3	56.490	1.097	12.385	418.
2.500	2.500	341.9	56.869	1.369	12.433	441.
3.000	3.000	425.6	57.188	1.641	12.471	457.
3.500	3.500	511.6	57.459	1.911	12.503	469.
4.000	4.000	599.4	57.689	2.181	12.530	480.
4.500	4.500	688.7	57.886	2.449	12.553	488.
5.000	5.000	779.1	58.056	2.716	12.574	495.
5.500	5.500	866.8	58.189	2.972	12.601	391.
6.000	6.000	946.3	58.280	3.205	12.645	294.
6.500	6.500	1017.7	58.337	3.418	12.697	214.
7.000	7.000	1080.6	58.369	3.612	12.753	150.
7.500	7.500	1134.7	58.370	3.785	12.809	97.
8.000	8.000	1179.4	58.339	3.935	12.864	58.
8.500	8.500	1215.1	58.289	4.062	12.913	32.
9.000	9.000	1242.3	58.228	4.164	12.954	16.
9.500	9.500	1261.9	58.169	4.243	12.988	6.
10.000	10.000	1273.8	58.118	4.294	13.010	1.
10.115	10.115	1274.9	58.109	4.299	13.012	

38K DWT S/U B/C
 NO.1 U.W.W.B.T. (P)
 COMP. NO 311

LEVEL FROM		VOLUME CUBM	CENTRE OF GRAVITY FROM			INERTIA MOMENT
BL	BOTTOM		LPP/2	BL	CL	
7.048	0.000	0.0				
7.548	0.500	0.48	78.798	7.301	-12.412	0.
8.048	1.000	3.04	76.218	7.777	-13.030	2.
8.548	1.500	7.28	75.476	8.094	-13.199	4.
9.048	2.000	12.80	74.905	8.398	-13.323	4.
9.548	2.500	21.60	73.612	8.766	-13.567	11.
10.048	3.000	32.91	72.214	9.130	-13.790	30.
10.548	3.500	52.76	68.642	9.572	-14.157	38.
11.048	4.000	73.46	66.887	9.918	-14.335	39.
11.548	4.500	94.47	65.920	10.225	-14.435	39.
12.048	5.000	115.78	65.321	10.515	-14.500	40.
12.548	5.500	137.41	64.921	10.796	-14.545	40.
13.048	6.000	159.40	64.644	11.072	-14.578	41.
13.548	6.500	181.73	64.445	11.346	-14.604	41.
14.048	7.000	205.91	64.206	11.635	-14.627	42.
14.548	7.500	238.73	63.682	12.003	-14.636	52.
15.048	8.000	283.19	63.037	12.443	-14.603	91.
15.548	8.500	341.34	62.445	12.932	-14.508	181.
16.048	9.000	414.74	61.995	13.441	-14.350	324.
16.548	9.500	503.43	61.672	13.945	-14.144	529.
17.048	10.000	606.42	61.443	14.431	-13.911	700.
17.548	10.500	712.54	61.281	14.858	-13.727	694.
17.877	10.829	768.99	61.226	15.065	-13.632	

38K DWT S/U B/C
 NO.1 U.W.W.B.T. (S)
 COMP. NO 312

LEVEL FROM		VOLUME CUBM	CENTRE OF GRAVITY FROM			INERTIA MOMENT
BL	BOTTOM		LPP/2	BL	CL	
7.048	0.000	0.0				
7.548	0.500	0.48	78.798	7.301	12.412	0.
8.048	1.000	3.04	76.218	7.777	13.030	2.
8.548	1.500	7.28	75.476	8.094	13.199	4.
9.048	2.000	12.80	74.905	8.398	13.323	4.
9.548	2.500	21.60	73.612	8.766	13.567	11.
10.048	3.000	32.91	72.214	9.130	13.790	30.
10.548	3.500	52.76	68.642	9.572	14.157	38.
11.048	4.000	73.46	66.887	9.918	14.335	39.
11.548	4.500	94.47	65.920	10.225	14.435	39.
12.048	5.000	115.78	65.321	10.515	14.500	40.
12.548	5.500	137.41	64.921	10.796	14.545	40.
13.048	6.000	159.40	64.644	11.072	14.578	41.
13.548	6.500	181.73	64.445	11.346	14.604	41.
14.048	7.000	205.91	64.206	11.635	14.627	42.
14.548	7.500	238.73	63.682	12.003	14.636	52.
15.048	8.000	283.19	63.037	12.443	14.603	91.
15.548	8.500	341.34	62.445	12.932	14.508	181.
16.048	9.000	414.74	61.995	13.441	14.350	324.
16.548	9.500	503.43	61.672	13.945	14.144	529.
17.048	10.000	606.42	61.443	14.431	13.911	700.
17.548	10.500	712.54	61.281	14.858	13.727	694.
17.877	10.829	768.99	61.226	15.065	13.632	

38K DWT S/U B/C
NO.1 W.B.T. (C)
COMP. NO 213

LEVEL FROM		VOLUME CUBM	CENTRE OF GRAVITY FROM			INERTIA MOMENT
BL	BOTTOM		LPP/2	BL	CL	
0.000	0.000	0.0				
0.250	0.250	65.3	61.200	0.125	0.000	1238.
0.500	0.500	130.7	61.200	0.250	0.000	1238.
0.750	0.750	196.0	61.200	0.375	0.000	1238.
1.000	1.000	261.1	61.181	0.499	0.000	1181.
1.250	1.250	323.4	61.030	0.620	0.000	1181.
1.500	1.500	385.8	60.928	0.742	0.000	1181.
1.750	1.750	448.2	60.855	0.865	0.000	1181.
2.000	2.000	510.5	60.799	0.988	0.000	1181.
2.250	2.250	572.9	60.756	1.112	0.000	1181.
2.500	2.500	635.3	60.721	1.236	0.000	1181.
2.750	2.750	697.7	60.692	1.360	0.000	1181.
3.000	3.000	760.0	60.668	1.485	0.000	1181.
3.250	3.250	822.4	60.648	1.609	0.000	1181.
3.500	3.500	884.8	60.630	1.733	0.000	1181.
3.750	3.750	947.1	60.615	1.858	0.000	1181.
4.000	4.000	1009.5	60.602	1.983	0.000	1181.
4.250	4.250	1072.1	60.593	2.108	0.000	1238.
4.500	4.500	1137.4	60.628	2.238	0.000	1238.
4.750	4.750	1202.7	60.659	2.368	0.000	1238.
5.000	5.000	1268.1	60.687	2.497	0.000	1238.
5.250	5.250	1332.2	60.712	2.623	0.000	1063.
5.500	5.500	1392.2	60.733	2.742	0.000	855.
5.750	5.750	1447.7	60.751	2.852	0.000	676.
6.000	6.000	1499.0	60.766	2.956	0.000	523.
6.250	6.250	1545.8	60.779	3.052	0.000	396.
6.500	6.500	1588.4	60.790	3.141	0.000	291.
6.750	6.750	1626.5	60.800	3.222	0.000	207.
7.000	7.000	1660.3	60.808	3.297	0.000	140.
7.250	7.250	1689.8	60.815	3.363	0.000	90.
7.500	7.500	1714.8	60.821	3.422	0.000	53.
7.750	7.750	1735.6	60.825	3.472	0.000	28.
8.000	8.000	1752.0	60.829	3.513	0.000	13.
8.250	8.250	1764.0	60.831	3.544	0.000	4.
8.500	8.500	1771.7	60.833	3.565	0.000	1.
8.750	8.750	1775.0	60.833	3.575	0.000	0.
8.815	8.815	1775.1	60.833	3.575	0.000	

38K DWT S/U B/C
 NO.2 L.W.W.B.T. (P)
 COMP. NO 221

LEVEL	FROM	VOLUME	CENTRE OF GRAVITY FROM	INERTIA
BL	BOTTOM	CUBM	LPP/2 BL CL	MOMENT
0.000	0.000	0.0		
0.500	0.500	89.8	26.000 0.258 -12.616	501.
1.000	1.000	190.2	26.000 0.519 -12.771	608.
1.500	1.500	294.8	26.000 0.779 -12.864	653.
2.000	2.000	400.5	26.000 1.035 -12.917	656.
2.500	2.500	506.3	26.000 1.289 -12.948	656.
3.000	3.000	612.0	26.000 1.541 -12.968	656.
3.500	3.500	717.8	26.000 1.793 -12.982	656.
4.000	4.000	823.6	26.000 2.044 -12.993	656.
4.500	4.500	929.3	26.000 2.295 -13.001	656.
5.000	5.000	1035.1	26.000 2.546 -13.008	656.
5.500	5.500	1137.3	26.000 2.789 -13.022	519.
6.000	6.000	1230.7	26.000 3.013 -13.052	393.
6.500	6.500	1315.5	26.000 3.222 -13.091	288.
7.000	7.000	1391.6	26.000 3.414 -13.136	204.
7.500	7.500	1458.9	26.000 3.591 -13.184	139.
8.000	8.000	1517.5	26.000 3.752 -13.231	89.
8.500	8.500	1567.5	26.000 3.895 -13.277	52.
9.000	9.000	1608.7	26.000 4.019 -13.319	28.
9.500	9.500	1641.2	26.000 4.122 -13.355	12.
10.000	10.000	1664.9	26.000 4.202 -13.385	4.
10.115	10.115	1669.2	26.000 4.217 -13.390	

38K DWT S/U B/C
 NO.2 L.W.W.B.T. (S)
 COMP. NO 222

LEVEL FROM		VOLUME CUBM	CENTRE OF GRAVITY FROM LPP/2	GRAVITY FROM		INERTIA MOMENT
BL	BOTTOM			BL	CL	
0.000	0.000	0.0				
0.500	0.500	89.8	26.000	0.258	12.616	501.
1.000	1.000	190.2	26.000	0.519	12.771	608.
1.500	1.500	294.8	26.000	0.779	12.864	653.
2.000	2.000	400.5	26.000	1.035	12.917	656.
2.500	2.500	506.3	26.000	1.289	12.948	656.
3.000	3.000	612.0	26.000	1.541	12.968	656.
3.500	3.500	717.8	26.000	1.793	12.982	656.
4.000	4.000	823.6	26.000	2.044	12.993	656.
4.500	4.500	929.3	26.000	2.295	13.001	656.
5.000	5.000	1035.1	26.000	2.546	13.008	656.
5.500	5.500	1137.3	26.000	2.789	13.022	519.
6.000	6.000	1230.7	26.000	3.013	13.052	393.
6.500	6.500	1315.5	26.000	3.222	13.091	288.
7.000	7.000	1391.6	26.000	3.414	13.136	204.
7.500	7.500	1458.9	26.000	3.591	13.184	139.
8.000	8.000	1517.5	26.000	3.752	13.231	89.
8.500	8.500	1567.5	26.000	3.895	13.277	52.
9.000	9.000	1608.7	26.000	4.019	13.319	28.
9.500	9.500	1641.2	26.000	4.122	13.355	12.
10.000	10.000	1664.9	26.000	4.202	13.385	4.
10.115	10.115	1669.2	26.000	4.217	13.390	

38K DWT S/U B/C
NO.2 U.W.W.B.T. (P)
COMP. NO 321

LEVEL	FROM	VOLUME	CENTRE OF GRAVITY FROM	INERTIA
BL	BOTTOM	CUBM	LPP/2 BL CL	MOMENT
10.115	0.000	0.0		
10.315	0.200	6.97	26.000 10.215 -15.600	3.
10.515	0.400	13.94	26.000 10.315 -15.600	3.
10.715	0.600	20.91	26.000 10.415 -15.600	3.
10.915	0.800	27.88	26.000 10.515 -15.600	3.
11.115	1.000	34.85	26.000 10.615 -15.600	3.
11.315	1.200	41.82	26.000 10.715 -15.600	3.
11.515	1.400	48.79	26.000 10.815 -15.600	3.
11.715	1.600	55.76	26.000 10.915 -15.600	3.
11.915	1.800	62.73	26.000 11.015 -15.600	3.
12.115	2.000	69.70	26.000 11.115 -15.600	3.
12.315	2.200	76.67	26.000 11.215 -15.600	3.
12.515	2.400	83.64	26.000 11.315 -15.600	3.
12.715	2.600	90.60	26.000 11.415 -15.600	3.
12.915	2.800	97.57	26.000 11.515 -15.600	3.
13.115	3.000	104.54	26.000 11.615 -15.600	3.
13.315	3.200	111.51	26.000 11.715 -15.600	3.
13.515	3.400	118.48	26.000 11.815 -15.600	3.
13.715	3.600	125.46	26.000 11.915 -15.600	3.
13.915	3.800	133.88	26.000 12.035 -15.593	8.
14.115	4.000	144.70	26.000 12.183 -15.573	15.
14.315	4.200	157.94	26.000 12.354 -15.537	26.
14.515	4.400	173.58	26.000 12.540 -15.487	41.
14.715	4.600	191.63	26.000 12.735 -15.422	62.
14.915	4.800	212.10	26.000 12.936 -15.346	88.
15.115	5.000	234.97	26.000 13.139 -15.259	121.
15.315	5.200	260.25	26.000 13.341 -15.165	161.
15.515	5.400	287.94	26.000 13.540 -15.063	209.
15.715	5.600	318.04	26.000 13.737 -14.957	266.
15.915	5.800	350.55	26.000 13.930 -14.847	332.
16.115	6.000	385.46	26.000 14.119 -14.733	408.
16.315	6.200	422.79	26.000 14.304 -14.617	496.
16.515	6.400	462.53	26.000 14.485 -14.500	595.
16.715	6.600	504.67	26.000 14.663 -14.381	706.
16.915	6.800	549.19	26.000 14.838 -14.261	806.
17.115	7.000	594.49	26.000 15.004 -14.154	806.
17.315	7.200	639.79	26.000 15.160 -14.061	806.
17.515	7.400	685.09	26.000 15.309 -13.981	806.
17.715	7.600	730.40	26.000 15.452 -13.911	806.
17.877	7.762	752.21	26.000 15.519 -13.860	

38K DWT S/U B/C
NO.2 U.W.W.B.T. (S)
COMP. NO 322

LEVEL	FROM	VOLUME	CENTRE OF GRAVITY FROM	INERTIA
BL	BOTTOM	CUBM	LPP/2 BL CL	MOMENT
10.115	0.000	0.0		
10.315	0.200	6.97	26.000 10.215 15.600	3.
10.515	0.400	13.94	26.000 10.315 15.600	3.
10.715	0.600	20.91	26.000 10.415 15.600	3.
10.915	0.800	27.88	26.000 10.515 15.600	3.
11.115	1.000	34.85	26.000 10.615 15.600	3.
11.315	1.200	41.82	26.000 10.715 15.600	3.
11.515	1.400	48.79	26.000 10.815 15.600	3.
11.715	1.600	55.76	26.000 10.915 15.600	3.
11.915	1.800	62.73	26.000 11.015 15.600	3.
12.115	2.000	69.70	26.000 11.115 15.600	3.
12.315	2.200	76.67	26.000 11.215 15.600	3.
12.515	2.400	83.64	26.000 11.315 15.600	3.
12.715	2.600	90.60	26.000 11.415 15.600	3.
12.915	2.800	97.57	26.000 11.515 15.600	3.
13.115	3.000	104.54	26.000 11.615 15.600	3.
13.315	3.200	111.51	26.000 11.715 15.600	3.
13.515	3.400	118.48	26.000 11.815 15.600	3.
13.715	3.600	125.46	26.000 11.915 15.600	3.
13.915	3.800	133.88	26.000 12.035 15.593	8.
14.115	4.000	144.70	26.000 12.183 15.573	15.
14.315	4.200	157.94	26.000 12.354 15.537	26.
14.515	4.400	173.58	26.000 12.540 15.487	41.
14.715	4.600	191.63	26.000 12.735 15.422	62.
14.915	4.800	212.10	26.000 12.936 15.346	88.
15.115	5.000	234.97	26.000 13.139 15.259	121.
15.315	5.200	260.25	26.000 13.341 15.165	161.
15.515	5.400	287.94	26.000 13.540 15.063	209.
15.715	5.600	318.04	26.000 13.737 14.957	266.
15.915	5.800	350.55	26.000 13.930 14.847	332.
16.115	6.000	385.46	26.000 14.119 14.733	408.
16.315	6.200	422.79	26.000 14.304 14.617	496.
16.515	6.400	462.53	26.000 14.485 14.500	595.
16.715	6.600	504.67	26.000 14.663 14.381	706.
16.915	6.800	549.19	26.000 14.838 14.261	806.
17.115	7.000	594.49	26.000 15.004 14.154	806.
17.315	7.200	639.79	26.000 15.160 14.061	806.
17.515	7.400	685.09	26.000 15.309 13.981	806.
17.715	7.600	730.40	26.000 15.452 13.911	806.
17.877	7.762	752.21	26.000 15.519 13.860	

38K DWT S/U B/C
NO.2 W.B.T. (C)
COMP. NO 223

LEVEL FROM		VOLUME CUBM	CENTRE OF GRAVITY FROM		INERTIA MOMENT
BL	BOTTOM		LPP/2	BL CL	
0.000	0.000	0.0			
0.250	0.250	65.3	26.000	0.125 0.000	1238.
0.500	0.500	130.7	26.000	0.250 0.000	1238.
0.750	0.750	196.0	26.000	0.375 0.000	1238.
1.000	1.000	261.4	26.000	0.500 0.000	1238.
1.250	1.250	326.7	26.000	0.625 0.000	1238.
1.500	1.500	392.0	26.000	0.750 0.000	1238.
1.750	1.750	457.4	26.000	0.875 0.000	1238.
2.000	2.000	522.7	26.000	1.000 0.000	1238.
2.250	2.250	588.1	26.000	1.125 0.000	1238.
2.500	2.500	653.4	26.000	1.250 0.000	1238.
2.750	2.750	718.7	26.000	1.375 0.000	1238.
3.000	3.000	784.1	26.000	1.500 0.000	1238.
3.250	3.250	849.4	26.000	1.625 0.000	1238.
3.500	3.500	914.8	26.000	1.750 0.000	1238.
3.750	3.750	980.1	26.000	1.875 0.000	1238.
4.000	4.000	1045.4	26.000	2.000 0.000	1238.
4.250	4.250	1110.8	26.000	2.125 0.000	1238.
4.500	4.500	1176.1	26.000	2.250 0.000	1238.
4.750	4.750	1241.5	26.000	2.375 0.000	1238.
5.000	5.000	1306.8	26.000	2.500 0.000	1238.
5.250	5.250	1370.9	26.000	2.623 0.000	1063.
5.500	5.500	1430.9	26.000	2.738 0.000	855.
5.750	5.750	1486.5	26.000	2.846 0.000	676.
6.000	6.000	1537.7	26.000	2.947 0.000	523.
6.250	6.250	1584.6	26.000	3.041 0.000	396.
6.500	6.500	1627.1	26.000	3.128 0.000	291.
6.750	6.750	1665.2	26.000	3.208 0.000	207.
7.000	7.000	1699.0	26.000	3.281 0.000	140.
7.250	7.250	1728.5	26.000	3.346 0.000	90.
7.500	7.500	1753.6	26.000	3.404 0.000	53.
7.750	7.750	1774.3	26.000	3.453 0.000	28.
8.000	8.000	1790.7	26.000	3.493 0.000	13.
8.250	8.250	1802.7	26.000	3.524 0.000	4.
8.500	8.500	1810.4	26.000	3.545 0.000	1.
8.750	8.750	1813.7	26.000	3.554 0.000	0.
8.815	8.815	1813.8	26.000	3.554 0.000	

38K DWT S/U B/C
 NO.3 L.W.W.B.T. (P)
 COMP. NO 231

LEVEL FROM		VOLUME	CENTRE OF GRAVITY FROM			INERTIA
BL	BOTTOM	CUBM	LPP/2	BL	CL	MOMENT
0.000	0.000	0.0				
0.500	0.500	89.4	-9.122	0.258	-12.605	496.
1.000	1.000	189.4	-9.137	0.519	-12.761	603.
1.500	1.500	293.8	-9.147	0.779	-12.855	649.
2.000	2.000	399.4	-9.156	1.036	-12.909	655.
2.500	2.500	505.2	-9.165	1.290	-12.942	656.
3.000	3.000	610.9	-9.171	1.543	-12.963	656.
3.500	3.500	716.7	-9.175	1.795	-12.978	656.
4.000	4.000	822.5	-9.179	2.046	-12.989	656.
4.500	4.500	928.2	-9.181	2.297	-12.998	656.
5.000	5.000	1034.0	-9.183	2.548	-13.005	656.
5.500	5.500	1136.1	-9.184	2.791	-13.019	519.
6.000	6.000	1229.6	-9.186	3.015	-13.050	393.
6.500	6.500	1314.4	-9.187	3.224	-13.089	288.
7.000	7.000	1390.4	-9.187	3.416	-13.134	204.
7.500	7.500	1457.8	-9.188	3.593	-13.182	139.
8.000	8.000	1516.4	-9.188	3.754	-13.230	89.
8.500	8.500	1566.3	-9.189	3.897	-13.275	52.
9.000	9.000	1607.6	-9.189	4.021	-13.317	28.
9.500	9.500	1640.0	-9.189	4.124	-13.354	12.
10.000	10.000	1663.8	-9.189	4.205	-13.383	4.
10.115	10.115	1668.1	-9.189	4.219	-13.389	

38K DWT S/U B/C
 NO.3 L.W.W.B.T. (S)
 COMP. NO 232

LEVEL FROM		VOLUME CUBM	CENTRE OF GRAVITY FROM LPP/2	GRAVITY FROM		INERTIA MOMENT
BL	BOTTOM			BL	CL	
0.000	0.000	0.0				
0.500	0.500	89.4	-9.122	0.258	12.605	496.
1.000	1.000	189.4	-9.137	0.519	12.761	603.
1.500	1.500	293.8	-9.147	0.779	12.855	649.
2.000	2.000	399.4	-9.156	1.036	12.909	655.
2.500	2.500	505.2	-9.165	1.290	12.942	656.
3.000	3.000	610.9	-9.171	1.543	12.963	656.
3.500	3.500	716.7	-9.175	1.795	12.978	656.
4.000	4.000	822.5	-9.179	2.046	12.989	656.
4.500	4.500	928.2	-9.181	2.297	12.998	656.
5.000	5.000	1034.0	-9.183	2.548	13.005	656.
5.500	5.500	1136.1	-9.184	2.791	13.019	519.
6.000	6.000	1229.6	-9.186	3.015	13.050	393.
6.500	6.500	1314.4	-9.187	3.224	13.089	288.
7.000	7.000	1390.4	-9.187	3.416	13.134	204.
7.500	7.500	1457.8	-9.188	3.593	13.182	139.
8.000	8.000	1516.4	-9.188	3.754	13.230	89.
8.500	8.500	1566.3	-9.189	3.897	13.275	52.
9.000	9.000	1607.6	-9.189	4.021	13.317	28.
9.500	9.500	1640.0	-9.189	4.124	13.354	12.
10.000	10.000	1663.8	-9.189	4.205	13.383	4.
10.115	10.115	1668.1	-9.189	4.219	13.389	

38K DWT S/U B/C
NO.3 U.W.W.B.T. (P)
COMP. NO 331

LEVEL FROM		VOLUME CUBM	CENTRE OF GRAVITY FROM			INERTIA MOMENT
BL	BOTTOM		LPP/2	BL	CL	
10.115	0.000	0.0				
10.315	0.200	6.97	-9.200	10.215	-15.600	3.
10.515	0.400	13.94	-9.200	10.315	-15.600	3.
10.715	0.600	20.91	-9.200	10.415	-15.600	3.
10.915	0.800	27.88	-9.200	10.515	-15.600	3.
11.115	1.000	34.85	-9.200	10.615	-15.600	3.
11.315	1.200	41.82	-9.200	10.715	-15.600	3.
11.515	1.400	48.79	-9.200	10.815	-15.600	3.
11.715	1.600	55.76	-9.200	10.915	-15.600	3.
11.915	1.800	62.73	-9.200	11.015	-15.600	3.
12.115	2.000	69.70	-9.200	11.115	-15.600	3.
12.315	2.200	76.67	-9.200	11.215	-15.600	3.
12.515	2.400	83.64	-9.200	11.315	-15.600	3.
12.715	2.600	90.60	-9.200	11.415	-15.600	3.
12.915	2.800	97.57	-9.200	11.515	-15.600	3.
13.115	3.000	104.54	-9.200	11.615	-15.600	3.
13.315	3.200	111.51	-9.200	11.715	-15.600	3.
13.515	3.400	118.48	-9.200	11.815	-15.600	3.
13.715	3.600	125.46	-9.200	11.915	-15.600	3.
13.915	3.800	133.88	-9.200	12.035	-15.593	8.
14.115	4.000	144.70	-9.200	12.183	-15.573	15.
14.315	4.200	157.94	-9.200	12.354	-15.537	26.
14.515	4.400	173.58	-9.200	12.540	-15.487	41.
14.715	4.600	191.63	-9.200	12.735	-15.422	62.
14.915	4.800	212.10	-9.200	12.936	-15.346	88.
15.115	5.000	234.97	-9.200	13.139	-15.259	121.
15.315	5.200	260.25	-9.200	13.341	-15.165	161.
15.515	5.400	287.94	-9.200	13.540	-15.063	209.
15.715	5.600	318.04	-9.200	13.737	-14.957	266.
15.915	5.800	350.55	-9.200	13.930	-14.847	332.
16.115	6.000	385.46	-9.200	14.119	-14.733	408.
16.315	6.200	422.79	-9.200	14.304	-14.617	496.
16.515	6.400	462.53	-9.200	14.485	-14.500	595.
16.715	6.600	504.67	-9.200	14.663	-14.381	706.
16.915	6.800	549.19	-9.200	14.838	-14.261	806.
17.115	7.000	594.49	-9.200	15.004	-14.154	806.
17.315	7.200	639.79	-9.200	15.160	-14.061	806.
17.515	7.400	685.09	-9.200	15.309	-13.981	806.
17.715	7.600	730.40	-9.200	15.452	-13.911	806.
17.877	7.762	752.21	-9.200	15.519	-13.860	

38K DWT S/U B/C
 NO.3 U.W.W.B.T. (S)
 COMP. NO 332

LEVEL	FROM	VOLUME	CENTRE OF GRAVITY FROM	INERTIA
BL	BOTTOM	CUBM	LPP/2 BL CL	MOMENT
10.115	0.000	0.0		
10.315	0.200	6.97	-9.200 10.215 15.600	3.
10.515	0.400	13.94	-9.200 10.315 15.600	3.
10.715	0.600	20.91	-9.200 10.415 15.600	3.
10.915	0.800	27.88	-9.200 10.515 15.600	3.
11.115	1.000	34.85	-9.200 10.615 15.600	3.
11.315	1.200	41.82	-9.200 10.715 15.600	3.
11.515	1.400	48.79	-9.200 10.815 15.600	3.
11.715	1.600	55.76	-9.200 10.915 15.600	3.
11.915	1.800	62.73	-9.200 11.015 15.600	3.
12.115	2.000	69.70	-9.200 11.115 15.600	3.
12.315	2.200	76.67	-9.200 11.215 15.600	3.
12.515	2.400	83.64	-9.200 11.315 15.600	3.
12.715	2.600	90.60	-9.200 11.415 15.600	3.
12.915	2.800	97.57	-9.200 11.515 15.600	3.
13.115	3.000	104.54	-9.200 11.615 15.600	3.
13.315	3.200	111.51	-9.200 11.715 15.600	3.
13.515	3.400	118.48	-9.200 11.815 15.600	3.
13.715	3.600	125.46	-9.200 11.915 15.600	3.
13.915	3.800	133.88	-9.200 12.035 15.593	8.
14.115	4.000	144.70	-9.200 12.183 15.573	15.
14.315	4.200	157.94	-9.200 12.354 15.537	26.
14.515	4.400	173.58	-9.200 12.540 15.487	41.
14.715	4.600	191.63	-9.200 12.735 15.422	62.
14.915	4.800	212.10	-9.200 12.936 15.346	88.
15.115	5.000	234.97	-9.200 13.139 15.259	121.
15.315	5.200	260.25	-9.200 13.341 15.165	161.
15.515	5.400	287.94	-9.200 13.540 15.063	209.
15.715	5.600	318.04	-9.200 13.737 14.957	266.
15.915	5.800	350.55	-9.200 13.930 14.847	332.
16.115	6.000	385.46	-9.200 14.119 14.733	408.
16.315	6.200	422.79	-9.200 14.304 14.617	496.
16.515	6.400	462.53	-9.200 14.485 14.500	595.
16.715	6.600	504.67	-9.200 14.663 14.381	706.
16.915	6.800	549.19	-9.200 14.838 14.261	806.
17.115	7.000	594.49	-9.200 15.004 14.154	806.
17.315	7.200	639.79	-9.200 15.160 14.061	806.
17.515	7.400	685.09	-9.200 15.309 13.981	806.
17.715	7.600	730.40	-9.200 15.452 13.911	806.
17.877	7.762	752.21	-9.200 15.519 13.860	

38K DWT S/U B/C
NO.3 W.B.T.(C)
COMP. NO 233

LEVEL FROM		.VOLUME CUBM	CENTRE OF GRAVITY FROM			INERTIA MOMENT
BL	BOTTOM		LPP/2	BL	CL	
0.000	0.000	0.0				
0.250	0.250	65.3	-9.200	0.125	0.000	1238.
0.500	0.500	130.7	-9.200	0.250	0.000	1238.
0.750	0.750	196.0	-9.200	0.375	0.000	1238.
1.000	1.000	261.1	-9.219	0.499	0.000	1181.
1.250	1.250	323.4	-9.370	0.620	0.000	1181.
1.500	1.500	385.8	-9.472	0.742	0.000	1181.
1.750	1.750	448.2	-9.545	0.865	0.000	1181.
2.000	2.000	510.5	-9.601	0.988	0.000	1181.
2.250	2.250	572.9	-9.644	1.112	0.000	1181.
2.500	2.500	635.3	-9.679	1.236	0.000	1181.
2.750	2.750	697.7	-9.708	1.360	0.000	1181.
3.000	3.000	760.0	-9.732	1.485	0.000	1181.
3.250	3.250	822.4	-9.752	1.609	0.000	1181.
3.500	3.500	884.8	-9.770	1.733	0.000	1181.
3.750	3.750	947.1	-9.785	1.858	0.000	1181.
4.000	4.000	1009.5	-9.798	1.983	0.000	1181.
4.250	4.250	1072.1	-9.807	2.106	0.000	1238.
4.500	4.500	1137.4	-9.772	2.238	0.000	1238.
4.750	4.750	1202.7	-9.741	2.368	0.000	1238.
5.000	5.000	1268.1	-9.713	2.497	0.000	1238.
5.250	5.250	1332.2	-9.688	2.623	0.000	1063.
5.500	5.500	1392.2	-9.667	2.742	0.000	855.
5.750	5.750	1447.7	-9.649	2.852	0.000	676.
6.000	6.000	1499.0	-9.634	2.956	0.000	523.
6.250	6.250	1545.8	-9.621	3.052	0.000	396.
6.500	6.500	1588.4	-9.610	3.141	0.000	291.
6.750	6.750	1626.5	-9.600	3.222	0.000	207.
7.000	7.000	1660.3	-9.592	3.297	0.000	140.
7.250	7.250	1689.8	-9.585	3.363	0.000	90.
7.500	7.500	1714.8	-9.579	3.422	0.000	53.
7.750	7.750	1735.6	-9.575	3.472	0.000	28.
8.000	8.000	1752.0	-9.571	3.513	0.000	13.
8.250	8.250	1764.0	-9.569	3.544	0.000	4.
8.500	8.500	1771.7	-9.567	3.565	0.000	1.
8.750	8.750	1775.0	-9.567	3.575	0.000	0.
8.815	8.815	1775.1	-9.567	3.575	0.000	

38K DWT S/U B/C
 NO.4 L.W.W.B.T. (P)
 COMP. NO 241

LEVEL	FROM	VOLUME	CENTRE OF GRAVITY FROM	INERTIA
BL	BOTTOM	CUBM	LPP/2	MOMENT
0.000	0.000	0.0		
0.500	0.500	36.3	-36.269	0.276 -11.768 241.
1.000	1.000	90.6	-38.026	0.566 -11.806 385.
1.500	1.500	154.5	-38.903	0.851 -11.895 396.
2.000	2.000	223.9	-39.372	1.131 -12.005 404.
2.500	2.500	298.1	-39.706	1.410 -12.105 414.
3.000	3.000	376.2	-39.983	1.688 -12.193 429.
3.500	3.500	458.3	-40.254	1.969 -12.267 452.
4.000	4.000	544.2	-40.523	2.250 -12.330 478.
4.500	4.500	633.5	-40.783	2.532 -12.385 499.
5.000	5.000	725.7	-41.029	2.814 -12.433 518.
5.500	5.500	820.1	-41.264	3.095 -12.478 530.
6.000	6.000	916.2	-41.490	3.373 -12.519 537.
6.500	6.500	1012.3	-41.719	3.646 -12.561 522.
7.000	7.000	1107.3	-41.953	3.912 -12.604 508.
7.500	7.500	1200.3	-42.190	4.171 -12.648 491.
8.000	8.000	1290.2	-42.427	4.420 -12.693 455.
8.500	8.500	1375.4	-42.661	4.657 -12.739 415.
9.000	9.000	1455.0	-42.889	4.881 -12.785 366.
9.500	9.500	1527.9	-43.106	5.089 -12.830 307.
10.000	10.000	1593.0	-43.307	5.280 -12.876 236.
10.115	10.115	1606.8	-43.350	5.321 -12.886

38K DWT S/U B/C
 NO.4 L.W.W.B.T. (S)
 COMP. NO 242

LEVEL FROM		VOLUME CUHM	CENTRE OF GRAVITY FROM LPP/2	GRAVITY FROM		INERTIA MOMENT
BL	BOTTOM			BL	CL	
0.000	0.000	0.0				
0.500	0.500	36.3	-36.269	0.276	11.768	241.
1.000	1.000	90.6	-38.026	0.566	11.806	385.
1.500	1.500	154.5	-38.903	0.851	11.895	396.
2.000	2.000	223.9	-39.372	1.131	12.005	404.
2.500	2.500	298.1	-39.706	1.410	12.105	414.
3.000	3.000	376.2	-39.983	1.688	12.193	429.
3.500	3.500	458.3	-40.254	1.969	12.267	452.
4.000	4.000	544.2	-40.523	2.250	12.330	478.
4.500	4.500	633.5	-40.783	2.532	12.385	499.
5.000	5.000	725.7	-41.029	2.814	12.433	518.
5.500	5.500	820.1	-41.264	3.095	12.478	530.
6.000	6.000	916.2	-41.490	3.373	12.519	537.
6.500	6.500	1012.3	-41.719	3.646	12.561	522.
7.000	7.000	1107.3	-41.953	3.912	12.604	508.
7.500	7.500	1200.3	-42.190	4.171	12.648	491.
8.000	8.000	1290.2	-42.427	4.420	12.693	455.
8.500	8.500	1375.4	-42.661	4.657	12.739	415.
9.000	9.000	1455.0	-42.889	4.881	12.785	366.
9.500	9.500	1527.9	-43.106	5.089	12.830	307.
10.000	10.000	1593.0	-43.307	5.280	12.876	236.
10.115	10.115	1606.8	-43.350	5.321	12.886	

38K DWT S/U B/C
NO.4 U.W.W.B T. (P)
COMP. NO 341

LEVEL	FROM	VOLUME	CENTRE OF GRAVITY FROM	INERTIA
BL	BOTTOM	CUBM	LPP/2 BL CL	MOMENT
10.115	0.000	0.0		
10.315	0.200	15.56	-44.167 10.215 -14.750	73.
10.515	0.400	31.16	-44.181 10.315 -14.752	73.
10.715	0.600	46.78	-44.194 10.415 -14.753	73.
10.915	0.800	62.42	-44.205 10.515 -14.754	74.
11.115	1.000	78.08	-44.215 10.616 -14.754	74.
11.315	1.200	93.75	-44.224 10.716 -14.755	74.
11.515	1.400	109.43	-44.232 10.816 -14.756	74.
11.715	1.600	125.13	-44.240 10.916 -14.757	74.
11.915	1.800	140.84	-44.246 11.017 -14.757	74.
12.115	2.000	156.56	-44.253 11.117 -14.758	74.
12.315	2.200	172.28	-44.258 11.217 -14.758	74.
12.515	2.400	188.00	-44.263 11.317 -14.759	74.
12.715	2.600	203.73	-44.268 11.417 -14.759	74.
12.915	2.800	219.45	-44.272 11.518 -14.759	74.
13.115	3.000	235.18	-44.275 11.618 -14.760	74.
13.315	3.200	250.91	-44.278 11.718 -14.760	74.
13.515	3.400	266.64	-44.281 11.818 -14.760	74.
13.715	3.600	282.36	-44.283 11.918 -14.760	74.
13.915	3.800	298.14	-44.282 12.018 -14.761	74.
14.115	4.000	314.06	-44.274 12.120 -14.761	74.
14.315	4.200	330.38	-44.249 12.223 -14.760	75.
14.515	4.400	347.23	-44.206 12.330 -14.759	77.
14.715	4.600	364.75	-44.144 12.439 -14.756	83.
14.915	4.800	383.18	-44.062 12.554 -14.749	94.
15.115	5.000	402.67	-43.964 12.673 -14.739	111.
15.315	5.200	423.35	-43.850 12.797 -14.723	135.
15.515	5.400	445.45	-43.727 12.927 -14.702	171.
15.715	5.600	469.12	-43.597 13.063 -14.673	216.
15.915	5.800	494.43	-43.464 13.204 -14.637	269.
16.115	6.000	521.38	-43.329 13.349 -14.594	331.
16.315	6.200	549.98	-43.195 13.498 -14.545	400.
16.515	6.400	580.23	-43.062 13.650 -14.489	479.
16.715	6.600	612.12	-42.931 13.805 -14.427	567.
16.915	6.800	645.63	-42.802 13.961 -14.360	645.
17.115	7.000	679.68	-42.684 14.114 -14.296	645.
17.315	7.200	713.73	-42.576 14.262 -14.239	645.
17.515	7.400	747.77	-42.479 14.405 -14.186	645.
17.715	7.600	781.82	-42.390 14.545 -14.138	645.
17.877	7.762	797.41	-42.336 14.608 -14.103	

38K DWT S/U B/C
NO.4 U.W.W.B.T. (S)
COMP. NO 342

LEVEL FROM		VOLUME CUBM	CENTRE OF GRAVITY FROM LPP/2	GRAVITY FROM		INERTIA MOMENT
BL	BOTTOM			BL	CL	
10.115	0.000	0.0				
10.315	0.200	15.56	-44.167	10.215	14.750	73.
10.515	0.400	31.16	-44.181	10.315	14.752	73.
10.715	0.600	46.78	-44.194	10.415	14.753	73.
10.915	0.800	62.42	-44.205	10.515	14.754	74.
11.115	1.000	78.08	-44.215	10.616	14.754	74.
11.315	1.200	93.75	-44.224	10.716	14.755	74.
11.515	1.400	109.43	-44.232	10.816	14.756	74.
11.715	1.600	125.13	-44.240	10.916	14.757	74.
11.915	1.800	140.84	-44.246	11.017	14.757	74.
12.115	2.000	156.56	-44.253	11.117	14.758	74.
12.315	2.200	172.28	-44.258	11.217	14.758	74.
12.515	2.400	188.00	-44.263	11.317	14.759	74.
12.715	2.600	203.73	-44.268	11.417	14.759	74.
12.915	2.800	219.45	-44.272	11.518	14.759	74.
13.115	3.000	235.18	-44.275	11.618	14.760	74.
13.315	3.200	250.91	-44.278	11.718	14.760	74.
13.515	3.400	266.64	-44.281	11.818	14.760	74.
13.715	3.600	282.36	-44.283	11.918	14.760	74.
13.915	3.800	298.14	-44.282	12.018	14.761	74.
14.115	4.000	314.06	-44.274	12.120	14.761	74.
14.315	4.200	330.38	-44.249	12.223	14.760	75.
14.515	4.400	347.23	-44.206	12.330	14.759	77.
14.715	4.600	364.75	-44.144	12.439	14.756	83.
14.915	4.800	383.18	-44.062	12.554	14.749	94.
15.115	5.000	402.67	-43.964	12.673	14.739	111.
15.315	5.200	423.35	-43.850	12.797	14.723	135.
15.515	5.400	445.45	-43.727	12.927	14.702	171.
15.715	5.600	469.12	-43.597	13.063	14.673	216.
15.915	5.800	494.43	-43.464	13.204	14.637	269.
16.115	6.000	521.38	-43.329	13.349	14.594	331.
16.315	6.200	549.98	-43.195	13.498	14.545	400.
16.515	6.400	580.23	-43.062	13.650	14.489	479.
16.715	6.600	612.12	-42.931	13.805	14.427	567.
16.915	6.800	645.63	-42.802	13.961	14.360	645.
17.115	7.000	679.68	-42.684	14.114	14.296	645.
17.315	7.200	713.73	-42.576	14.262	14.239	645.
17.515	7.400	747.77	-42.479	14.405	14.186	645.
17.715	7.600	781.82	-42.390	14.545	14.138	645.
17.877	7.762	797.41	-42.336	14.608	14.103	

38K DWT S/U B/C
E/R DB.W.B.T.(C)
COMP. NO 253

LEVEL FROM		VOLUME CUBM	CENTRE OF GRAVITY FROM			INERTIA MOMENT
BL	BOTTOM		LPP/2	BL	CL	
0.000	0.000	0.0				
0.100	0.100	5.76	-65.543	0.051	0.449	513.
0.200	0.200	12.21	-65.644	0.104	0.513	625.
0.300	0.300	19.12	-65.714	0.157	0.561	721.
0.400	0.400	26.38	-65.769	0.210	0.601	808.
0.500	0.500	33.95	-65.813	0.264	0.634	888.
0.600	0.600	41.79	-65.850	0.317	0.664	968.
0.700	0.700	49.88	-65.883	0.371	0.691	1047.
0.800	0.800	58.21	-65.913	0.426	0.717	1125.
0.900	0.900	66.76	-65.939	0.480	0.740	1202.
1.000	1.000	75.44	-65.968	0.534	0.758	1271.
1.100	1.100	84.04	-66.006	0.587	0.761	1349.
1.200	1.200	92.85	-66.041	0.640	0.766	1430.
1.300	1.300	101.84	-66.071	0.694	0.772	1511.
1.400	1.400	109.34	-66.144	0.739	0.792	936.
1.500	1.500	116.02	-66.234	0.780	0.817	986.
1.600	1.600	123.12	-66.312	0.824	0.826	1617.
1.700	1.700	131.26	-66.367	0.876	0.786	1390.
1.800	1.800	138.27	-66.436	0.920	0.757	1459.
1.900	1.900	145.42	-66.500	0.966	0.731	1529.
2.000	2.000	152.71	-66.559	1.013	0.707	1601.
2.100	2.100	159.05	-66.621	1.054	0.690	1049.
2.200	2.200	164.01	-66.690	1.087	0.677	1219.
2.300	2.300	169.30	-66.755	1.123	0.656	1273.
2.400	2.400	174.70	-66.817	1.161	0.636	1328.
2.420	2.420	175.78	-66.829	1.169	0.632	

38K DWT S/U B/C
A.P.T.
COMP. NO 260

LEVEL FROM		VOLUME CUBM	CENTRE OF GRAVITY FROM LPP/2	GRAVITY FROM		INERTIA MOMENT
BL	BOTTOM			BL	CL	
0.000	0.000	0.0				
0.500	0.500	1.9	-83.826	0.300	0.000	3.
1.000	1.000	6.3	-84.263	0.632	0.000	7.
1.500	1.500	12.8	-84.575	0.951	0.000	12.
2.000	2.000	20.3	-84.743	1.249	0.000	14.
2.500	2.500	28.7	-84.879	1.543	0.000	16.
3.000	3.000	37.8	-85.006	1.833	0.000	17.
3.500	3.500	47.5	-85.144	2.123	0.000	16.
4.000	4.000	57.1	-85.235	2.396	0.000	15.
4.500	4.500	65.9	-85.276	2.644	0.000	14.
5.000	5.000	73.4	-85.250	2.858	0.000	14.
5.500	5.500	80.3	-85.197	3.063	0.000	16.
6.000	6.000	87.4	-85.141	3.280	0.000	21.
6.500	6.500	95.3	-85.088	3.527	0.000	33.
7.000	7.000	104.9	-85.038	3.823	0.000	59.
7.500	7.500	116.9	-84.991	4.178	0.000	129.
8.000	8.000	135.9	-84.980	4.679	0.000	408.
8.500	8.500	167.3	-85.026	5.352	0.000	1320.
9.000	9.000	224.9	-85.372	6.230	0.000	4155.
9.500	9.500	327.6	-86.236	7.182	0.000	7415.
10.000	10.000	463.9	-87.147	7.939	0.000	10328.
10.500	10.500	619.6	-87.795	8.521	0.000	13438.
11.000	11.000	789.5	-88.247	9.001	0.000	16248.
11.500	11.500	969.8	-88.570	9.419	0.000	18603.
12.000	12.000	1157.5	-88.807	9.798	0.000	20527.
12.500	12.500	1351.2	-88.988	10.149	0.000	0.
12.500	12.500	1351.2	-88.988	10.149	0.000	

38K DWT S/U B/C
F.O.T. (P)
COMP. NO 401

LEVEL FROM		VOLUME CUBM	CENTRE OF GRAVITY FROM			INERTIA MOMENT
BL	BOTTOM		LPP/2	BL	CL	
0.975	0.000	0.0				
1.475	0.500	11.42	-58.967	1.232	-5.858	46.
1.975	1.000	24.82	-58.985	1.502	-6.047	70.
2.475	1.500	40.10	-59.006	1.779	-6.234	95.
2.975	2.000	56.74	-59.039	2.057	-6.389	110.
3.475	2.500	74.05	-59.073	2.330	-6.502	116.
3.975	3.000	91.46	-59.097	2.596	-6.576	116.
4.475	3.500	108.87	-59.114	2.856	-6.626	116.
4.975	4.000	126.28	-59.126	3.114	-6.662	116.
5.475	4.500	143.68	-59.135	3.370	-6.690	116.
5.975	5.000	161.09	-59.142	3.624	-6.712	116.
6.475	5.500	178.50	-59.147	3.878	-6.729	116.
6.975	6.000	195.91	-59.152	4.131	-6.743	116.
7.475	6.500	213.32	-59.156	4.383	-6.755	116.
7.975	7.000	230.72	-59.159	4.635	-6.765	116.
8.475	7.500	248.13	-59.162	4.887	-6.774	116.
8.975	8.000	265.54	-59.165	5.139	-6.782	116.
9.475	8.500	283.01	-59.166	5.391	-6.789	121.
9.975	9.000	301.16	-59.166	5.653	-6.804	146.
10.475	9.500	334.76	-59.062	6.114	-7.087	831.
10.975	10.000	374.05	-58.944	6.599	-7.403	831.
11.475	10.500	413.33	-58.849	7.038	-7.658	831.
11.975	11.000	452.62	-58.770	7.445	-7.869	831.
12.475	11.500	491.91	-58.704	7.827	-8.047	831.
12.975	12.000	530.83	-58.649	8.186	-8.198	819.
13.475	12.500	568.44	-58.606	8.519	-8.332	772.
13.975	13.000	605.10	-58.571	8.835	-8.450	759.
14.475	13.500	641.52	-58.540	9.141	-8.555	759.
14.975	14.000	677.94	-58.513	9.441	-8.649	759.
15.475	14.500	714.36	-58.489	9.736	-8.734	759.
15.975	15.000	751.04	-58.464	10.028	-8.811	761.
16.475	15.500	789.59	-58.430	10.331	-8.886	762.
16.975	16.000	830.76	-58.386	10.648	-8.958	763.
17.475	16.500	872.79	-58.341	10.965	-9.024	763.
17.975	17.000	905.24	-58.317	11.205	-9.055	0.
17.990	17.015	905.27	-58.317	11.205	-9.054	

38K DWT S/U B/C
F.O.T. (S)
COMP. NO 402

LEVEL FROM		VOLUME CUBM	CENTRE OF GRAVITY FROM LPP/2	FROM		INERTIA MOMENT
BL	BOTTOM			BL	CL	
0.975	0.000	0.0				
1.475	0.500	11.42	-58.967	1.232	5.858	46.
1.975	1.000	24.82	-58.985	1.502	6.047	70.
2.475	1.500	40.10	-59.006	1.779	6.234	95.
2.975	2.000	56.74	-59.039	2.057	6.389	110.
3.475	2.500	74.05	-59.073	2.330	6.502	116.
3.975	3.000	91.46	-59.097	2.596	6.576	116.
4.475	3.500	108.87	-59.114	2.856	6.626	116.
4.975	4.000	126.28	-59.126	3.114	6.662	116.
5.475	4.500	143.68	-59.135	3.370	6.690	116.
5.975	5.000	161.09	-59.142	3.624	6.712	116.
6.475	5.500	178.50	-59.147	3.878	6.729	116.
6.975	6.000	195.91	-59.152	4.131	6.743	116.
7.475	6.500	210.33	-59.133	4.341	6.753	66.
7.975	7.000	220.28	-59.082	4.494	6.760	66.
8.475	7.500	230.23	-59.035	4.655	6.765	66.
8.975	8.000	240.17	-58.992	4.824	6.770	66.
9.475	8.500	250.18	-58.952	5.000	6.776	71.
9.975	9.000	260.65	-58.912	5.189	6.787	85.
10.475	9.500	286.12	-58.766	5.641	7.110	590.
10.975	10.000	317.27	-58.612	6.140	7.478	590.
11.475	10.500	348.41	-58.485	6.595	7.779	590.
11.975	11.000	379.55	-58.379	7.016	8.031	590.
12.475	11.500	410.69	-58.290	7.411	8.245	590.
12.975	12.000	449.21	-58.258	7.867	8.408	819.
13.475	12.500	486.82	-58.238	8.280	8.548	772.
13.975	13.000	523.48	-58.223	8.662	8.669	759.
14.475	13.500	559.90	-58.211	9.023	8.776	759.
14.975	14.000	596.32	-58.200	9.372	8.869	759.
15.475	14.500	632.74	-58.190	9.709	8.952	759.
15.975	15.000	669.42	-58.179	10.038	9.026	761.
16.475	15.500	707.97	-58.157	10.375	9.098	762.
16.975	16.000	749.14	-58.123	10.724	9.166	763.
17.475	16.500	791.17	-58.087	11.070	9.228	763.
17.975	17.000	823.62	-58.071	11.330	9.254	0.
17.990	17.015	823.65	-58.071	11.330	9.254	

38K DWT S/U B/C
NO.1 FO SETT.T(P)
COMP. NO 403

LEVEL FROM		VOLUME CUBM	CENTRE OF GRAVITY FROM			INERTIA MOMENT
BL	BOTTOM		LPP/2	BL	CL	
7.275	0.000	0.0				
7.525	0.250	1.26	-63.200	7.400	-4.813	2.
7.775	0.500	2.52	-63.200	7.525	-4.813	2.
8.025	0.750	3.79	-63.200	7.650	-4.812	2.
8.275	1.000	5.05	-63.200	7.775	-4.813	2.
8.525	1.250	6.31	-63.200	7.900	-4.812	2.
8.775	1.500	7.57	-63.200	8.025	-4.812	2.
9.025	1.750	8.84	-63.200	8.150	-4.813	2.
9.275	2.000	10.10	-63.200	8.275	-4.813	2.
9.525	2.250	11.36	-63.200	8.400	-4.812	2.
9.775	2.500	12.62	-63.200	8.525	-4.812	2.
10.025	2.750	13.88	-63.200	8.650	-4.812	2.
10.275	3.000	15.15	-63.200	8.775	-4.812	2.
10.525	3.250	16.41	-63.200	8.900	-4.813	2.
10.775	3.500	17.67	-63.200	9.025	-4.813	2.
11.025	3.750	18.93	-63.200	9.150	-4.813	2.
11.275	4.000	20.20	-63.200	9.275	-4.813	2.
11.525	4.250	21.46	-63.200	9.400	-4.812	2.
11.775	4.500	22.72	-63.200	9.525	-4.812	2.
12.025	4.750	23.98	-63.200	9.650	-4.812	2.
12.275	5.000	25.25	-63.200	9.775	-4.812	2.
12.525	5.250	26.51	-63.200	9.900	-4.812	2.
12.775	5.500	27.77	-63.200	10.025	-4.812	2.
13.025	5.750	29.03	-63.200	10.150	-4.812	2.
13.275	6.000	30.29	-63.200	10.275	-4.812	2.
13.525	6.250	31.56	-63.200	10.400	-4.812	2.
13.775	6.500	32.82	-63.200	10.525	-4.813	2.
14.025	6.750	34.08	-63.200	10.650	-4.812	2.
14.275	7.000	35.34	-63.200	10.775	-4.813	2.
14.525	7.250	36.61	-63.200	10.900	-4.812	2.
14.775	7.500	37.87	-63.200	11.025	-4.813	2.
15.025	7.750	39.13	-63.200	11.150	-4.812	2.
15.275	8.000	40.39	-63.200	11.275	-4.813	2.
15.525	8.250	41.65	-63.200	11.400	-4.812	2.
15.775	8.500	42.92	-63.200	11.525	-4.812	2.
16.025	8.750	44.18	-63.200	11.650	-4.812	2.
16.275	9.000	45.44	-63.200	11.775	-4.812	2.
16.525	9.250	46.70	-63.200	11.900	-4.812	2.
16.775	9.500	47.97	-63.200	12.025	-4.812	2.
16.950	9.675	48.85	-63.200	12.112	-4.812	2.

38K DWT S/U B/C
NO.2 FO SETT.T(P)
COMP. NO 404

LEVEL FROM		VOLUME CUBM	CENTRE OF GRAVITY FROM		INERTIA MOMENT
BL	BOTTOM		LPP/2	BL CL	
7.275	0.000	0.0			
7.525	0.250	1.26	-63.200	7.400 -6.938	2.
7.775	0.500	2.52	-63.200	7.525 -6.938	2.
8.025	0.750	3.79	-63.200	7.650 -6.938	2.
8.275	1.000	5.05	-63.200	7.775 -6.938	2.
8.525	1.250	6.31	-63.200	7.900 -6.937	2.
8.775	1.500	7.57	-63.200	8.025 -6.938	2.
9.025	1.750	8.84	-63.200	8.150 -6.938	2.
9.275	2.000	10.10	-63.200	8.275 -6.938	2.
9.525	2.250	11.36	-63.200	8.400 -6.938	2.
9.775	2.500	12.62	-63.200	8.525 -6.937	2.
10.025	2.750	13.88	-63.200	8.650 -6.938	2.
10.275	3.000	15.15	-63.200	8.775 -6.938	2.
10.525	3.250	16.41	-63.200	8.900 -6.938	2.
10.775	3.500	17.67	-63.200	9.025 -6.938	2.
11.025	3.750	18.93	-63.200	9.150 -6.938	2.
11.275	4.000	20.20	-63.200	9.275 -6.938	2.
11.525	4.250	21.46	-63.200	9.400 -6.937	2.
11.775	4.500	22.72	-63.200	9.525 -6.938	2.
12.025	4.750	23.98	-63.200	9.650 -6.937	2.
12.275	5.000	25.25	-63.200	9.775 -6.937	2.
12.525	5.250	26.51	-63.200	9.900 -6.938	2.
12.775	5.500	27.77	-63.200	10.025 -6.938	2.
13.025	5.750	29.03	-63.200	10.150 -6.937	2.
13.275	6.000	30.29	-63.200	10.275 -6.938	2.
13.525	6.250	31.56	-63.200	10.400 -6.938	2.
13.775	6.500	32.82	-63.200	10.525 -6.938	2.
14.025	6.750	34.08	-63.200	10.650 -6.938	2.
14.275	7.000	35.34	-63.200	10.775 -6.938	2.
14.525	7.250	36.61	-63.200	10.900 -6.937	2.
14.775	7.500	37.87	-63.200	11.025 -6.938	2.
15.025	7.750	39.13	-63.200	11.150 -6.937	2.
15.275	8.000	40.39	-63.200	11.275 -6.938	2.
15.525	8.250	41.65	-63.200	11.400 -6.938	2.
15.775	8.500	42.92	-63.200	11.525 -6.937	2.
16.025	8.750	44.18	-63.200	11.650 -6.938	2.
16.275	9.000	45.44	-63.200	11.775 -6.938	2.
16.525	9.250	46.70	-63.200	11.900 -6.938	2.
16.775	9.500	47.97	-63.200	12.025 -6.937	2.
16.950	9.675	48.85	-63.200	12.112 -6.937	

38K DWT S/U B/C
NO.1 FO SERV.T.(P)
COMP. NO 405

LEVEL	FROM	VOLUME	CENTRE OF GRAVITY FROM	INERTIA
BL	BOTTOM	CUBM	LPP/2	MOMENT
7.275	0.000	0.0		
7.525	0.250	1.19	-63.200	7.400 -9.000 2.
7.775	0.500	2.38	-63.200	7.525 -9.000 2.
8.025	0.750	3.56	-63.200	7.650 -9.000 2.
8.275	1.000	4.75	-63.200	7.775 -9.000 2.
8.525	1.250	5.94	-63.200	7.900 -9.000 2.
8.775	1.500	7.13	-63.200	8.025 -9.000 2.
9.025	1.750	8.32	-63.200	8.150 -9.000 2.
9.275	2.000	9.50	-63.200	8.275 -9.000 2.
9.525	2.250	10.69	-63.200	8.400 -9.000 2.
9.775	2.500	11.88	-63.200	8.525 -9.000 2.
10.025	2.750	13.07	-63.200	8.650 -9.000 2.
10.275	3.000	14.26	-63.200	8.775 -9.000 2.
10.525	3.250	15.44	-63.200	8.900 -9.000 2.
10.775	3.500	16.63	-63.200	9.025 -9.000 2.
11.025	3.750	17.82	-63.200	9.150 -9.000 2.
11.275	4.000	19.01	-63.200	9.275 -9.000 2.
11.525	4.250	20.20	-63.200	9.400 -9.000 2.
11.775	4.500	21.38	-63.200	9.525 -9.000 2.
12.025	4.750	22.57	-63.200	9.650 -9.000 2.
12.275	5.000	23.76	-63.200	9.775 -9.000 2.
12.525	5.250	24.95	-63.200	9.900 -9.000 2.
12.775	5.500	26.14	-63.200	10.025 -9.000 2.
13.025	5.750	27.32	-63.200	10.150 -9.000 2.
13.275	6.000	28.51	-63.200	10.275 -9.000 2.
13.525	6.250	29.70	-63.200	10.400 -9.000 2.
13.775	6.500	30.89	-63.200	10.525 -9.000 2.
14.025	6.750	32.08	-63.200	10.650 -9.000 2.
14.275	7.000	33.26	-63.200	10.775 -9.000 2.
14.525	7.250	34.45	-63.200	10.900 -9.000 2.
14.775	7.500	35.64	-63.200	11.025 -9.000 2.
15.025	7.750	36.83	-63.200	11.150 -9.000 2.
15.275	8.000	38.02	-63.200	11.275 -9.000 2.
15.525	8.250	39.20	-63.200	11.400 -9.000 2.
15.775	8.500	40.39	-63.200	11.525 -9.000 2.
16.025	8.750	41.58	-63.200	11.650 -9.000 2.
16.275	9.000	42.77	-63.200	11.775 -9.000 2.
16.525	9.250	43.96	-63.200	11.900 -9.000 2.
16.775	9.500	45.14	-63.200	12.025 -9.000 2.
16.950	9.675	45.98	-63.200	12.112 -9.000

38K DWT S/U B/C
NO.2 FO SERV.T(P)
COMP. NO 406

LEVEL FROM		VOLUME CUBM	CENTRE OF GRAVITY FROM LPP/2	FROM		INERTIA MOMENT
BL	BOTTOM			BL	CL	
7.275	0.000	0.0				
7.525	0.250	1.19	-63.200	7.400	-11.000	2.
7.775	0.500	2.38	-63.200	7.525	-11.000	2.
8.025	0.750	3.56	-63.200	7.650	-11.000	2.
8.275	1.000	4.75	-63.200	7.775	-11.000	2.
8.525	1.250	5.94	-63.200	7.900	-11.000	2.
8.775	1.500	7.13	-63.200	8.025	-11.000	2.
9.025	1.750	8.32	-63.200	8.150	-11.000	2.
9.275	2.000	9.50	-63.200	8.275	-11.000	2.
9.525	2.250	10.69	-63.200	8.400	-11.000	2.
9.775	2.500	11.88	-63.200	8.525	-11.000	2.
10.025	2.750	13.07	-63.200	8.650	-11.000	2.
10.275	3.000	14.26	-63.200	8.775	-11.000	2.
10.525	3.250	15.44	-63.200	8.900	-11.000	2.
10.775	3.500	16.63	-63.200	9.025	-11.000	2.
11.025	3.750	17.82	-63.200	9.150	-11.000	2.
11.275	4.000	19.01	-63.200	9.275	-11.000	2.
11.525	4.250	20.20	-63.200	9.400	-11.000	2.
11.775	4.500	21.38	-63.200	9.525	-11.000	2.
12.025	4.750	22.57	-63.200	9.650	-11.000	2.
12.275	5.000	23.76	-63.200	9.775	-11.000	2.
12.525	5.250	24.95	-63.200	9.900	-11.000	2.
12.775	5.500	26.14	-63.200	10.025	-11.000	2.
13.025	5.750	27.32	-63.200	10.150	-11.000	2.
13.275	6.000	28.51	-63.200	10.275	-11.000	2.
13.525	6.250	29.70	-63.200	10.400	-11.000	2.
13.775	6.500	30.89	-63.200	10.525	-11.000	2.
14.025	6.750	32.08	-63.200	10.650	-11.000	2.
14.275	7.000	33.26	-63.200	10.775	-11.000	2.
14.525	7.250	34.45	-63.200	10.900	-11.000	2.
14.775	7.500	35.64	-63.200	11.025	-11.000	2.
15.025	7.750	36.83	-63.200	11.150	-11.000	2.
15.275	8.000	38.02	-63.200	11.275	-11.000	2.
15.525	8.250	39.20	-63.200	11.400	-11.000	2.
15.775	8.500	40.39	-63.200	11.525	-11.000	2.
16.025	8.750	41.58	-63.200	11.650	-11.000	2.
16.275	9.000	42.77	-63.200	11.775	-11.000	2.
16.525	9.250	43.96	-63.200	11.900	-11.000	2.
16.775	9.500	45.14	-63.200	12.025	-11.000	2.
16.950	9.675	45.98	-63.200	12.112	-11.000	

38K DWT S/U B/C
 NO.1 M.D.O.SERV. (S)
 COMP. NO 411

LEVEL	FROM	VOLUME	CENTRE OF GRAVITY FROM	INERTIA
BL	BOTTOM	CUBM	LPP/2	MOMENT
7.275	0.000	0.0		
7.475	0.200	1.45	-60.800	6.
7.675	0.400	2.90	-60.800	6.
7.875	0.600	4.35	-60.800	6.
8.075	0.800	5.80	-60.800	6.
8.275	1.000	7.25	-60.800	6.
8.475	1.200	8.70	-60.800	6.
8.675	1.400	10.15	-60.800	6.
8.875	1.600	11.59	-60.800	6.
9.075	1.800	13.04	-60.800	6.
9.275	2.000	14.49	-60.800	6.
9.475	2.200	15.94	-60.800	6.
9.675	2.400	17.39	-60.800	6.
9.875	2.600	18.84	-60.800	6.
10.075	2.800	20.29	-60.800	6.
10.275	3.000	21.74	-60.800	6.
10.475	3.200	23.19	-60.800	6.
10.675	3.400	24.64	-60.800	6.
10.875	3.600	26.09	-60.800	6.
11.075	3.800	27.54	-60.800	6.
11.275	4.000	28.99	-60.800	6.
11.475	4.200	30.44	-60.800	6.
11.675	4.400	31.89	-60.800	6.
11.875	4.600	33.34	-60.800	6.
12.075	4.800	34.78	-60.800	6.
12.275	5.000	36.23	-60.800	6.
12.475	5.200	37.68	-60.800	6.
12.500	5.225	37.86	-60.800	6.

38K DWT S/U B/C
 NO.2 M.D.O.SERV.(S)
 COMP. NO 412

LEVEL FROM		VOLUME CUBM	CENTRE OF GRAVITY FROM			INERTIA MOMENT
BL	BOTTOM		LPP/2	BL	CL	
7.275	0.000	0.0				
7.475	0.200	1.53	-60.800	7.375	8.415	7.
7.675	0.400	3.07	-60.800	7.475	8.415	7.
7.875	0.600	4.60	-60.800	7.575	8.415	7.
8.075	0.800	6.14	-60.800	7.675	8.415	7.
8.275	1.000	7.67	-60.800	7.775	8.415	7.
8.475	1.200	9.21	-60.800	7.875	8.415	7.
8.675	1.400	10.74	-60.800	7.975	8.415	7.
8.875	1.600	12.28	-60.800	8.075	8.415	7.
9.075	1.800	13.81	-60.800	8.175	8.415	7.
9.275	2.000	15.35	-60.800	8.275	8.415	7.
9.475	2.200	16.88	-60.800	8.375	8.415	7.
9.675	2.400	18.44	-60.800	8.476	8.417	8.
9.875	2.600	20.09	-60.800	8.583	8.427	9.
10.075	2.800	21.83	-60.800	8.694	8.443	11.
10.275	3.000	23.64	-60.800	8.807	8.463	11.
10.475	3.200	25.45	-60.800	8.919	8.480	11.
10.675	3.400	27.25	-60.800	9.029	8.495	11.
10.875	3.600	29.06	-60.800	9.137	8.508	11.
11.075	3.800	30.87	-60.800	9.245	8.519	11.
11.275	4.000	32.68	-60.800	9.352	8.529	11.
11.475	4.200	34.49	-60.800	9.458	8.538	11.
11.675	4.400	36.30	-60.800	9.563	8.547	11.
11.875	4.600	38.11	-60.800	9.668	8.554	11.
12.075	4.800	39.91	-60.800	9.773	8.561	11.
12.275	5.000	41.72	-60.800	9.877	8.567	11.
12.475	5.200	43.53	-60.800	9.981	8.573	11.
12.500	5.225	43.76	-60.800	9.994	8.573	

38K DWT S/U B/C
 POT.W.T. (P)
 COMP. NO 431

LEVEL FROM		VOLUME CUBM	CENTRE OF GRAVITY FROM			INERTIA MOMENT
BL	BOTTOM		LPP/2	BL	CL	
13.300	0.000	0.0				
13.500	0.200	7.03	-93.457	13.400	-8.763	75.
13.700	0.400	14.05	-93.457	13.500	-8.763	75.
13.900	0.600	21.08	-93.457	13.600	-8.763	75.
14.100	0.800	28.11	-93.457	13.700	-8.763	75.
14.300	1.000	35.14	-93.457	13.800	-8.763	75.
14.500	1.200	42.16	-93.457	13.900	-8.763	75.
14.700	1.400	49.19	-93.457	14.000	-8.763	75.
14.900	1.600	56.22	-93.457	14.100	-8.763	75.
15.100	1.800	63.24	-93.457	14.200	-8.763	75.
15.300	2.000	70.27	-93.457	14.300	-8.763	75.
15.500	2.200	77.30	-93.457	14.400	-8.763	75.
15.700	2.400	84.32	-93.457	14.500	-8.763	75.
15.900	2.600	91.35	-93.457	14.600	-8.763	75.
16.100	2.800	98.38	-93.457	14.700	-8.763	75.
16.300	3.000	105.41	-93.457	14.800	-8.763	75.
16.500	3.200	112.43	-93.457	14.900	-8.763	75.
16.700	3.400	119.46	-93.457	15.000	-8.763	75.
16.900	3.600	126.49	-93.457	15.100	-8.763	75.
17.100	3.800	133.51	-93.457	15.200	-8.763	75.
17.300	4.000	140.54	-93.457	15.300	-8.763	75.
17.500	4.200	147.57	-93.457	15.400	-8.763	75.
17.700	4.400	154.59	-93.457	15.500	-8.763	75.
17.900	4.600	161.08	-93.461	15.592	-8.757	5.
17.940	4.640	161.38	-93.461	15.597	-8.754	

38K DWT S/U B/C
 POT.W.T. (S)
 COMP. NO 432

LEVEL FROM		VOLUME CUBM	CENTRE OF GRAVITY FROM LPP/2	GRAVITY FROM		INERTIA MOMENT
BL	BOTTOM			BL	CL	
13.300	0.000	0.0				
13.500	0.200	7.03	-93.457	13.400	8.763	75.
13.700	0.400	14.05	-93.457	13.500	8.763	75.
13.900	0.600	21.08	-93.457	13.600	8.763	75.
14.100	0.800	28.11	-93.457	13.700	8.763	75.
14.300	1.000	35.14	-93.457	13.800	8.763	75.
14.500	1.200	42.16	-93.457	13.900	8.763	75.
14.700	1.400	49.19	-93.457	14.000	8.763	75.
14.900	1.600	56.22	-93.457	14.100	8.763	75.
15.100	1.800	63.24	-93.457	14.200	8.763	75.
15.300	2.000	70.27	-93.457	14.300	8.763	75.
15.500	2.200	77.30	-93.457	14.400	8.763	75.
15.700	2.400	84.32	-93.457	14.500	8.763	75.
15.900	2.600	91.35	-93.457	14.600	8.763	75.
16.100	2.800	98.38	-93.457	14.700	8.763	75.
16.300	3.000	105.41	-93.457	14.800	8.763	75.
16.500	3.200	112.43	-93.457	14.900	8.763	75.
16.700	3.400	119.46	-93.457	15.000	8.763	75.
16.900	3.600	126.49	-93.457	15.100	8.763	75.
17.100	3.800	133.51	-93.457	15.200	8.763	75.
17.300	4.000	140.54	-93.457	15.300	8.763	75.
17.500	4.200	147.57	-93.457	15.400	8.763	75.
17.700	4.400	154.59	-93.457	15.500	8.763	75.
17.900	4.600	161.08	-93.461	15.592	8.757	5.
17.940	4.640	161.38	-93.461	15.597	8.754	

38K DWT S/U B/C
 LO HOLDING T. (S)
 COMP. NO 421

LEVEL FROM		VOLUME CUBM	CENTRE OF GRAVITY FROM			INERTIA MOMENT
BL	BOTTOM		LPP/2	BL	CL	
12.500	0.000	0.0				
12.700	0.200	0.95	-64.000	12.600	7.400	2.
12.900	0.400	1.90	-64.000	12.700	7.400	2.
13.100	0.600	2.85	-64.000	12.800	7.400	2.
13.300	0.800	3.80	-64.000	12.900	7.400	2.
13.500	1.000	4.75	-64.000	13.000	7.400	2.
13.700	1.200	5.70	-64.000	13.100	7.400	2.
13.900	1.400	6.65	-64.000	13.200	7.400	2.
14.100	1.600	7.60	-64.000	13.300	7.400	2.
14.300	1.800	8.55	-64.000	13.400	7.400	2.
14.500	2.000	9.50	-64.000	13.500	7.400	2.
14.700	2.200	10.45	-64.000	13.600	7.400	2.
14.900	2.400	11.40	-64.000	13.700	7.400	2.
15.100	2.600	12.36	-64.000	13.800	7.400	2.
15.300	2.800	13.31	-64.000	13.900	7.400	2.
15.500	3.000	14.26	-64.000	14.000	7.400	2.
15.700	3.200	15.21	-64.000	14.100	7.400	2.
15.900	3.400	16.16	-64.000	14.200	7.400	2.
16.100	3.600	17.11	-64.000	14.300	7.400	2.
16.300	3.800	18.06	-64.000	14.400	7.400	2.
16.500	4.000	19.01	-64.000	14.500	7.400	2.
16.700	4.200	19.96	-64.000	14.600	7.400	2.
16.900	4.400	20.91	-64.000	14.700	7.400	2.
16.950	4.450	21.15	-64.000	14.725	7.400	

38K DWT S/U B/C
LO STOR. T. (S)
COMP. NO 422

LEVEL FROM		VOLUME CUBM	CENTRE OF GRAVITY FROM LPP/2	GRAVITY FROM		INERTIA MOMENT
BL	BOTTOM			BL	CL	
12.500	0.000	0.0				
12.700	0.200	0.95	-64.000	12.600	9.400	2.
12.900	0.400	1.90	-64.000	12.700	9.400	2.
13.100	0.600	2.85	-64.000	12.800	9.400	2.
13.300	0.800	3.80	-64.000	12.900	9.400	2.
13.500	1.000	4.75	-64.000	13.000	9.400	2.
13.700	1.200	5.70	-64.000	13.100	9.400	2.
13.900	1.400	6.65	-64.000	13.200	9.400	2.
14.100	1.600	7.60	-64.000	13.300	9.400	2.
14.300	1.800	8.55	-64.000	13.400	9.400	2.
14.500	2.000	9.50	-64.000	13.500	9.400	2.
14.700	2.200	10.45	-64.000	13.600	9.400	2.
14.900	2.400	11.40	-64.000	13.700	9.400	2.
15.100	2.600	12.36	-64.000	13.800	9.400	2.
15.300	2.800	13.31	-64.000	13.900	9.400	2.
15.500	3.000	14.26	-64.000	14.000	9.400	2.
15.700	3.200	15.21	-64.000	14.100	9.400	2.
15.900	3.400	16.16	-64.000	14.200	9.400	2.
16.100	3.600	17.11	-64.000	14.300	9.400	2.
16.300	3.800	18.06	-64.000	14.400	9.400	2.
16.500	4.000	19.01	-64.000	14.500	9.400	2.
16.700	4.200	19.96	-64.000	14.600	9.400	2.
16.900	4.400	20.91	-64.000	14.700	9.400	2.
16.950	4.450	21.15	-64.000	14.725	9.400	

38K DWT S/U B/C
CYL. LO STOR.T.(S)
COMP. NO 423

LEVEL	FROM	VOLUME	CENTRE OF GRAVITY FROM	INERTIA
BL	BOTTOM	CUBM	LPP/2	MOMENT
12.500	0.000	0.0		
12.700	0.200	1.90	-64.800	5.
12.900	0.400	3.80	-64.800	5.
13.100	0.600	5.70	-64.800	5.
13.300	0.800	7.60	-64.800	5.
13.500	1.000	9.50	-64.800	5.
13.700	1.200	11.40	-64.800	5.
13.900	1.400	13.31	-64.800	5.
14.100	1.600	15.21	-64.800	5.
14.300	1.800	17.11	-64.800	5.
14.500	2.000	19.01	-64.800	5.
14.700	2.200	20.91	-64.800	5.
14.900	2.400	22.81	-64.800	5.
15.100	2.600	24.71	-64.800	5.
15.300	2.800	26.61	-64.800	5.
15.500	3.000	28.51	-64.800	5.
15.700	3.200	30.41	-64.800	5.
15.900	3.400	32.31	-64.800	5.
16.100	3.600	34.21	-64.800	5.
16.300	3.800	36.12	-64.800	5.
16.500	4.000	38.02	-64.800	5.
16.700	4.200	39.92	-64.800	5.
16.900	4.400	41.82	-64.800	5.
16.950	4.450	42.29	-64.800	5.

38K DWT S/U B/C
SSDG LO HOLDING T. (S)
COMP. NO 424

LEVEL	FROM	VOLUME	CENTRE OF GRAVITY	FROM	INERTIA
BL	BOTTOM	CUBM	LPP/2	BL	MOMENT
12.500	0.000	0.0			
12.700	0.200	0.32	-66.000	12.600	6.900
12.900	0.400	0.63	-66.000	12.700	6.900
13.100	0.600	0.95	-66.000	12.800	6.900
13.300	0.800	1.27	-66.000	12.900	6.900
13.500	1.000	1.58	-66.000	13.000	6.900
13.700	1.200	1.90	-66.000	13.100	6.900
13.900	1.400	2.22	-66.000	13.200	6.900
14.100	1.600	2.53	-66.000	13.300	6.900
14.300	1.800	2.85	-66.000	13.400	6.900
14.500	2.000	3.17	-66.000	13.500	6.900
14.700	2.200	3.48	-66.000	13.600	6.900
14.900	2.400	3.80	-66.000	13.700	6.900
15.100	2.600	4.12	-66.000	13.800	6.900
15.300	2.800	4.44	-66.000	13.900	6.900
15.500	3.000	4.75	-66.000	14.000	6.900
15.700	3.200	5.07	-66.000	14.100	6.900
15.900	3.400	5.39	-66.000	14.200	6.900
16.100	3.600	5.70	-66.000	14.300	6.900
16.300	3.800	6.02	-66.000	14.400	6.900
16.500	4.000	6.34	-66.000	14.500	6.900
16.700	4.200	6.65	-66.000	14.600	6.900
16.900	4.400	6.97	-66.000	14.700	6.900
16.950	4.450	7.05	-66.000	14.725	6.900

38K DWT S/U B/C
SSDG LO STOR. T. (S)
COMP. NO 425

LEVEL FROM		VOLUME CUBM	CENTRE OF GRAVITY FROM			INERTIA MOMENT
BL	BOTTOM		LPP/2	BL	CL	
12.500	0.000	0.0				
12.700	0.200	0.32	-66.000	12.600	7.900	0.
12.900	0.400	0.63	-66.000	12.700	7.900	0.
13.100	0.600	0.95	-66.000	12.800	7.900	0.
13.300	0.800	1.27	-66.000	12.900	7.900	0.
13.500	1.000	1.58	-66.000	13.000	7.900	0.
13.700	1.200	1.90	-66.000	13.100	7.900	0.
13.900	1.400	2.22	-66.000	13.200	7.900	0.
14.100	1.600	2.53	-66.000	13.300	7.900	0.
14.300	1.800	2.85	-66.000	13.400	7.900	0.
14.500	2.000	3.17	-66.000	13.500	7.900	0.
14.700	2.200	3.48	-66.000	13.600	7.900	0.
14.900	2.400	3.80	-66.000	13.700	7.900	0.
15.100	2.600	4.12	-66.000	13.800	7.900	0.
15.300	2.800	4.44	-66.000	13.900	7.900	0.
15.500	3.000	4.75	-66.000	14.000	7.900	0.
15.700	3.200	5.07	-66.000	14.100	7.900	0.
15.900	3.400	5.39	-66.000	14.200	7.900	0.
16.100	3.600	5.70	-66.000	14.300	7.900	0.
16.300	3.800	6.02	-66.000	14.400	7.900	0.
16.500	4.000	6.34	-66.000	14.500	7.900	0.
16.700	4.200	6.65	-66.000	14.600	7.900	0.
16.900	4.400	6.97	-66.000	14.700	7.900	0.
16.950	4.450	7.05	-66.000	14.725	7.900	

38K DWT S/U B/C
 L.O.SUMP.T. (C)
 COMP. NO 426

LEVEL FROM		VOLUME	CENTRE OF GRAVITY FROM	INERTIA	
BL	BOTTOM		LPP/2	BL	CL
0.840	0.000	0.0			
0.890	0.050	1.24	-72.400	0.865	0.000
0.940	0.100	2.47	-72.400	0.890	0.000
0.990	0.150	3.71	-72.400	0.915	0.000
1.040	0.200	4.94	-72.400	0.940	0.000
1.090	0.250	6.18	-72.400	0.965	0.000
1.140	0.300	7.41	-72.400	0.990	0.000
1.190	0.350	8.65	-72.400	1.015	0.000
1.240	0.400	9.88	-72.400	1.040	0.000
1.290	0.450	11.12	-72.400	1.065	0.000
1.340	0.500	12.36	-72.400	1.090	0.000
1.390	0.550	13.59	-72.400	1.115	0.000
1.440	0.600	14.83	-72.400	1.140	0.000
1.490	0.650	16.06	-72.400	1.165	0.000
1.540	0.700	17.30	-72.400	1.190	0.000
1.590	0.750	18.53	-72.400	1.215	0.000
1.640	0.800	19.77	-72.400	1.240	0.000
1.690	0.850	21.00	-72.400	1.265	0.000
1.730	0.890	21.99	-72.400	1.285	0.000

38K DWT S/U B/C

P.A.T. (S)

COMP. NO 501

LEVEL FROM		VOLUME CUBM	CENTRE OF GRAVITY FROM		INERTIA MOMENT
BL	BOTTOM		LPP/2	BL CL	
7.275	0.000	0.0			
7.525	0.250	0.49	-62.500	7.400	4.675
7.775	0.500	0.98	-62.500	7.525	4.675
8.025	0.750	1.46	-62.500	7.650	4.675
8.275	1.000	1.95	-62.500	7.775	4.675
8.525	1.250	2.44	-62.500	7.900	4.675
8.775	1.500	3.30	-62.623	8.098	4.675
9.025	1.750	4.27	-62.720	8.282	4.675
9.275	2.000	5.25	-62.782	8.443	4.675
9.525	2.250	6.23	-62.824	8.593	4.675
9.775	2.500	7.20	-62.855	8.737	4.675
10.025	2.750	8.24	-62.889	8.884	4.675
10.275	3.000	9.34	-62.926	9.033	4.675
10.525	3.250	10.44	-62.955	9.177	4.675
10.775	3.500	11.54	-62.978	9.317	4.675
11.025	3.750	12.64	-62.997	9.455	4.675
11.275	4.000	13.74	-63.014	9.590	4.675
11.525	4.250	14.84	-63.027	9.724	4.675
11.775	4.500	15.93	-63.039	9.857	4.675
12.025	4.750	17.03	-63.050	9.989	4.675
12.275	5.000	18.13	-63.059	10.120	4.675
12.525	5.250	19.23	-63.067	10.250	4.675
12.775	5.500	20.33	-63.074	10.380	4.675
13.025	5.750	21.43	-63.081	10.509	4.675
13.275	6.000	22.53	-63.086	10.638	4.675
13.525	6.250	23.63	-63.092	10.766	4.675
13.775	6.500	24.73	-63.097	10.895	4.675
14.025	6.750	25.82	-63.101	11.022	4.675
14.275	7.000	26.92	-63.105	11.150	4.675
14.525	7.250	28.02	-63.109	11.278	4.675
14.775	7.500	29.12	-63.112	11.405	4.675
15.025	7.750	30.22	-63.115	11.532	4.675
15.275	8.000	31.32	-63.118	11.659	4.675
15.525	8.250	32.42	-63.121	11.786	4.675
15.775	8.500	33.52	-63.124	11.912	4.675
16.025	8.750	34.62	-63.126	12.039	4.675
16.275	9.000	35.71	-63.128	12.165	4.675
16.525	9.250	36.81	-63.130	12.292	4.675
16.775	9.500	37.91	-63.132	12.418	4.675
16.950	9.675	38.68	-63.134	12.507	4.675

38K DWT S/U B/C
 CILY W.T. (P)
 COMP. NO 502

LEVEL FROM		VOLUME CUBM	CENTRE OF GRAVITY LPP/2	FROM		INERTIA MOMENT
BL	BOTTOM			BL	CL	
0.000	0.000	0.0				
0.100	0.100	0.18	-72.906	0.059	-2.463	0.
0.200	0.200	0.51	-73.184	0.121	-2.540	0.
0.300	0.300	0.99	-73.389	0.184	-2.599	1.
0.400	0.400	1.58	-73.557	0.247	-2.648	1.
0.500	0.500	2.27	-73.697	0.309	-2.689	2.
0.600	0.600	3.06	-73.810	0.372	-2.727	2.
0.700	0.700	3.94	-73.902	0.434	-2.763	3.
0.800	0.800	4.89	-73.977	0.496	-2.797	3.
0.900	0.900	5.92	-74.039	0.557	-2.829	4.
1.000	1.000	7.02	-74.092	0.619	-2.860	4.
1.100	1.100	8.17	-74.136	0.680	-2.889	5.
1.200	1.200	9.39	-74.174	0.741	-2.917	6.
1.300	1.300	10.67	-74.207	0.802	-2.945	6.
1.400	1.400	12.00	-74.236	0.863	-2.972	7.
1.500	1.500	13.38	-74.262	0.923	-2.998	8.
1.600	1.600	14.82	-74.284	0.984	-3.023	9.
1.700	1.700	16.30	-74.304	1.045	-3.047	9.
1.800	1.800	17.83	-74.322	1.105	-3.071	10.
1.900	1.900	19.40	-74.338	1.166	-3.095	11.
2.000	2.000	21.02	-74.352	1.226	-3.118	12.
2.100	2.100	22.68	-74.365	1.287	-3.140	13.
2.200	2.200	24.39	-74.377	1.347	-3.162	14.
2.300	2.300	26.14	-74.388	1.407	-3.184	15.
2.400	2.400	27.93	-74.397	1.468	-3.206	16.
2.420	2.420	28.29	-74.399	1.480	-3.210	

38K DWT S/U B/C
WASTE O.T. (S)
COMP. NO 503

LEVEL FROM		VOLUME CUBM	CENTRE OF GRAVITY FROM		INERTIA MOMENT
BL	BOTTOM		LPP/2	BL CL	
0.000	0.000	0.0			
0.100	0.100	0.18	-72.906	0.059 2.463	0.
0.200	0.200	0.51	-73.184	0.121 2.540	0.
0.300	0.300	0.99	-73.389	0.184 2.599	1.
0.400	0.400	1.58	-73.557	0.247 2.648	1.
0.500	0.500	2.27	-73.697	0.309 2.689	2.
0.600	0.600	3.06	-73.810	0.372 2.727	2.
0.700	0.700	3.94	-73.902	0.434 2.763	3.
0.800	0.800	4.89	-73.977	0.496 2.797	3.
0.900	0.900	5.92	-74.039	0.557 2.829	4.
1.000	1.000	7.02	-74.092	0.619 2.860	4.
1.100	1.100	8.17	-74.136	0.680 2.889	5.
1.200	1.200	9.39	-74.174	0.741 2.917	6.
1.300	1.300	10.67	-74.207	0.802 2.945	6.
1.400	1.400	12.00	-74.236	0.863 2.972	7.
1.500	1.500	13.38	-74.262	0.923 2.998	8.
1.600	1.600	14.82	-74.284	0.984 3.023	9.
1.700	1.700	16.30	-74.304	1.045 3.047	9.
1.800	1.800	17.83	-74.322	1.105 3.071	10.
1.900	1.900	19.40	-74.338	1.166 3.095	11.
2.000	2.000	21.02	-74.352	1.226 3.118	12.
2.100	2.100	22.68	-74.365	1.287 3.140	13.
2.200	2.200	24.39	-74.377	1.347 3.162	14.
2.300	2.300	26.14	-74.388	1.407 3.184	15.
2.400	2.400	27.93	-74.397	1.468 3.206	16.
2.420	2.420	28.29	-74.399	1.480 3.210	

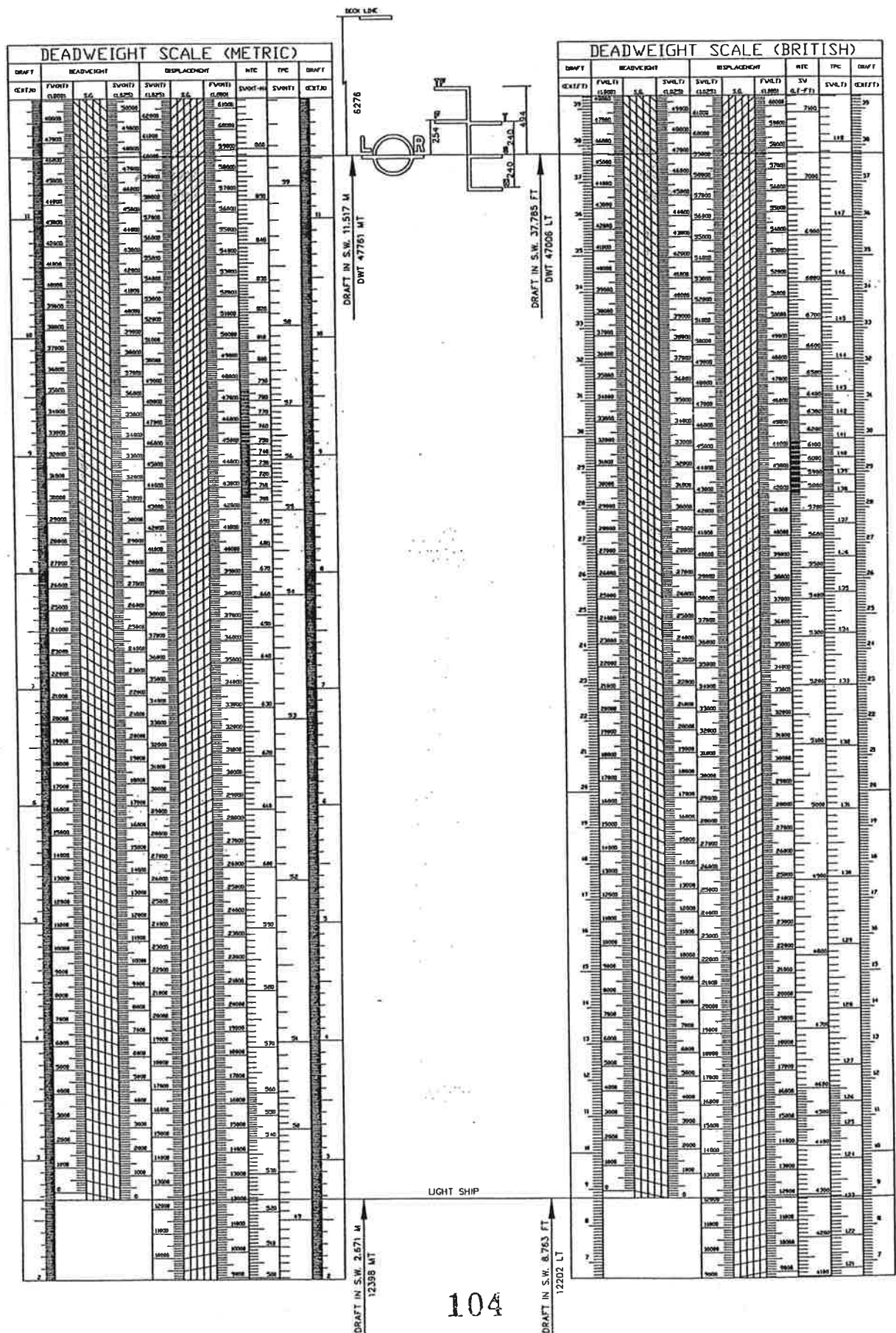
38K DWT S/U B/C
 CLEAN W.T. (C)
 COMP. NO 504

LEVEL	FROM	VOLUME	CENTRE OF GRAVITY FROM	INERTIA
BL	BOTTOM	CUBM	LPP/2 BL CL	MOMENT
0.000	0.000	0.0		
0.100	0.100	0.60	-79.125 0.053 0.000	5.
0.200	0.200	1.36	-79.133 0.108 0.000	8.
0.300	0.300	2.21	-79.137 0.163 0.000	11.
0.400	0.400	3.14	-79.141 0.218 0.000	13.
0.500	0.500	4.11	-79.147 0.273 0.000	15.
0.600	0.600	5.12	-79.154 0.328 0.000	16.
0.700	0.700	6.16	-79.161 0.382 0.000	18.
0.800	0.800	7.23	-79.168 0.437 0.000	19.
0.900	0.900	8.33	-79.174 0.491 0.000	21.
1.000	1.000	9.45	-79.179 0.546 0.000	22.
1.100	1.100	10.59	-79.185 0.600 0.000	23.
1.200	1.200	11.75	-79.190 0.654 0.000	25.
1.300	1.300	12.92	-79.194 0.709 0.000	26.
1.400	1.400	14.12	-79.199 0.763 0.000	27.
1.500	1.500	15.33	-79.203 0.817 0.000	28.
1.600	1.600	16.55	-79.207 0.871 0.000	29.
1.700	1.700	17.79	-79.210 0.925 0.000	30.
1.800	1.800	19.04	-79.213 0.980 0.000	31.
1.900	1.900	20.30	-79.216 1.034 0.000	32.
2.000	2.000	21.57	-79.219 1.088 0.000	33.
2.100	2.100	22.86	-79.222 1.142 0.000	34.
2.200	2.200	24.15	-79.225 1.196 0.000	35.
2.300	2.300	25.45	-79.227 1.250 0.000	36.
2.400	2.400	26.76	-79.229 1.303 0.000	37.
2.420	2.420	27.02	-79.230 1.314 0.000	

38K DWT S/U B/C
FO OVER.F.T.(P)
COMP. NO 407

LEVEL FROM		VOLUME CUBM	CENTRE OF GRAVITY FROM			INERTIA MOMENT
BL	BOTTOM		LPP/2	BL	CL	
0.000	0.000	0.0				
0.100	0.100	0.57	-63.728	0.054	-4.527	2.
0.200	0.200	1.35	-63.763	0.110	-4.662	4.
0.300	0.300	2.25	-63.784	0.167	-4.768	5.
0.400	0.400	3.26	-63.798	0.224	-4.857	7.
0.500	0.500	4.36	-63.808	0.281	-4.935	9.
0.600	0.600	5.54	-63.817	0.338	-5.006	11.
0.700	0.700	6.80	-63.824	0.396	-5.072	13.
0.800	0.800	8.13	-63.830	0.454	-5.133	15.
0.900	0.900	9.52	-63.835	0.512	-5.192	17.
1.000	1.000	10.90	-63.852	0.567	-5.242	13.
1.100	1.100	12.12	-63.901	0.616	-5.278	15.
1.200	1.200	13.38	-63.942	0.666	-5.316	17.
1.300	1.300	14.69	-63.978	0.718	-5.354	19.
1.400	1.400	16.05	-64.008	0.772	-5.394	21.
1.500	1.500	17.45	-64.035	0.826	-5.433	23.
1.600	1.600	18.62	-64.060	0.871	-5.464	3.
1.700	1.700	18.88	-64.086	0.882	-5.468	3.
1.800	1.800	19.14	-64.113	0.894	-5.472	4.
1.900	1.900	19.42	-64.140	0.907	-5.477	4.
2.000	2.000	19.70	-64.166	0.922	-5.483	5.
2.100	2.100	19.99	-64.193	0.939	-5.489	5.
2.178	2.178	20.22	-64.214	0.952	-5.495	

3.6 LOAD LINE MARK AND DEADWEIGHT SCALE





TRIM & STABILITY BOOKLET

REV.

STANDARD NO.

ORI

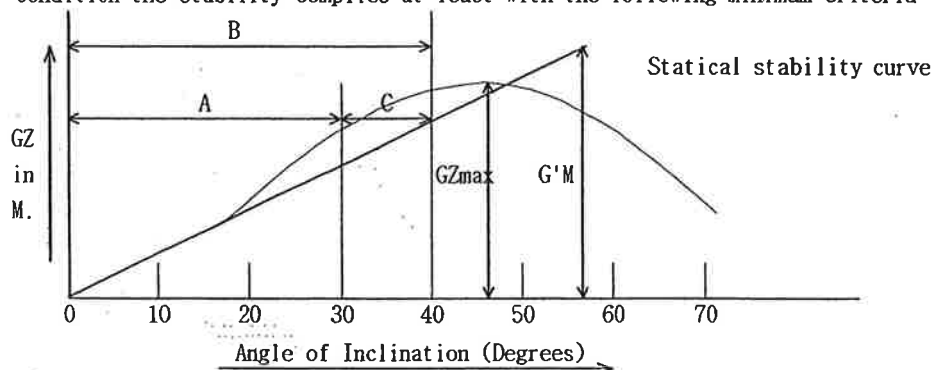
HDS-56-B002

4. DATA FOR STABILITY



4.1 Special notes regarding the stability and loading of the ship

1. As this ship is required to comply with "the international load line convention 1966, regulation 10 para 2", it is most important to ensure that in any sailing condition the stability complies at least with the following minimum criteria :



A - area under curve up to 30 degrees to be not less than 0.055 metre-radians (10.34 foot-degrees).

B - area under curve up to Θf or 40 degrees to be not less than 0.09 metre-radians (16.92 foot-degrees).

C - area between 30 degrees and Θf or 40 degrees to be not less than 0.03 metre-radians (5.64 foot-degrees).

Θf - 40 degrees, or any lesser angle at which the lower edges of any openings - in the hull, superstructure or deckhouses - which lead below deck and cannot be closed weathertight would be immersed.

* GZ_{max} - The maximum righting arm should occur at an angle of heel not less than 30 degrees and to be at least 0.2 meter in height.

$G'M$ - Initial fluid GM to be not less than 0.15 metres (0.49 feet)

* : Flag authority special requirement

General Precautions against Capsizing

2. Compliance with the stability criteria indicated above does not ensure immunity against capsizing regardless of the circumstances, or absolve the master from his responsibilities. Masters should, therefore, exercise prudence and good seamanship having regard to the season of the year, weather forecasts and the navigational zone and should take the appropriate action as to speed and course warranted by the prevailing circumstances.
3. Care should be taken to ensure that the cargo allocated to the ship is capable of being stowed so that compliance with the criteria can be achieved. If necessary the amount should be limited to the extent that ballast weight may be required to ensure that the stability remains adequate throughout the voyage.
4. Before a voyage commences care should be taken to ensure that the cargo and sizable pieces of equipment have been properly stowed or lashed so as to minimize the possibility of both longitudinal and lateral shifting while at sea,



4.2 Notes on use of the free surface moments

When a tank is completely filled with liquid and no movement of the liquid is possible, the effect on the ship's stability is precisely the same as if the tank contained solid material.

If certain quantity of liquid is discharged from the tank the situation changes completely and the stability of the ship is adversely affected by what is known as the "free surface effects" :

This adverse effect on the stability is referred to as a "loss in GM" or as a virtual rise in V.C.G. and is calculated as follows :

$$\text{Loss in GM due to Free Surface Effects (GG')} = \frac{\text{Free surface moment of inertia (M}^4\text{)} \times \text{S.G of liquid (T/M}^3\text{)}}{\text{Displacement of ship (Tonnes)}}$$

Notes ;

- 1) All oil fuel, fresh water, feed water and service tanks are considered, whether full or slack, slack at all times for the purpose of correcting the metacentric height for free surface effects.
- 2) Maximum inertia to be used regardless of filling height for consumable tanks.
- 3) In any arrival and intermediate condition where water ballast introduced during voyage maximum inertia to be used.
- 4) Maximum inertia to be used for any ballast tanks but not 100% full.



4.3 Example showing use of KN data

The purpose of the KN data is to enable statical stability curves to be drawn for the ship in any sailing condition.

Example : For Cond. No.25 Extreme Design Load(SG: 1.442) Dep.

1) DISPLACEMENT 49,923.1 ton

VCG(=KG) : 9.77 m above base line

Free Surface Correction(GG') : 0.46 m

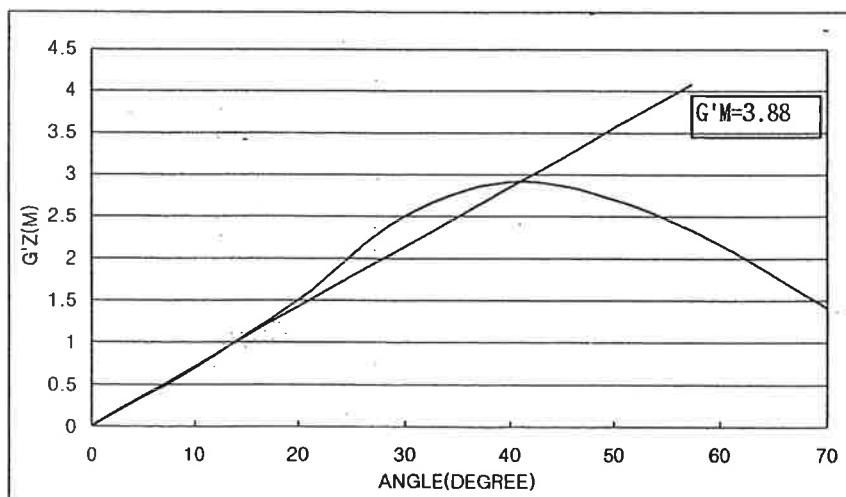
The vertical center of gravity above keel (KG') corrected for

Free Surface = $KG + GG' = 10.23 \text{ M}$

2) Enter the KN curves at the load displacement (= 49923.1 Ton)
and lift off the KN values for each angle of heel from data.

ANGLE OF HEEL θ (deg.)	$\sin \theta$ (deg.)	KN (metres)	-	$KG' \sin \theta$ (metres)	=	$G'Z$
5 °	0.0872	1.232		0.892		0.340
10 °	0.1736	2.470		1.776		0.694
20 °	0.3420	4.999		3.499		1.500
30 °	0.5000	7.618		5.115		2.503
40 °	0.6428	9.486		6.576		2.910
50 °	0.7660	10.542		7.836		2.706
60 °	0.8660	11.028		8.859		2.169
70 °	0.9397	11.023		9.613		1.410

3) Plot the G'Z curve





TRIM & STABILITY BOOKLET

REV.

STANDARD NO.

ORI

HDS-56-B002

4) Plot the following on the G'Z curve :

The G'M line : plot the value of G'M at 1 radian = 57.3°
and join this point to the origin.

5) Check to ensure that the G'Z curve meets all the elements of
the appropriate criteria.

5.1) the area under the G'Z curve from 0° ~ 30°

ANGLE OF HEELθ	G'Z VALUE	S.M.	F(A)
0 °	0.000	1	0.000
10 °	0.694	3	2.082
20 °	1.501	3	4.503
30 °	2.504	1	2.504
F(A) =			9.089

$$\text{AREA} = \frac{1}{3} \times 10^\circ \times F(A) / 57.3 = 0.595 \text{ METRE-RAD}$$

5.2) the area under the G'Z curve from 0° ~ 40° or from 0° ~ θf

ANGLE OF HEELθ	G'Z VALUE	S.M.	F(A)
0 °	0.000	1	0.000
10 °	0.694	4	2.776
20 °	1.501	2	3.002
30 °	2.504	4	10.016
40 °	2.911	1	2.911
F(A) =			18.705

$$\text{AREA} = \frac{1}{3} \times 10^\circ \times F(A) / 57.3 = 1.088 \text{ METRE-RAD}$$

If flooding angle(θf) is less than 40°, calculate the area under
the G'Z curve from θf to 40° and subtract this area from 0° to 40°.
Compare this value with the required criterion value.



TRIM & STABILITY BOOKLET

REV.

STANDARD NO.

ORI

HDS-56-B002

- 5.3) The area under the G'Z curve from 30° to 40° ,
or 30° to Θf (if Θf is less than 40°).

$$\text{Actual area} = \text{AREA}(0^\circ - 40^\circ \text{ or } 0^\circ - \Theta f) - \text{AREA}(0^\circ - 30^\circ)$$

$$= 1.088 - 0.595$$

$$= 0.493 \text{ METRE-RAD.}$$

Compare this value with the required criterion value.

- 5.4) The maximum G'Z value, and the angle of heel at which is occurs :

Actual maximum value lifted from the G'Z curve is 2.914 metres
at 40.6° angle of heel.

Compare this value with the required criterion value.



TRIM & STABILITY BOOKLET

REV.

STANDARD NO.

ORI

HDS-56-B002

EXAMPLE SHCWING USE OF KN DATA (BLANK)

The purpose of the KN data is to enable statcal stability curves to be drawn for the ship in any sailing condition.

Example : For COND. NO.

1) DISPLACEMENT tonnes

VCG(=KG) : above base line

Free Surface Correction(GG') :

The vertical center of gravity above keel (KG') corrected for

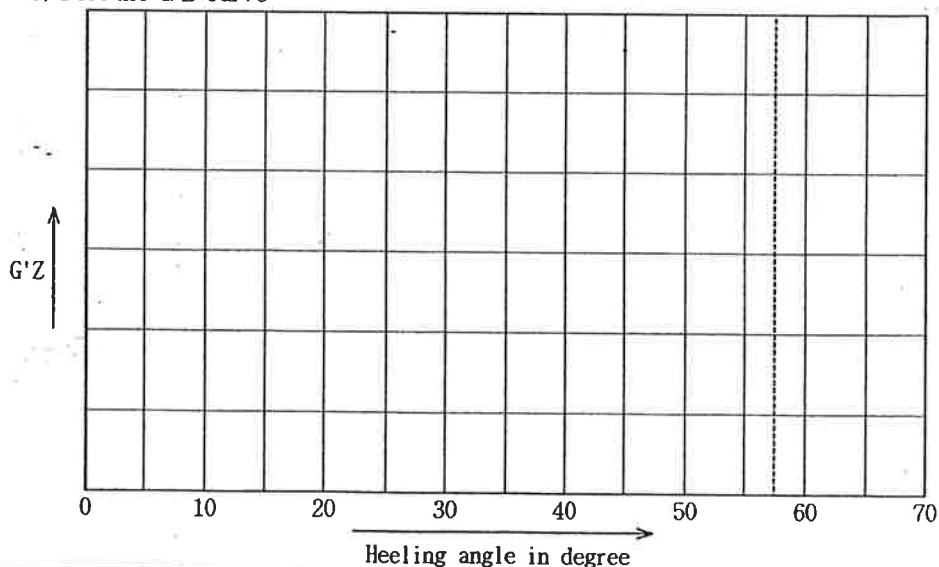
Free Surface = $KG + GG' =$

2) Enter the KN tables at the load displacement

= tonnes and lift off the KN values for each angle of heel from data.

<u>ANGLE OF HEEL</u> (deg.)	<u>SIN</u> (deg.)	<u>KN</u> (metres)	=	<u>KG' SIN</u> (metres)	=	<u>G'Z</u>
5 °	0.0872					
10 °	0.1736					
20 °	0.3420					
30 °	0.5000					
40 °	0.6428					
50 °	0.7660					
60 °	0.8660					
70 °	0.9397					

3) Plot the G'Z curve





TRIM & STABILITY BOOKLET

REV.	STANDARD NO.
ORI	HDS-56-B002

4) Plot the following on the G'Z curve :

The G'M line : plot the value of G'M at 1 radian = 57.3 °
and join this point to the origin.

5) Check to ensure that the G'Z curve meets all the elements of
the appropriate criteria.

5.1) the area under the G'Z curve from 0 ° ~ 30 °

ANGLE OF HEEL θ	G'Z VALUE	S.M.	F(A)
0 °	0.000	1	0.000
10 °		3	
20 °		3	
30 °		1	
F(A) =			

$$\text{AREA} = \frac{1}{3} \times 10^\circ \times F(A) / 57.3 = \text{METRE-RAD}$$

5.2) the area under the G'Z curve from 0 ° ~ 40 ° or from 0 ° ~ θ_f

ANGLE OF HEEL θ	G'Z VALUE	S.M.	F(A)
0 °	0.000	1	0.000
10 °		4	
20 °		2	
30 °		4	
40 °		1	
F(A) =			

$$\text{AREA} = \frac{1}{3} \times 10^\circ \times F(A) / 57.3 = \text{METRE-RAD}$$

If flooding angle(θ_f) is less than 40 °, calculate the area under
the G'Z curve from θ_f to 40 ° and subtract this area from 0 ° to 40 °.
Compare this value with the required criterion value.



TRIM & STABILITY BOOKLET

REV.

STANDARD NO.

ORI

HDS-56-B002

- 5.3) The area under the G'Z curve from 30° to 40° ,
or 30° to Θ_f (if Θ_f is less than 40°).

$$\text{Actual area} = \text{AREA}(0^\circ - 40^\circ \text{ or } 0^\circ - \Theta_f) - \text{AREA}(0^\circ - 30^\circ)$$

=

-

=

METRE-RAD.

Compare this value with the required criterion value.

- 5.4) The maximum G'Z value, and the angle of heel at which it occurs :

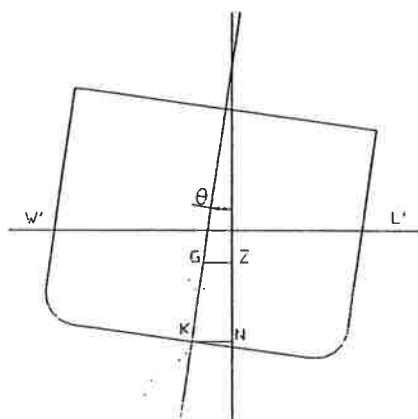
Actual maximum value lifted from the G'Z curve is metres

at $^\circ$ angle of heel.

Compare this value with the required criterion value.



4.4 Table of KN value



38K DWT S/U B/C

TABLE OF KN VALUES (FOR SEA WATER S.G. 1.025)

THE TABLE APPLIES FOR TRIM= 0.000 IN UPRIGHT CONDITION

DISPL	ANGLES OF HEEL								
	0.1	5.0	10.0	20.0	30.0	40.0	50.0	60.0	70.0
10000	0.065	3.244	6.081	9.066	10.470	11.117	11.313	11.277	
11000	0.060	2.963	5.714	8.828	10.320	11.064	11.354	11.408	
12000	0.056	2.787	5.418	8.593	10.174	11.014	11.393	11.534	11.403
13000	0.052	2.613	5.123	8.384	10.043	10.966	11.431	11.644	11.471
14000	0.049	2.451	4.855	8.178	9.912	10.920	11.465	11.740	11.535
15000	0.047	2.334	4.633	7.988	9.795	10.876	11.499	11.817	11.578
16000	0.044	2.218	4.413	7.806	9.678	10.834	11.530	11.877	11.612
17000	0.042	2.115	4.226	7.630	9.573	10.794	11.561	11.921	11.635
18000	0.041	2.034	4.064	7.467	9.469	10.755	11.588	11.952	11.654
19000	0.039	1.952	3.902	7.305	9.373	10.719	11.615	11.973	11.662
20000	0.038	1.881	3.769	7.155	9.279	10.683	11.633	11.983	11.666
21000	0.036	1.821	3.649	7.010	9.190	10.650	11.652	11.987	11.665
22000	0.035	1.761	3.529	6.865	9.106	10.617	11.654	11.984	11.659
23000	0.034	1.710	3.432	6.735	9.023	10.586	11.656	11.973	11.650
24000	0.033	1.665	3.341	6.604	8.946	10.557	11.648	11.961	11.637
25000	0.032	1.620	3.250	6.477	8.872	10.529	11.634	11.940	11.622
26000	0.032	1.582	3.177	6.362	8.797	10.502	11.616	11.920	11.604
27000	0.031	1.548	3.108	6.247	8.729	10.476	11.587	11.892	11.587
28000	0.030	1.513	3.039	6.135	8.661	10.450	11.563	11.866	11.569
29000	0.030	1.485	2.983	6.038	8.595	10.424	11.527	11.833	11.552
30000	0.029	1.459	2.930	5.941	8.533	10.397	11.492	11.800	11.534
31000	0.029	1.432	2.877	5.847	8.471	10.370	11.456	11.764	11.516
32000	0.028	1.410	2.834	5.767	8.412	10.338	11.413	11.727	11.497
33000	0.028	1.390	2.794	5.689	8.356	10.305	11.373	11.688	11.479
34000	0.027	1.370	2.753	5.610	8.299	10.270	11.327	11.650	11.458
35000	0.027	1.353	2.720	5.546	8.245	10.229	11.279	11.611	11.439
36000	0.027	1.338	2.690	5.485	8.193	10.189	11.232	11.573	11.417
37000	0.026	1.322	2.659	5.422	8.141	10.145	11.181	11.535	11.395
38000	0.026	1.310	2.634	5.369	8.091	10.097	11.131	11.496	11.371
39000	0.026	1.299	2.611	5.322	8.043	10.051	11.078	11.459	11.346
40000	0.026	1.287	2.589	5.272	7.996	10.002	11.025	11.420	11.320
41000	0.026	1.279	2.570	5.230	7.949	9.948	10.972	11.382	11.292
42000	0.025	1.271	2.554	5.193	7.905	9.897	10.918	11.342	11.265
43000	0.025	1.263	2.537	5.154	7.861	9.843	10.865	11.303	11.235
44000	0.025	1.257	2.523	5.120	7.818	9.786	10.813	11.263	11.206
45000	0.025	1.252	2.512	5.093	7.775	9.731	10.761	11.221	11.175
46000	0.025	1.247	2.500	5.064	7.733	9.673	10.709	11.180	11.145
47000	0.025	1.242	2.490	5.037	7.691	9.613	10.658	11.138	11.113
48000	0.025	1.239	2.482	5.017	7.649	9.555	10.607	11.096	11.081
49000	0.025	1.235	2.474	4.995	7.605	9.494	10.556	11.052	11.048
50000	0.025	1.231	2.466	4.977	7.561	9.430	10.505	11.009	11.016
51000	0.025	1.229	2.460	4.959	7.517	9.370	10.454	10.965	10.983
52000	0.025	1.226	2.454	4.944	7.472	9.306	10.402	10.920	10.949
53000	0.024	1.223	2.448	4.931	7.425	9.244	10.350	10.875	10.916
54000	0.024	1.221	2.444	4.917	7.380	9.181	10.297	10.830	10.882
55000	0.024	1.219	2.440	4.906	7.333	9.118	10.242	10.784	10.849
56000	0.024	1.217	2.435	4.898	7.286	9.056	10.188	10.737	10.815
57000	0.024	1.215	2.431	4.887	7.238	8.993	10.132	10.690	10.782
58000	0.024	1.214	2.428	4.879	7.190	8.931	10.076	10.643	10.748
59000	0.024	1.212	2.425	4.871	7.143	8.870	10.019	10.596	10.714
60000	0.024	1.211	2.422	4.866	7.093	8.808	9.961	10.548	10.680
61000	0.024	1.210	2.420	4.859	7.045	8.746	9.903	10.499	10.645
62000	0.024	1.209	2.418	4.853	6.998	8.683	9.844	10.450	10.611
63000	0.024	1.208	2.416	4.848	6.946	8.621	9.784	10.401	10.576
64000	0.024	1.207	2.415	4.842	6.898	8.557	9.723	10.352	10.542
65000	0.024	1.207	2.415	4.833	6.849	8.495	9.662	10.302	10.507
66000	0.024	1.206	2.414	4.823	6.804	8.432	9.600	10.251	10.471
67000	0.024	1.206	2.413	4.813	6.754	8.369	9.537	10.200	10.436
68000	0.024	1.206	2.413	4.800	6.709	8.306	9.475	10.149	10.401
69000	0.024	1.206	2.413	4.782	6.664	8.243	9.411	10.097	10.365
70000	0.024	1.206	2.413	4.765	6.619	8.182	9.347	10.045	10.329

38K DWT S/U B/C

TABLE OF KN VALUES (FOR FRESH WATER S.G. 1.000)

DISPL	ANGLES OF HEEL								
	0.1	5.0	10.0	20.0	30.0	40.0	50.0	60.0	70.0
10000	0.064	3.174	5.988	9.005	10.430	11.104	11.323	11.310	
11000	0.058	2.914	5.633	8.764	10.280	11.050	11.365	11.444	11.354
12000	0.055	2.735	5.330	8.528	10.134	10.999	11.405	11.567	11.422
13000	0.051	2.556	5.027	8.317	10.000	10.951	11.442	11.680	11.493
14000	0.048	2.410	4.777	8.107	9.871	10.905	11.477	11.767	11.549
15000	0.046	2.291	4.551	7.920	9.751	10.861	11.511	11.846	11.593
16000	0.043	2.172	4.324	7.733	9.636	10.818	11.543	11.895	11.622
17000	0.042	2.081	4.157	7.561	9.529	10.779	11.573	11.940	11.646
18000	0.040	1.997	3.991	7.394	9.424	10.739	11.601	11.960	11.658
19000	0.038	1.913	3.833	7.232	9.328	10.701	11.624	11.982	11.666
20000	0.037	1.851	3.709	7.082	9.233	10.666	11.642	11.983	11.665
21000	0.036	1.790	3.586	6.933	9.147	10.633	11.654	11.988	11.663
22000	0.035	1.731	3.473	6.793	9.060	10.600	11.655	11.980	11.654
23000	0.034	1.684	3.379	6.659	8.979	10.570	11.654	11.968	11.643
24000	0.033	1.638	3.286	6.526	8.902	10.540	11.638	11.950	11.628
25000	0.032	1.595	3.203	6.405	8.824	10.511	11.624	11.929	11.611
26000	0.031	1.560	3.132	6.287	8.753	10.485	11.597	11.903	11.593
27000	0.030	1.525	3.061	6.169	8.683	10.459	11.572	11.875	11.575
28000	0.030	1.493	2.999	6.067	8.614	10.432	11.539	11.843	11.557
29000	0.029	1.466	2.945	5.968	8.550	10.405	11.502	11.809	11.539
30000	0.029	1.439	2.890	5.868	8.487	10.378	11.467	11.773	11.521
31000	0.028	1.415	2.844	5.785	8.425	10.345	11.425	11.735	11.502
32000	0.028	1.394	2.802	5.705	8.367	10.311	11.381	11.696	11.483
33000	0.027	1.373	2.760	5.624	8.309	10.277	11.335	11.657	11.462
34000	0.027	1.355	2.725	5.556	8.252	10.235	11.286	11.617	11.442
35000	0.027	1.340	2.693	5.493	8.199	10.194	11.238	11.578	11.420
36000	0.026	1.324	2.662	5.428	8.146	10.150	11.186	11.539	11.397
37000	0.026	1.311	2.636	5.373	8.094	10.101	11.134	11.499	11.372
38000	0.026	1.299	2.613	5.324	8.046	10.053	11.081	11.461	11.347
39000	0.026	1.288	2.589	5.273	7.997	10.003	11.026	11.421	11.321
40000	0.026	1.279	2.570	5.230	7.949	9.948	10.972	11.382	11.292
41000	0.025	1.271	2.553	5.192	7.904	9.896	10.917	11.341	11.264
42000	0.025	1.263	2.536	5.153	7.859	9.840	10.862	11.301	11.234
43000	0.025	1.257	2.522	5.118	7.815	9.782	10.809	11.260	11.204
44000	0.025	1.251	2.511	5.091	7.771	9.725	10.755	11.218	11.172
45000	0.025	1.246	2.499	5.061	7.727	9.666	10.702	11.175	11.141
46000	0.025	1.242	2.488	5.034	7.684	9.604	10.650	11.132	11.108
47000	0.025	1.238	2.480	5.014	7.641	9.544	10.598	11.088	11.075
48000	0.025	1.234	2.472	4.991	7.596	9.482	10.546	11.044	11.042
49000	0.025	1.231	2.465	4.972	7.551	9.418	10.494	10.999	11.008
50000	0.025	1.228	2.458	4.955	7.506	9.354	10.441	10.954	10.974
51000	0.024	1.225	2.453	4.942	7.459	9.288	10.387	10.908	10.940
52000	0.024	1.223	2.447	4.927	7.412	9.225	10.334	10.862	10.906
53000	0.024	1.220	2.442	4.913	7.365	9.160	10.279	10.815	10.872
54000	0.024	1.218	2.438	4.902	7.317	9.097	10.223	10.768	10.837
55000	0.024	1.216	2.433	4.893	7.267	9.032	10.167	10.720	10.803
56000	0.024	1.215	2.430	4.883	7.219	8.968	10.110	10.672	10.768
57000	0.024	1.213	2.427	4.875	7.170	8.905	10.052	10.623	10.733
58000	0.024	1.211	2.424	4.870	7.119	8.842	9.993	10.574	10.698
59000	0.024	1.210	2.421	4.862	7.070	8.778	9.933	10.525	10.663
60000	0.024	1.209	2.419	4.856	7.021	8.714	9.873	10.475	10.628
61000	0.024	1.208	2.417	4.851	6.969	8.650	9.812	10.425	10.593
62000	0.024	1.208	2.416	4.845	6.920	8.586	9.751	10.374	10.557
63000	0.024	1.207	2.415	4.837	6.872	8.521	9.688	10.323	10.521
64000	0.024	1.206	2.414	4.827	6.823	8.457	9.625	10.271	10.486
65000	0.024	1.206	2.413	4.817	6.773	8.393	9.561	10.219	10.449
66000	0.024	1.206	2.413	4.806	6.725	8.329	9.497	10.167	10.413
67000	0.024	1.206	2.413	4.788	6.679	8.264	9.432	10.114	10.376
68000	0.024	1.206	2.413	4.771	6.632	8.201	9.367	10.061	10.340
69000	0.024	1.206	2.414	4.752	6.587	8.136	9.301	10.008	10.303
70000	0.024	1.207	2.415	4.728	6.544	8.073	9.235	9.954	10.266

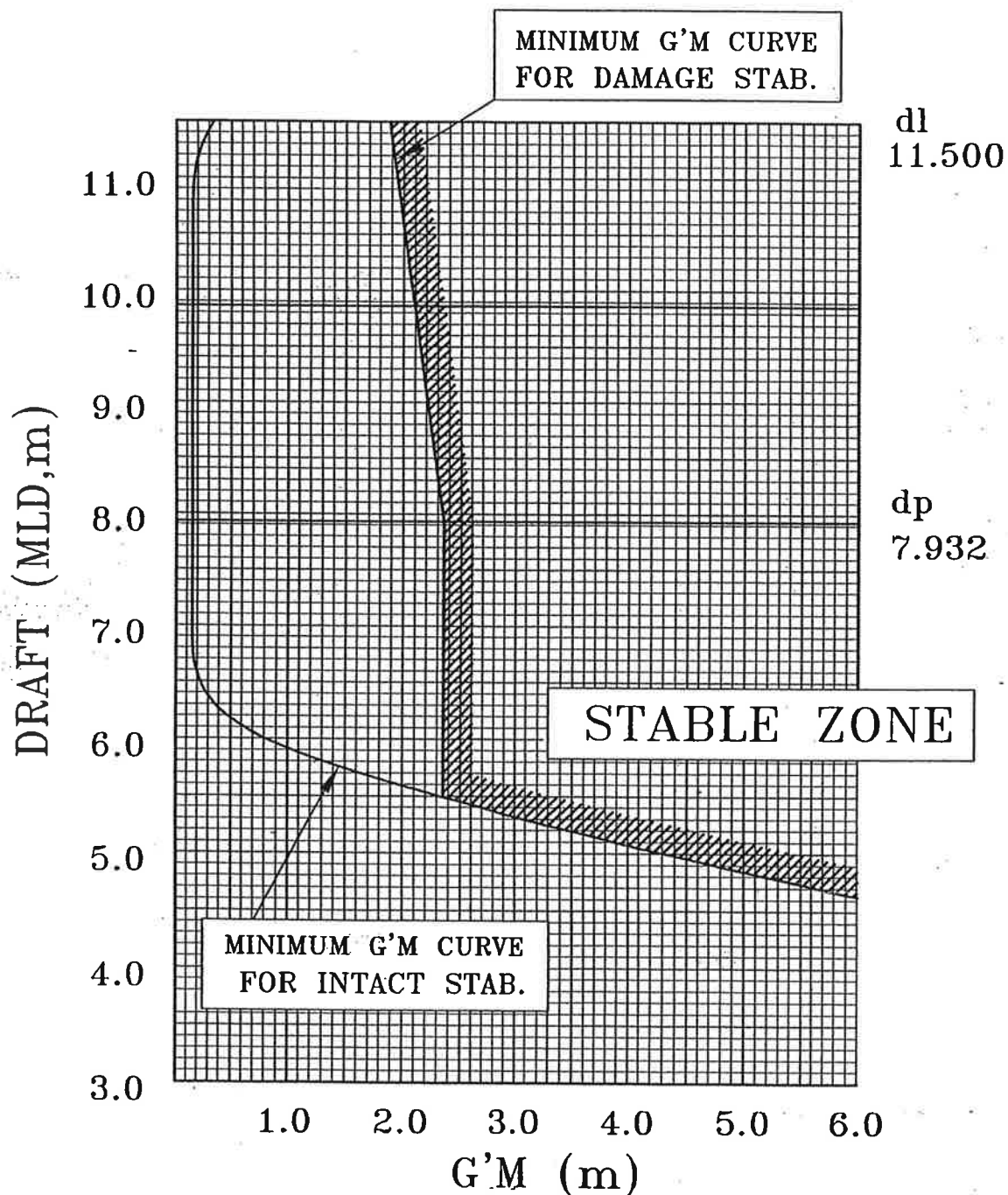
4.5 MINIMUM ALLOWABLE G'M CURVE

DEEPEST DRAFT (dl,MLD) : 11.500 M

G'M AT dl : 1.870 M

PARTIAL DRAFT (dp,MLD) : 7.932 M

G'M AT dp : 2.350 M





TRIM & STABILITY BOOKLET

REV.

STANDARD NO.

ORI

HDS-56-B002

4.6 Down flooding angle Table

38K DWT S/U B/C

ANGLE OF HEEL AT WHICH STIPULATED POINTS BECOME IMMERSED (FOR SEA WATER S.G.1.025)

THE TABLE APPLIES FOR TRIM= 0.000 IN UPRIGHT CONDITION

COORDINATES FOR SPECIAL POINTS ON THE SHIP

POINT	FRAME	Y	Z	TYPE	
1	36.065	16.100	22.760	1.000	A-Deck square window (STB)
2	39.533	14.375	22.760	1.000	A-Deck square window (STB)
3	39.533	8.675	22.760	1.000	A-Deck square window (STB)
4	39.533	6.775	22.760	1.000	A-Deck square window (STB)
5	122.500	16.100	17.750	2.000	Deck Edge

*** INDICATES THAT THE POINT IS NOT FLOODED FOR CALC. RANGE OF ANGLES

POINT NUMBER AS DEFINED IN ABOVE TABLE					
DISPL	1	2	3	4	5
10000	***	***	***	***	***
11000	***	***	***	***	***
12000	***	***	***	***	61.6
13000	***	***	***	***	59.9
14000	***	***	***	***	58.3
15000	***	***	***	***	56.8
16000	69.1	***	***	***	55.3
17000	68.0	***	***	***	53.9
18000	66.9	***	***	***	52.5
19000	65.9	***	***	***	51.1
20000	64.9	***	***	***	49.9
21000	63.8	***	***	***	48.8
22000	62.9	69.1	***	***	47.7
23000	61.9	68.0	***	***	46.6
24000	61.0	67.0	***	***	45.6
25000	60.1	65.9	***	***	44.6
26000	59.2	64.9	***	***	43.6
27000	58.3	64.0	***	***	42.7
28000	57.4	63.0	***	***	41.7
29000	56.6	62.0	***	***	40.8
30000	55.8	61.1	***	***	40.0
31000	55.0	60.2	***	***	39.2
32000	54.3	59.3	***	***	38.5
33000	53.5	58.5	***	***	37.7
34000	52.8	57.6	***	***	37.0
35000	52.1	56.8	***	***	36.3
36000	51.4	56.0	***	***	35.6
37000	50.7	55.2	***	***	34.9
38000	50.0	54.5	***	***	34.2
39000	49.3	53.7	***	***	33.5
40000	48.6	52.9	***	***	32.9

DISPL	1	2	3	4	5
41000	48.0	52.2	***	***	32.2
42000	47.3	51.4	69.9	***	31.6
43000	46.6	50.7	68.9	***	31.0
44000	46.0	49.9	67.8	***	30.5
45000	45.3	49.2	66.8	***	29.9
46000	44.6	48.5	65.7	***	29.3
47000	44.0	47.7	64.7	***	28.8
48000	43.3	47.0	63.7	***	28.2
49000	42.7	46.3	62.6	69.5	27.7
50000	42.0	45.6	61.6	68.4	27.1
51000	41.4	44.8	60.6	67.3	26.6
52000	40.7	44.1	59.5	66.1	26.0
53000	40.1	43.4	58.5	65.0	25.4
54000	39.4	42.7	57.5	63.9	24.9
55000	38.8	42.0	56.5	62.7	24.3
56000	38.2	41.3	55.5	61.6	23.8
57000	37.6	40.6	54.5	60.5	23.2
58000	37.0	40.0	53.5	59.4	22.7
59000	36.4	39.3	52.5	58.3	22.1
60000	35.8	38.7	51.6	57.3	21.6
61000	35.2	38.0	50.7	56.2	21.0
62000	34.6	37.4	49.7	55.2	20.5
63000	34.0	36.7	48.8	54.1	20.0
64000	33.4	36.1	47.9	53.1	19.4
65000	32.9	35.5	47.0	52.1	18.9
66000	32.3	34.8	46.2	51.1	18.3
67000	31.7	34.2	45.3	50.2	17.7
68000	31.1	33.6	44.5	49.2	17.1
69000	30.6	33.0	43.6	48.2	16.5
70000	30.0	32.4	42.8	47.3	16.0

38K DWT S/U B/C

ANGLE OF HEEL AT WHICH STIPULATED POINTS BECOME IMMERSED (FOR FRESH WATER S.G. 1.000)

THE TABLE APPLIES FOR TRIM= 0.000 IN UPRIGHT CONDITION

COORDINATES FOR SPECIAL POINTS ON THE SHIP

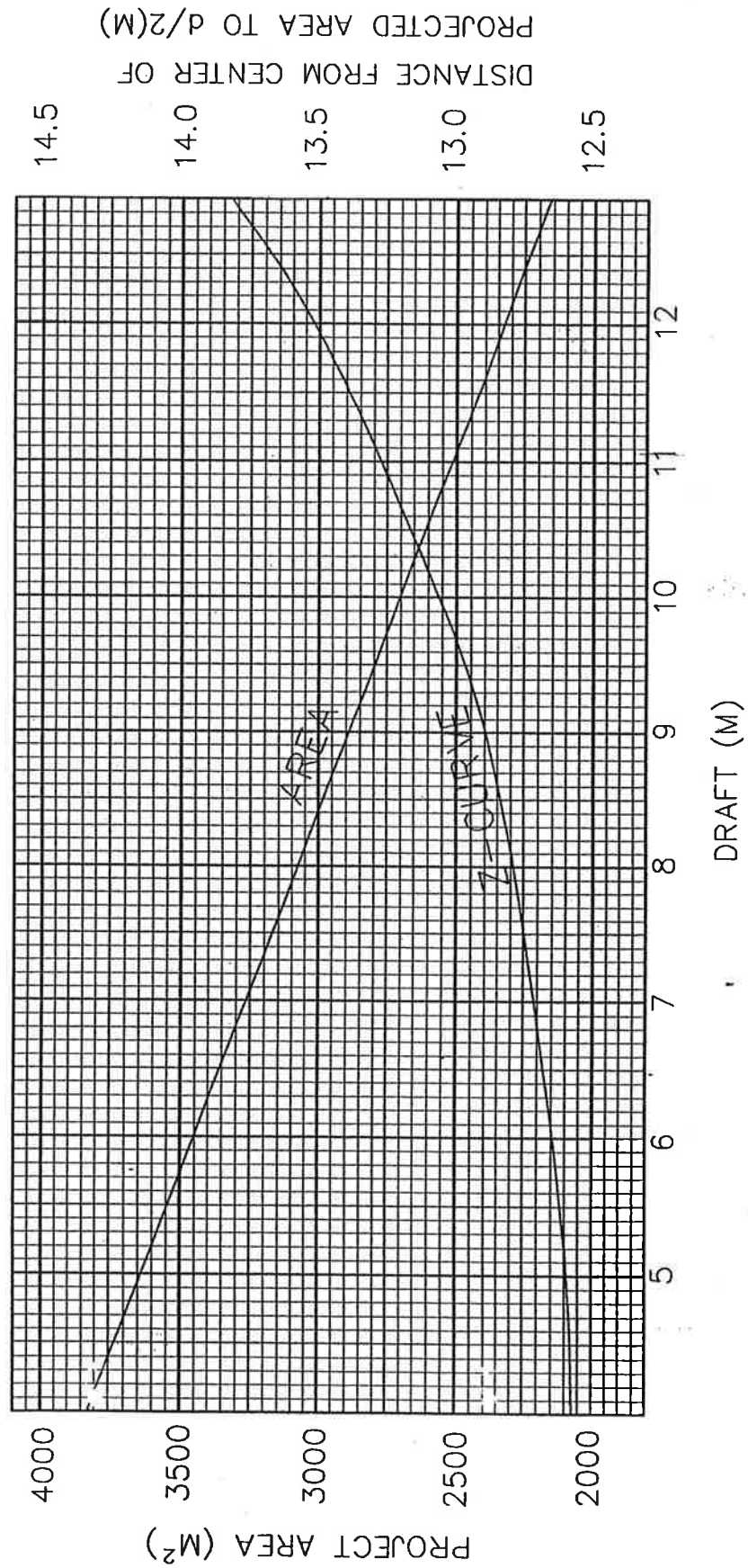
POINT	FRAME	Y	Z	TYPE	
1	36.065	16.100	22.760	1.000	A-Deck square window (STB)
2	39.533	14.375	22.760	1.000	A-Deck square window (STB)
3	39.533	8.675	22.760	1.000	A-Deck square window (STB)
4	39.533	6.775	22.760	1.000	A-Deck square window (STB)
5	122.500	16.100	17.750	2.000	Deck Edge

*** INDICATES THAT THE POINT IS NOT FLOODED FOR CALC.RANGE OF ANGLES

POINT NUMBER AS DEFINED IN ABOVE TABLE					
DISPL	1	2	3	4	5
10000	****	****	****	****	****
11000	****	****	****	****	62.9
12000	****	****	****	****	61.1
13000	****	****	****	****	59.4
14000	****	****	****	****	57.8
15000	69.8	****	****	****	56.2
16000	68.6	****	****	****	54.7
17000	67.5	****	****	****	53.3
18000	66.4	****	****	****	51.9
19000	65.4	****	****	****	50.5
20000	64.4	****	****	****	49.3
21000	63.3	69.6	****	****	48.2
22000	62.3	68.5	****	****	47.1
23000	61.4	67.4	****	****	46.0
24000	60.4	66.3	****	****	45.0
25000	59.5	65.3	****	****	44.0
26000	58.6	64.3	****	****	43.0
27000	57.7	63.3	****	****	42.0
28000	56.9	62.3	****	****	41.1
29000	56.0	61.4	****	****	40.2
30000	55.2	60.4	****	****	39.4
31000	54.4	59.5	****	****	38.6
32000	53.7	58.6	****	****	37.9
33000	52.9	57.8	****	****	37.1
34000	52.2	56.9	****	****	36.4
35000	51.5	56.1	****	****	35.7
36000	50.7	55.3	****	****	34.9
37000	50.0	54.5	****	****	34.2
38000	49.3	53.7	****	****	33.6
39000	48.6	53.0	****	****	32.9
40000	48.0	52.2	****	****	32.2

DISPL	1	2	3	4	5
41000	47.3	51.4	69.9	****	31.6
42000	46.6	50.7	68.8	****	31.0
43000	45.9	49.9	67.7	****	30.4
44000	45.2	49.1	66.7	****	29.8
45000	44.6	48.4	65.6	****	29.3
46000	43.9	47.6	64.5	****	28.7
47000	43.2	46.9	63.5	****	28.1
48000	42.5	46.1	62.4	69.3	27.6
49000	41.9	45.4	61.4	68.1	27.0
50000	41.2	44.7	60.3	67.0	26.4
51000	40.5	43.9	59.2	65.8	25.8
52000	39.9	43.2	58.2	64.7	25.3
53000	39.2	42.5	57.1	63.5	24.7
54000	38.6	41.8	56.1	62.4	24.1
55000	37.9	41.1	55.1	61.2	23.6
56000	37.3	40.4	54.1	60.1	23.0
57000	36.7	39.7	53.1	59.0	22.4
58000	36.1	39.0	52.1	57.9	21.9
59000	35.5	38.4	51.2	56.8	21.3
60000	34.9	37.7	50.2	55.7	20.8
61000	34.3	37.0	49.3	54.6	20.2
62000	33.7	36.4	48.3	53.6	19.7
63000	33.1	35.7	47.4	52.5	19.1
64000	32.5	35.1	46.5	51.5	18.5
65000	31.9	34.5	45.6	50.5	17.9
66000	31.3	33.8	44.8	49.5	17.3
67000	30.8	33.2	43.9	48.6	16.7
68000	30.2	32.5	43.1	47.6	16.1
69000	29.6	31.9	42.2	46.6	15.5
70000	29.0	31.3	41.4	45.7	14.9

4.7 WIND AREA AND Z CURVE





TRIM & STABILITY BOOKLET

REV.

STANDARD NO.

ORI

HDS-56-B002

4.8 Examination as to Heeling due to strong beam wind and rolling for worst service condition



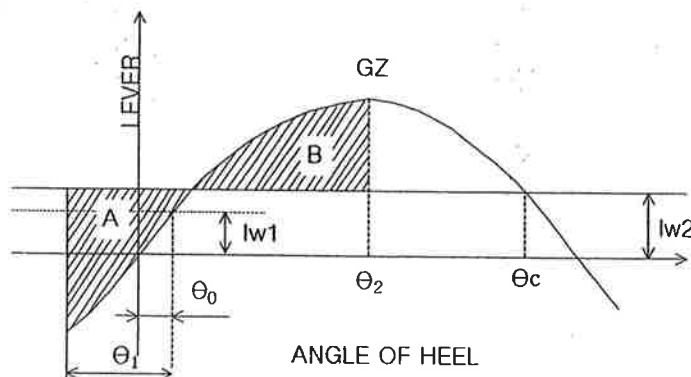
SEVERE WIND AND ROLLING CRITERION (WEATHER CRITERION)

(IMO Resolution R. 749)

Recommended criterion

The ability of a ship to withstand the combined effects of beam wind and rolling should be demonstrated for each standard condition of loading, with reference to the figure as follows:

1. The ship is subjected to a steady wind pressure acting perpendicular to the ship's centerline which results in a steady wind heeling lever (lw_1)
2. From the resultant angle of equilibrium (θ_0), the ship is assumed to roll owing to wave action to an angle of roll (θ_1) to windward.
3. The ship is then subjected to a gust wind pressure which results in a gust wind heeling lever (lw_2)
4. Under these circumstances, area "B" should be equal to or greater than area "A"
5. Free surface effects should be accounted for in the standard conditions of loading.





TRIM & STABILITY BOOKLET

REV.

STANDARD NO.

ORI

HDS-56-B002

θ_0 = Angle of heel under action of steady wind
 θ_0 should be limited 16° or 80% of deck immersion angle, whichever is less
For timber loading conditions, 80% of deck immersion angle may be ignored.

θ_1 = Angle of roll to windward due to wave action.

θ_2 = Angle of downflooding (θ_f) or 50 degrees of θ_c ,
whichever is less.

where :

θ_f = Angle of heel at which openings in the hull,
superstructures or deckhouses which cannot be
enclosed weathertight immerse.

θ_c = Angle of second intercept between wind heeling
lever lw_2 and GZ curves.

(a) The wind heeling levers lw_1 and lw_2

$$lw_1 = \frac{P \times A \times Z}{\Delta} \quad (m)$$

$$lw_2 = 1.5 \times lw_1$$

where ; $P = 0.0514 \text{ (T/m}^2\text{)}$

A = Projected lateral area of the portion of the
ship and deck cargo above waterline (m^2)

Z = Vertical distance from the center of "A"
to a point at one half the draft (m)

Δ = Displacement (Ton)



TRIM & STABILITY BOOKLET

REV.

STANDARD NO.

ORI

HDS-56-B002

(b) The angle of roll (Θ_1)

$$\Theta_1 = 109 \times K \times X1 \times X2 \times \sqrt{(r \times s)}$$

where : $X1$ = factor as shown in table 1

$X2$ = factor as shown in table 2

K = factor as shown in table 3

$$r = 0.73 \pm 0.6 \text{ OG} / d$$

With : OG = Distance between the center

of gravity (KG') and the waterline (m)

(+ if KG' is above waterline, - if it is below)

d = Mean moulded draft (m)

s = factor as shown in table 4

Table 1

B/d	≤2.4	2.5	2.6	2.7	2.8	2.9	3.0	3.1	3.2	3.3	3.4	≥3.5
X1	1.00	0.98	0.96	0.95	0.93	0.91	0.90	0.88	0.86	0.84	0.82	0.80

Table 2

Cb	≤0.45	0.50	0.55	0.60	0.65	≥0.70
X2	0.75	0.82	0.89	0.95	0.97	1.00

Table 3

Ak 100 / L B	0.0	1.0	1.5	2.0	2.5	3.0	3.5	≥4.0
K	1.00	0.98	0.95	0.88	0.79	0.74	0.72	0.70

Table 4

T	≤6.0	7.0	8.0	12.0	14.0	16.0	18.0	≥20.0
s	0.1	0.098	0.093	0.065	0.053	0.044	0.038	0.035

※ Intermediate values in the above tables should be obtained by linear interpolation.

	TRIM & STABILITY BOOKLET	REV.	STANDARD NO.
		ORI	HDS-56-B002

where: L = waterline length of the ship (m)
B = moulded breadth of the ship (m)
d = mean moulded draft of the ship (m)
Cb = block coefficient
Ak = total overall area of bilge keels,
or area of the lateral projection of the bar keel,
or sum of these areas (m²)

(c) Rolling period (T)

$$T = \frac{2 \times C \times B}{\sqrt{G'M}}$$

where ; C = 0.373 + 0.023 (B/d) - 0.043 (L/100)
G'M = metacentric height corrected for free surface effect (m)



TRIM & STABILITY BOOKLET

REV.

STANDARD NO.

ORI

HDS-56-B002

Examination as to heeling due to strong beam wind and rolling for worst service condition. (Condition No. 33)

(a) The wind heeling levers lw1 and lw2

$$lw1 = \frac{P \times A \times Z}{\Delta} = \frac{0.0514 \times 2640 \times 13.14}{53393} = 0.033$$

$$lw2 = 1.5 \times lw1 = 0.05$$

where ; P = 0.0514 (T/m²)

A = 2640

Z = 13.14

Δ = 53393

(b) The angle of roll (Θ1)

$$\Theta1 = 109 \times K \times X1 \times X2 \times \sqrt{r \times s} = \frac{16.20}{18.44}$$

where ; X1 = 0.864

X2 = 1.00

K = 0.982

$$r = 0.73 \pm 0.6 \text{ OG} / d = 0.795$$

With : OG = 1.13

d = 10.36

s = 0.033 0.050

L = 192.6

B = 32.2

d = 10.36

Cb = 0.829

Ak = 56

(c) Rolling period (T)

$$T = \frac{2 \times C \times B}{\sqrt{G'M}} = \frac{2 \times 0.362 \times 32.2}{\sqrt{2.5}} = 14.7$$

where ; C = 0.373 + 0.023 (B/d) - 0.043 (L/100) = 0.362

G'M = 2.5



TRIM & STABILITY BOOKLET

REV.

STANDARD NO.

ORI

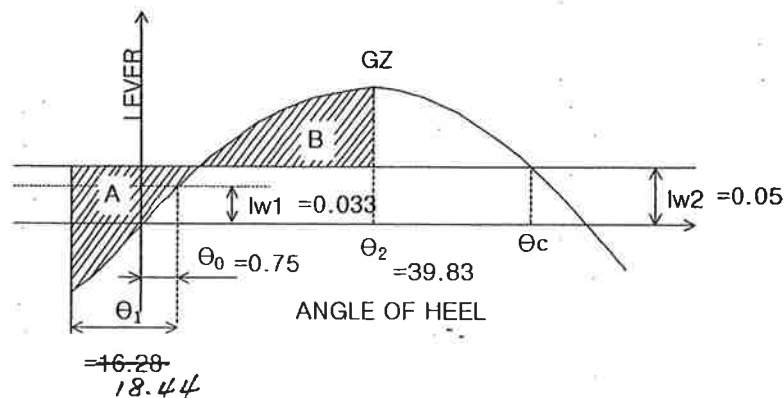
HDS-56-B002

(d) Calculate the area of "A" and "B"

Area of "A"			Area of "B"		
Angle interval : 4.375			Angle interval : 9.653		
Height	S.M	f(A)	Height	S.M	f(A)
0.000	1	0.000	0.000	1	0.000
0.193	4	0.772	0.447	4	1.788
0.392	2	0.784	0.991	2	1.982
0.612	4	2.448	1.650	4	6.600
0.855	1	0.855	1.806	1	1.806
$\Sigma f(A)$		4.859	$\Sigma f(B)$		12.176
Area (A) = $1/3 \times 4.375 \times 4.859$			Area (B) = $1/3 \times 9.653 \times 12.176$		
= 7.086			= 39.178		

Where area of "B" is greater than area of "A"

Therefore, this condition satisfies criteria.



(e) Find the angle of heel of under action of steady wind.

$$\theta_0 \approx 0.75^\circ$$

$\theta_0 < 16^\circ$ or 80% of the angle of deck edge immersion

$$(25.2^\circ \times 80\% = 20.2^\circ)$$



TRIM & STABILITY BOOKLET

REV.

STANDARD NO.

ORI

HDS-56-B002

5. STANDARD LOADING CONDITION

Special notes concerning icing effect on stability

For vessels operating in areas where ice accretion is likely to occur, the following icing allowance should be made in the stability calculations:

- 1 30 kg/m² on exposed horizontal surfaces;
- 2 15 kg/m² for projected lateral area of each side of the vessel above the water plane;
- 3 the projected lateral area of discontinuous surfaces of rail, sundry booms, spars (except masts) and rigging of vessels having no sails and the projected lateral area of other small objects should be computed by increasing the total projected area of continuous surfaces by 5 per cent and the static moments of this area by 10 percent.





TRIM & STABILITY BOOKLET

REV.

STANDARD NO.

ORI

HDS-56-B002

5.1 General information

1. Lightship condition.

Ship's light weight : 12398 MT
L.C.G : 12.471 m aft from midship
V.C.G : 10.507 m above base line

2. Specific gravity

Oil and water	Specific gravity
Fuel oil	: 0.990MT/M ³
Diesel oil	: 0.850MT/M ³
Lub.(CYL) oil	: 0.924MT/M ³
Sea water	: 1.025MT/M ³
Pot. Water	: 1.000MT/M ³

3. Minimum Forward Draft : 5.37 M

Scantlings approved for a minimum draught forward of 5.37 metres.

In heavy weather conditions the forward draught should not be less than this value. If, in the opinion of the master, sea conditions are likely to cause regular slamming, then other appropriate measures such as change in speed, heading or an increase in draught forward may also need to be taken.

4. An local loading on deck and hatch covers is not allowed.

And No cargo hold is permitted to be empty at maximum draught.

5. Deadweight constant

5.1 Departure Condition(FULL)

Item	WEIGHT	L.C.G	L.C.G-MT	V.C.G	V.C.G-MT
Crew & their effects	5	-72.4	-362	25.5	128
Provision & store	10	-82	-820	18.0	180
Stores	65	0	0	9.5	618
Oil & water in E/R	34	-67	-2278	5.0	170
Oil in deck mach	6	0	0	18.2	109
Total	120	-28.83	-3460	10.04	1204

5.2 Arrival Condition(STORES REMAIN 10 %)

Item	WEIGHT	L.C.G	L.C.G-MT	V.C.G	V.C.G-MT
Crew & their effects	5	-72.4	-362	25.5	128
Provision & store(10%)	1	-82	-82	18.0	18
Stores(10%)	6.5	0	0	9.5	62
Oil & water in E/R	34	-67	-2278	5.0	170
Oil in deck mach	6	0	0	18.2	109
Total	52.5	-51.85	-2722	9.27	486



5.2 Method of trim and stability calculation

1. How to obtain DISPLACEMENT, LCF, LCB, MTC and LCG from observed drafts

OBSERVED DATA

df = draft at fore draft mark (M)

da = draft at aft draft mark (M)

dm = draft at midship draft mark (M)

ρ = specific gravity of sea water (T/M³)

* If port and starboard drafts are different, their arithmetical mean is to be used

1.1) To derive drafts at perpendiculars from observed drafts by draft correction data

dF(draft at F.P.) = $df \pm \Delta df$

dA(draft at A.P.) = $da \pm \Delta da$

dM(draft at M.S) = $dm \pm \Delta dm$

dm_e (mean draft) = $1/2 (dF + dA)$

Trim = $dF - dA$, Deflection = $dM - dm_e$

If deflection > 0 Sagging

deflection < 0 Hogging

* Δdf fore draft correction (M)

Δda aft draft correction (M)

Δdm midship draft correction (M)

1.2) To derive equivalent draft (draft at L.C.F)

$dM' = \frac{dA + (6 \times dM) + dF}{8}$ Midship draft correction for deflection

$d_{eq.} = dM' (\pm) \frac{|dF - dA| \times |LCF|}{LBP}$ Draft at L.C.F (equivalent draft)

If

$dA > dF$, L.C.F is fore midship : -
 $dA > dF$, L.C.F is aft midship : +
 $dA < dF$, L.C.F is fore midship : +
 $dA < dF$, L.C.F is aft midship : -

* LCF can be obtained from hydro. data at dM' .



TRIM & STABILITY BOOKLET

REV.

STANDARD NO.

ORI

HDS-56-B002

1.3) Now you can read off DISPLACEMENT, LCB, MTC, etc. from hydro. data at deq.

$$\text{Actual displacement } (\Delta) = \text{Displacement (from hydro.data)} \times \frac{p}{1.025}$$

1.4) How to obtain L.C.G from above data

$$GB = \frac{100 \times MTC \times \text{Trim}}{\Delta}$$

* GB is the distance between L.C.G and L.C.B

* if $dA > dF$: L.C.G is aft L.C.B

$dA < dF$: L.C.G is fore L.C.B

$$L.C.G = L.C.B + GB$$

2. How to obtain DRAFTS, TRIM and G'M by loading weights

2.1) Read off following items from hydro. data

deq. = draft corresponding to displacement (Δ) L.C.F (M)

L.C.B = longitudinal center of buoyancy from midship at deq. (M)

L.C.F = longitudinal center of floatation from midship at deq. (M)

M.T.C = moment to change trim one centimeter at deq. (T-M)

K.M.T = transverse metacentric height above base line (M)

L.C.G, V.C.G = decided by loading scheme (M)

2.2) Actual DRAFTS and TRIM can be obtained as follows

$$\text{Trim} = \frac{\Delta \times GB}{M.T.C \times 100} \text{ (M)}$$

$$dF = \text{deq.} + \frac{(L/2 - LCF)}{LBP} \times \text{Trim}$$

$$dA = \text{deq.} - \frac{(L/2 + LCF)}{LBP} \times \text{Trim}$$

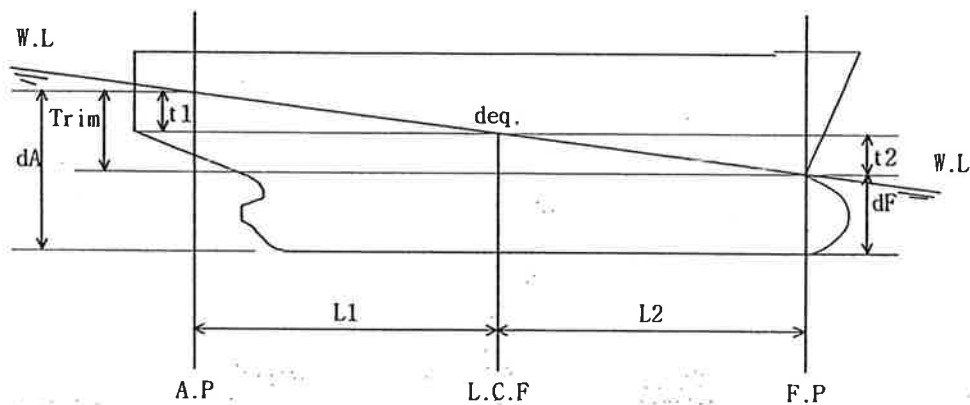
$$dm = \frac{dA + dF}{2}$$

Note : Trim by stern (-)

Trim by head (+)



* If trim by the stern



$$dA = \text{deq.} + t1$$

$$dF = \text{deq.} - t2$$

$$t1 = \frac{L1 \times \text{Trim}}{LBP}$$

$$t2 = \frac{L2 \times \text{Trim}}{LBP}$$

2.3) Calculation of actual metacentric height (G'M)

$$GM = KMT - KG \text{ (V.C.G.)}$$

$$G'M = GM - GG'$$

$$KG' = KG + GG'$$

$$G'M = KMT - KG'$$

* GG' = Virtual rise of KG due to freesurface effect

* Freesurface effect (GG')

$$= \frac{(\text{Moment of inertia of liquid surface in each tank} \times \text{S.G of liquid})}{\text{Displacement } (\Delta)}$$

* This loading manual gives volume in M^3 , KG, LCG in M and moment of inertia of freesurface in M^4 at frequent intervals of height from bottom of each tank.



2.4) Statical stability curve (righting lever curve)

can be obtained as follows.

$$G'Z = KN - KG' \times \sin\theta$$

KN is obtained from "KN TABLE OF STABILITY" (see page 115,116)

Where,

θ = Inclination of ship in degree

$$\begin{aligned} 3. \text{ Propeller immersion} &= \frac{dA - H}{D_p} \times 100 (\%) \\ &= \frac{dA - 3.8}{7.2 \text{ m}} \times 100 (\%) \end{aligned}$$

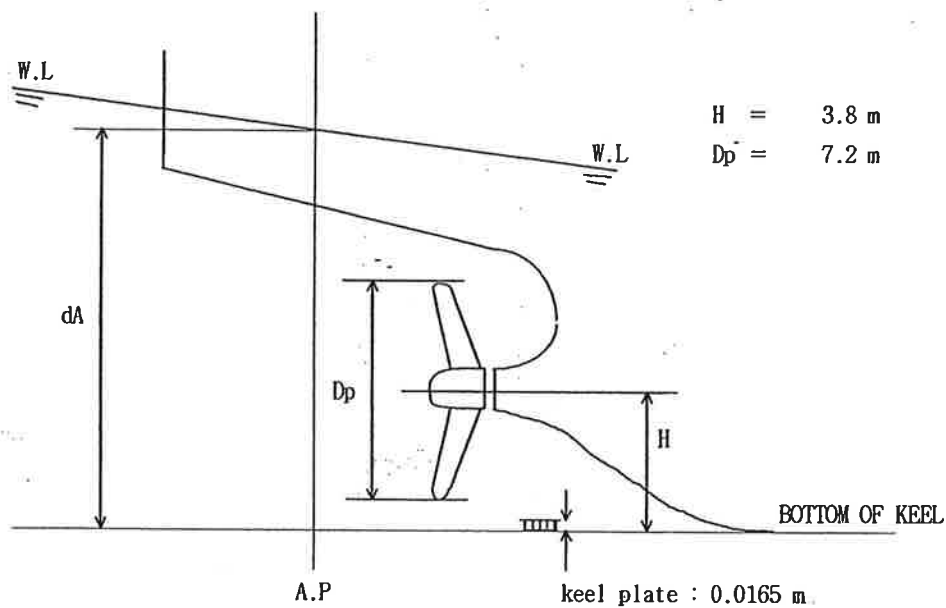
Where,

H : Height of shaft centerline from bottom of keel in meter

D_p : Diameter of propeller in meter

dA : Draft at A.P in meter

* Note : If "propeller immersion" is less than 50%, propeller tips are not immersed.





TRIM & STABILITY BOOKLET

REV.

STANDARD NO.

ORI

HDS-56-B002

Example : Calculation of displacement and draft

- 1) We can calculate actual displacement and L.C.G from observed drafts by using following format.

1	DRAFT AT DRAFT MARK	DERIVED FROM	RESULT OF CALCULATION		
		DRAFT(OBSERVED)	FORE	MIDSHIP	AFT
		PORT	11.46	11.515	11.56
		STARBOARD	11.46	11.515	11.56
2	ARITHMETICAL MEAN DRAFT		11.46	11.515	11.56
3	DRAFT CORRECTION TO F.P MIDSHIP AND A.P	SEE "2.1 Draft cor. Table"	-0.004	0.000	0.006
4	DRAFT AT (F.P), (M.S), (A.P)	(2) + (3)	A 11.456	B 11.515	C 11.566
5	FACTOR		1	6	1
6	DEFLECTION CORRECTION	(4) × (5)	11.456	69.090	11.566
7	MIDSHIP DRAFT CORRECTED FOR DEFLECTION	$1/8 \times \Sigma(6)$	11.514		
8	ACTUAL TRIM	A - C	-0.110		
9	L.C.F AT DRAFT (7)	HYDRO. TABLE	-3.895		
10	TRIM CORRECTION	$\frac{1(9) \times (8)}{LBP}$	0.002		
11	EQUIVALENT DRAFT	(7) ± (10)	11.516		
12	DISPLACEMENT AT DRAFT (11)	HYDRO. TABLE	60,159.00		
13	MEASURED S.G. OF SEA WATER		1.025		
14	ACTUAL DISPLACEMENT	$(12) \times \frac{(13)}{1.025}$	60,159.00		
15	M.T.C AT DRAFT (11)	HYDRO. TABLE	858.7		
16	L.C.B AT DRAFT (11)	HYDRO. TABLE	4.230		
17	GB AT DISPLACEMENT (14)	$\frac{100 \times (15) \times (8)}{(14)}$	-0.157		
18	L.C.G AT DISPLACEMENT (14)	(16) + (17)	4.073		



TRIM & STABILITY BOOKLET

REV.

STANDARD NO.

ORI

HDS-56-B002

- 2) Assuming that we will load weight of 150 MT at 50 M forward of midship and unload weight of 500 MT at 10 M after of midship on above condition. Then, we can calculate changed drafts at fore, midship and after draft marks provided that the ship has no deflection.

ITEM	WEIGHT	L.C.G from MIDSHIP	LONGI. MOMENT ABOUT MIDSHIP
CURRENT DISPLACEMENT	60159.00	4.073	245028
ADDED WEIGHT	150	50	7500
DEDUCTED WEIGHT	-500	-10	5000
TOTAL	59,809.00	4.306	257528

19	TOTAL DISPLACEMENT	ABOVE DATA	59,809
20	DISPL'T CORRECTED FOR S.G.(13) - TO USE HYDRO. TABLE -	$(19) \times \frac{1.025}{(13)}$	59,809
21	EXT. DRAFT(deq.) AT DISPL'T(20)	HYDRO. TABLE	11.457
22	M.T.C AT DRAFT (21)	HYDRO. TABLE	857.4
23	L.C.B AT DRAFT (21)	HYDRO. TABLE	4.282
24	L.C.F AT DRAFT (21)	HYDRO. TABLE	-3.869
25	L.C.G AT DRAFT (21)	ABOVE DATA	4.306
26	GB AT DRAFT (21)	$(25) - (23)$	0.024
27	TRIM AT DRAFT (21)	$\frac{(19) \times (26)}{(22) \times 100}$	0.017
28	CHANGED DRAFT AT F.P	$(21) + \frac{LBP/2 - (24) \times (27)}{LBP}$	11.466
29	CHANGED DRAFT AT A.P	$(28) - (27)$	11.449
30	CHANGED MEAN DRAFT AT MID SHIP	$\frac{(28) + (29)}{2}$	11.457



TRIM & STABILITY BOOKLET

REV.

STANDARD NO.

ORI

HDS-56-B002

Blank : Calculation of displacement and draft

1	DRAFT AT DRAFT MARK	DERIVED FROM	RESULT OF CALCULATION		
		DRAFT(OBSERVED)	FORE	MIDSHIP	AFT
		PORT			
		STARBOARD			
2	ARITHMETICAL MEAN DRAFT				
3	DRAFT CORRECTION TO F.P MIDSHIP AND A.P	SEE "2.1 Draft cor. Table"			
4	DRAFT AT (F.P), (M.S), (A.P)	(2) + (3)	A	B	C
5	FACTOR		1	6	1
6	DEFLECTION CORRECTION	(4) × (5)			
7	MIDSHIP DRAFT CORRECTED FOR DEFLECTION	$1/8 \times \Sigma(6)$			
8	ACTUAL TRIM	A - C			
9	L.C.F AT DRAFT (7)	HYDRO. TABLE			
10	TRIM CORRECTION	$\frac{|(9) \times (8)|}{LBP}$			
11	EQUIVALENT DRAFT	(7) ± (10)			
12	DISPLACEMENT AT DRAFT (11)	HYDRO. TABLE			
13	MEASURED S.G. OF SEA WATER				
14	ACTUAL DISPLACEMENT	$(12) \times \frac{(13)}{1.025}$			
15	M.T.C AT DRAFT (11)	HYDRO. TABLE			
16	L.C.B AT DRAFT (11)	HYDRO. TABLE			
17	GB AT DISPLACEMENT (14)	$\frac{100 \times (15) \times (8)}{(14)}$			
18	L.C.G AT DISPLACEMENT (14)	(16) + (17)			



TRIM & STABILITY BOOKLET

REV.

STANDARD NO.

ORI

HDS-56-B002

- 2) Assuming that we will load weight of ___MT at ___M forward of midship and unload weight of ___MT at ___M after of midship on above condition. Then, we can calculate changed drafts at fore, midship and after draft marks provided that the ship has no deflection.

ITEM	WEIGHT	L.C.G from MIDSHIP	LONGI. MOMENT ABOUT MIDSHIP
CURRENT DISPLACEMENT	(14)	(18)	(14) × (18)
ADDED WEIGHT			
DEDUCTED WEIGHT			
TOTAL			

19	TOTAL DISPLACEMENT	ABOVE DATA	
20	DISPL'T CORRECTED FOR S.G.(13) - TO USE HYDRO. TABLE -	(19) × $\frac{1.025}{(13)}$	
21	EXT. DRAFT(deq.) AT DISPL'T(20)	HYDRO. TABLE	
22	M.T.C AT DRAFT (21)	HYDRO. TABLE	
23	L.C.B AT DRAFT (21)	HYDRO. TABLE	
24	L.C.F AT DRAFT (21)	HYDRO. TABLE	
25	L.C.G AT DRAFT (21)	ABOVE DATA	
26	GB AT DRAFT (21)	(25) - (23)	
27	TRIM AT DRAFT (21)	$\frac{(19) \times (26)}{(22) \times 100}$	
28	CHANGED DRAFT AT F.P	(21) + $\frac{LBP/2 - (24) \times (27)}{LBP}$	
29	CHANGED DRAFT AT A.P	(28) - (27)	
30	CHANGED MEAN DRAFT AT MID SHIP	$\frac{(28) + (29)}{2}$	



5.3 Allowable longitudinal strength

1) Allowable still water BENDING MOMENT

Fr.	SWBM (tonnes-fm)			
	Sea-going		Harbour	
	Hog.	Sag.	Hog.	Sag.
45	49000	-45000	86000	-83000
89	137000	-190000	225000	-283000
133	137000	-190000	225000	-283000
177	137000	-190000	225000	-283000
221	31000	-29000	52000	-51000

2) Allowable still water SHEARING FORCE

Fr.	SWSF (tonnes)			
	Sea-going		Harbour	
	Positive	Negative	Positive	Negative
45	6600	-6500	7600	-7500
89	6400	-6400	7500	-7400
133	6600	-6600	7600	-7600
177	5800	-6000	7200	-7300
221	7100	-7100	7800	-7800



5.4 Plots of Optimum Trim

(Comparison of Effective Horse Power)



TRIM & STABILITY BOOKLET

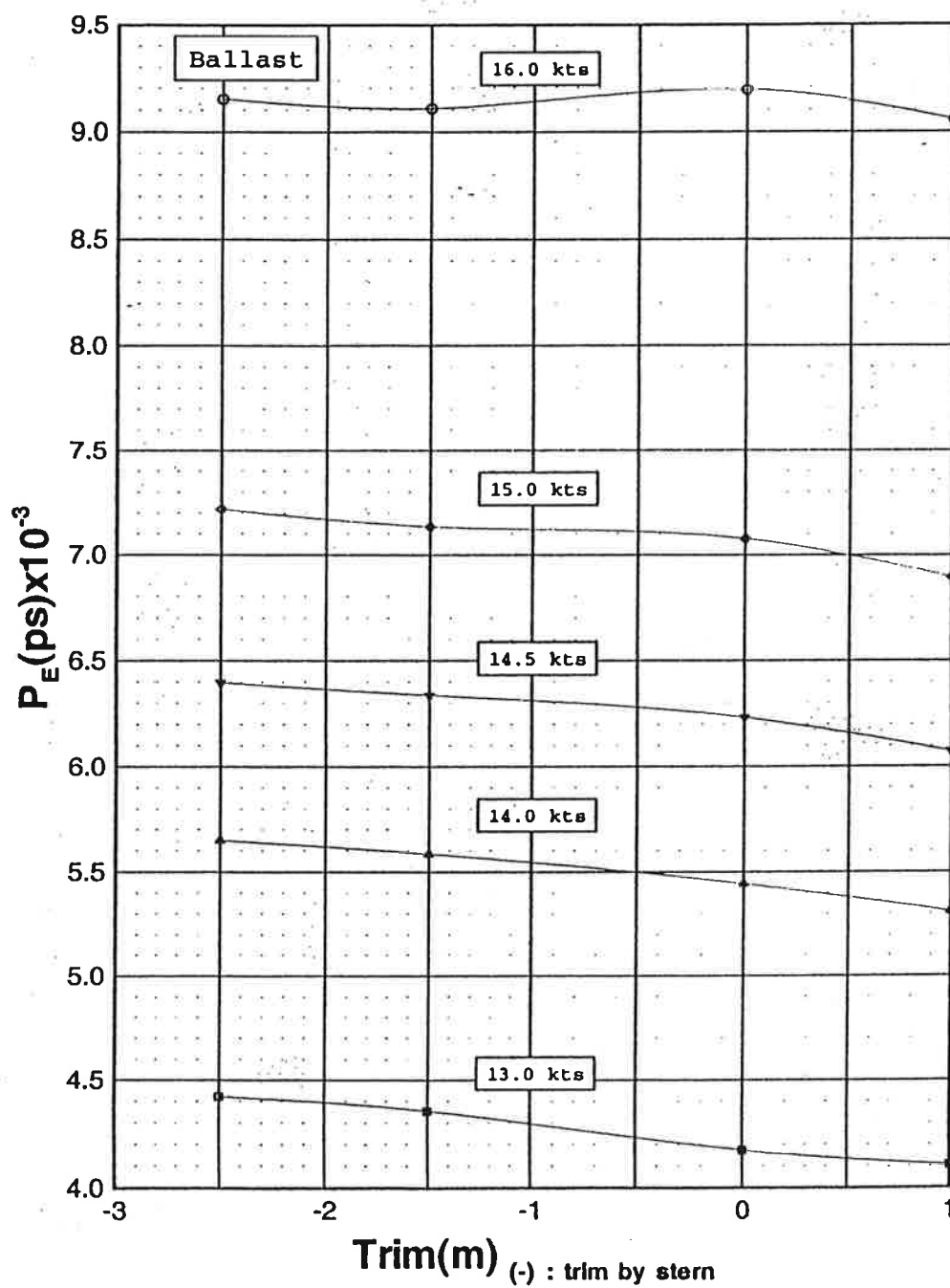
REV.

STANDARD NO.

0

HDS-56-B002

Draft : 7.11 M Ballast



HYUNDAI MIPO DOCKYARD CO., LTD.



TRIM & STABILITY BOOKLET

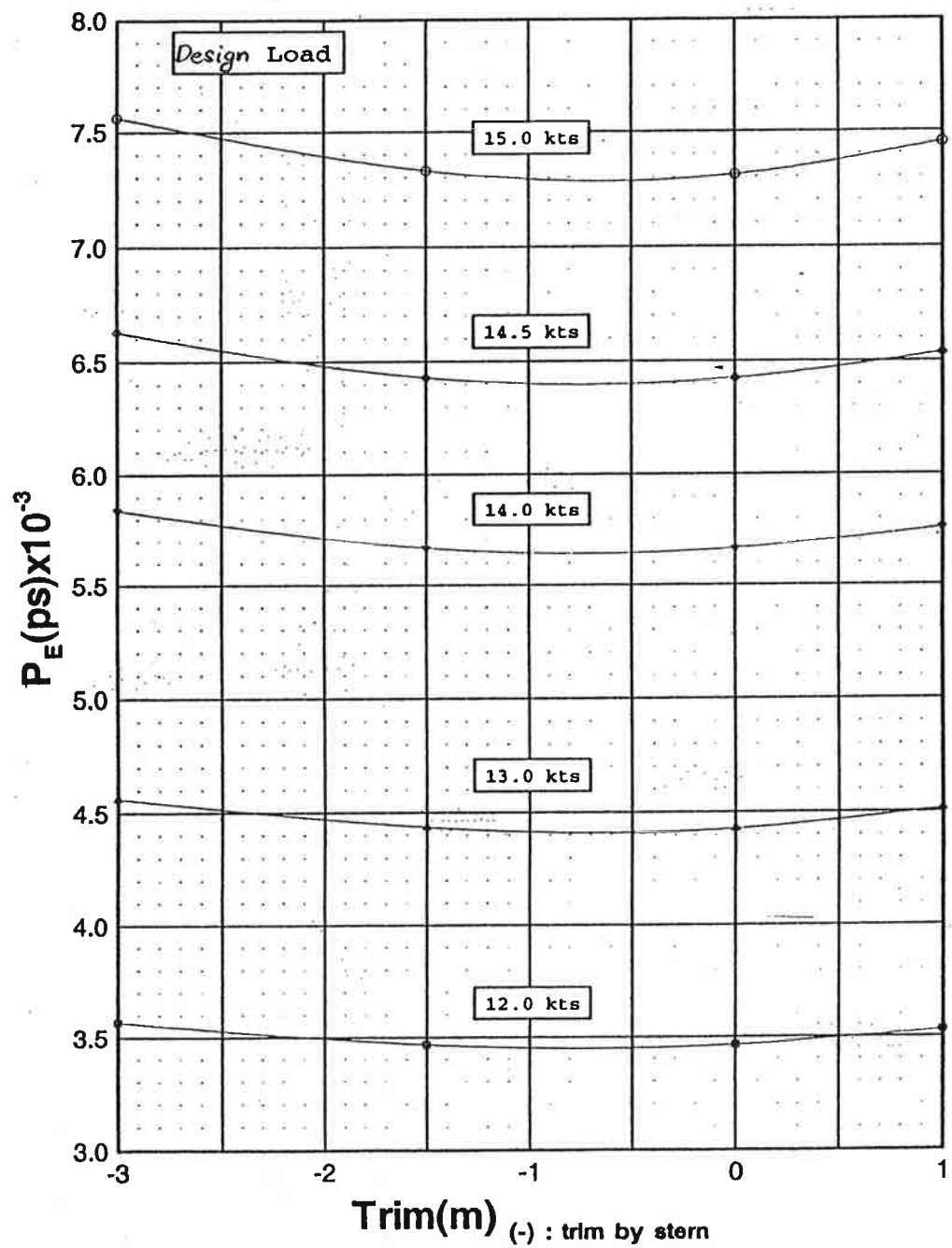
REV.

0

STANDARD NO.

HDS-56-B002

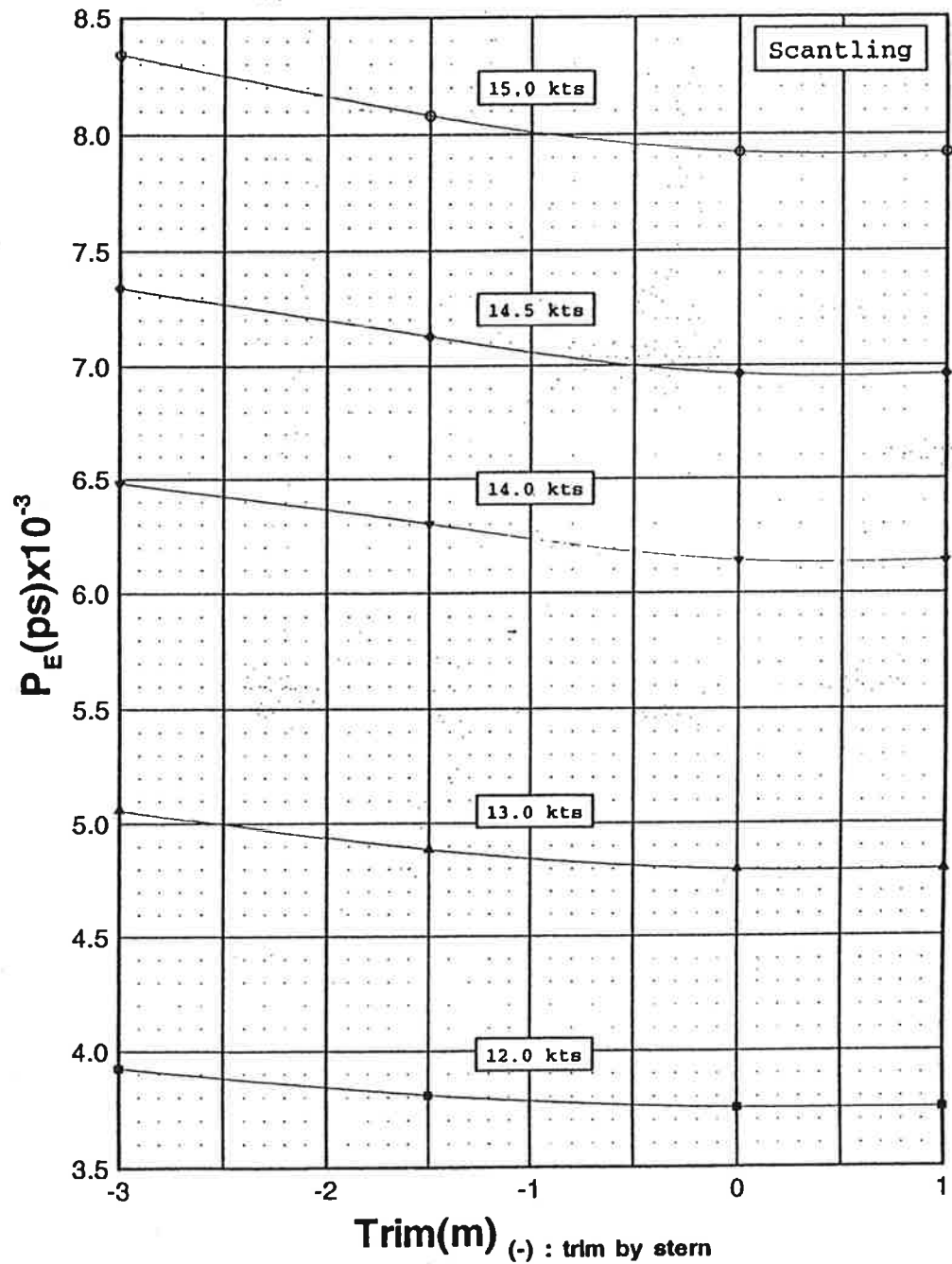
Design Draft : 9.75 M Design



HYUNDAI MIPO DOCKYARD CO., LTD.



Draft : 11.5 M Scantling





5.5 Loading criteria

1) MAX. ALLOWABLE CARGO LOADING HEIGHT IN EACH HOLD

as a function of specific gravity of a cargo

1.1) The Moving Hole Feeder(MHF) system was designed under following design criteria.

Hold	S.G. (Ton/M ³)	Cargo Height (M)	Max. Pressure (Ton/M ²)	Max. Weight (Ton)
No.1	1.442	17.425	25.13	17168
No.2	1.442	17.425	25.13	17856
No.3	1.442	17.425	25.13	18000
No.4	1.442	17.425	25.13	13032

note : Cargo height of 17.425 m is the max. cargo hold height from hold bottom to top of hatch coaming.

Accordingly the max. allowable cargo height to be restricted to a certain level considering the specific gravity of the cargo.

1.2) Allowable cargo loading height in holds

Allowable cargo loading height in each hold (M)

$$= (\text{Maximum Pressure}) / (\text{Cargo S.G.in Ton/M}^3)$$

$$= (25.13 \text{ Ton/M}^2) / (\text{Cargo S.G.in Ton/M}^3)$$

1.3) Allowable cargo loading volume and weight in each hold

Allowable cargo loading volume and weight corresponding to the A.C.L.H in each hold can be found from volume table(page. 57 ~ 60)

Example of Hot briquetted iron

Hold	Max. Pressure (Ton/M ²)	Cargo S.G. (Ton/M ³)	Allowable cargo loading		
			Height (M)	Volume (M ³)	Weight (Ton)
No.1	25.13	2.857	8.80	5537.62	15821
No.2	25.13	2.857	8.80	5754.38	16440
No.3	25.13	2.857	8.80	5754.38	16440
No.4	25.13	2.857	8.80	3827.72	10936

2) GUIDANCE ON THE LOADING OF SPECIFIC CARGO HOLDS AT REDUCED DRAFT

as a function of draft (Page. 145 ~ 147)

2.1) Max. allowable and min. required load in each hold as a function of draft

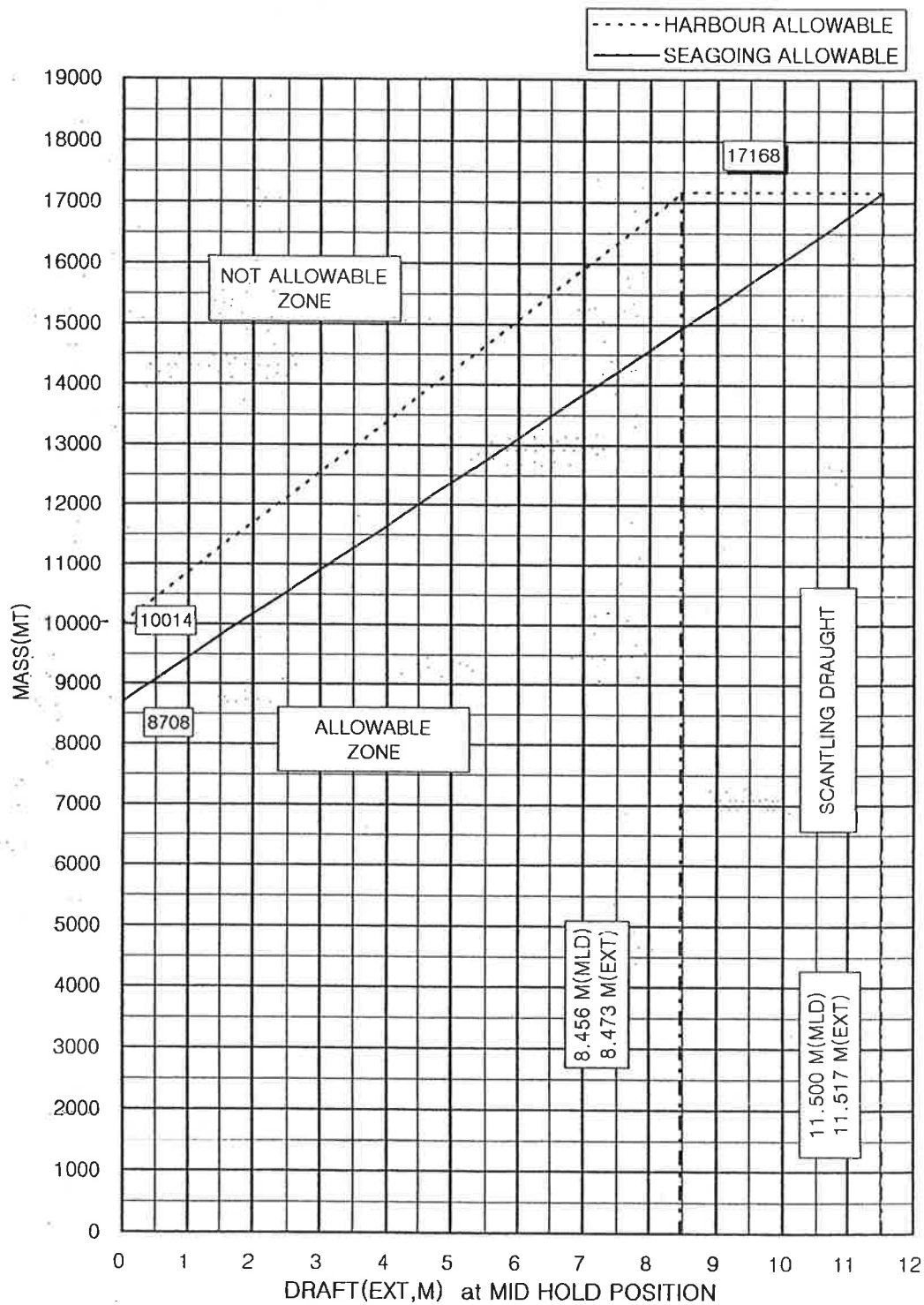
to be taken into account during loading/unloading of the cargo.

2.2) Draft in horizontal axis means the one at mid position of each hold.

2.3) Mass in vertical axis is the weight including a cargo and LW/Center W.B.T.

GUIDANCE ON THE LOADING OF SPECIFIC CARGO HOLDS AT REDUCED DRAFT

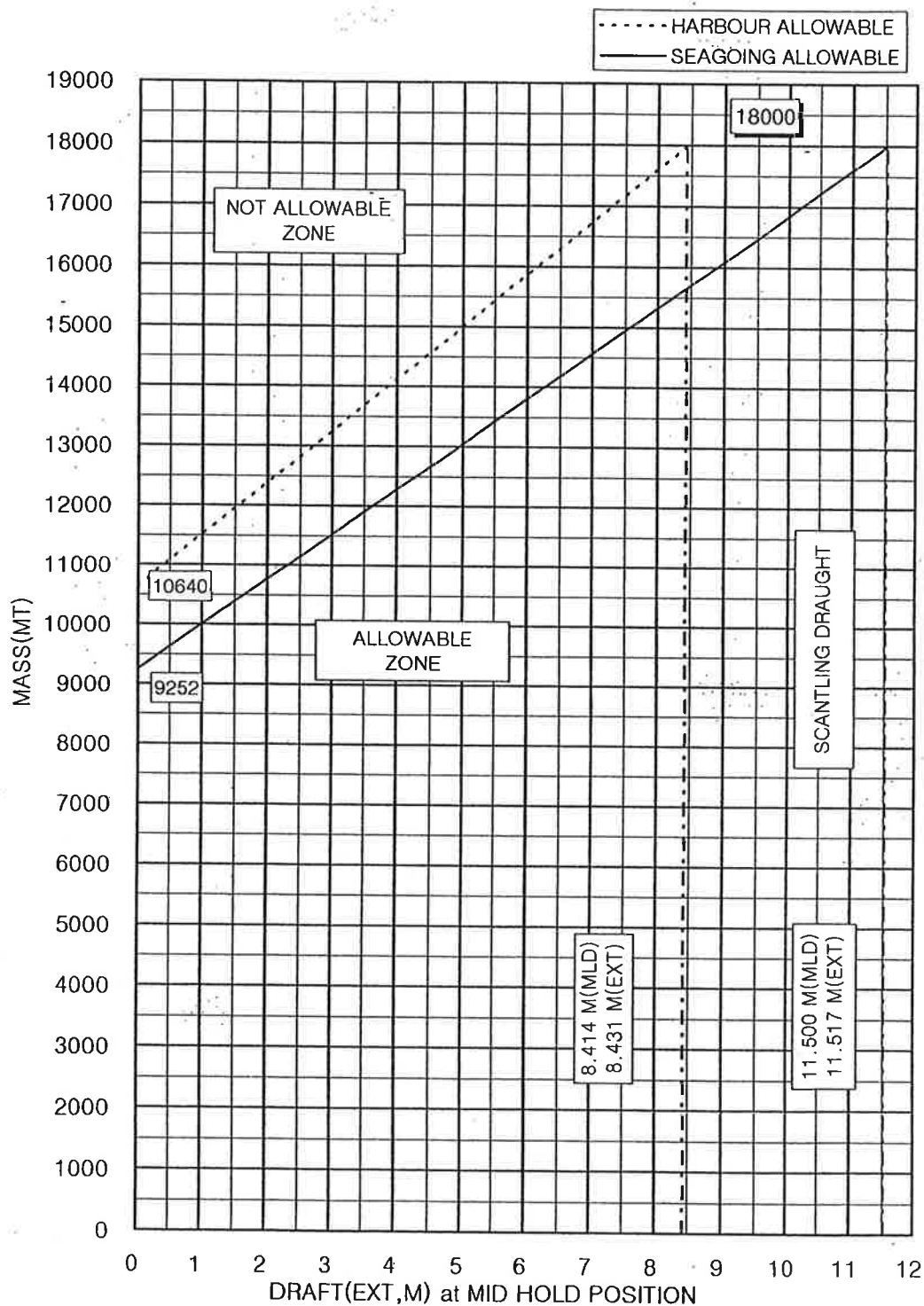
MAX. LOAD FOR NO.1 CARGO HOLD
AS A FUNCTION OF DRAFT



* MASS INCLUDES THE WEIGHT OF CARGO, L.W & CENTER WATER BALLAST

GUIDANCE ON THE LOADING OF SPECIFIC CARGO HOLDS AT REDUCED DRAFT

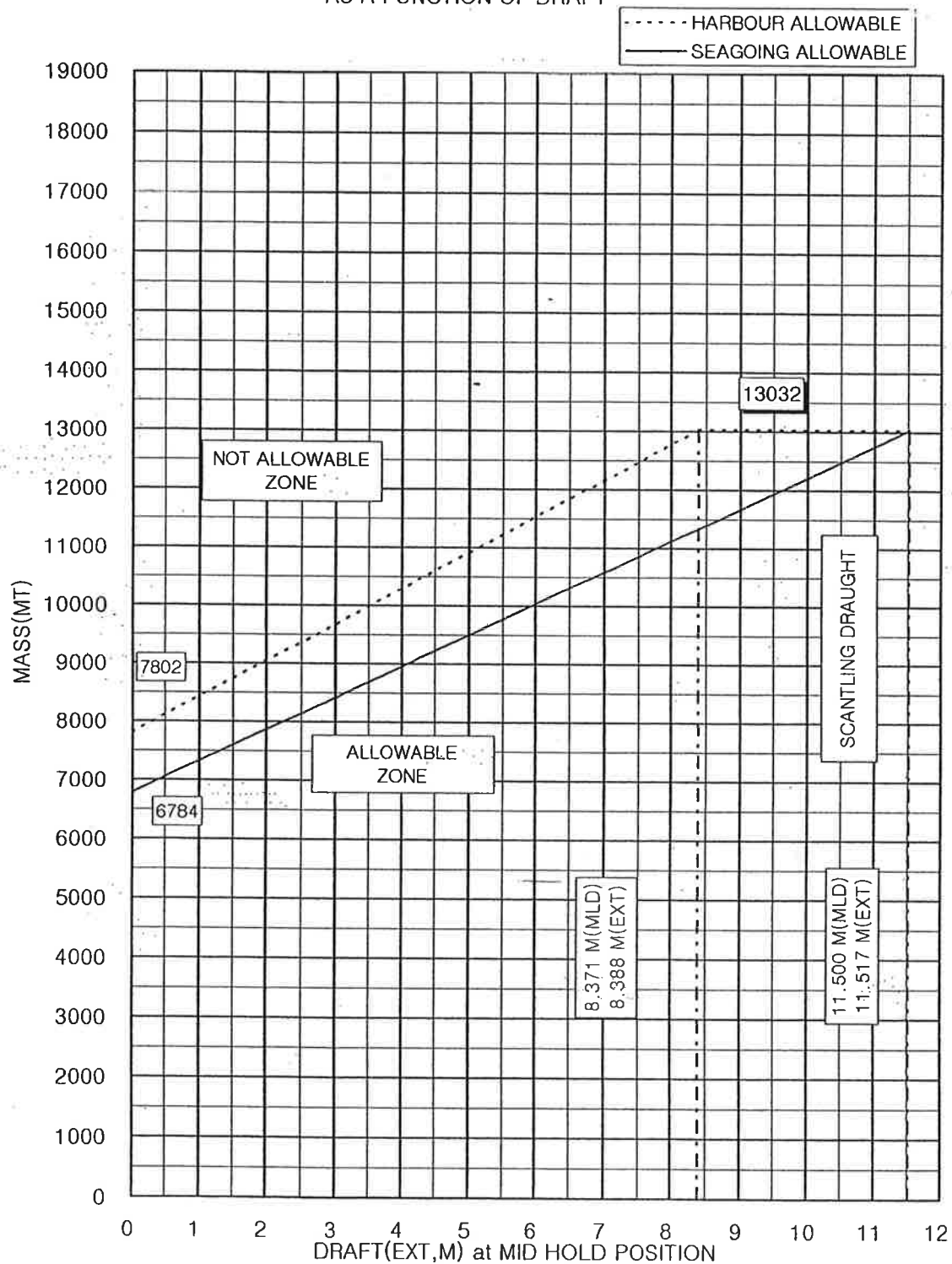
MAX. LOAD FOR NO.2, 3 CARGO HOLD
AS A FUNCTION OF DRAFT



* MASS INCLUDES THE WEIGHT OF CARGO, L.W & CENTER WATER BALLAST

GUIDANCE ON THE LOADING OF SPECIFIC CARGO HOLDS AT REDUCED DRAFT

**MAX.LOAD FOR NO.4 CARGO HOLD
AS A FUNCTION OF DRAFT**



* MASS INCLUDES THE WEIGHT OF CARGO, L.W & CENTER WATER BALLAST

	TRIM & STABILITY BOOKLET	REV.	STANDARD NO.
		ORI	HDS-56-B002
5.6 Summary table ** 80 MT of ballast is carried in the Aft Peak Tank for shaft cooling water			

SUMMARY OF TRIM AND LONGITUDINAL STRENGTH CALCULATION

DESCRIPTION	LIGHT SH IP COND.	DOCKING COND.	BALL. COND.		LIGHT BALL. COND.	
	1)	2)	11) DEP.	12) ARR.	13) DEP.	14) ARR.
LIGHTSHIP WEIGHT (MT)	12398.0	12398.0	12398.0	12398.0	12398.0	12398.0
CONSUMABLES (MT)	0.0	373.6	2490.9	398.6	1343.1	373.6
WATER BALLAST (MT)	0.0	5263.0	26852.8	24622.2	23167.6	24622.2
CARGO (MT)	0.0	0.0	0.0	0.0	0.0	0.0
DEADWEIGHT (MT)	0.0	5636.6	29343.7	25020.8	24510.8	24995.7
DISPLACEMENT (MT)	12398.0	18034.6	41741.7	37418.8	36908.8	37393.7
DRAFT EQIV. (M)	2.67	3.80	8.31	7.51	7.41	7.50
DRAFT AT F.P (M)	0.42	3.80	7.31	6.08	6.01	6.09
DRAFT AT A.P (M)	5.31	3.80	9.36	9.08	8.96	9.06
TRIM (M)	-4.90	0.00	-2.05	-2.99	-2.95	-2.97
KMT (M)	30.87	23.17	14.54	15.05	15.13	15.06
KG (M)	10.51	8.61	8.48	8.23	7.90	8.22
GG' (M)	0.00	0.23	0.15	0.17	0.13	0.13
G'M (M)	20.36	14.33	5.91	6.66	7.10	6.70
L.C.G (M)	-12.47	7.98	3.46	1.98	2.06	2.03
L.C.B (M)	8.21	7.99	6.82	7.18	7.21	7.18
L.C.F (M)	7.47	7.65	2.76	4.50	4.67	4.51
M.T.C (MT-M)	523.49	566.49	684.72	649.31	645.79	649.14
T.P.C (MT/CM)	49.23	50.83	54.67	53.67	53.56	53.66
PROPELLER IMM. (%)	20.8	-0.2	77.0	73.1	71.5	72.8
MAX. B. MOMENT (MT-M)	1.	145439.	77945.	30601.	50550.	30546.
MAX. S. FORCE (MT)	1.	-3071.	1933.	1071.	1357.	1078.

SUMMARY OF TRIM AND LONGITUDINAL STRENGTH CALCULATION

DESCRIPTION	HOMO. DESIGN LOAD (GYPSUM, SG.1.442)		HOMO. HALF LOAD (GYPSUM, SG.1.442)		EXTREME DESIGN LOAD (GYPSUM, SG.1.442)	
	21) DEP.	22) ARR.	23) DEP.	24) ARR.	25) DEP.	26) ARR.
LIGHTSHIP WEIGHT (MT)	12398.0	12398.0	12398.0	12398.0	12398.0	12398.0
CONSUMABLES (MT)	1343.1	373.6	1343.1	373.6	1343.1	373.6
WATER BALLAST (MT)	80.0	1049.5	5078.3	6278.2	80.0	800.0
CARGO (MT)	36102.0	36102.0	18000.0	18000.0	36102.0	36102.0
DEADWEIGHT (MT)	37525.2	37525.1	24421.4	24651.8	37525.1	37275.6
DISPLACEMENT (MT)	49923.2	49923.1	36819.4	37049.8	49923.1	49673.6
DRAFT EQUIV. (M)	9.77	9.77	7.40	7.44	9.77	9.72
DRAFT AT F.P (M)	9.48	9.58	6.06	6.14	9.49	9.40
DRAFT AT A.P (M)	10.04	9.95	8.87	8.87	10.03	10.03
TRIM (M)	-0.55	-0.37	-2.81	-2.73	-0.54	-0.64
KMT (M)	14.11	14.11	15.15	15.11	14.11	14.12
KG (M)	9.18	9.28	8.24	8.42	9.77	9.80
GG' (M)	0.06	0.06	0.09	0.09	0.46	0.46
G'M (M)	4.87	4.77	6.82	6.60	3.88	3.86
L.C.G (M)	4.87	5.16	2.30	2.43	4.88	4.77
L.C.B (M)	5.75	5.75	7.22	7.20	5.75	5.79
L.C.F (M)	-1.97	-1.97	4.70	4.63	-1.97	-1.88
M.T.C (MT-M)	798.85	798.85	645.18	646.77	798.85	796.52
T.P.C (MT/CM)	57.57	57.57	53.55	53.59	57.57	57.51
PROPELLER IMM. (%)	86.4	85.1	70.2	70.3	86.3	86.4
MAX. B. MOMENT (MT-M)	-47949.	-55340.	40376.	-37411.	-188718.	-185586.
MAX. S. FORCE (MT)	1658.	1681.	-1724.	-1571.	5270.	5165.

SUMMARY OF TRIM AND LONGITUDINAL STRENGTH CALCULATION

DESCRIPTION	EXTREME HALF LOAD (GYPSUM, SG.1.442)		HOMO. SUMMER LOAD (GYPSUM, SG.1.442)		HOMO. SUMMER LOAD (HOT BRIQUETTED IRON SG 2.857)	
	27) DEP.	28) ARR.	29) DEP.	30) ARR.	31) DEP.	32) ARR.
LIGHTSHIP WEIGHT (MT)	12398.0	12398.0	12398.0	12398.0	12398.0	12398.0
CONSUMABLES (MT)	1343.1	373.6	2490.9	398.6	2490.9	398.6
WATER BALLAST (MT)	5043.9	7043.5	80.0	1384.9	80.0	1384.9
CARGO (MT)	18000.0	18000.0	45190.2	45190.2	45190.2	45190.2
DEADWEIGHT (MT)	24387.0	25417.1	47761.1	46973.7	47761.1	46973.7
DISPLACEMENT (MT)	36785.0	37815.1	60159.1	59371.7	60159.1	59371.7
DRAFT EQUIV. (M)	7.39	7.58	11.52	11.38	11.52	11.38
DRAFT AT F.P (M)	6.01	6.38	11.37	11.29	11.46	11.38
DRAFT AT A.P (M)	8.91	8.90	11.65	11.47	11.57	11.38
TRIM (M)	-2.90	-2.52	-0.28	-0.17	-0.11	0.00
KMT (M)	15.15	14.99	13.87	13.88	13.87	13.88
KG (M)	8.36	8.10	9.89	9.84	8.17	8.09
GG' (M)	0.13	0.13	0.38	0.39	0.38	0.39
G'M (M)	6.67	6.77	3.60	3.65	5.32	5.40
L.C.G (M)	2.13	2.81	3.83	4.10	4.07	4.34
L.C.B (M)	7.22	7.15	4.23	4.34	4.23	4.34
L.C.F (M)	4.72	4.37	-3.90	-3.83	-3.90	-3.83
M.T.C (MT-M)	644.94	652.04	858.72	855.92	858.72	855.92
T.P.C (MT/CM)	53.54	53.74	59.16	59.08	59.16	59.08
PROPELLER IMM. (%)	70.8	70.6	108.8	106.2	107.7	105.1
MAX. B. MOMENT (MT-M)	-67254.	-87239.	-78305.	-72200.	-76556.	-70302.
MAX. S. FORCE (MT)	-2769.	2672.	2157.	-2212.	2178.	-2437.

SUMMARY OF TRIM AND LONGITUDINAL STRENGTH CALCULATION

DESCRIPTION	HOMO. COAL LOAD (SG 0.84)		HOMO. SUMMER LOAD (FULLY FILLED SG 0.988)		HOMO. COAL LOAD (SG 0.84) IN FRESH WATER	
	33) DEP.	34) ARR.	35) DEP.	36) ARR.	37) DEP.	38) ARR.
LIGHTSHIP WEIGHT (MT)	12398.0	12398.0	12398.0	12398.0	12398.0	12398.0
CONSUMABLES (MT)	2490.9	398.6	2490.9	398.6	1343.1	373.6
WATER BALLAST (MT)	80.0	80.0	80.0	1384.9	80.0	1714.7
CARGO (MT)	38395.2	38395.2	45190.2	45190.2	38395.2	38395.2
DEADWEIGHT (MT)	40966.2	38873.8	47761.1	46973.7	39818.4	40483.5
DISPLACEMENT (MT)	53364.2	51271.8	60159.1	59371.7	52216.4	52881.5
DRAFT EQIV. (M)	10.36	10.00	11.52	11.38	10.39	10.50
DRAFT AT F.P (M)	9.54	9.95	11.36	11.28	10.06	10.11
DRAFT AT A.P (M)	11.13	10.05	11.66	11.48	10.69	10.87
TRIM (M)	-1.60	-0.11	-0.30	-0.19	-0.63	-0.76
KMT (M)	14.00	14.06	13.87	13.88	14.00	13.98
KG (M)	11.46	11.45	11.50	11.47	11.38	11.55
GG' (M)	0.03	0.04	0.38	0.39	0.06	0.06
G'M (M)	2.51	2.58	1.99	2.03	2.55	2.38
L.C.G (M)	2.75	5.38	3.80	4.06	4.22	3.93
L.C.B (M)	5.22	5.54	4.23	4.34	5.19	5.09
L.C.F (M)	-2.93	-2.43	-3.90	-3.83	-2.97	-3.12
M.T.C (MT-M)	825.92	811.46	858.72	855.92	806.82	811.07
T.P.C (MT/CM)	58.27	57.89	59.16	59.08	58.30	58.42
PROPELLER IMM. (%)	101.6	86.6	109.0	106.4	95.5	98.0
MAX. B. MOMENT (MT-M)	-45099.	-61329.	-76886.	-70886.	-55379.	-64887.
MAX. S. FORCE (MT)	1687.	1773.	2154.	2131.	1750.	-1847.



TRIM & STABILITY BOOKLET

REV.

STANDARD NO.

ORI

HDS-56-B002

5.7 Calculation for standard condition

COND. NO 45 CONSUMABLES DEP. (FULL)

DEADWEIGHT ITEMS	WEIGHT	L.C.G FROM	MOMENT ABOUT	V.C.G FROM	MOMENT ABOUT	FREE SURFACE
		L/2	L/2	BL	BL	MOMENT
	MT.	M.	MT-M.	M.	MT-M.	MT-M.
DWT CONST. (DEP.)	120.0	-28.83	-3460.	10.04	1205.	0.
F.O.T. (P)	878.3	-58.33	-51231.	11.07	9726.	822.
F.O.T. (S)	799.1	-58.08	-46411.	11.20	8951.	811.
NO.1 FO SETT.T(P)	47.4	-63.20	-2995.	12.02	569.	2.
NO.2 FO SETT.T(P)	47.4	-63.20	-2995.	12.02	569.	2.
NO.1 FO SERV.T. (P)	44.6	-63.20	-2819.	12.02	536.	2.
NO.2 FO SERV.T. (P)	44.6	-63.20	-2819.	12.02	536.	2.
NO.1 M.D.O.SERV.T. (S)	31.5	-60.80	-1918.	9.84	310.	5.
NO.2 M.D.O.SERV.T. (S)	36.4	-60.80	-2216.	9.94	362.	9.
POT.W.T. (P)	161.4	-93.46	-15083.	15.60	2517.	75.
POT.W.T. (S)	161.4	-93.46	-15083.	15.60	2517.	75.
LO STOR.T. (S)	19.1	-64.00	-1226.	14.68	281.	1.
CYL. LO STOR.T. (S)	38.3	-64.80	-2482.	14.68	562.	4.
SSDG LO STOR.T. (S)	6.4	-66.00	-421.	14.68	94.	0.
L.O. SUMP.T. (C)	19.9	-72.40	-1442.	1.28	25.	13.
P.A.T. (S)	35.0	-63.13	-2211.	12.42	435.	1.
TOTAL	2490.9	-62.15	-154812.	11.72	29196.	1825.

COND. NO 46 CONSUMABLES ARR. (10%)

DEADWEIGHT ITEMS	WEIGHT	L.C.G FROM	MOMENT ABOUT	V.C.G FROM	MOMENT ABOUT	FREE SURFACE
		L/2	L/2	BL	BL	MOMENT
	MT.	M.	MT-M.	M.	MT-M.	MT-M.
DWT CONST. (10% ARR	52.5	-51.85	-2722.	9.27	487.	0.
F.O.T. (P)	0.0	-58.97	-1.	1.23	0.	822.
F.O.T. (S)	0.0	-58.97	-1.	1.23	0.	811.
NO.1 FO SETT.T(P)	47.4	-63.20	-2995.	12.02	569.	2.
NO.2 FO SETT.T(P)	47.4	-63.20	-2995.	12.02	569.	2.
NO.1 FO SERV.T. (P)	44.6	-63.20	-2819.	12.02	536.	2.
NO.2 FO SERV.T. (P)	44.6	-63.20	-2819.	12.02	536.	2.
NO.1 M.D.O.SERV.T. (S)	0.0	-60.80	-1.	7.38	0.	5.
NO.2 M.D.O.SERV.T. (S)	11.0	-60.80	-669.	8.12	89.	9.
POT.W.T. (P)	16.1	-93.46	-1509.	13.54	219.	75.
POT.W.T. (S)	16.1	-93.46	-1509.	13.54	219.	75.
LO STOR.T. (S)	19.1	-64.00	-1226.	14.68	281.	1.
CYL. LO STOR.T. (S)	38.3	-64.80	-2482.	14.68	562.	4.
SSDG LO STOR.T. (S)	6.4	-66.00	-421.	14.68	94.	0.
L.O. SUMP.T. (C)	19.9	-72.40	-1442.	1.28	25.	13.
P.A.T. (S)	35.0	-63.13	-2211.	12.42	435.	1.
TOTAL	398.6	-64.78	-25822.	11.60	4622.	1825.

COND. NO 47. CONSUMABLES DEP. (50%, FOR SHORT VOYAGE)

DEADWEIGHT ITEMS	WEIGHT	L.C.G FROM	MOMENT ABOUT	V.C.G FROM	MOMENT ABOUT	FREE SURFACE
	MT.	L/2 M.	L/2 MT-M.	BL M.	BL MT-M.	MOMENT MT-M.
DWT CONST. (DEP.)	120.0	-28.83	-3460.	10.04	1205.	0.
F.O.T. (P)	393.2	-58.89	-23156.	6.87	2701.	822.
F.O.T. (S)	357.8	-58.44	-20908.	6.78	2425.	811.
NO.1 FO SETT.T(P)	47.4	-63.20	-2995.	12.02	569.	2.
NO.2 FO SETT.T(P)	47.4	-63.20	-2995.	12.02	569.	2.
NO.1 FO SERV.T. (P)	44.6	-63.20	-2819.	12.02	536.	2.
NO.2 FO SERV.T. (P)	44.6	-63.20	-2819.	12.02	536.	2.
NO.1 M.D.O.SERV.T. (S)	31.5	-60.80	-1918.	9.84	310.	5.
NO.2 M.D.O.SERV.T. (S)	36.4	-60.80	-2216.	9.94	362.	9.
POT.W.T. (P)	63.2	-93.46	-5907.	14.20	897.	75.
POT.W.T. (S)	63.2	-93.46	-5907.	14.20	897.	75.
LO STOR.T. (S)	19.1	-64.00	-1226.	14.68	281.	1.
CYL. LO STOR.T. (S)	38.3	-64.80	-2482.	14.68	562.	4.
SSDG LO STOR.T. (S)	6.4	-66.00	-421.	14.68	94.	0.
L.O. SUMP.T. (C)	19.9	-72.40	-1442.	1.28	25.	13.
P.A.T. (S)	10.0	-62.96	-630.	9.23	92.	1.
TOTAL	1343.1	-60.53	-81298.	8.98	12064.	1825.

COND. NO 48 CONSUMABLES ARR. (10%, FOR SHORT VOYAGE)

DEADWEIGHT ITEMS	WEIGHT	L.C.G FROM	MOMENT ABOUT	V.C.G FROM	MOMENT ABOUT	FREE SURFACE
	MT.	L/2 M.	L/2 MT-M.	BL M.	BL MT-M.	MOMENT MT-M.
DWT CONST. (10% ARR)	52.5	-51.85	-2722.	9.27	487.	0.
F.O.T. (P)	0.0	-58.97	-1.	1.23	0.	822.
F.O.T. (S)	0.0	-58.97	-1.	1.23	0.	811.
NO.1 FO SETT.T(P)	47.4	-63.20	-2995.	12.02	569.	2.
NO.2 FO SETT.T(P)	47.4	-63.20	-2995.	12.02	569.	2.
NO.1 FO SERV.T. (P)	44.6	-63.20	-2819.	12.02	536.	2.
NO.2 FO SERV.T. (P)	44.6	-63.20	-2819.	12.02	536.	2.
NO.1 M.D.O.SERV.T. (S)	0.0	-60.80	-1.	7.38	0.	5.
NO.2 M.D.O.SERV.T. (S)	11.0	-60.80	-669.	8.12	89.	9.
POT.W.T. (P)	16.1	-93.46	-1509.	13.54	219.	75.
POT.W.T. (S)	16.1	-93.46	-1509.	13.54	219.	75.
LO STOR.T. (S)	19.1	-64.00	-1226.	14.68	281.	1.
CYL. LO STOR.T. (S)	38.3	-64.80	-2482.	14.68	562.	4.
SSDG LO STOR.T. (S)	6.4	-66.00	-421.	14.68	94.	0.
L.O. SUMP.T. (C)	19.9	-72.40	-1442.	1.28	25.	13.
P.A.T. (S)	10.0	-62.96	-630.	9.23	92.	1.
TOTAL	373.6	-64.89	-24240.	11.45	4279.	1825.

COND. NO 1 LIGHT SHIP COND.

DEADWEIGHT ITEMS	WEIGHT	L.C.G FROM	MOMENT ABOUT	V.C.G FROM	MOMENT ABOUT	FREE SURFACE
	MT.	L/2 M.	L/2 MT-M.	BL M.	BL MT-M.	MOMENT MT-M.
DEADWEIGHT	0.0	0.00	0.	0.00	0.	0.
LIGHT SHIP WEIGHT	12398.0	-12.47	-154615.	10.51	130266.	
DISPLACEMENT	12398.0	-12.47	-154615.	10.51	130266.	0.
DRAFT EQUIV.	2.67 M		TRANSV. METACENTRE	KMT	30.87 M	
TRIM BY STERN	-4.90 M		VERT CENTRE OF GRAV	KG	10.51 M	
DRAFT FORWARD	0.42 M		METAC. HEIGHT	GM	20.36 M	
DRAFT AFT	5.31 M		FREE SURFACE CORR.	GG'	0.00 M	
DRAFT MEAN	2.87 M		CORR. METAC. HEIGHT	G'M	20.36 M	
L. C. B.	8.21 M					
L. C. F.	7.47 M		PROPELLER IMMERSION		20.8 %	
M. T. C.	523.5 MT-M					
T. P. C.	49.23 MT/CM					

LIGHTWEIGHT DISTRIBUTION

FRA	DX	FRF	DX	QA	QF	Q
0.000	-4.200	19.000	0.000	8.372	46.046	424.460
19.000	0.000	45.000	0.000	20.995	56.986	811.000
45.000	0.000	221.000	0.000	52.889	44.582	6862.001
88.000	0.000	89.000	0.000	65.001	64.999	52.000
132.000	0.000	133.000	0.000	64.999	65.002	52.000
176.000	0.000	177.000	0.000	64.999	65.001	52.000
221.000	0.000	251.000	0.000	49.934	3.841	527.000
0.000	-4.200	251.000	0.000	0.415	0.632	103.000
0.000	-4.200	19.000	0.000	12.882	4.746	137.500
221.000	0.000	229.000	0.000	3.078	3.078	19.700
0.000	-4.200	12.000	0.000	3.339	4.591	45.200
221.000	0.000	251.000	0.000	14.914	1.147	157.400
54.000	0.000	219.000	0.000	0.599	0.578	77.700
53.000	0.000	57.000	0.000	11.430	1.633	20.900
51.000	0.000	118.000	0.000	6.761	0.545	195.800
39.000	0.000	53.000	0.000	13.624	21.055	194.200
51.000	0.000	219.000	0.000	0.760	0.760	102.100
45.000	0.000	219.000	0.000	0.718	0.718	100.000
54.000	0.000	216.000	0.000	3.144	3.144	407.400
0.000	-4.200	251.000	0.000	0.309	0.274	57.400
12.000	0.000	37.000	0.000	61.995	29.521	851.100
45.000	0.000	229.000	0.000	1.635	1.028	196.000
27.000	0.000	36.000	0.000	44.861	44.861	323.000
5.000	0.000	27.000	0.000	8.344	0.872	68.200
19.000	0.000	45.000	0.000	27.362	10.081	389.400
19.000	0.000	45.000	0.000	7.452	7.452	155.000
45.000	0.000	230.000	0.000	0.113	0.111	16.540

COND. NO 2 DOCKING COND.

DEADWEIGHT ITEMS	WEIGHT	L.C.G FROM	MOMENT ABOUT	V.C.G FROM	MOMENT ABOUT	FREE SURFACE
	MT.	L/2 M.	L/2 MT-M.	BL M.	BL MT-M.	MOMENT MT-M.
CONSUMABLES ARR. (NO.48)	373.6	-64.89	-24240.	11.45	4279.	1825.
F.P.T.	750.0	89.42	67066.	3.76	2817.	2255.
NO.1 L.W.W.B.T. (P)	1306.8	58.11	75935.	4.30	5617.	0.
NO.1 L.W.W.B.T. (S)	1306.8	58.11	75935.	4.30	5617.	0.
NO.1 W.B.T. (C)	1819.5	60.83	110686.	3.58	6505.	0.
A.P.T.	80.0	-85.21	-6817.	3.00	240.	16.
DEADWEIGHT	5636.6	52.97	298564.	4.45	25076.	4096.
LIGHT SHIP WEIGHT	12398.0	-12.47	-154615.	10.51	130266.	
DISPLACEMENT	18034.6	7.98	143948.	8.61	155341.	4096.
DRAFT EQUIV.	3.80 M		TRANSV. METACENTRE	KMT	23.17 M	
TOTAL TRIM	0.00 M		VERT CENTRE OF GRAV	KG	8.61 M	
DRAFT FORWARD	3.80 M		METAC. HEIGHT	GM	14.55 M	
DRAFT AFT	3.80 M		FREE SURFACE CORR.	GG'	0.23 M	
DRAFT MEAN	3.80 M		CORR. METAC. HEIGHT	G'M	14.33 M	
L. C. B.	7.99 M					
L. C. F.	7.65 M		PROPELLER IMMERSION		-0.2 %	
M. T. C.	566.5 MT-M					
T. P. C.	50.83 MT/CM					

COND. NO 2 DOCKING COND.

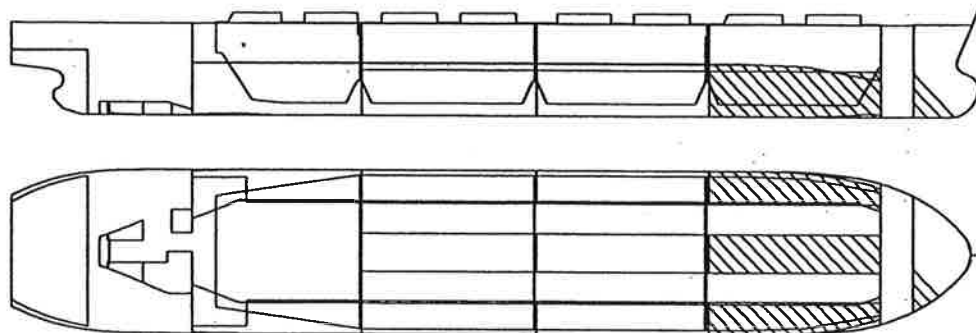
INCLINATION V	5.00	10.00	20.00	30.00	40.00	50.00	60.00	70.00
SIN V	0.087	0.174	0.342	0.500	0.643	0.766	0.866	0.940
KN	2.031	4.059	7.466	9.474	10.777	11.636	12.027	11.729
KG * SIN V	0.751	1.496	2.946	4.307	5.537	6.598	7.460	8.094
CORR	0.020	0.039	0.078	0.114	0.146	0.174	0.197	0.213
G'Z =								
KN-KG*SINV - CORR	1.260	2.524	4.443	5.054	5.095	4.864	4.371	3.421
GZ AREA (M-RAD)	0.055	0.220	0.845	1.689	2.579	3.452	4.262	4.951

MAX GZ 5.116 M AT 36.40 DEGREE
GZ 3.421 M AT 70.00 DEGREE

ANGLE	2.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00
GZ	0.494	1.003	1.518	2.028	2.523	2.993	3.428	3.820
GZ AREA	0.009	0.035	0.079	0.141	0.220	0.317	0.429	0.555
ANGLE	18.00	20.00	22.00	24.00	26.00	28.00	30.00	32.00
GZ	4.161	4.442	4.658	4.816	4.928	5.004	5.054	5.088
GZ AREA	0.695	0.845	1.004	1.170	1.340	1.513	1.689	1.866
ANGLE	34.00	36.00	38.00	40.00	42.00	44.00	46.00	48.00
GZ	5.108	5.115	5.111	5.094	5.068	5.031	4.984	4.929
GZ AREA	2.044	2.223	2.401	2.579	2.757	2.933	3.108	3.281
ANGLE	50.00	52.00	54.00	56.00	58.00	60.00	62.00	64.00
GZ	4.864	4.790	4.706	4.609	4.498	4.371	4.225	4.059
GZ AREA	3.452	3.620	3.786	3.949	4.108	4.262	4.412	4.557
ANGLE	66.00	68.00	70.00					
GZ	3.871	3.659	3.421					
GZ AREA	4.696	4.827	4.951					



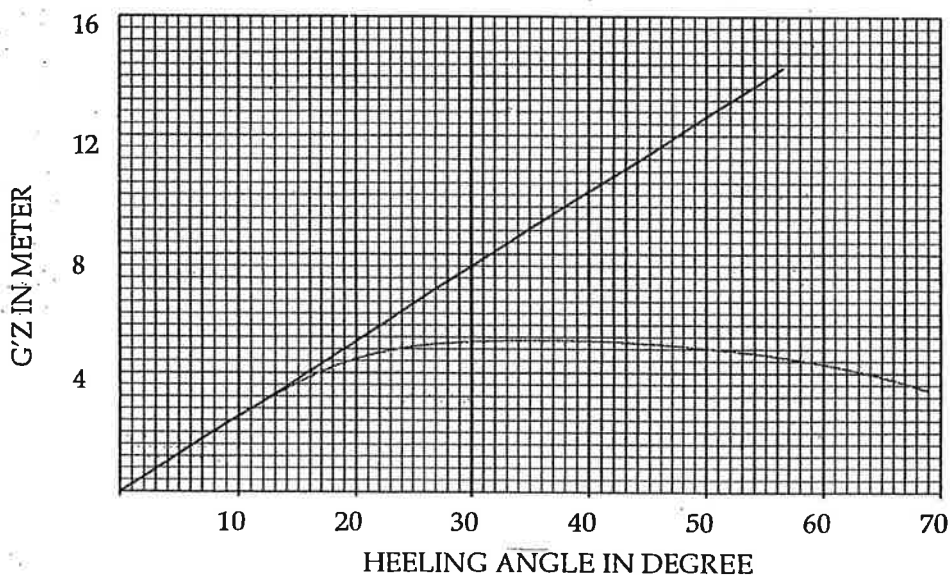
COND. NO. 2 DOCKING COND.



CARGO



W.B.T



STABILITY CRITERIA ACCORDING TO IMO RES. A.749(18)	ACTUAL	REQUIREMENT
AREA UNDER CURVE UP TO 30(DEG)	1.689 M-RAD	0.055 M-RAD
AREA UNDER CURVE UP TO 40(DEG) or θ_f WHICHEVER IS LESS	2.579 M-RAD	0.09 M-RAD
AREA BETWEEN 30 AND 40(DEG) or θ_f WHICHEVER IS LESS	0.890 M-RAD	0.03 M-RAD
G'Z AT GREATER THAN 30(DEG)	5.116 M	0.20 M
THE ANGLE AT WHICH THE MAX. G'Z OCCURS	36.40 DEG	30 DEG
THE INITIAL METACENTRIC HEIGHT G'M	14.326 M	0.15 M
NOTE : FLOODING ANGLE $\theta_f \geq 40.0(\text{DEG})$ SO 40.0(DEG) IS ADOPTED		

CONDITION NO 2 DOCKING COND.
LONGITUDINAL STRENGTH CALCULATION.

FRAME	SHEAR FORCE	BENDING MOMENT
LONGITUDINAL STRENGTH VALUES WHEN SHEAR FORCE = 0.		
118.789	0.000	145438.6

LONGITUDINAL STRENGTH VALUES ON THE BULKHEADS.

45.000	2816.822 (	37.1%)	45850.7 (	53.3%)
89.000	1522.789 (	20.3%)	127690.3 (	56.8%)
133.000	-709.114 (	9.3%)	140776.5 (	62.6%)
177.000	-3070.694 (	42.1%)	72193.3 (	32.1%)
221.000	-673.141 (	8.6%)	9224.5 (	17.7%)
229.000	-725.980 (	12.6%)	4367.1 (	0.0%)
251.500	0.000 (	-)	0.0 (	-)

CORRECTED PEAK SHEAR FORCE ON THE BULKHEADS.

45.000	2816.822	45850.7
89.000	1522.853	127690.3
133.000	-709.232	140776.5
177.000	-3070.576	72193.3
221.000	-673.261	9224.5
229.000	-725.977	4367.1
251.500	0.000	0.0

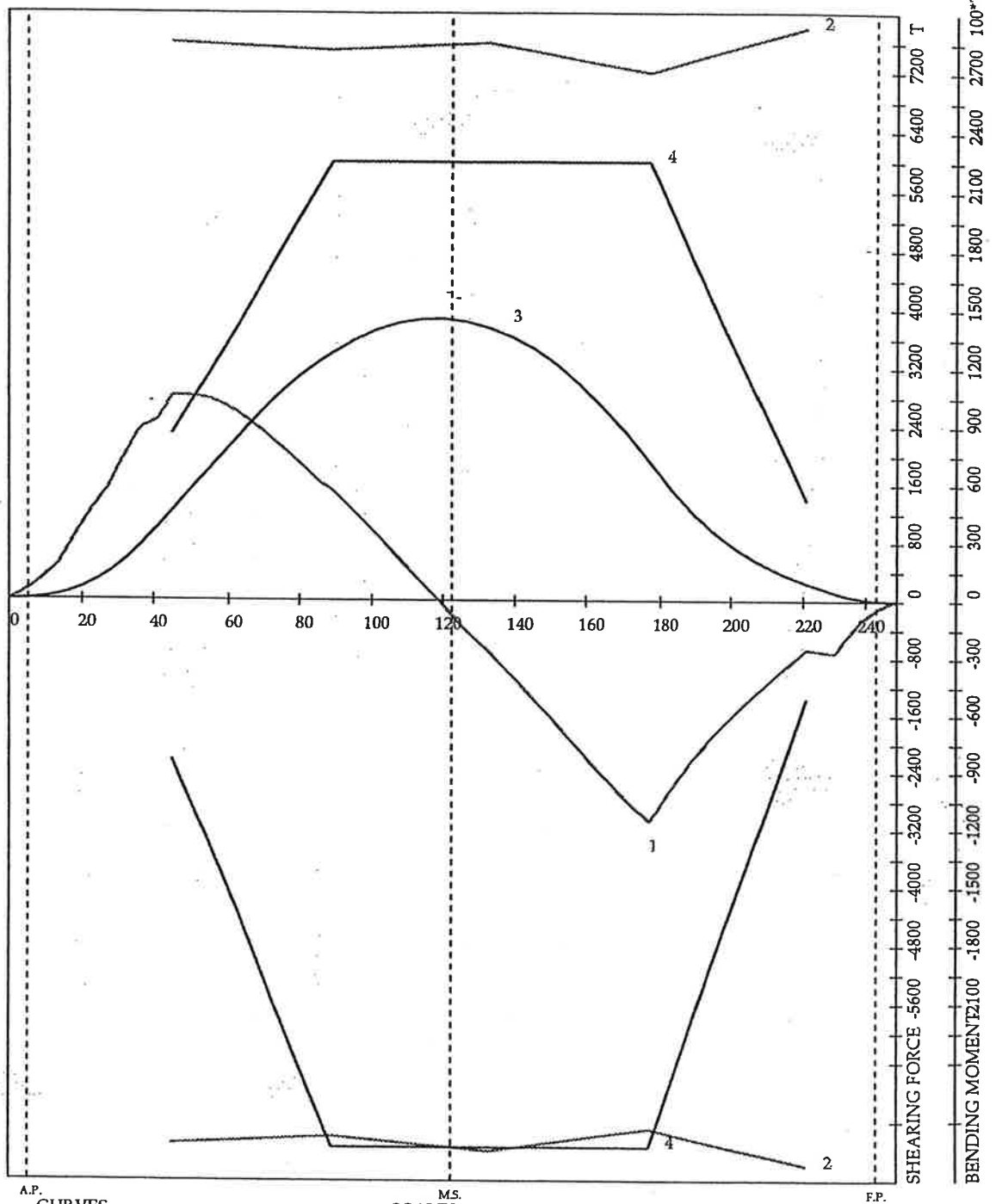
MAXIMUM SHEAR FORCE = -3070.694 AT FR NO. = 177.000 (42.1%)

MAXIMUM BENDING MOMENT = 145438.6 AT FR NO. = 118.789 (64.6%)

MAX. CORR. SHEAR FORCE = -3070.576 AT FR NO. = 177.000



COND. NO. 2 DOCKING COND.



A.P.		M.S.			
CURVES		SCALES			
1	- SHEARING FORCE DIAGRAM	1 UNIT	400.0	T	
2	- ALLOWABLE SHEAR FORCE				
3	- BENDING MOMENT DIAGRAM	1 UNIT	15000.0	T*M	
4	- ALLOWABLE BENDING MOMENT				
MAX. POSITIVE SHEARING F.		2822.0	T	AT	-59.292 M. FROM M. S.
MAX. NEGATIVE SHEARING F.		-3070.7	T	AT	43.600 M. FROM M. S.
MAX. POSITIVE BENDING M.		145438.6	T*M	AT	-2.970 M. FROM M. S.
MAX. NEGATIVE BENDING M.		-0.1	T*M	AT	0.001 M. FROM M. S.

COND. NO 11 BALL. COND DEP.

DEADWEIGHT ITEMS	WEIGHT	L.C.G FROM	MOMENT ABOUT	V.C.G FROM	MOMENT ABOUT	FREE SURFACE
	MT.	L/2 M.	L/2 MT-M.	BL M.	BL MT-M.	MOMENT MT-M.
CONSUMABLES DEP. (NO.45)	2490.9	-62.15	-154812.	11.72	29196.	1825.
F.P.T	2230.7	89.24	199061.	9.71	21651.	4361.
NO.1 L.W.W.B.T. (P)	1306.8	58.11	75935.	4.30	5617.	0.
NO.1 L.W.W.B.T. (S)	1306.8	58.11	75935.	4.30	5617.	0.
NO.1 U.W.W.B.T. (P)	788.2	61.23	48259.	15.07	11874.	0.
NO.1 U.W.W.B.T. (S)	788.2	61.23	48259.	15.07	11874.	0.
NO.1 W.B.T. (C)	1819.5	60.83	110686.	3.58	6505.	0.
NO.2 L.W.W.B.T. (P)	1710.9	26.00	44484.	4.22	7215.	0.
NO.2 L.W.W.B.T. (S)	1710.9	26.00	44484.	4.22	7215.	0.
NO.2 U.W.W.B.T. (P)	771.0	26.00	20046.	15.52	11966.	0.
NO.2 U.W.W.B.T. (S)	771.0	26.00	20046.	15.52	11966.	0.
NO.2 W.B.T. (C)	1859.2	26.00	48339.	3.55	6608.	0.
NO.3 L.W.W.B.T. (P)	1709.8	-9.19	-15712.	4.22	7214.	0.
NO.3 L.W.W.B.T. (S)	1709.8	-9.19	-15712.	4.22	7214.	0.
NO.3 U.W.W.B.T. (P)	771.0	-9.20	-7093.	15.52	11966.	0.
NO.3 U.W.W.B.T. (S)	771.0	-9.20	-7093.	15.52	11966.	0.
NO.3 W.B.T. (C)	1819.5	-9.57	-17406.	3.58	6505.	0.
NO.4 L.W.W.B.T. (P)	1647.0	-43.35	-71397.	5.32	8763.	0.
NO.4 L.W.W.B.T. (S)	1647.0	-43.35	-71397.	5.32	8763.	0.
NO.4 U.W.W.B.T. (P)	817.3	-42.34	-34603.	14.61	11940.	0.
NO.4 U.W.W.B.T. (S)	817.3	-42.34	-34603.	14.61	11940.	0.
A.P.T.	80.0	-85.21	-6817.	3.00	240.	16.
DEADWEIGHT	29343.7	10.19	298888.	7.63	223816.	6202.
LIGHT SHIP WEIGHT	12398.0	-12.47	-154615.	10.51	130266.	
DISPLACEMENT	41741.7	3.46	144272.	8.48	354081.	6202.
DRAFT EQUIV.	8.31 M		TRANSV. METACENTRE	KMT	14.54 M	
TRIM BY STERN	-2.05 M		VERT CENTRE OF GRAV	KG	8.48 M	
DRAFT FORWARD	7.31 M		METAC. HEIGHT	GM	6.06 M	
DRAFT AFT	9.36 M		FREE SURFACE CORR.	GG'	0.15 M	
DRAFT MEAN	8.34 M		CORR. METAC. HEIGHT	G'M	5.91 M	
L. C. B.	6.82 M					
L. C. F.	2.76 M		PROPELLER IMMERSION		77.0 %	
M. T. C.	684.7 MT-M					
T. P. C.	54.67 MT/CM					

COND. NO 11 BALL. COND DEP.

INCLINATION V 5.00 10.00 20.00 30.00 40.00 50.00 60.00 70.00

SIN V 0.087 0.174 0.342 0.500 0.643 0.766 0.866 0.940

KN 1.273 2.562 5.229 7.979 9.987 10.980 11.382 11.285

KG * SIN V 0.739 1.473 2.901 4.241 5.453 6.498 7.346 7.971

CORR 0.013 0.026 0.051 0.074 0.096 0.114 0.129 0.140

G'Z =

KN-KG*SINV - CORR 0.521 1.063 2.277 3.663 4.439 4.368 3.907 3.174

GZ AREA (M-RAD) 0.023 0.092 0.379 0.900 1.620 2.398 3.124 3.746

MAX GZ 4.491 M AT 43.40 DEGREE

GZ 3.174 M AT 70.00 DEGREE

ANGLE 2.00 4.00 6.00 8.00 10.00 12.00 14.00 16.00

GZ 0.206 0.415 0.628 0.844 1.064 1.288 1.519 1.759

GZ AREA 0.004 0.015 0.033 0.058 0.092 0.133 0.182 0.239

ANGLE 18.00 20.00 22.00 24.00 26.00 28.00 30.00 32.00

GZ 2.011 2.278 2.559 2.848 3.134 3.410 3.663 3.887

GZ AREA 0.305 0.379 0.464 0.558 0.662 0.777 0.900 1.032

ANGLE 34.00 36.00 38.00 40.00 42.00 44.00 46.00 48.00

GZ 4.079 4.236 4.357 4.439 4.482 4.490 4.470 4.427

GZ AREA 1.171 1.317 1.467 1.620 1.776 1.933 2.089 2.245

ANGLE 50.00 52.00 54.00 56.00 58.00 60.00 62.00 64.00

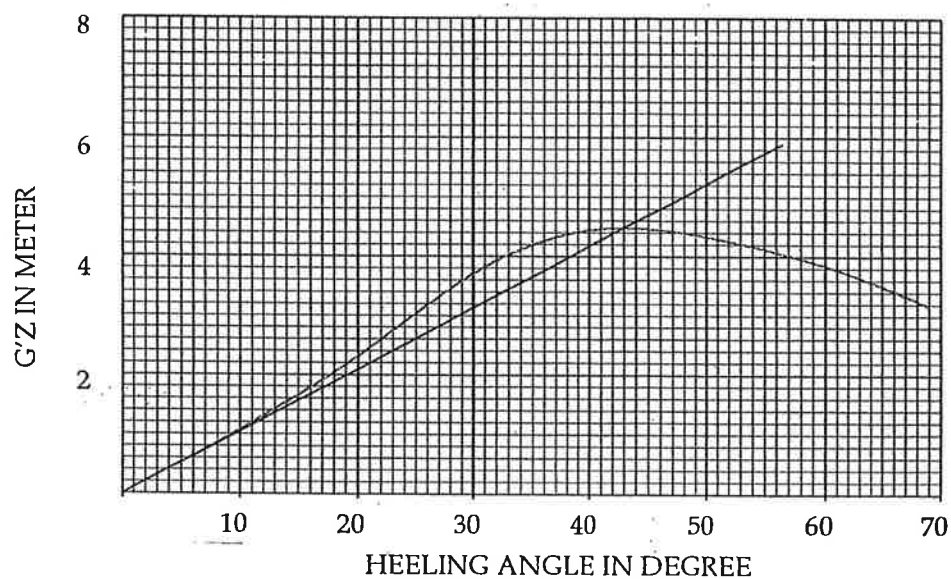
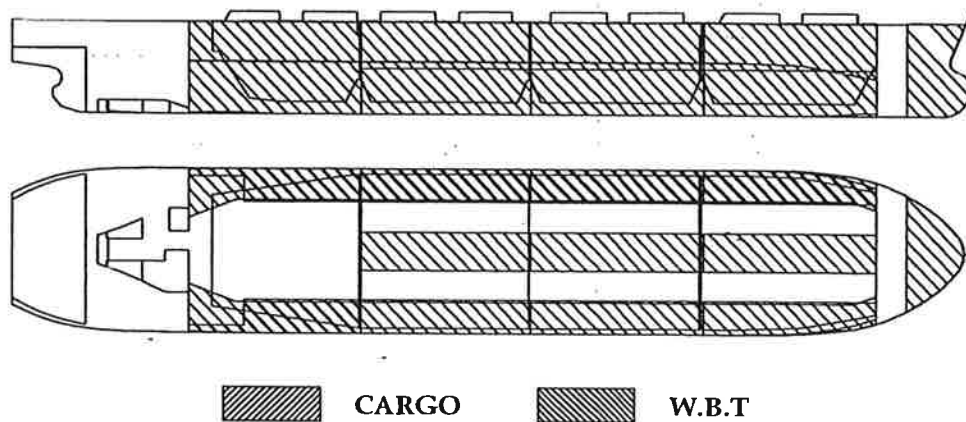
GZ 4.368 4.297 4.216 4.123 4.020 3.907 3.782 3.646

GZ AREA 2.398 2.549 2.698 2.844 2.986 3.124 3.258 3.388

ANGLE 66.00 68.00 70.00

GZ 3.500 3.343 3.174

GZ AREA 3.513 3.632 3.746



STABILITY CRITERIA ACCORDING TO IMO RES. A.749(18)	ACTUAL	REQUIREMENT
AREA UNDER CURVE UP TO 30(DEG)	0.900 M-RAD	0.055 M-RAD
AREA UNDER CURVE UP TO 40(DEG) or θ_f WHICHEVER IS LESS	1.620 M-RAD	0.09 M-RAD
AREA BETWEEN 30 AND 40(DEG) or θ_f WHICHEVER IS LESS	0.720 M-RAD	0.03 M-RAD
G'Z AT GREATER THAN 30(DEG)	4.491 M	0.20 M
THE ANGLE AT WHICH THE MAX. G'Z OCCURS	43.40 DEG	30 DEG
THE INITIAL METACENTRIC HEIGHT G'M	5.912 M	0.15 M
NOTE : FLOODING ANGLE $\theta_f \geq 40.0(\text{DEG})$ SO 40.0(DEG) IS ADOPTED		

CONDITION NO 11 BALL. COND DEP.
LONGITUDINAL STRENGTH CALCULATION.

FRAME	SHEAR FORCE	BENDING MOMENT
LONGITUDINAL STRENGTH VALUES WHEN SHEAR FORCE = 0.		
110.626	0.000	77944.5

LONGITUDINAL STRENGTH VALUES ON THE BULKHEADS.

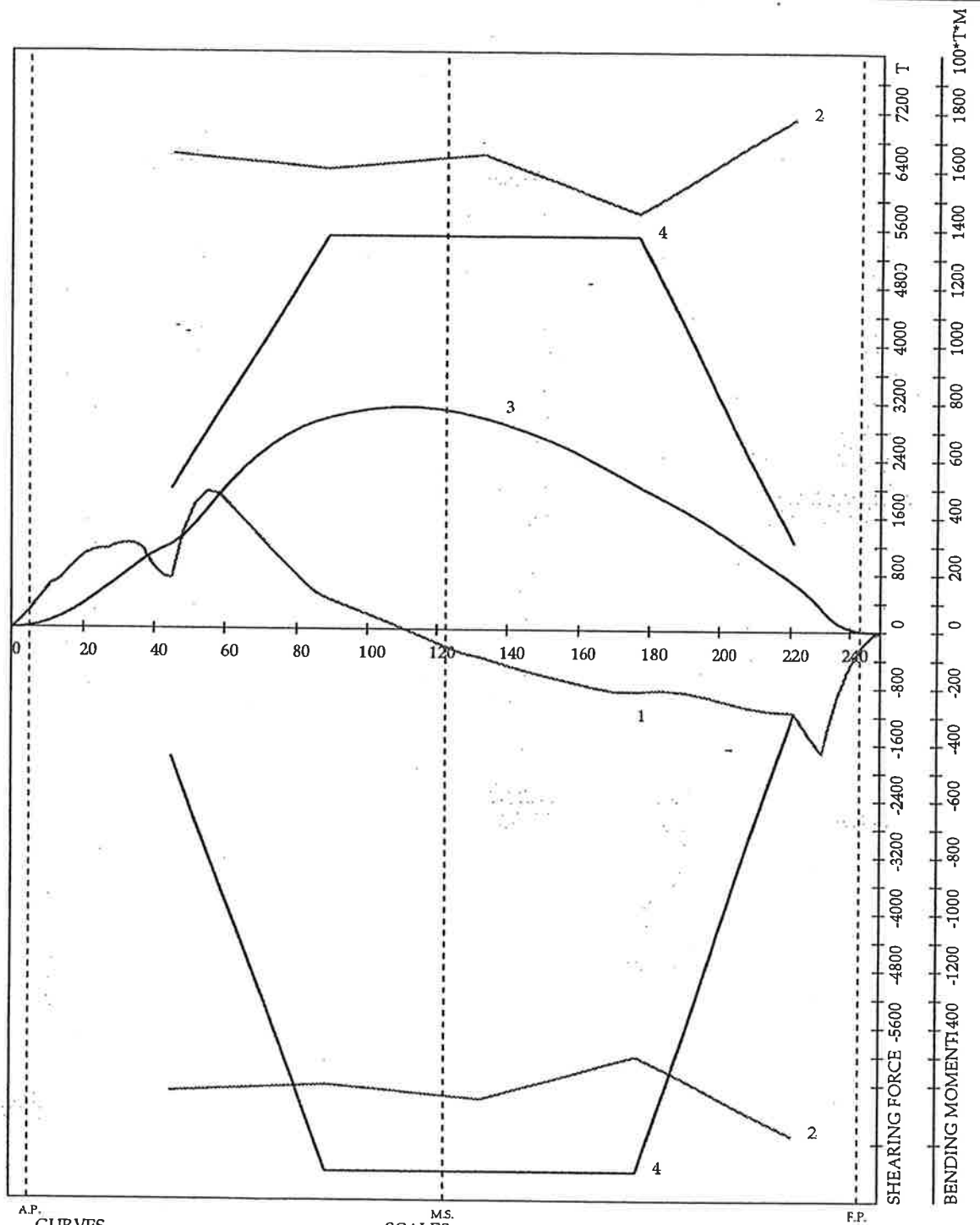
45.000	712.789 (	10.8%)	29580.6 (	60.4%)
89.000	431.984 (	6.7%)	73989.9 (	54.0%)
133.000	-395.332 (	6.0%)	74192.1 (	54.2%)
177.000	-865.834 (	14.4%)	50676.2 (	37.0%)
221.000	-1149.115 (	16.2%)	16919.8 (	54.6%)
229.000	-1731.442 (	33.1%)	7778.2 (	0.0%)
251.500	0.000 (	-)	0.0 (	-)

CORRECTED PEAK SHEAR FORCE ON THE BULKHEADS.

45.000	712.789	29580.6
89.000	431.998	73989.9
133.000	-395.355	74192.1
177.000	-865.848	50676.2
221.000	-1149.144	16919.8
229.000	-1731.412	7778.2
251.500	0.000	0.0

MAXIMUM SHEAR FORCE = 1932.765 AT FR NO. = 55.155 (29.5%)

MAXIMUM BENDING MOMENT = 77944.5 AT FR NO. = 110.626 (56.9%)
MAX. CORR. SHEAR FORCE = -1731.412 AT FR NO. = 229.000



A.P.

M.S.

F.P.

CURVES

SCALES

1 - SHEARING FORCE DIAGRAM	1 UNIT	400.0	T
2 - ALLOWABLE SHEAR FORCE			
3 - BENDING MOMENT DIAGRAM	1 UNIT	10000.0	T*M
4 - ALLOWABLE BENDING MOMENT			

MAX. POSITIVE SHEARING F.	1932.8	T	AT -53.877 M. FROM M. S.
MAX. NEGATIVE SHEARING F.	-1731.4	T	AT 85.200 M. FROM M. S.
MAX. POSITIVE BENDING M.	77944.5	T*M	AT -9.499 M. FROM M. S.
MAX. NEGATIVE BENDING M.	-14.9	T*M	AT 96.772 M. FROM M. S.

COND. NO 12 BALL. COND ARR.

DEADWEIGHT ITEMS	WEIGHT	L.C.G FROM	MOMENT ABOUT	V.C.G FROM	MOMENT ABOUT	FREE SURFACE
	MT.	L/2 M.	L/2 MT-M.	BL M.	BL MT-M.	MOMENT MT-M.
CONSUMABLES DEP. (NO. 46)	398.6	-64.78	-25822.	11.60	4622.	1825.
F.P.T	0.0	88.65	1.	0.28	0.	4361.
NO.1 L.W.W.B.T. (P)	1306.8	58.11	75935.	4.30	5617.	0.
NO.1 L.W.W.B.T. (S)	1306.8	58.11	75935.	4.30	5617.	0.
NO.1 U.W.W.B.T. (P)	788.2	61.23	48259.	15.07	11874.	0.
NO.1 U.W.W.B.T. (S)	788.2	61.23	48259.	15.07	11874.	0.
NO.1 W.B.T. (C)	1819.5	60.83	110686.	3.58	6505.	0.
NO.2 L.W.W.B.T. (P)	1710.9	26.00	44484.	4.22	7215.	0.
NO.2 L.W.W.B.T. (S)	1710.9	26.00	44484.	4.22	7215.	0.
NO.2 U.W.W.B.T. (P)	771.0	26.00	20046.	15.52	11966.	0.
NO.2 U.W.W.B.T. (S)	771.0	26.00	20046.	15.52	11966.	0.
NO.2 W.B.T. (C)	1859.2	26.00	48339.	3.55	6608.	0.
NO.3 L.W.W.B.T. (P)	1709.8	-9.19	-15712.	4.22	7214.	0.
NO.3 L.W.W.B.T. (S)	1709.8	-9.19	-15712.	4.22	7214.	0.
NO.3 U.W.W.B.T. (P)	771.0	-9.20	-7093.	15.52	11966.	0.
NO.3 U.W.W.B.T. (S)	771.0	-9.20	-7093.	15.52	11966.	0.
NO.3 W.B.T. (C)	1819.5	-9.57	-17406.	3.58	6505.	0.
NO.4 L.W.W.B.T. (P)	1647.0	-43.35	-71397.	5.32	8763.	0.
NO.4 L.W.W.B.T. (S)	1647.0	-43.35	-71397.	5.32	8763.	0.
NO.4 U.W.W.B.T. (P)	817.3	-42.34	-34603.	14.61	11940.	0.
NO.4 U.W.W.B.T. (S)	817.3	-42.34	-34603.	14.61	11940.	0.
A.P.T.	80.0	-85.21	-6817.	3.00	240.	16.
DEADWEIGHT	25020.8	9.15	228819.	7.10	177591.	6202.
LIGHT SHIP WEIGHT	12398.0	-12.47	-154615.	10.51	130266.	
DISPLACEMENT	37418.8	1.98	74203.	8.23	307857.	6202.
DRAFT EQUIV.	7.51 M		TRANSV. METACENTRE	KMT	15.05 M	
TRIM BY STERN	-2.99 M		VERT CENTRE OF GRAV	KG	8.23 M	
DRAFT FORWARD	6.08 M		METAC. HEIGHT	GM	6.83 M	
DRAFT AFT	9.08 M		FREE SURFACE CORR.	GG'	0.17 M	
DRAFT MEAN	7.58 M		CORR. METAC. HEIGHT	G'M	6.66 M	
L. C. B.	7.18 M					
L. C. F.	4.50 M		PROPELLER IMMERSION		73.1 %	
M. T. C.	649.3 MT-M					
T. P. C.	53.67 MT/CM					

COND. NO 12 BALL. COND ARR.

INCLINATION V 5.00 10.00 20.00 30.00 40.00 50.00 60.00 70.00

SIN V 0.087 0.174 0.342 0.500 0.643 0.766 0.866 0.940

KN 1.317 2.651 5.424 8.178 10.204 11.217 11.552 11.413

KG * SIN V 0.717 1.429 2.814 4.114 5.288 6.303 7.125 7.731

CORR 0.014 0.029 0.057 0.083 0.107 0.127 0.144 0.156

G'Z =

KN-KG*SINV - CORR 0.585 1.193 2.554 3.982 4.809 4.788 4.284 3.526

GZ AREA (M-RAD) 0.026 0.103 0.427 1.001 1.780 2.628 3.424 4.108

MAX GZ 4.888 M AT 44.10 DEGREE

GZ 3.526 M AT 70.00 DEGREE

ANGLE 2.00 4.00 6.00 8.00 10.00 12.00 14.00 16.00

GZ 0.233 0.467 0.704 0.946 1.193 1.448 1.712 1.984

GZ AREA 0.004 0.016 0.037 0.066 0.103 0.149 0.204 0.269

ANGLE 18.00 20.00 22.00 24.00 26.00 28.00 30.00 32.00

GZ 2.264 2.554 2.851 3.150 3.443 3.723 3.982 4.213

GZ AREA 0.343 0.427 0.521 0.626 0.741 0.866 1.001 1.144

ANGLE 34.00 36.00 38.00 40.00 42.00 44.00 46.00 48.00

GZ 4.413 4.581 4.714 4.809 4.866 4.887 4.878 4.843

GZ AREA 1.294 1.451 1.614 1.780 1.949 2.119 2.290 2.460

ANGLE 50.00 52.00 54.00 56.00 58.00 60.00 62.00 64.00

GZ 4.788 4.715 4.627 4.525 4.410 4.284 4.147 4.002

GZ AREA 2.628 2.794 2.957 3.117 3.273 3.424 3.571 3.714

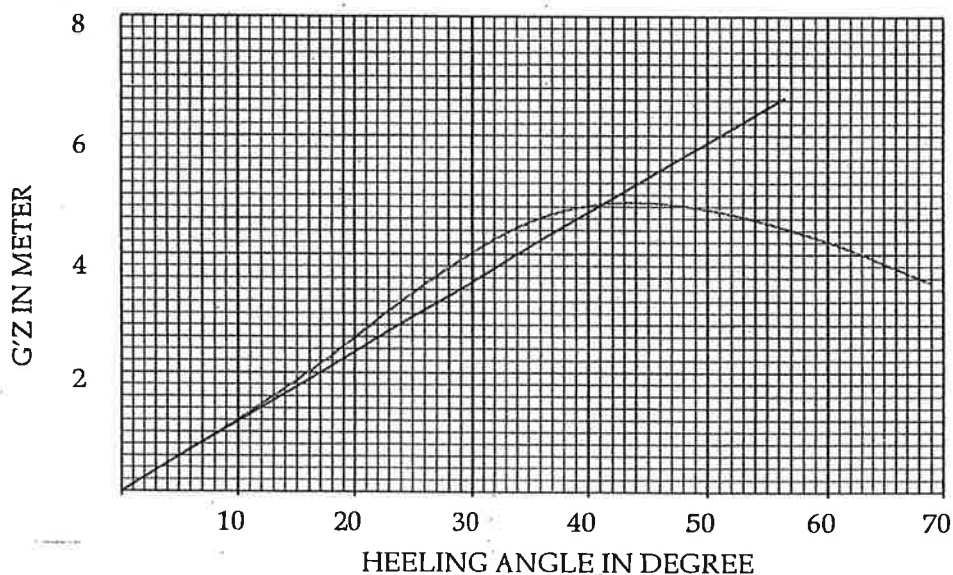
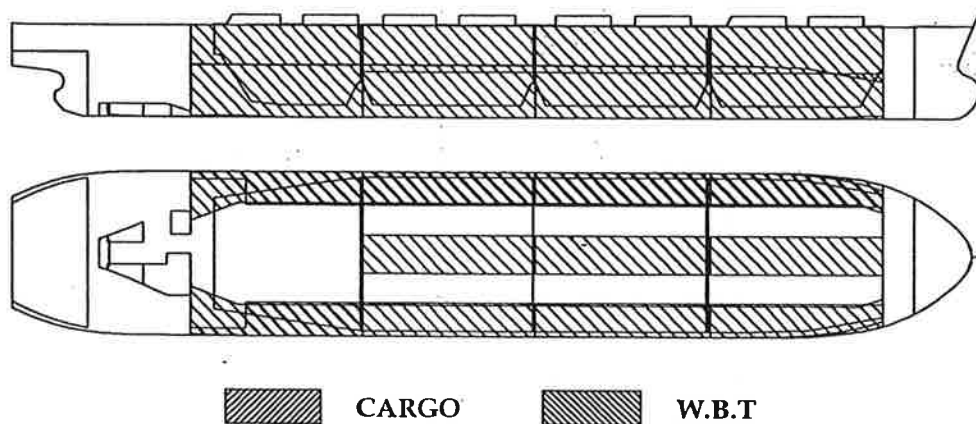
ANGLE 66.00 68.00 70.00

GZ 3.849 3.690 3.526

GZ AREA 3.851 3.982 4.108



COND. NO. 12 BALL. COND ARR.



STABILITY CRITERIA ACCORDING TO IMO RES. A.749(18)	ACTUAL	REQUIREMENT
AREA UNDER CURVE UP TO 30(DEG)	1.001 M-RAD	0.055 M-RAD
AREA UNDER CURVE UP TO 40(DEG) or θf WHICHEVER IS LESS	1.780 M-RAD	0.09 M-RAD
AREA BETWEEN 30 AND 40(DEG) or θf WHICHEVER IS LESS	0.780 M-RAD	0.03 M-RAD
G'Z AT GREATER THAN 30(DEG)	4.888 M	0.20 M
THE ANGLE AT WHICH THE MAX. G'Z OCCURS	44.10 DEG	30 DEG
THE INITIAL METACENTRIC HEIGHT G'M	6.660 M	0.15 M
NOTE : FLOODING ANGLE $\theta f \geq 40.0(\text{DEG})$ SO 40.0(DEG) IS ADOPTED		

CONDITION NO 12 BALL. COND ARR.
LONGITUDINAL STRENGTH CALCULATION.

FRAME	SHEAR FORCE	BENDING MOMENT
-------	----------------	-------------------

LONGITUDINAL STRENGTH VALUES WHEN SHEAR FORCE = 0.

65.429	0.000	30600.9
182.193	0.000	-19476.6
243.984	0.000	-230.6

LONGITUDINAL STRENGTH VALUES ON THE BULKHEADS.

45.000	659.690 (	10.0%)	24157.0 (	49.3%)
89.000	-729.651 (	11.4%)	22914.5 (	16.7%)
133.000	-722.770 (	11.0%)	-3004.2 (	1.6%)
177.000	-153.799 (	2.6%)	-19392.4 (	10.2%)
221.000	745.251 (	10.5%)	-5941.1 (	20.5%)
229.000	337.425 (	6.4%)	-2124.4 (	0.0%)
251.500	0.000 (	-)	0.0 (	-)

CORRECTED PEAK SHEAR FORCE ON THE BULKHEADS.

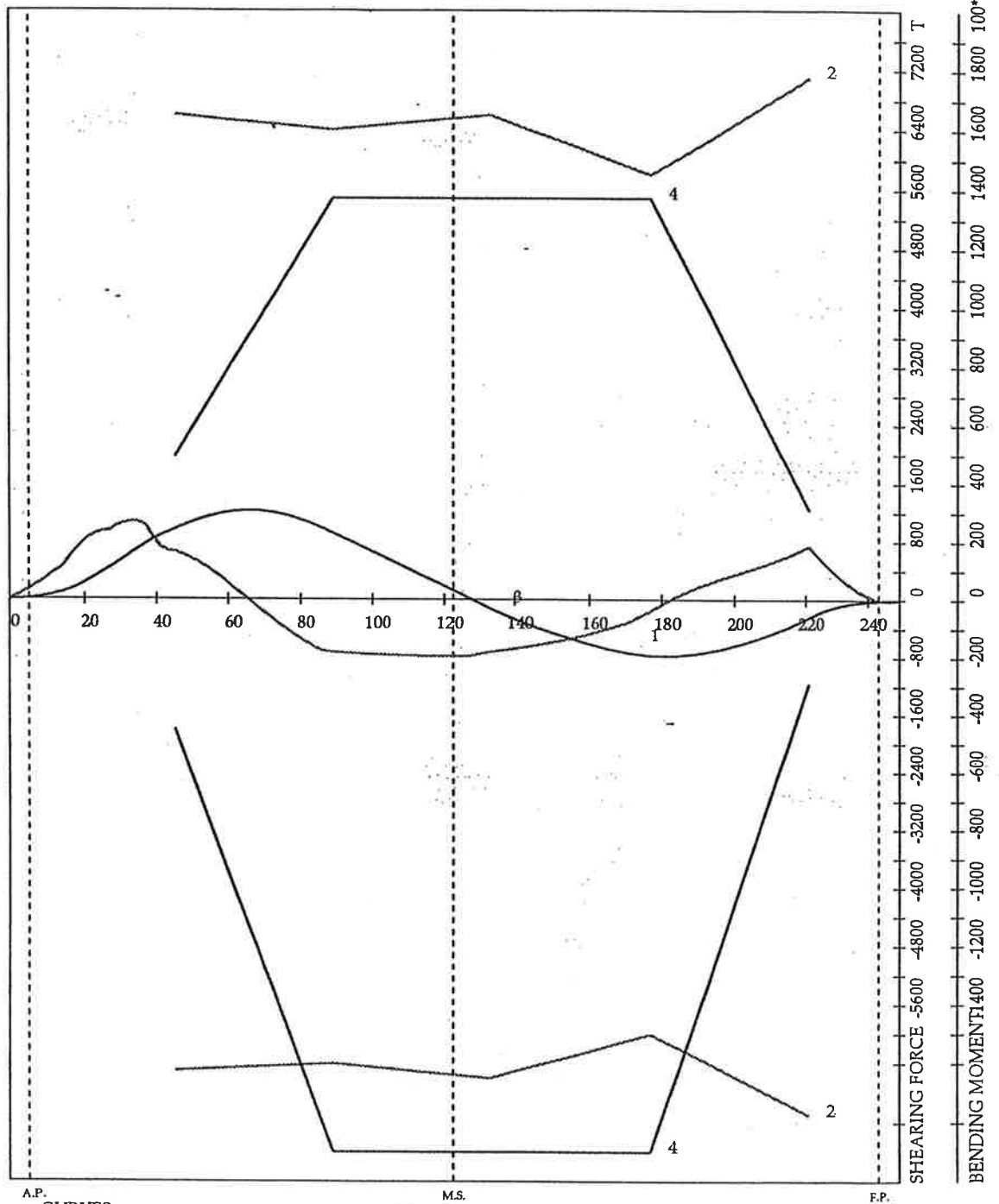
45.000	659.690	24157.0
89.000	-729.651	22914.5
133.000	-722.771	-3004.2
177.000	-153.828	-19392.4
221.000	745.231	-5941.1
229.000	337.445	-2124.4
251.500	0.000	0.0

MAXIMUM SHEAR FORCE = 1070.575 AT FR NO. = 33.001 (-)

MAXIMUM BENDING MOMENT = 30600.9 AT FR NO. = 65.429 (34.1%)
MAX. CORR. SHEAR FORCE = 745.231 AT FR NO. = 221.000



COND. NO. 12 BALL COND ARR.



A.P.		M.S.			
CURVES		SCALES			
1	- SHEARING FORCE DIAGRAM	1 UNIT	400.0	T	
2	- ALLOWABLE SHEAR FORCE				
3	- BENDING MOMENT DIAGRAM	1 UNIT	10000.0	T*M	
4	- ALLOWABLE BENDING MOMENT				
MAX POSITIVE SHEARING F.		1070.6	T	AT	-71.600 M. FROM M. S.
MAX NEGATIVE SHEARING F.		-784.4	T	AT	-1.657 M. FROM M. S.
MAX POSITIVE BENDING M.		30600.9	T*M	AT	-45.658 M. FROM M. S.
MAX NEGATIVE BENDING M.		-19476.7	T*M	AT	47.754 M. FROM M. S.

COND. NO 13 LIGHT BALL. COND. DEP.

DEADWEIGHT ITEMS	WEIGHT	L.C.G FROM	MOMENT ABOUT	V.C.G FROM	MOMENT ABOUT	FREE SURFACE
	MT.	L/2 M.	L/2 MT-M.	BL M.	BL MT-M.	MOMENT MT-M.
CONSUMABLES DEP. (NO.47)	1343.1	-60.53	-81298.	8.98	12064.	1825.
NO.1 L.W.W.B.T. (P)	1306.8	58.11	75935.	4.30	5617.	0.
NO.1 L.W.W.B.T. (S)	1306.8	58.11	75935.	4.30	5617.	0.
NO.1 U.W.W.B.T. (P)	788.2	61.23	48259.	15.07	11874.	0.
NO.1 U.W.W.B.T. (S)	788.2	61.23	48259.	15.07	11874.	0.
NO.1 W.B.T. (C)	1819.5	60.83	110686.	3.58	6505.	0.
NO.2 L.W.W.B.T. (P)	1710.9	26.00	44484.	4.22	7215.	0.
NO.2 L.W.W.B.T. (S)	1710.9	26.00	44484.	4.22	7215.	0.
NO.2 U.W.W.B.T. (P)	771.0	26.00	20046.	15.52	11966.	0.
NO.2 U.W.W.B.T. (S)	771.0	26.00	20046.	15.52	11966.	0.
NO.2 W.B.T. (C)	1859.2	26.00	48339.	3.55	6608.	0.
NO.3 L.W.W.B.T. (P)	1709.8	-9.19	-15712.	4.22	7214.	0.
NO.3 L.W.W.B.T. (S)	1709.8	-9.19	-15712.	4.22	7214.	0.
NO.3 U.W.W.B.T. (P)	771.0	-9.20	-7093.	15.52	11966.	0.
NO.3 U.W.W.B.T. (S)	771.0	-9.20	-7093.	15.52	11966.	0.
NO.3 W.B.T. (C)	1819.5	-9.57	-17406.	3.58	6505.	0.
NO.4 L.W.W.B.T. (P)	1647.0	-43.35	-71397.	5.32	8763.	0.
NO.4 L.W.W.B.T. (S)	1647.0	-43.35	-71397.	5.32	8763.	0.
NO.4 U.W.W.B.T. (P)	0.0	-44.17	0.	10.22	0.	661.
NO.4 U.W.W.B.T. (S)	0.0	-44.17	0.	10.22	0.	661.
E/R DB.W.B.T. (C)	180.2	-66.83	-12041.	1.17	211.	1657.
A.P.T.	80.0	-85.21	-6817.	3.00	240.	16.
DEADWEIGHT	24510.8	9.40	230506.	6.58	161364.	4821.
LIGHT SHIP WEIGHT	12398.0	-12.47	-154615.	10.51	130266.	
DISPLACEMENT	36908.8	2.06	75891.	7.90	291630.	4821.
DRAFT EQUIV.	7.41 M		TRANSV. METACENTRE	KMT	15.13 M	
TRIM BY STERN	-2.95 M		VERT CENTRE OF GRAV	KG	7.90 M	
DRAFT FORWARD	6.01 M		METAC. HEIGHT	GM	7.23 M	
DRAFT AFT	8.96 M		FREE SURFACE CORR.	GG'	0.13 M	
DRAFT MEAN	7.49 M		CORR. METAC. HEIGHT	G'M	7.10 M	
L. C. B.	7.21 M					
L. C. F.	4.67 M		PROPELLER IMMERSION		71.5 %	
M. T. C.	645.8 MT-M					
T. P. C.	53.56 MT/CM					

COND. NO 13 LIGHT BALL. COND. DEP.

INCLINATION V 5.00 10.00 20.00 30.00 40.00 50.00 60.00 70.00

SIN V 0.087 0.174 0.342 0.500 0.643 0.766 0.866 0.940

KN 1.324 2.664 5.453 8.204 10.228 11.244 11.572 11.427

KG * SIN V 0.689 1.372 2.702 3.951 5.079 6.053 6.843 7.425

CORR 0.011 0.023 0.045 0.065 0.084 0.100 0.113 0.123

G'Z =

KN-KG*SINV - CORR 0.624 1.270 2.706 4.188 5.065 5.091 4.616 3.879

GZ AREA (M-RAD) 0.027 0.110 0.454 1.059 1.879 2.775 3.628 4.372

MAX GZ 5.167 M AT 44.80 DEGREE

GZ 3.879 M AT 70.00 DEGREE

ANGLE 2.00 4.00 6.00 8.00 10.00 12.00 14.00 16.00

GZ 0.249 0.498 0.750 1.007 1.270 1.541 1.820 2.107

GZ AREA 0.004 0.017 0.039 0.070 0.110 0.159 0.217 0.286

ANGLE 18.00 20.00 22.00 24.00 26.00 28.00 30.00 32.00

GZ 2.402 2.706 3.015 3.326 3.629 3.919 4.188 4.429

GZ AREA 0.365 0.454 0.554 0.664 0.786 0.917 1.059 1.209

ANGLE 34.00 36.00 38.00 40.00 42.00 44.00 46.00 48.00

GZ 4.639 4.817 4.960 5.065 5.132 5.163 5.164 5.138

GZ AREA 1.368 1.533 1.704 1.879 2.057 2.237 2.417 2.597

ANGLE 50.00 52.00 54.00 56.00 58.00 60.00 62.00 64.00

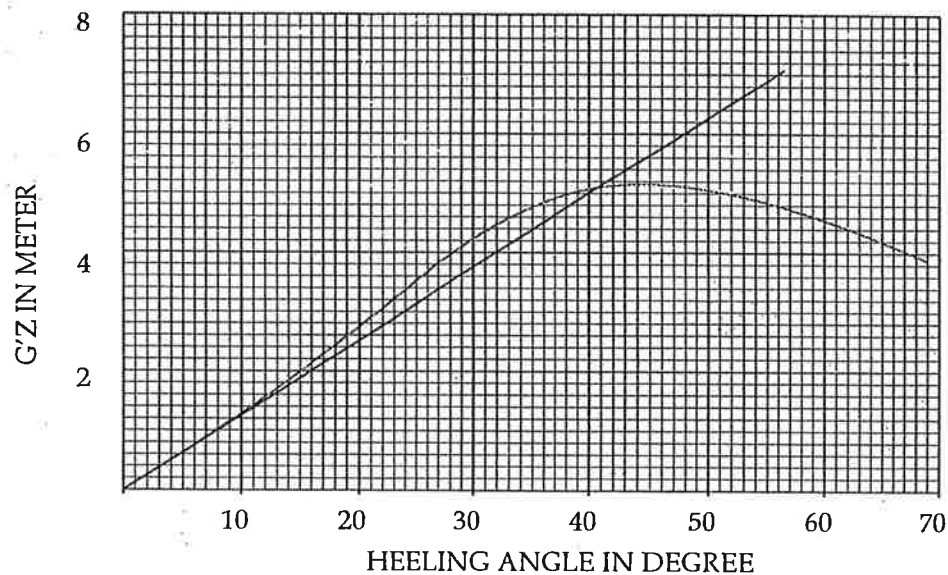
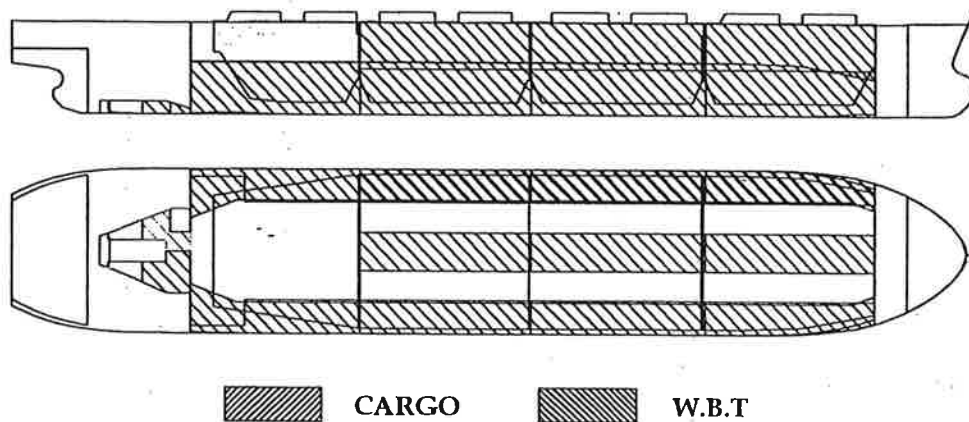
GZ 5.091 5.025 4.944 4.847 4.738 4.616 4.484 4.343

GZ AREA 2.775 2.952 3.126 3.297 3.464 3.628 3.786 3.940

ANGLE 66.00 68.00 70.00

GZ 4.194 4.039 3.879

GZ AREA 4.090 4.233 4.372



STABILITY CRITERIA ACCORDING TO IMO RES. A.749(18)	ACTUAL	REQUIREMENT
AREA UNDER CURVE UP TO 30(DEG)	1.059 M-RAD	0.055 M-RAD
AREA UNDER CURVE UP TO 40(DEG) or θf WHICHEVER IS LESS	1.879 M-RAD	0.09 M-RAD
AREA BETWEEN 30 AND 40(DEG) or θf WHICHEVER IS LESS	0.820 M-RAD	0.03 M-RAD
G'Z AT GREATER THAN 30(DEG)	5.167 M	0.20 M
THE ANGLE AT WHICH THE MAX. G'Z OCCURS	44.80 DEG	30 DEG
THE INITIAL METACENTRIC HEIGHT G'M	7.100 M	0.15 M
NOTE : FLOODING ANGLE $\theta f \geq 40.0(\text{DEG})$ SO 40.0(DEG) IS ADOPTED		

CONDITION NO 13 LIGHT BALL. COND. DEP.
LONGITUDINAL STRENGTH CALCULATION.

FRAME	SHEAR FORCE	BENDING MOMENT
LONGITUDINAL STRENGTH VALUES WHEN SHEAR FORCE = 0.		
73.995	0.000	50549.9
185.590	0.000	-15400.2
243.936	0.000	-27.8

LONGITUDINAL STRENGTH VALUES ON THE BULKHEADS.

45.000	1058.574 (	16.0%)	29440.2 (	60.1%)
89.000	-1039.975 (	16.2%)	43982.2 (	32.1%)
133.000	-924.612 (	14.0%)	8232.7 (	6.0%)
177.000	-257.107 (	4.3%)	-14676.7 (	7.7%)
221.000	726.165 (	10.2%)	-4815.9 (	16.6%)
229.000	328.694 (	6.3%)	-1397.1 (	0.0%)
251.500	0.000 (	-)	0.0 (	-)

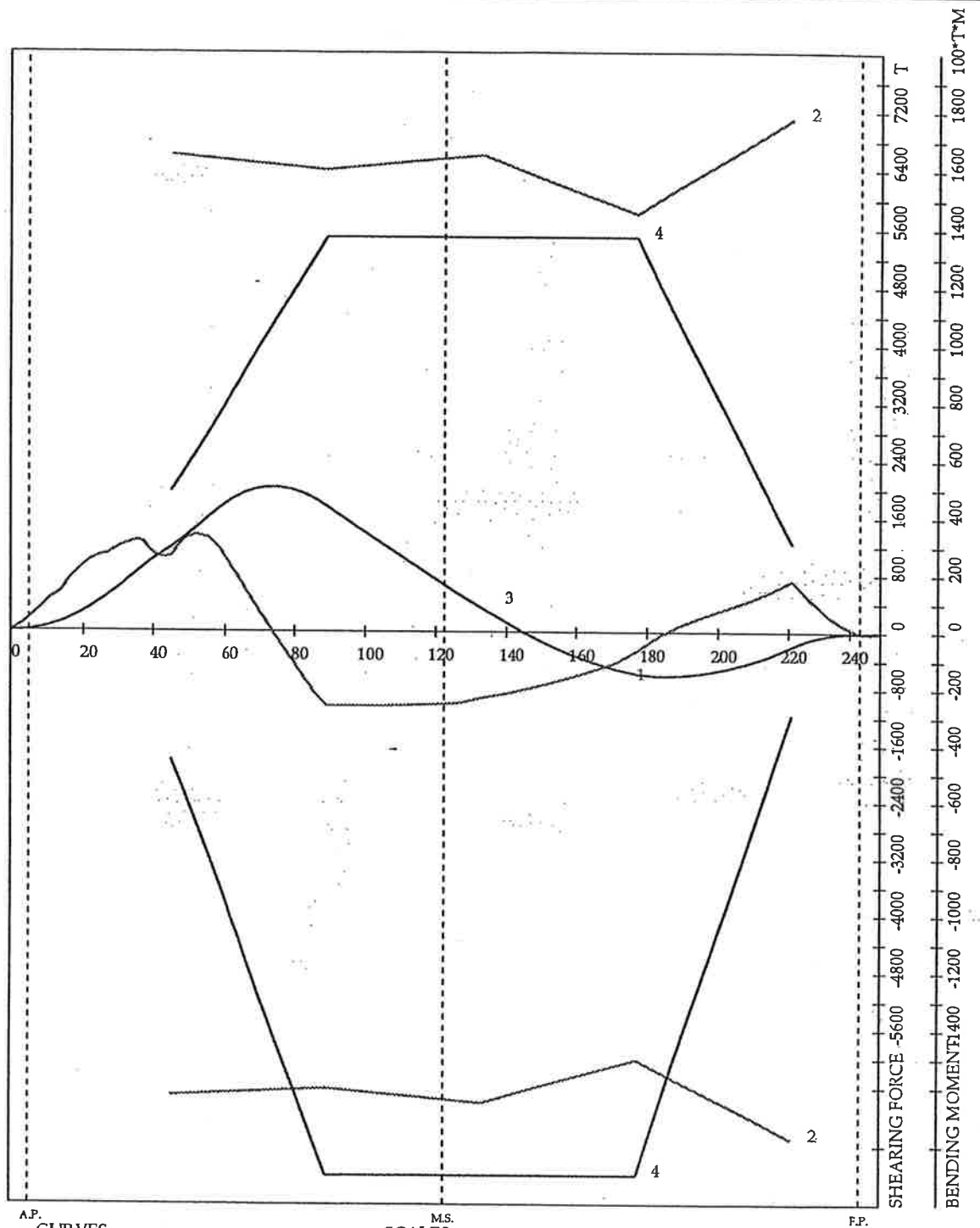
CORRECTED PEAK SHEAR FORCE ON THE BULKHEADS.

45.000	1058.574	29440.2
89.000	-1039.970	43982.2
133.000	-924.618	8232.7
177.000	-257.140	-14676.7
221.000	726.145	-4815.9
229.000	328.714	-1397.1
251.500	0.000	0.0

MAXIMUM SHEAR FORCE = 1356.868 AT FR NO. = 51.770 (20.7%)

MAXIMUM BENDING MOMENT = 50549.9 AT FR NO. = 73.995 (47.2%)

MAX. CORR. SHEAR FORCE = -1039.970 AT FR NO. = 89.000



A.P.

M.S.

F.P.

CURVES

SCALES

- | | | | |
|------------------------------|--------|---------|-----|
| 1 - SHEARING FORCE DIAGRAM | 1 UNIT | 400.0 | T |
| 2 - ALLOWABLE SHEAR FORCE | | | |
| 3 - BENDING MOMENT DIAGRAM | 1 UNIT | 10000.0 | T*M |
| 4 - ALLOWABLE BENDING MOMENT | | | |

MAX. POSITIVE SHEARING F.	1356.9	T	AT	-56.585 M. FROM M. S.
MAX. NEGATIVE SHEARING F.	-1041.3	T	AT	-21.771 M. FROM M. S.
MAX. POSITIVE BENDING M.	50549.9	T*M	AT	-38.805 M. FROM M. S.
MAX. NEGATIVE BENDING M.	-15400.3	T*M	AT	50.472 M. FROM M. S.

COND. NO 14 LIGHT BALL. COND. ARR.

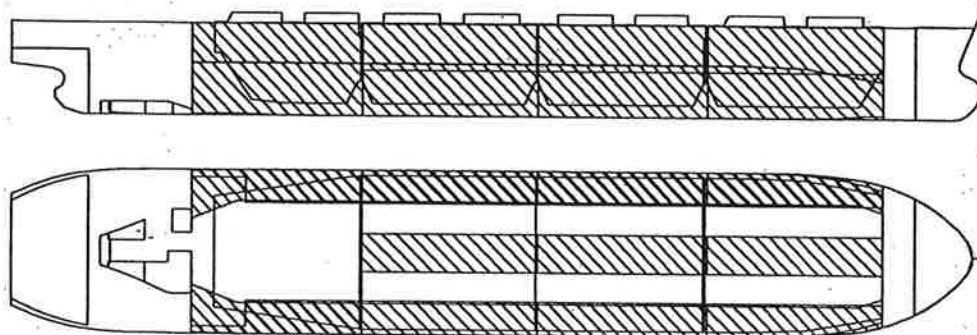
DEADWEIGHT ITEMS	WEIGHT	L.C.G FROM	MOMENT ABOUT	V.C.G FROM	MOMENT ABOUT	FREE SURFACE
	MT.	L/2 M.	L/2 MT-M.	BL M.	BL MT-M.	MOMENT MT-M.
CONSUMABLES ARR. (NO. 48)	373.6	-64.89	-24240.	11.45	4279.	1825.
NO. 1 L.W.W.B.T. (P)	1306.8	58.11	75935.	4.30	5617.	0.
NO. 1 L.W.W.B.T. (S)	1306.8	58.11	75935.	4.30	5617.	0.
NO. 1 U.W.W.B.T. (P)	788.2	61.23	48259.	15.07	11874.	0.
NO. 1 U.W.W.B.T. (S)	788.2	61.23	48259.	15.07	11874.	0.
NO. 1 W.B.T. (C)	1819.5	60.83	110686.	3.58	6505.	0.
NO. 2 L.W.W.B.T. (P)	1710.9	26.00	44484.	4.22	7215.	0.
NO. 2 L.W.W.B.T. (S)	1710.9	26.00	44484.	4.22	7215.	0.
NO. 2 U.W.W.B.T. (P)	771.0	26.00	20046.	15.52	11966.	0.
NO. 2 U.W.W.B.T. (S)	771.0	26.00	20046.	15.52	11966.	0.
NO. 2 W.B.T. (C)	1859.2	26.00	48339.	3.55	6608.	0.
NO. 3 L.W.W.B.T. (P)	1709.8	-9.19	-15712.	4.22	7214.	0.
NO. 3 L.W.W.B.T. (S)	1709.8	-9.19	-15712.	4.22	7214.	0.
NO. 3 U.W.W.B.T. (P)	771.0	-9.20	-7093.	15.52	11966.	0.
NO. 3 U.W.W.B.T. (S)	771.0	-9.20	-7093.	15.52	11966.	0.
NO. 3 W.B.T. (C)	1819.5	-9.57	-17406.	3.58	6505.	0.
NO. 4 L.W.W.B.T. (P)	1647.0	-43.35	-71397.	5.32	8763.	0.
NO. 4 L.W.W.B.T. (S)	1647.0	-43.35	-71397.	5.32	8763.	0.
NO. 4 U.W.W.B.T. (P)	817.3	-42.34	-34603.	14.61	11940.	661.
NO. 4 U.W.W.B.T. (S)	817.3	-42.34	-34603.	14.61	11940.	661.
E/R DB.W.B.T. (C)	0.0	-65.54	-1.	0.05	0.	1657.
A.P.T.	80.0	-85.21	-6817.	3.00	240.	16.
DEADWEIGHT	24995.7	9.22	230399.	7.09	177248.	4821.
LIGHT SHIP WEIGHT	12398.0	-12.47	-154615.	10.51	130266.	
DISPLACEMENT	37393.7	2.03	75783.	8.22	307514.	4821.
DRAFT EQUIV.	7.50 M		TRANSV. METACENTRE	KMT	15.06 M	
TRIM BY STERN	-2.97 M		VERT CENTRE OF GRAV	KG	8.22 M	
DRAFT FORWARD	6.09 M		METAC. HEIGHT	GM	6.83 M	
DRAFT AFT	9.06 M		FREE SURFACE CORR.	GG'	0.13 M	
DRAFT MEAN	7.58 M		CORR. METAC. HEIGHT	G'M	6.70 M	
L. C. B.	7.18 M					
L. C. F.	4.51 M		PROPELLER IMMERSION		72.8 %	
M. T. C.	649.1 MT-M					
T. P. C.	53.66 MT/CM					

COND. NO 14 LIGHT BALL. COND. ARR.

INCLINATION V	5.00	10.00	20.00	30.00	40.00	50.00	60.00	70.00
SIN V	0.087	0.174	0.342	0.500	0.643	0.766	0.866	0.940
KN	1.317	2.651	5.426	8.180	10.206	11.219	11.553	11.414
KG * SIN V	0.717	1.428	2.813	4.112	5.286	6.300	7.122	7.728
CORR	0.011	0.022	0.044	0.064	0.083	0.099	0.112	0.121
G'Z =								
KN-KG*SINV - CORR	0.589	1.201	2.569	4.003	4.837	4.820	4.320	3.565
GZ AREA (M-RAD)	0.026	0.104	0.429	1.006	1.790	2.643	3.446	4.136

MAX GZ 4.917 M AT 44.10 DEGREE
GZ 3.565 M AT 70.00 DEGREE

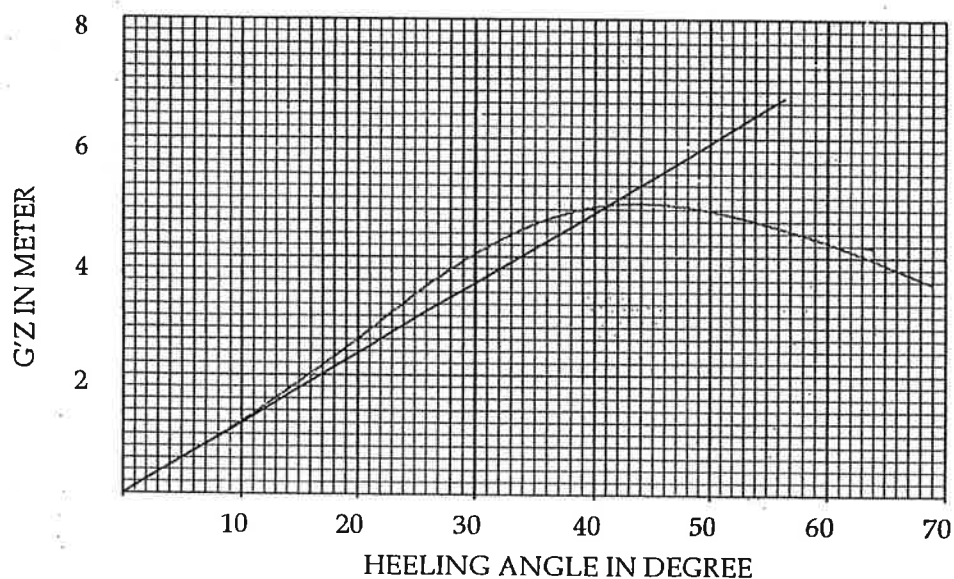
ANGLE	2.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00
GZ	0.235	0.470	0.709	0.952	1.201	1.458	1.722	1.996
GZ AREA	0.004	0.017	0.037	0.066	0.104	0.150	0.205	0.270
ANGLE	18.00	20.00	22.00	24.00	26.00	28.00	30.00	32.00
GZ	2.278	2.569	2.868	3.168	3.462	3.743	4.003	4.236
GZ AREA	0.345	0.429	0.524	0.630	0.745	0.871	1.006	1.150
ANGLE	34.00	36.00	38.00	40.00	42.00	44.00	46.00	48.00
GZ	4.437	4.606	4.740	4.836	4.894	4.917	4.909	4.875
GZ AREA	1.302	1.460	1.623	1.790	1.960	2.131	2.303	2.474
ANGLE	50.00	52.00	54.00	56.00	58.00	60.00	62.00	64.00
GZ	4.820	4.748	4.661	4.560	4.445	4.320	4.184	4.039
GZ AREA	2.643	2.810	2.974	3.135	3.293	3.446	3.594	3.738
ANGLE	66.00	68.00	70.00					
GZ	3.887	3.728	3.565					
GZ AREA	3.876	4.009	4.136					



CARGO



W.B.T



STABILITY CRITERIA ACCORDING TO IMO RES. A.749(18)	ACTUAL	REQUIREMENT
AREA UNDER CURVE UP TO 30(DEG)	1.006 M-RAD	0.055 M-RAD
AREA UNDER CURVE UP TO 40(DEG) or θf WHICHEVER IS LESS	1.790 M-RAD	0.09 M-RAD
AREA BETWEEN 30 AND 40(DEG) or θf WHICHEVER IS LESS	0.784 M-RAD	0.03 M-RAD
G'Z AT GREATER THAN 30(DEG)	4.917 M	0.20 M
THE ANGLE AT WHICH THE MAX. G'Z OCCURS	44.10 DEG	30 DEG
THE INITIAL METACENTRIC HEIGHT G'M	6.704 M	0.15 M
NOTE : FLOODING ANGLE $\theta f \geq 40.0(\text{DEG})$ SO 40.0(DEG) IS ADOPTED		

CONDITION NO 14 LIGHT BALL. COND. ARR.
LONGITUDINAL STRENGTH CALCULATION.

FRAME	SHEAR FORCE	BENDING MOMENT
LONGITUDINAL STRENGTH VALUES WHEN SHEAR FORCE = 0.		
65.244	0.000	30546.2
181.994	0.000	-19477.1
243.995	0.000	-216.9

LONGITUDINAL STRENGTH VALUES ON THE BULKHEADS.					
45.000	646.025 (	9.8%)	24288.1 (	49.6%)	
89.000	-731.298 (	11.4%)	22756.7 (	16.6%)	
133.000	-717.787 (	10.9%)	-3143.1 (	1.7%)	
177.000	-147.688 (	2.5%)	-19398.1 (	10.2%)	
221.000	747.295 (	10.5%)	-5890.9 (	20.3%)	
229.000	338.502 (	6.5%)	-2084.3 (	0.0%)	
251.500	0.000 (	-)	0.0 (	-)	

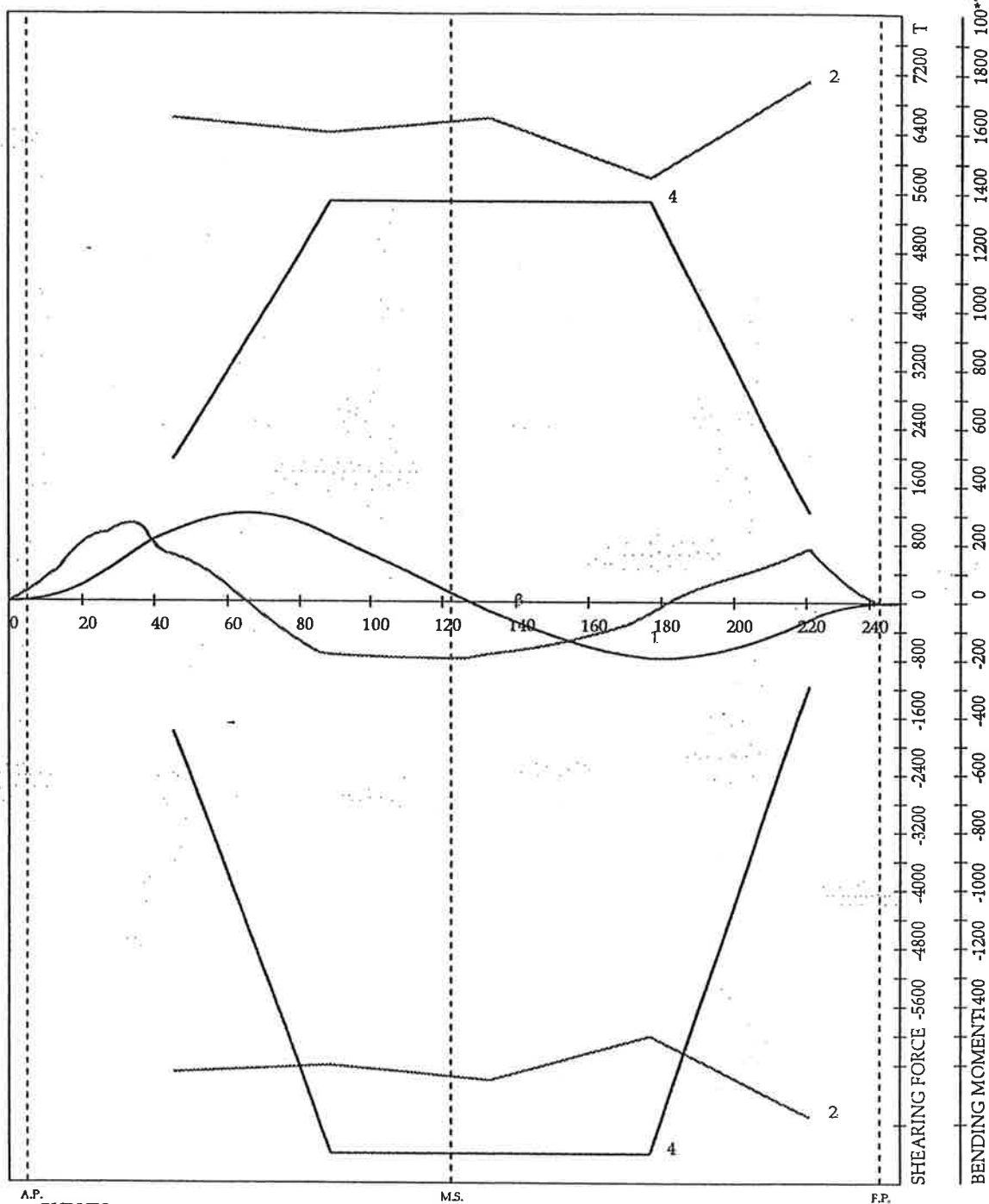
CORRECTED PEAK SHEAR FORCE ON THE BULKHEADS.		
45.000	646.025	24288.1
89.000	-731.297	22756.7
133.000	-717.788	-3143.1
177.000	-147.716	-19398.1
221.000	747.274	-5890.9
229.000	338.522	-2084.3
251.500	0.000	0.0

MAXIMUM SHEAR FORCE = 1078.187 AT FR NO. = 33.001 (-)

MAXIMUM BENDING MOMENT = 30546.2 AT FR NO. = 65.244 (34.1%)
MAX. CORR. SHEAR FORCE = 747.274 AT FR NO. = 221.000



COND. NO. 14 LIGHT BALL. COND. ARR.

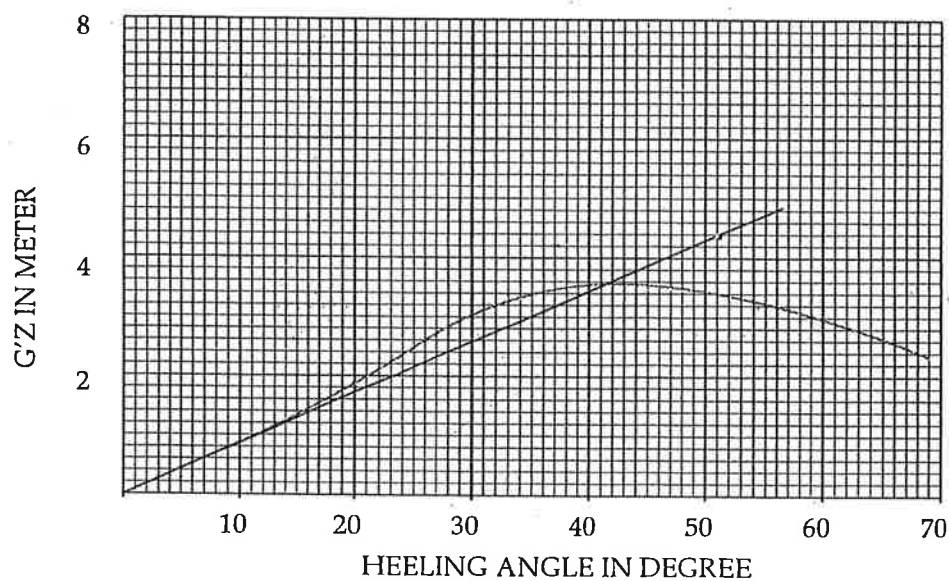
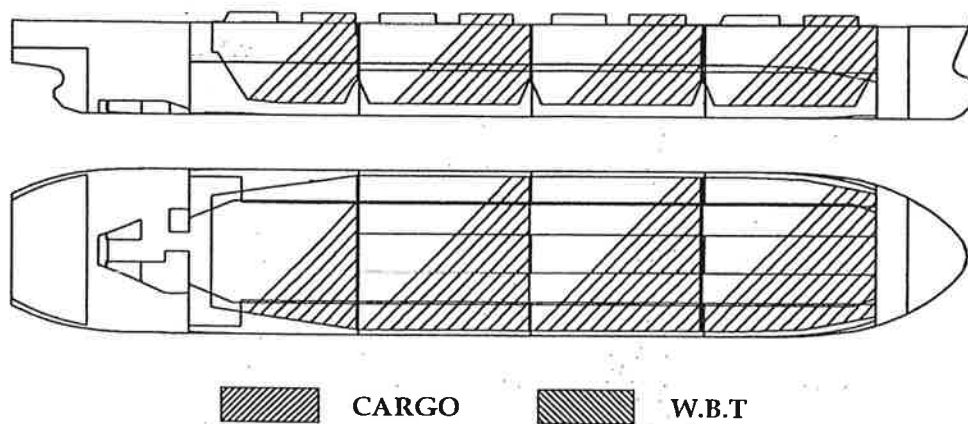


A.P.		M.S.			
CURVES		SCALES			
1	- SHEARING FORCE DIAGRAM	1 UNIT	400.0	T	
2	- ALLOWABLE SHEAR FORCE				
3	- BENDING MOMENT DIAGRAM	1 UNIT	10000.0	T*M	
4	- ALLOWABLE BENDING MOMENT				
MAX. POSITIVE SHEARING F.		1078.2	T	AT	-71.600 M. FROM M. S.
MAX. NEGATIVE SHEARING F.		-780.8	T	AT	-1.657 M. FROM M. S.
MAX. POSITIVE BENDING M.		30546.2	T*M	AT	-45.805 M. FROM M. S.
MAX. NEGATIVE BENDING M.		-19477.2	T*M	AT	47.595 M. FROM M. S.

COND. NO 21 HOMO. DESIGN LOAD DEP. (GYPSUM, SG.1.442)

DEADWEIGHT ITEMS	WEIGHT	L.C.G FROM	MOMENT ABOUT	V.C.G FROM	MOMENT ABOUT	FREE SURFACE
	MT.	L/2 M.	L/2 MT-M.	BL M.	BL MT-M.	MOMENT MT-M.
CONSUMABLES DEP. (NO.47)	1343.1	-60.53	-81298.	8.98	12064.	1825.
NO.1 CARGO HOLD (C) 56%	9652.0	60.29	581884.	8.76	84534.	0.
NO.2 CARGO HOLD (C) 56%	10000.0	25.60	256000.	8.74	87383.	0.
NO.3 CARGO HOLD (C) 56%	10000.0	-9.60	-96000.	8.74	87383.	0.
NO.4 CARGO HOLD (C) 49%	6450.0	-39.73	-256238.	8.74	56356.	0.
NO.4 U.W.W.B.T. (P)	0.0	-44.17	0.	10.22	0.	661.
NO.4 U.W.W.B.T. (S)	0.0	-44.17	0.	10.22	0.	661.
A.P.T.	80.0	-85.21	-6817.	3.00	240.	16.
DEADWEIGHT	37525.2	10.59	397530.	8.74	327960.	3164.
LIGHT SHIP WEIGHT	12398.0	-12.47	-154615.	10.51	130266.	
DISPLACEMENT	49923.2	4.87	242914.	9.18	458225.	3164.
DRAFT EQUIV.	9.77 M		TRANSV. METACENTRE	KMT	14.11 M	
TRIM BY STERN	-0.55 M		VERT CENTRE OF GRAV	KG	9.18 M	
DRAFT FORWARD	9.48 M		METAC. HEIGHT	GM	4.93 M	
DRAFT AFT	10.04 M		FREE SURFACE CORR.	GG'	0.06 M	
DRAFT MEAN	9.76 M		CORR. METAC. HEIGHT	G'M	4.87 M	
L. C. B.	5.75 M					
L. C. F.	-1.97 M		PROPELLER IMMERSION		86.4 %	
M. T. C.	798.9 MT-M					
T. P. C.	57.57 MT/CM					

COND. NO 21 HOMO. DESIGN LOAD DEP. (GYPSUM, SG. 1.442)									
INCLINATION V	5.00	10.00	20.00	30.00	40.00	50.00	60.00	70.00	
SIN V	0.087	0.174	0.342	0.500	0.643	0.766	0.866	0.940	
KN	1.232	2.470	4.999	7.618	9.486	10.542	11.028	11.023	
KG * SIN V	0.800	1.594	3.139	4.589	5.900	7.031	7.949	8.625	
CORR	0.006	0.011	0.022	0.032	0.041	0.049	0.055	0.060	
G'Z =									
KN-KG*SIN V - CORR	0.427	0.865	1.838	2.997	3.545	3.462	3.024	2.338	
GZ AREA (M-RAD)	0.019	0.075	0.307	0.732	1.314	1.932	2.502	2.973	
MAX GZ 3.572 M AT 43.40 DEGREE									
GZ 2.338 M AT 70.00 DEGREE									
ANGLE	2.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00	
GZ	0.169	0.340	0.514	0.689	0.865	1.043	1.225	1.416	
GZ AREA	0.003	0.012	0.027	0.048	0.075	0.108	0.148	0.194	
ANGLE	18.00	20.00	22.00	24.00	26.00	28.00	30.00	32.00	
GZ	1.619	1.838	2.074	2.319	2.562	2.791	2.997	3.169	
GZ AREA	0.247	0.307	0.375	0.452	0.537	0.631	0.732	0.839	
ANGLE	34.00	36.00	38.00	40.00	42.00	44.00	46.00	48.00	
GZ	3.308	3.416	3.494	3.545	3.569	3.570	3.551	3.514	
GZ AREA	0.953	1.070	1.191	1.314	1.438	1.563	1.687	1.810	
ANGLE	50.00	52.00	54.00	56.00	58.00	60.00	62.00	64.00	
GZ	3.462	3.397	3.320	3.232	3.133	3.024	2.905	2.776	
GZ AREA	1.932	2.052	2.169	2.283	2.395	2.502	2.606	2.705	
ANGLE	66.00	68.00	70.00						
GZ	2.638	2.492	2.338						
GZ AREA	2.799	2.889	2.973						



STABILITY CRITERIA ACCORDING TO IMO RES. A.749(18)	ACTUAL	REQUIREMENT
AREA UNDER CURVE UP TO 30(DEG)	0.732 M-RAD	0.055 M-RAD
AREA UNDER CURVE UP TO 40(DEG) or θ_f WHICHEVER IS LESS	1.314 M-RAD	0.09 M-RAD
AREA BETWEEN 30 AND 40(DEG) or θ_f WHICHEVER IS LESS	0.582 M-RAD	0.03 M-RAD
G'Z AT GREATER THAN 30(DEG)	3.572 M	0.20 M
THE ANGLE AT WHICH THE MAX. G'Z OCCURS	43.40 DEG	30 DEG
THE INITIAL METACENTRIC HEIGHT G'M	4.869 M	0.15 M
NOTE : FLOODING ANGLE $\theta_f \geq 40.0(\text{DEG})$ SO 40.0(DEG) IS ADOPTED		

CONDITION NO 21 HOMO. DESIGN LOAD DEP. (GYPSUM, SG. 1.442)
LONGITUDINAL STRENGTH CALCULATION.

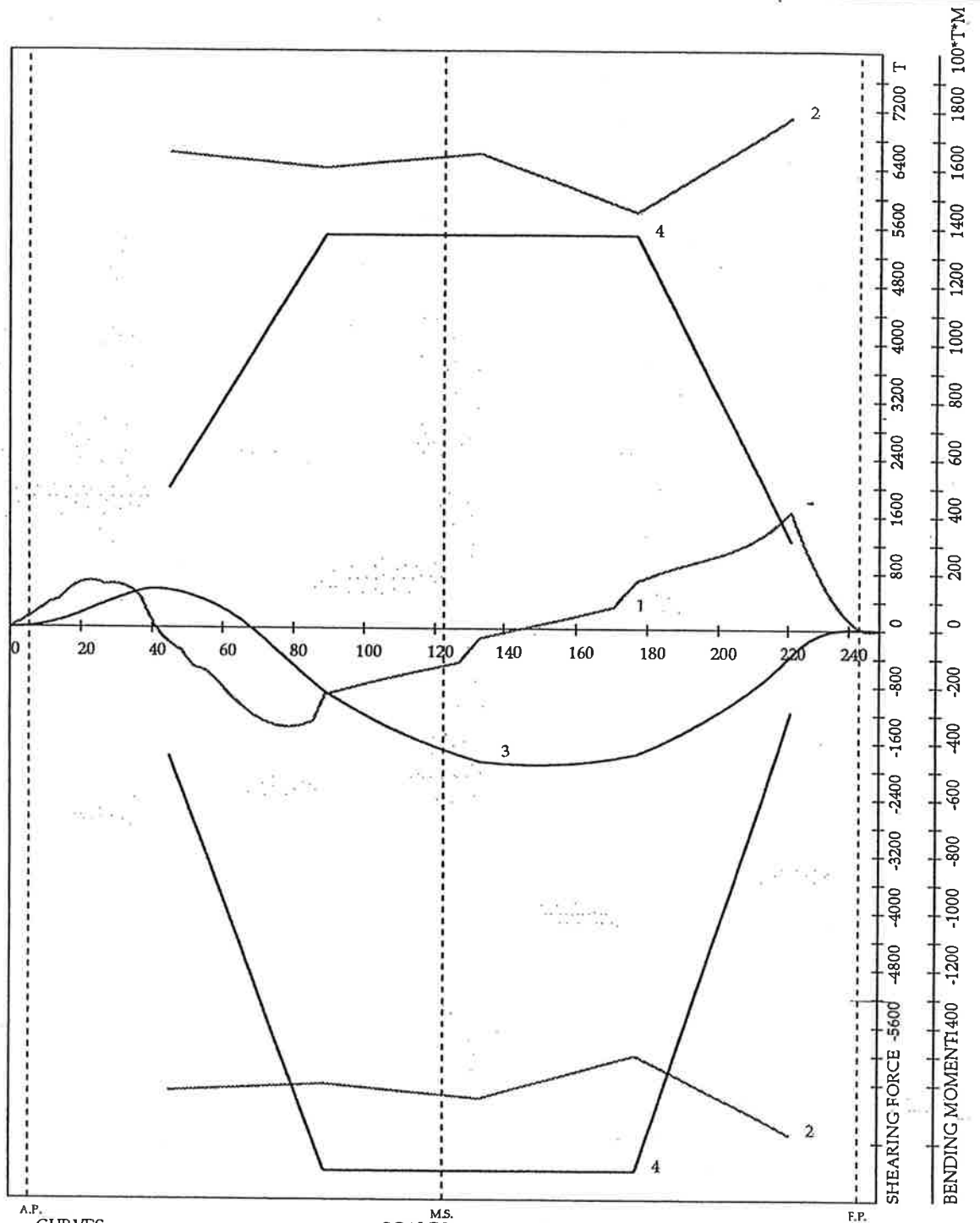
FRAME	SHEAR FORCE	BENDING MOMENT
LONGITUDINAL STRENGTH VALUES WHEN SHEAR FORCE = 0.		
41.084	0.000	13682.5
144.581	0.000	-47944.0
245.578	0.000	342.1

LONGITUDINAL STRENGTH VALUES ON THE BULKHEADS.					
45.000	-207.580 (	3.2%)	13261.0 (	27.1%)	
89.000	-933.269 (	14.6%)	-22434.1 (	11.8%)	
133.000	-132.427 (	2.0%)	-46872.6 (	24.7%)	
177.000	668.328 (	11.5%)	-44231.4 (	23.3%)	
221.000	1658.360 (	23.4%)	-8999.7 (	31.0%)	
229.000	761.374 (	14.5%)	-1861.7 (	0.0%)	
251.500	0.000 (	-)	0.0 (	-)	

CORRECTED PEAK SHEAR FORCE ON THE BULKHEADS.			
45.000	-207.580	13261.0	
89.000	-933.233	-22434.1	
133.000	-132.467	-46872.6	
177.000	668.377	-44231.4	
221.000	1658.316	-8999.7	
229.000	761.419	-1861.7	
251.500	0.000	0.0	

MAXIMUM SHEAR FORCE = 1658.360 AT FR NO. = 221.000 (23.4%)

MAXIMUM BENDING MOMENT = -47949.0 AT FR NO. = 151.857 (25.2%)
MAX. CORR. SHEAR FORCE = 1658.316 AT FR NO. = 221.000



A.P.

M.S.

F.P.

CURVES

SCALES

1 - SHEARING FORCE DIAGRAM	1 UNIT	400.0	T
2 - ALLOWABLE SHEAR FORCE			
3 - BENDING MOMENT DIAGRAM	1 UNIT	10000.0	T*M
4 - ALLOWABLE BENDING MOMENT			

MAX. POSITIVE SHEARING F.	1658.4	T	AT	78.800 M. FROM M. S.
MAX. NEGATIVE SHEARING F.	-1394.4	T	AT	-34.923 M. FROM M. S.
MAX. POSITIVE BENDING M.	13682.5	T*M	AT	-65.133 M. FROM M. S.
MAX. NEGATIVE BENDING M.	-47949.1	T*M	AT	23.487 M. FROM M. S.

COND. NO 22 HOMO. DESIGN LOAD ARR. (GYPSUM,SG.1.442)

DEADWEIGHT ITEMS	WEIGHT	L.C.G FROM	MOMENT ABOUT	V.C.G FROM	MOMENT ABOUT	FREE SURFACE
	MT.	L/2 M.	L/2 MT-M.	BL M.	BL MT-M.	MOMENT MT-M.
CONSUMABLES ARR. (NO.48)	373.6	-64.89	-24240.	11.45	4279.	1825.
NO.1 CARGO HOLD (C) 56%	9652.0	60.29	581884.	8.76	84534.	0.
NO.2 CARGO HOLD (C) 56%	10000.0	25.60	256000.	8.74	87383.	0.
NO.3 CARGO HOLD (C) 56%	10000.0	-9.60	-96000.	8.74	87383.	0.
NO.4 CARGO HOLD (C) 49%	6450.0	-39.73	-256238.	8.74	56356.	0.
NO.4 U.W.W.B.T. (P)	484.8	-43.58	-21123.	13.08	6343.	661.
NO.4 U.W.W.B.T. (S)	484.7	-43.58	-21123.	13.08	6343.	661.
A.P.T.	80.0	-85.21	-6817.	3.00	240.	16.
DEADWEIGHT	37525.1	10.99	412342.	8.87	332860.	3164.
LIGHT SHIP WEIGHT	12398.0	-12.47	-154615.	10.51	130266.	
DISPLACEMENT	49923.1	5.16	257727.	9.28	463126.	3164.
DRAFT EQUIV.	9.77 M		TRANSV. METACENTRE	KMT	14.11 M	
TRIM BY STERN	-0.37 M		VERT CENTRE OF GRAV	KG	9.28 M	
DRAFT FORWARD	9.58 M		METAC. HEIGHT	GM	4.83 M	
DRAFT AFT	9.95 M		FREE SURFACE CORR.	GG'	0.06 M	
DRAFT MEAN	9.76 M		CORR. METAC. HEIGHT	G'M	4.77 M	
L. C. B.	5.75 M					
L. C. F.	-1.97 M		PROPELLER IMMERSION		85.1 %	
M. T. C.	798.8 MT-M					
T. P. C.	57.57 MT/CM					

COND. NO 22 HOMO. DESIGN LOAD ARR. (GYPSUM, SG. 1.442)

INCLINATION V	5 00	10.00	20.00	30.00	40.00	50.00	60.00	70.00
---------------	------	-------	-------	-------	-------	-------	-------	-------

SIN V	0.087	0.174	0.342	0.500	0.643	0.766	0.866	0.940
-------	-------	-------	-------	-------	-------	-------	-------	-------

KN	1.232	2.470	4.999	7.618	9.486	10.542	11.028	11.023
----	-------	-------	-------	-------	-------	--------	--------	--------

KG * SIN V	0.809	1.611	3.173	4.638	5.963	7.106	8.034	8.717
------------	-------	-------	-------	-------	-------	-------	-------	-------

CORR	0.006	0.011	0.022	0.032	0.041	0.049	0.055	0.060
------	-------	-------	-------	-------	-------	-------	-------	-------

G'Z =

KN-KG*SINV - CORR	0.418	0.848	1.804	2.948	3.482	3.387	2.939	2.246
-------------------	-------	-------	-------	-------	-------	-------	-------	-------

GZ AREA (M-RAD)	0.018	0.073	0.301	0.719	1.291	1.897	2.453	2.909
-----------------	-------	-------	-------	-------	-------	-------	-------	-------

MAX GZ 3.506 M AT 42.70 DEGREE

GZ 2.246 M AT 70.00 DEGREE

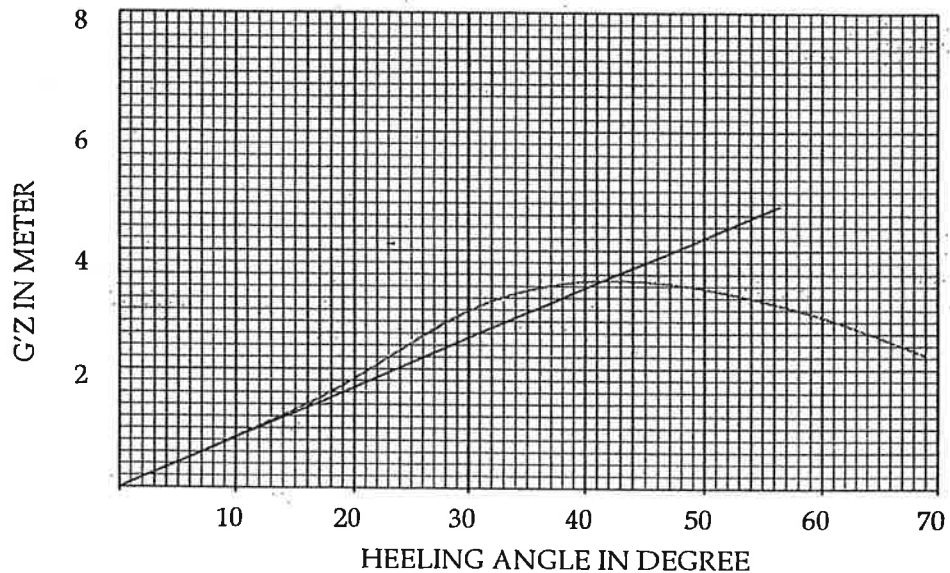
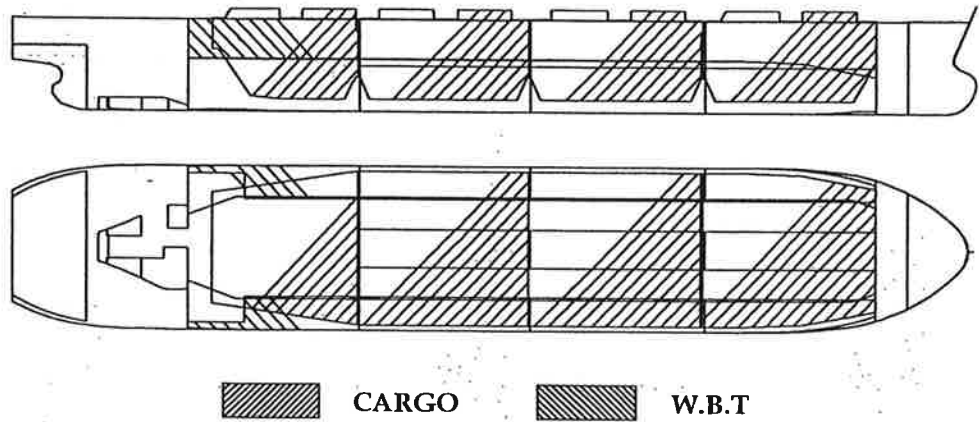
ANGLE	2.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00
GZ	0.165	0.333	0.503	0.675	0.848	1.023	1.202	1.389
GZ AREA	0.003	0.012	0.026	0.047	0.073	0.106	0.145	0.190

ANGLE	18.00	20.00	22.00	24.00	26.00	28.00	30.00	32.00
GZ	1.589	1.804	2.037	2.279	2.519	2.745	2.948	3.117
GZ AREA	0.242	0.301	0.368	0.443	0.527	0.619	0.719	0.825

ANGLE	34.00	36.00	38.00	40.00	42.00	44.00	46.00	48.00
GZ	3.253	3.358	3.434	3.482	3.504	3.502	3.480	3.441
GZ AREA	0.936	1.051	1.170	1.291	1.413	1.535	1.657	1.778

ANGLE	50.00	52.00	54.00	56.00	58.00	60.00	62.00	64.00
GZ	3.387	3.320	3.241	3.151	3.050	2.939	2.818	2.688
GZ AREA	1.897	2.014	2.129	2.240	2.348	2.453	2.553	2.650

ANGLE	66.00	68.00	70.00
GZ	2.549	2.401	2.246
GZ AREA	2.741	2.827	2.909



STABILITY CRITERIA ACCORDING TO IMO RES. A.749(18)	ACTUAL	REQUIREMENT
AREA UNDER CURVE UP TO 30(DEG)	0.719 M-RAD	0.055 M-RAD
AREA UNDER CURVE UP TO 40(DEG) or θ_f WHICHEVER IS LESS	1.291 M-RAD	0.09 M-RAD
AREA BETWEEN 30 AND 40(DEG) or θ_f WHICHEVER IS LESS	0.572 M-RAD	0.03 M-RAD
G'Z AT GREATER THAN 30(DEG)	3.506 M	0.20 M
THE ANGLE AT WHICH THE MAX. G'Z OCCURS	42.70 DEG	30 DEG
THE INITIAL METACENTRIC HEIGHT G'M	4.770 M	0.15 M
NOTE : FLOODING ANGLE $\theta_f \geq 40.0(\text{DEG})$ SO 40.0(DEG) IS ADOPTED		

CONDITION NO 22 HOMO. DESIGN LOAD ARR. (GYPSUM, SG.1.442)
LONGITUDINAL STRENGTH CALCULATION.

FRAME	SHEAR FORCE	BENDING MOMENT
LONGITUDINAL STRENGTH VALUES WHEN SHEAR FORCE = 0.		
40.239	0.000	11848.9
133.688	0.000	-55339.9
245.563	0.000	216.2

LONGITUDINAL STRENGTH VALUES ON THE BULKHEADS.

45.000	-298.977 (4.6%)	11148.9 (22.8%)
89.000	-815.682 (12.7%)	-35796.5 (18.8%)
133.000	-7.577 (0.1%)	-55323.3 (29.1%)
177.000	760.160 (13.1%)	-48015.8 (25.3%)
221.000	1680.697 (23.7%)	-9758.6 (33.7%)
229.000	771.181 (14.7%)	-2325.2 (0.0%)
251.500	0.000 (-)	0.0 (-)

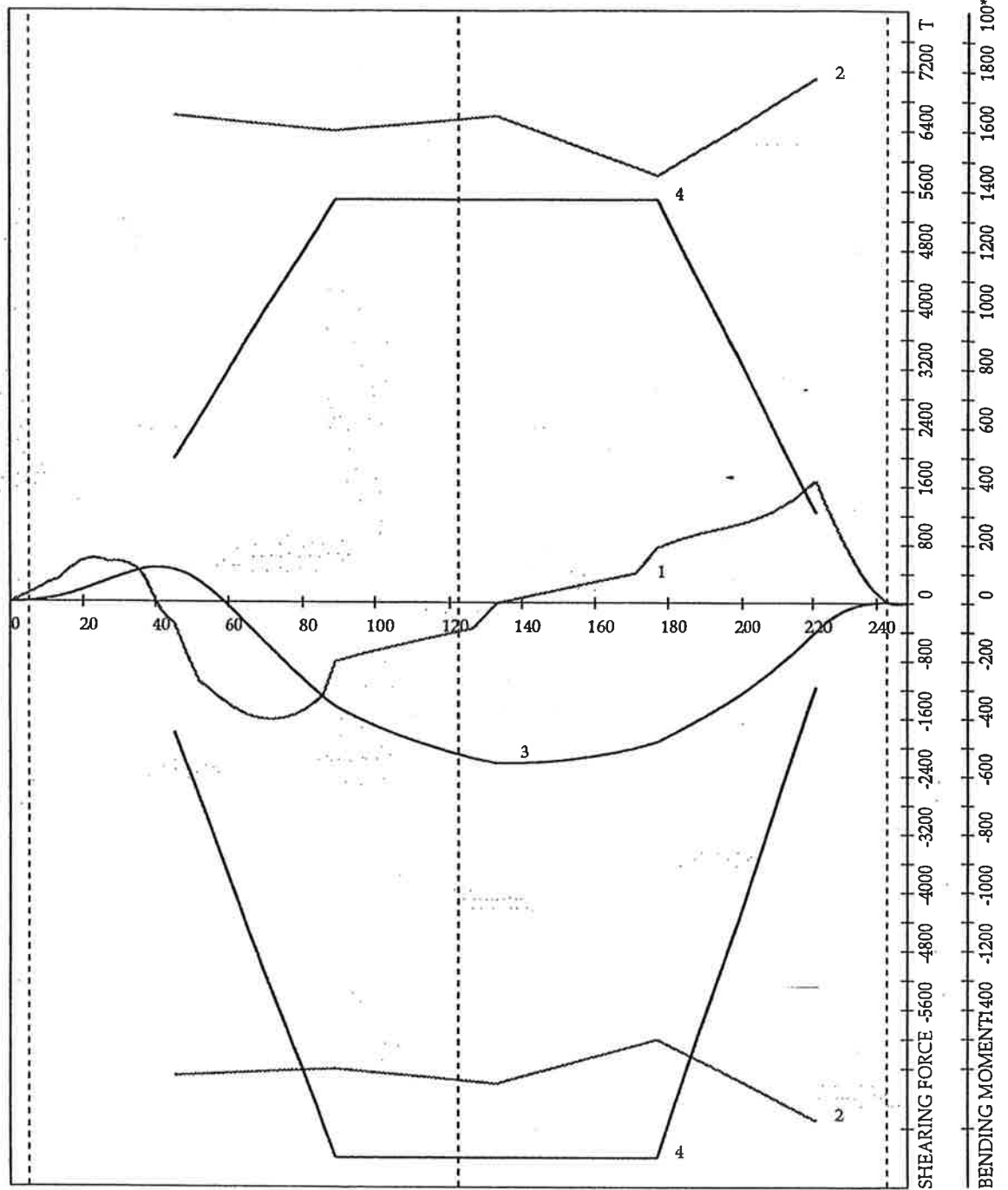
CORRECTED PEAK SHEAR FORCE ON THE BULKHEADS.

45.000	-298.977	11148.9
89.000	-815.656	-35796.5
133.000	-7.618	-55323.3
177.000	760.206	-48015.8
221.000	1680.651	-9758.6
229.000	771.227	-2325.2
251.500	0.000	0.0

MAXIMUM SHEAR FORCE = 1680.697 AT FR NO. = 221.000 (23.7%)

MAXIMUM BENDING MOMENT = -55339.9 AT FR NO. = 133.688 (29.1%)

MAX. CORR. SHEAR FORCE = 1680.651 AT FR NO. = 221.000



A.P.		M.S.			
CURVES		SCALES			
1	- SHEARING FORCE DIAGRAM	1 UNIT	400.0	T	
2	- ALLOWABLE SHEAR FORCE				
3	- BENDING MOMENT DIAGRAM	1 UNIT	10000.0	T*M	
4	- ALLOWABLE BENDING MOMENT				
MAX. POSITIVE SHEARING F.		1680.7	T	AT	78.800 M. FROM M. S.
MAX. NEGATIVE SHEARING F.		-1616.6	T	AT	-40.338 M. FROM M. S.
MAX. POSITIVE BENDING M.		11848.9	T*M	AT	-65.810 M. FROM M. S.
MAX. NEGATIVE BENDING M.		-55340.0	T*M	AT	8.951 M. FROM M. S.

COND. NO 23 HOMO. HALF LOAD DEP. (GYPSUM, SG. 1.442)

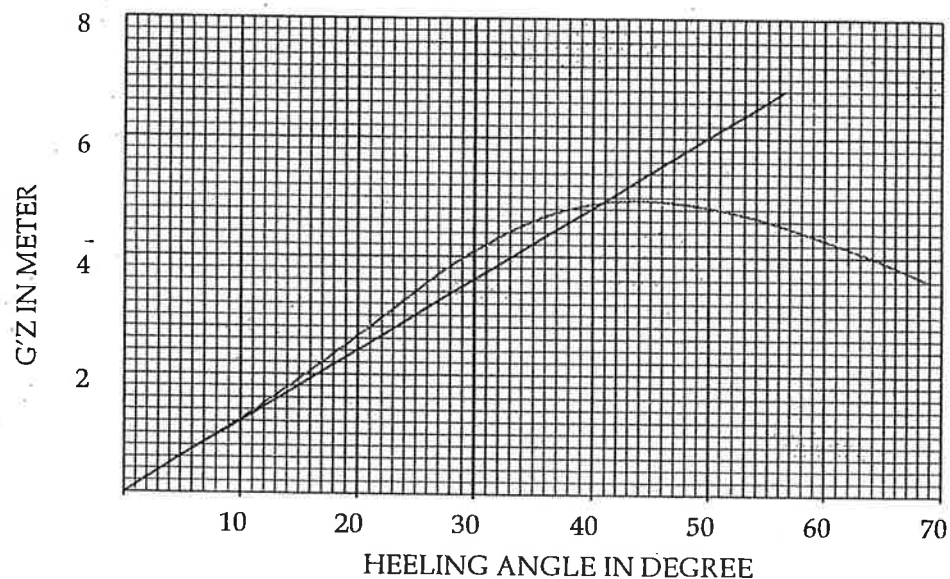
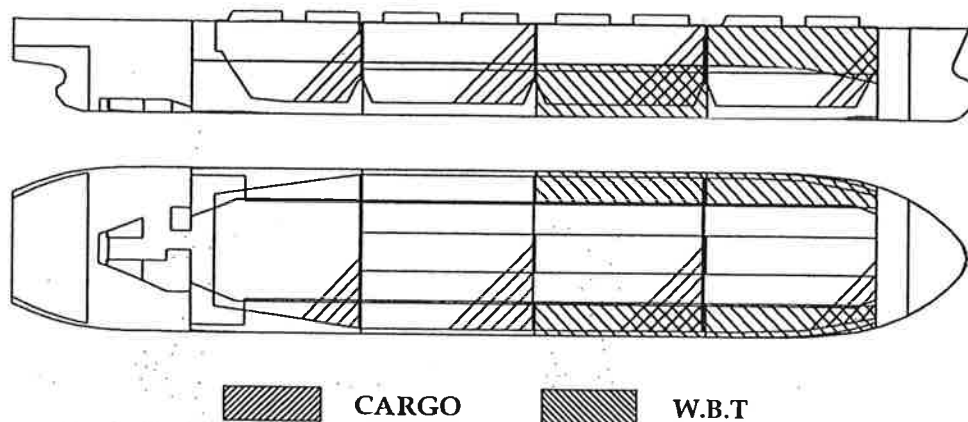
DEADWEIGHT ITEMS	WEIGHT	L.C.G FROM	MOMENT ABOUT	V.C.G FROM	MOMENT ABOUT	FREE SURFACE
	MT.	L/2 M.	L/2 MT-M.	BL M.	BL MT-M.	MOMENT MT-M.
CONSUMABLES DEP. (NO. 47)	1343.1	-60.53	-81298.	8.98	12064.	1825.
NO. 1 CARGO HOLD (C) 20%	3400.0	60.08	204287.	6.02	20456.	0.
NO. 2 CARGO HOLD (C) 30%	5400.0	25.60	138240.	6.92	37346.	0.
NO. 3 CARGO HOLD (C) 30%	5400.0	-9.60	-51840.	6.92	37346.	0.
NO. 4 CARGO HOLD (C) 29%	3800.0	-39.17	-148830.	7.23	27478.	0.
NO. 1 U.W.W.B.T. (P)	788.2	61.23	48259.	15.07	11874.	0.
NO. 1 U.W.W.B.T. (S)	788.2	61.23	48259.	15.07	11874.	0.
NO. 2 L.W.W.B.T. (P)	1710.9	26.00	44484.	4.22	7215.	0.
NO. 2 L.W.W.B.T. (S)	1710.9	26.00	44484.	4.22	7215.	0.
NO. 4 U.W.W.B.T. (P)	0.0	-44.17	0.	10.22	0.	661.
NO. 4 U.W.W.B.T. (S)	0.0	-44.17	0.	10.22	0.	661.
A.P.T.	80.0	-85.21	-6817.	3.00	240.	16.
DEADWEIGHT	24421.4	9.80	239227.	7.09	173109.	3164.
LIGHT SHIP WEIGHT	12398.0	-12.47	-154615.	10.51	130266.	
DISPLACEMENT	36819.4	2.30	84611.	8.24	303375.	3164.
DRAFT EQUIV.	7.40 M		TRANSV. METACENTRE	KMT	15.15 M	
TRIM BY STERN	-2.81 M		VERT CENTRE OF GRAV	KG	8.24 M	
DRAFT FORWARD	6.06 M		METAC. HEIGHT	GM	6.91 M	
DRAFT AFT	8.87 M		FREE SURFACE CORR.	GG'	0.09 M	
DRAFT MEAN	7.47 M		CORR. METAC. HEIGHT	G'M	6.82 M	
L. C. B.	7.22 M					
L. C. F.	4.70 M		PROPELLER IMMERSION		70.2 %	
M. T. C.	645.2 MT-M					
T. P. C.	53.55 MT/CM					

COND. NO 23 HOMO. HALF LOAD DEP. (GYPSUM, SG.1.442)

INCLINATION V	5.00	10.00	20.00	30.00	40.00	50.00	60.00	70.00
SIN V	0.087	0.174	0.342	0.500	0.643	0.766	0.866	0.940
KN	1.325	2.667	5.458	8.209	10.232	11.249	11.576	11.429
KG * SIN V	0.718	1.431	2.818	4.120	5.296	6.312	7.136	7.743
CORR	0.007	0.015	0.029	0.043	0.055	0.066	0.074	0.081
G'Z =								
KN-KG*SINV - CORR	0.600	1.222	2.611	4.046	4.881	4.871	4.366	3.606
GZ AREA (M-RAD)	0.026	0.105	0.437	1.021	1.813	2.674	3.485	4.183

MAX GZ 4.965 M AT 44.80 DEGREE
GZ 3.606 M AT 70.00 DEGREE

ANGLE	2.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00
GZ	0.239	0.479	0.721	0.968	1.222	1.483	1.753	2.031
GZ AREA	0.004	0.017	0.038	0.067	0.105	0.153	0.209	0.275
ANGLE	18.00	20.00	22.00	24.00	26.00	28.00	30.00	32.00
GZ	2.317	2.611	2.911	3.212	3.506	3.786	4.046	4.278
GZ AREA	0.351	0.437	0.533	0.640	0.757	0.885	1.021	1.167
ANGLE	34.00	36.00	38.00	40.00	42.00	44.00	46.00	48.00
GZ	4.479	4.649	4.783	4.881	4.940	4.964	4.957	4.925
GZ AREA	1.320	1.479	1.644	1.813	1.984	2.157	2.330	2.503
ANGLE	50.00	52.00	54.00	56.00	58.00	60.00	62.00	64.00
GZ	4.871	4.799	4.711	4.608	4.493	4.365	4.228	4.082
GZ AREA	2.674	2.843	3.009	3.172	3.330	3.485	3.635	3.780
ANGLE	66.00	68.00	70.00					
GZ	3.929	3.770	3.606					
GZ AREA	3.920	4.054	4.183					



STABILITY CRITERIA ACCORDING TO IMO RES. A.749(18)	ACTUAL	REQUIREMENT
AREA UNDER CURVE UP TO 30(DEG)	1.021 M-RAD	0.055 M-RAD
AREA UNDER CURVE UP TO 40(DEG) or θ_f WHICHEVER IS LESS	1.813 M-RAD	0.09 M-RAD
AREA BETWEEN 30 AND 40(DEG) or θ_f WHICHEVER IS LESS	0.791 M-RAD	0.03 M-RAD
G'Z AT GREATER THAN 30(DEG)	4.965 M	0.20 M
THE ANGLE AT WHICH THE MAX. G'Z OCCURS	44.80 DEG	30 DEG
THE INITIAL METACENTRIC HEIGHT G'M	6.820 M	0.15 M
NOTE : FLOODING ANGLE $\theta_f \geq 40.0(\text{DEG})$ SO 40.0(DEG) IS ADOPTED		

CONDITION NO 23 HOMO. HALF LOAD DEP. (GYPSUM, SG. 1.442)
LONGITUDINAL STRENGTH CALCULATION.

FRAME	SHEAR FORCE	BENDING MOMENT
-------	----------------	-------------------

LONGITUDINAL STRENGTH VALUES WHEN SHEAR FORCE = 0.

67.181	0.000	40376.2
164.389	0.000	-32275.0
244.007	0.000	29.3

LONGITUDINAL STRENGTH VALUES ON THE BULKHEADS.

45.000	929.761 (14.1%)	29282.6 (59.8%)
89.000	-485.566 (7.6%)	32759.2 (23.9%)
133.000	-1723.723 (26.1%)	-10135.1 (5.3%)
177.000	904.343 (15.6%)	-28353.6 (14.9%)
221.000	739.576 (10.4%)	-4637.6 (16.0%)
229.000	335.649 (6.4%)	-1239.8 (0.0%)
251.500	0.000 (-)	0.0 (-)

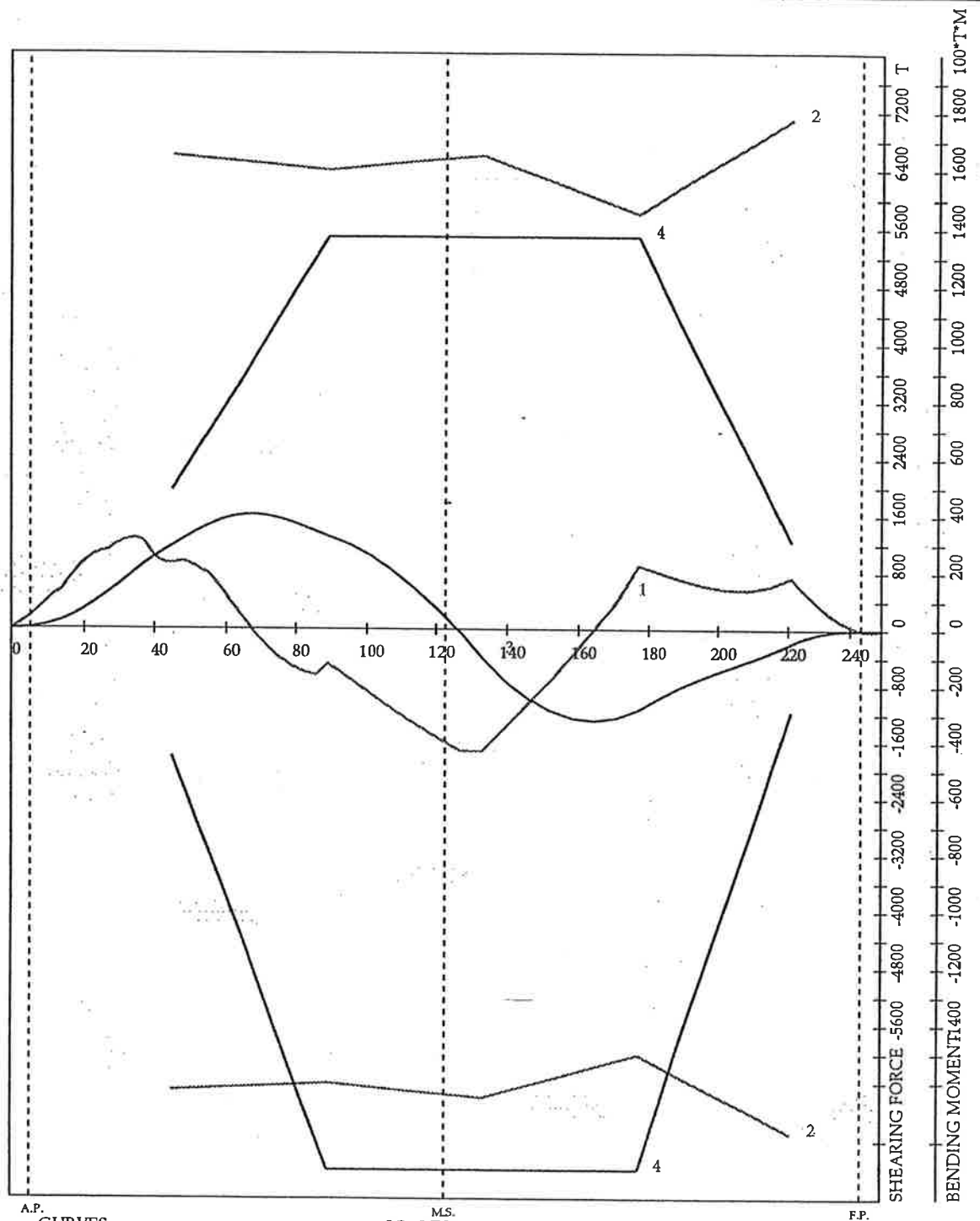
CORRECTED PEAK SHEAR FORCE ON THE BULKHEADS.

45.000	929.761	29282.6
89.000	-485.628	32759.2
133.000	-1723.661	-10135.1
177.000	904.334	-28353.6
221.000	739.584	-4637.6
229.000	335.669	-1239.8
251.500	0.000	0.0

MAXIMUM SHEAR FORCE = -1723.723 AT FR NO. = 133.000 (26.1%)

MAXIMUM BENDING MOMENT = 40376.2 AT FR NO. = 67.181 (43.2%)

MAX. CORR. SHEAR FORCE = -1723.661 AT FR NO. = 133.000



A.P.

M.S.

F.P.

CURVES

SCALES

1 - SHEARING FORCE DIAGRAM	1 UNIT	400.0	T
2 - ALLOWABLE SHEAR FORCE			
3 - BENDING MOMENT DIAGRAM	1 UNIT	10000.0	T*M
4 - ALLOWABLE BENDING MOMENT			

MAX. POSITIVE SHEARING F.	1282.4	T	AT	-70.000	M. FROM M. S.
MAX. NEGATIVE SHEARING F.	-1723.7	T	AT	8.400	M. FROM M. S.
MAX. POSITIVE BENDING M.	40376.2	T*M	AT	-44.255	M. FROM M. S.
MAX. NEGATIVE BENDING M.	-32275.1	T*M	AT	33.512	M. FROM M. S.

COND. NO 24 HOMO. HALF LOAD ARR. (GYPSUM, SG.1.442)

DEADWEIGHT ITEMS	WEIGHT	L.C.G FROM	MOMENT ABOUT	V.C.G FROM	MOMENT ABOUT	FREE SURFACE
	MT.	L/2 M.	L/2 MT-M.	BL M.	BL MT-M.	MOMENT MT-M.
CONSUMABLES ARR. (NO.48)	373.6	-64.89	-24240.	11.45	4279.	1825.
NO.1 CARGO HOLD (C) 20%	3400.0	60.08	204287.	6.02	20456.	0.
NO.2 CARGO HOLD (C) 30%	5400.0	25.60	138240.	6.92	37346.	0.
NO.3 CARGO HOLD (C) 30%	5400.0	-9.60	-51840.	6.92	37346.	0.
NO.4 CARGO HOLD (C) 29%	3800.0	-39.17	-148830.	7.23	27478.	0.
NO.1 U.W.W.B.T. (P)	788.2	61.23	48259.	15.07	11874.	0.
NO.1 U.W.W.B.T. (S)	788.2	61.23	48259.	15.07	11874.	0.
NO.2 L.W.W.B.T. (P)	1710.9	26.00	44484.	4.22	7215.	0.
NO.2 L.W.W.B.T. (S)	1710.9	26.00	44484.	4.22	7215.	0.
NO.4 U.W.W.B.T. (P)	600.0	-43.04	-25824.	13.68	8206.	661.
NO.4 U.W.W.B.T. (S)	600.0	-43.04	-25824.	13.68	8206.	661.
A.P.T.	80.0	-85.21	-6817.	3.00	240.	16.
DEADWEIGHT	24651.8	9.92	244639.	7.37	181735.	3164.
LIGHT SHIP WEIGHT	12398.0	-12.47	-154615.	10.51	130266.	
DISPLACEMENT	37049.8	2.43	90023.	8.42	312001.	3164.
DRAFT EQUIV.	7.44 M		TRANSV. METACENTRE	KMT	15.11 M	
TRIM BY STERN	-2.73 M		VERT CENTRE OF GRAV	KG	8.42 M	
DRAFT FORWARD	6.14 M		METAC. HEIGHT	GM	6.69 M	
DRAFT AFT	8.87 M		FREE SURFACE CORR.	GG'	0.09 M	
DRAFT MEAN	7.51 M		CORR. METAC. HEIGHT	G'M	6.60 M	
L. C. B.	7.20 M					
L. C. F.	4.63 M		PROPELLER IMMERSION		70.3 %	
M. T. C.	646.8 MT-M					
T. P. C.	53.59 MT/CM					

COND. NO 24 HOMO. HALF LOAD ARR. (GYPSUM, SG. 1.442)

INCLINATION V	5.00	10.00	20.00	30.00	40.00	50.00	60.00	70.00
SIN V	0.087	0.174	0.342	0.500	0.643	0.766	0.866	0.940
KN	1.322	2.660	5.444	8.197	10.222	11.237	11.567	11.423
KG * SIN V	0.734	1.462	2.880	4.211	5.413	6.451	7.293	7.913
CORR	0.007	0.015	0.029	0.043	0.055	0.065	0.074	0.080

G'Z =

KN-KG*SIN V - CORR	0.580	1.183	2.534	3.944	4.754	4.720	4.200	3.429
--------------------	-------	-------	-------	-------	-------	-------	-------	-------

GZ AREA (M-RAD)	0.025	0.102	0.423	0.992	1.764	2.600	3.384	4.052
-----------------	-------	-------	-------	-------	-------	-------	-------	-------

MAX GZ 4.827 M AT 44.10 DEGREE

GZ 3.429 M AT 70.00 DEGREE

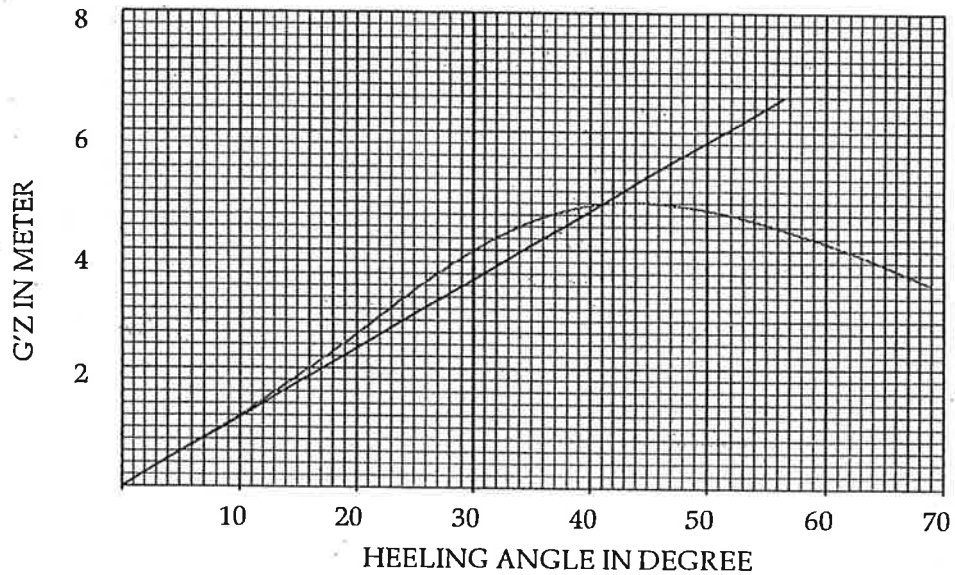
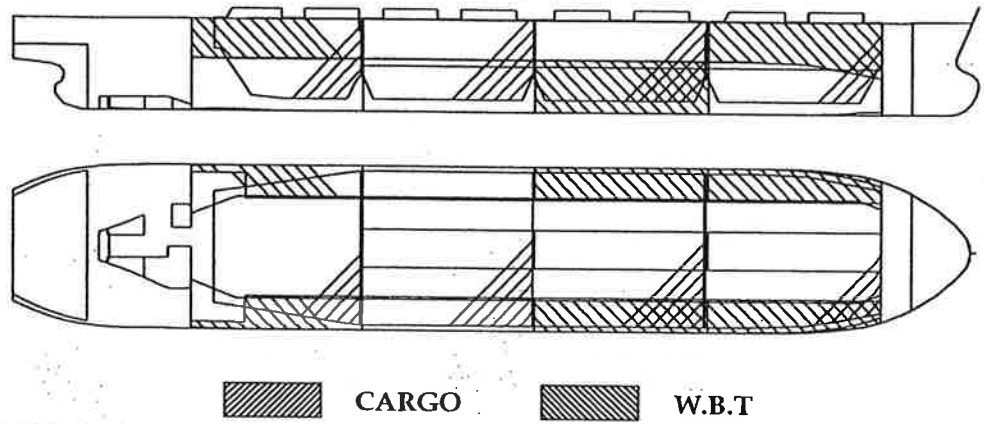
ANGLE	2.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00
GZ	0.231	0.464	0.698	0.938	1.183	1.437	1.699	1.969
GZ AREA	0.004	0.016	0.037	0.065	0.102	0.148	0.202	0.266

ANGLE	18.00	20.00	22.00	24.00	26.00	28.00	30.00	32.00
GZ	2.247	2.535	2.829	3.124	3.413	3.689	3.944	4.171
GZ AREA	0.340	0.423	0.517	0.621	0.735	0.859	0.992	1.134

ANGLE	34.00	36.00	38.00	40.00	42.00	44.00	46.00	48.00
GZ	4.367	4.532	4.661	4.753	4.808	4.827	4.815	4.778
GZ AREA	1.283	1.439	1.599	1.764	1.931	2.099	2.267	2.435

ANGLE	50.00	52.00	54.00	56.00	58.00	60.00	62.00	64.00
GZ	4.720	4.644	4.553	4.448	4.329	4.200	4.060	3.912
GZ AREA	2.600	2.764	2.925	3.082	3.235	3.384	3.528	3.667

ANGLE	66.00	68.00	70.00
GZ	3.757	3.595	3.429
GZ AREA	3.801	3.929	4.052



STABILITY CRITERIA ACCORDING TO IMO RES. A.749(18)	ACTUAL	REQUIREMENT
AREA UNDER CURVE UP TO 30(DEG)	0.992 M-RAD	0.055 M-RAD
AREA UNDER CURVE UP TO 40(DEG) or θ_f WHICHEVER IS LESS	1.764 M-RAD	0.09 M-RAD
AREA BETWEEN 30 AND 40(DEG) or θ_f WHICHEVER IS LESS	0.771 M-RAD	0.03 M-RAD
G'Z AT GREATER THAN 30(DEG)	4.827 M	0.20 M
THE ANGLE AT WHICH THE MAX. G'Z OCCURS	44.10 DEG	30 DEG
THE INITIAL METACENTRIC HEIGHT G'M	6.603 M	0.15 M
NOTE : FLOODING ANGLE $\theta_f \geq 40.0(\text{DEG})$ SO 40.0(DEG) IS ADOPTED		

CONDITION NO 24 HOMO. HALF LOAD ARR. (GYPSUM, SG.1.442)
LONGITUDINAL STRENGTH CALCULATION.

FRAME	SHEAR FORCE	BENDING MOMENT
LONGITUDINAL STRENGTH VALUES WHEN SHEAR FORCE = 0.		
56.675	0.000	29080.0
162.429	0.000	-37411.4
244.097	0.000	-100.7

LONGITUDINAL STRENGTH VALUES ON THE BULKHEADS.

45.000	760.286 (11.5%)	25879.2 (52.8%)
89.000	-289.966 (4.5%)	17206.1 (12.6%)
133.000	-1571.370 (23.8%)	-18985.6 (10.0%)
177.000	997.299 (17.2%)	-32098.1 (16.9%)
221.000	760.953 (10.7%)	-5416.6 (18.7%)
229.000	346.206 (6.6%)	-1722.2 (0.0%)
251.500	0.000 (-)	0.0 (-)

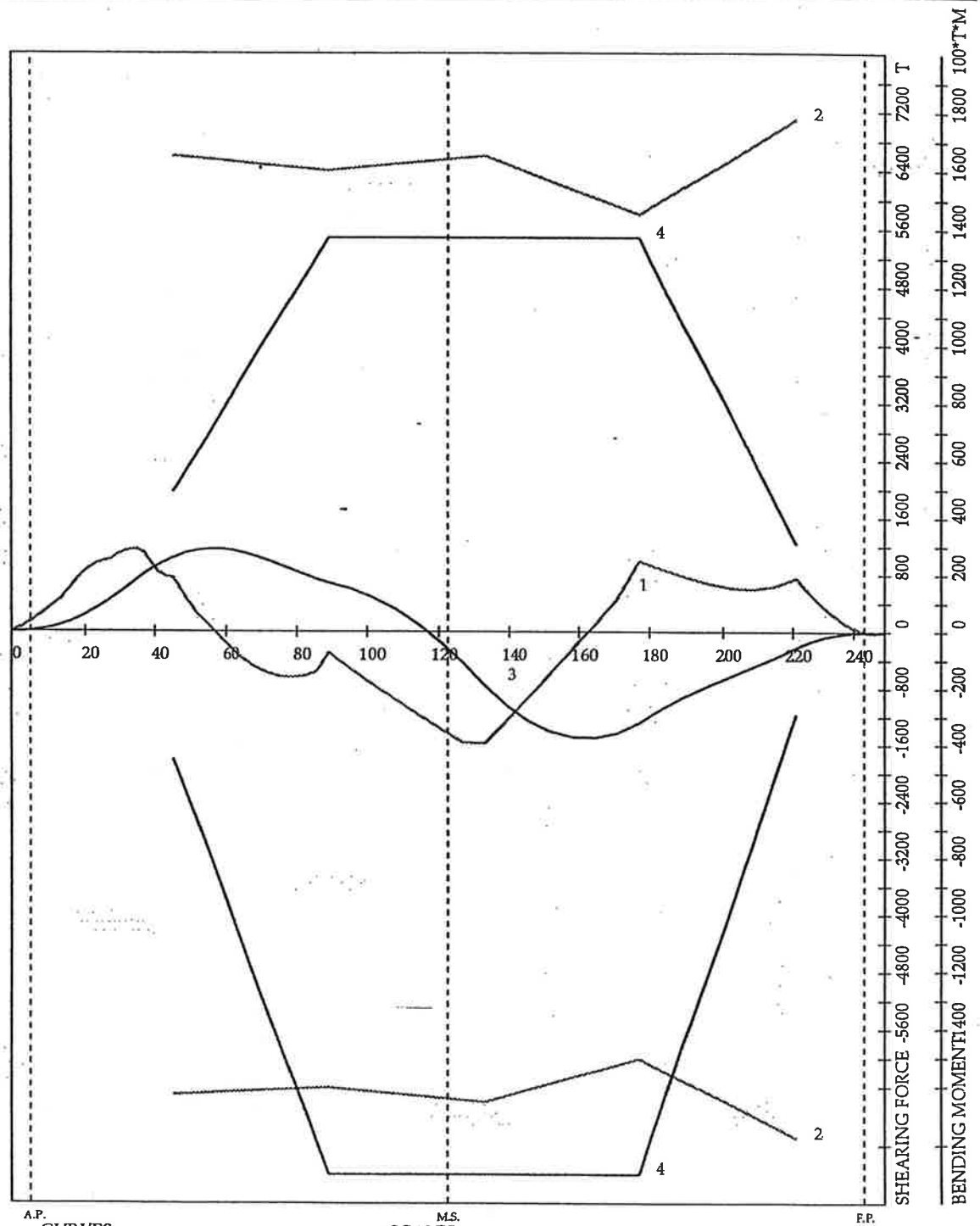
CORRECTED PEAK SHEAR FORCE ON THE BULKHEADS.

45.000	760.286	25879.2
89.000	-290.030	17206.1
133.000	-1571.305	-18985.6
177.000	997.287	-32098.1
221.000	760.965	-5416.6
229.000	346.227	-1722.2
251.500	0.000	0.0

MAXIMUM SHEAR FORCE = -1571.370 AT FR NO. = 133.000 (23.8%)

MAXIMUM BENDING MOMENT = -37411.4 AT FR NO. = 162.429 (19.7%)

MAX. CORR. SHEAR FORCE = -1571.305 AT FR NO. = 133.000



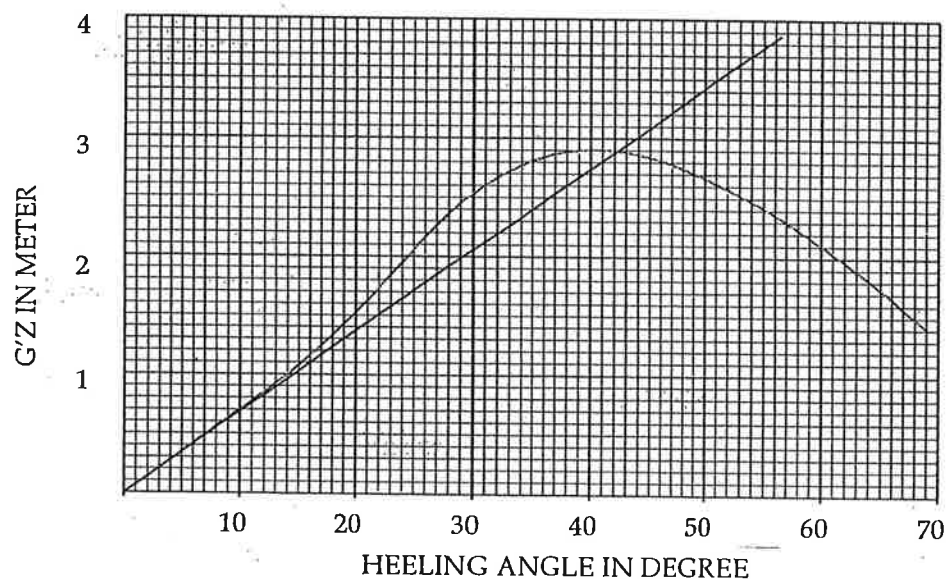
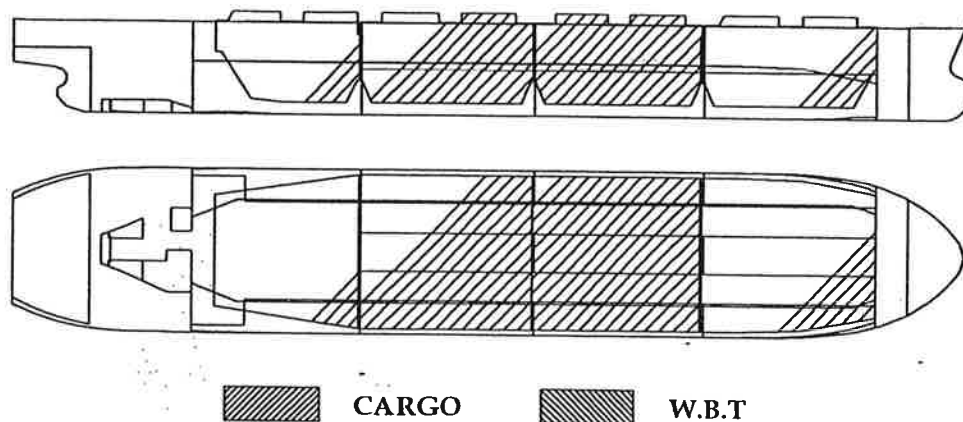
CURVES		M.S.		F.P.	
		SCALES			
1	- SHEARING FORCE DIAGRAM	1 UNIT	400.0	T	
2	- ALLOWABLE SHEAR FORCE				
3	- BENDING MOMENT DIAGRAM	1 UNIT	10000.0	T*M	
4	- ALLOWABLE BENDING MOMENT				
MAX. POSITIVE SHEARING F.		1158.4	T	AT	-70.000 M. FROM M. S.
MAX. NEGATIVE SHEARING F.		-1571.4	T	AT	8.400 M. FROM M. S.
MAX. POSITIVE BENDING M.		29080.0	T*M	AT	-52.660 M. FROM M. S.
MAX. NEGATIVE BENDING M.		-37411.5	T*M	AT	31.943 M. FROM M. S.

COND. NO 25 EXTREME DESIGN LOAD DEP. (GYPSUM, SG. 1.442)

DEADWEIGHT ITEMS	WEIGHT	L.C.G FROM	MOMENT ABOUT	V.C.G FROM	MOMENT ABOUT	FREE SURFACE
	MT.	L/2 M.	L/2 MT-M.	BL M.	BL MT-M.	MOMENT MT-M.
CONSUMABLES DEP. (NO. 47)	1343.1	-60.53	-81298.	8.98	12064.	1825.
NO. 1 CARGO HOLD (C) 29%	4942.0	60.17	297350.	6.82	33698.	0.
NO. 2 CARGO HOLD (C) 92%	16500.0	25.60	422353.	11.11	183313.	0.
NO. 3 CARGO HOLD (C) 64%	11500.0	-9.60	-110400.	9.28	106724.	0.
NO. 4 CARGO HOLD (C) 24%	3160.0	-38.97	-123146.	6.81	21522.	0.
A.P.T. (C)	80.0	-85.21	-6817.	3.00	240.	21041.
DEADWEIGHT	37525.1	10.61	398041.	9.53	357561.	22866.
LIGHT SHIP WEIGHT	12398.0	-12.47	-154615.	10.51	130266.	
DISPLACEMENT	49923.1	4.88	243426.	9.77	487827.	22866.
DRAFT EQUIV.	9.77 M		TRANSV. METACENTRE	KMT	14.11 M	
TRIM BY STERN	-0.54 M		VERT CENTRE OF GRAV	KG	9.77 M	
DRAFT FORWARD	9.49 M		METAC. HEIGHT	GM	4.34 M	
DRAFT AFT	10.03 M		FREE SURFACE CORR.	GG'	0.46 M	
DRAFT MEAN	9.76 M		CORR. METAC. HEIGHT	G'M	3.88 M	
L. C. B.	5.75 M					
L. C. F.	-1.97 M		PROPELLER IMMERSION		86.3 %	
M. T. C.	798.9 MT-M					
T. P. C.	57.57 MT/CM					

COND. NO 25 EXTREME DESIGN LOAD DEP. (GYPSUM, SG.1.442)

INCLINATION V	5.00	10.00	20.00	30.00	40.00	50.00	60.00	70.00
SIN V	0.087	0.174	0.342	0.500	0.643	0.766	0.866	0.940
KN	1.232	2.470	4.999	7.618	9.486	10.542	11.028	11.023
KG * SIN V	0.852	1.697	3.342	4.886	6.281	7.485	8.462	9.182
CORR	0.040	0.080	0.157	0.229	0.294	0.351	0.397	0.430
G'Z =								
KN-KG*SINV - CORR	0.341	0.694	1.500	2.503	2.910	2.705	2.169	1.410
GZ AREA (M-RAD)	0.015	0.060	0.248	0.599	1.083	1.579	2.008	2.323
MAX GZ	2.912 M	AT	40.60	DEGREE				
GZ	1.410 M	AT	70.00	DEGREE				
ANGLE	2.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00
GZ	0.134	0.271	0.411	0.551	0.694	0.838	0.986	1.144
GZ AREA	0.002	0.009	0.021	0.038	0.060	0.087	0.118	0.156
ANGLE	18.00	20.00	22.00	24.00	26.00	28.00	30.00	32.00
GZ	1.314	1.500	1.704	1.917	2.129	2.328	2.503	2.646
GZ AREA	0.198	0.248	0.303	0.367	0.437	0.515	0.599	0.689
ANGLE	34.00	36.00	38.00	40.00	42.00	44.00	46.00	48.00
GZ	2.756	2.836	2.886	2.910	2.909	2.884	2.841	2.780
GZ AREA	0.784	0.881	0.981	1.083	1.184	1.285	1.385	1.483
ANGLE	50.00	52.00	54.00	56.00	58.00	60.00	62.00	64.00
GZ	2.705	2.619	2.521	2.414	2.296	2.169	2.033	1.888
GZ AREA	1.579	1.672	1.762	1.848	1.930	2.008	2.082	2.150
ANGLE	66.00	68.00	70.00					
GZ	1.736	1.576	1.410					
GZ AREA	2.213	2.271	2.323					



STABILITY CRITERIA ACCORDING TO IMO RES. A.749(18)	ACTUAL	REQUIREMENT
AREA UNDER CURVE UP TO 30(DEG)	0.599 M-RAD	0.055 M-RAD
AREA UNDER CURVE UP TO 40(DEG) or θ_f WHICHEVER IS LESS	1.083 M-RAD	0.09 M-RAD
AREA BETWEEN 30 AND 40(DEG) or θ_f WHICHEVER IS LESS	0.483 M-RAD	0.03 M-RAD
G'Z AT GREATER THAN 30(DEG)	2.912 M	0.20 M
THE ANGLE AT WHICH THE MAX. G'Z OCCURS	40.60 DEG	30 DEG
THE INITIAL METACENTRIC HEIGHT G'M	3.881 M	0.15 M
NOTE : FLOODING ANGLE $\theta_f \geq 40.0(\text{DEG})$ SO 40.0(DEG) IS ADOPTED		

CONDITION NO 25 EXTREME DESIGN LOAD DEP. (GYPSUM, SG.1.442)
LONGITUDINAL STRENGTH CALCULATION.

FRAME	SHEAR FORCE	BENDING MOMENT
LONGITUDINAL STRENGTH VALUES WHEN SHEAR FORCE = 0.		
41.119	0.000	13716.2
144.370	0.000	-188718.3
245.578	0.000	342.5

LONGITUDINAL STRENGTH VALUES ON THE BULKHEADS.

45.000	-205.159 (3.2%)	13301.9 (27.1%)
89.000	-4185.884 (65.4%)	-67183.0 (35.4%)
133.000	-1773.497 (26.9%)	-180235.7 (94.9%)
177.000	5270.204 (90.9%)	-123524.8 (65.0%)
221.000	1659.155 (23.4%)	-9001.6 (31.0%)
229.000	761.735 (14.5%)	-1860.8 (0.0%)
251.500	0.000 (-)	0.0 (-)

CORRECTED PEAK SHEAR FORCE ON THE BULKHEADS.

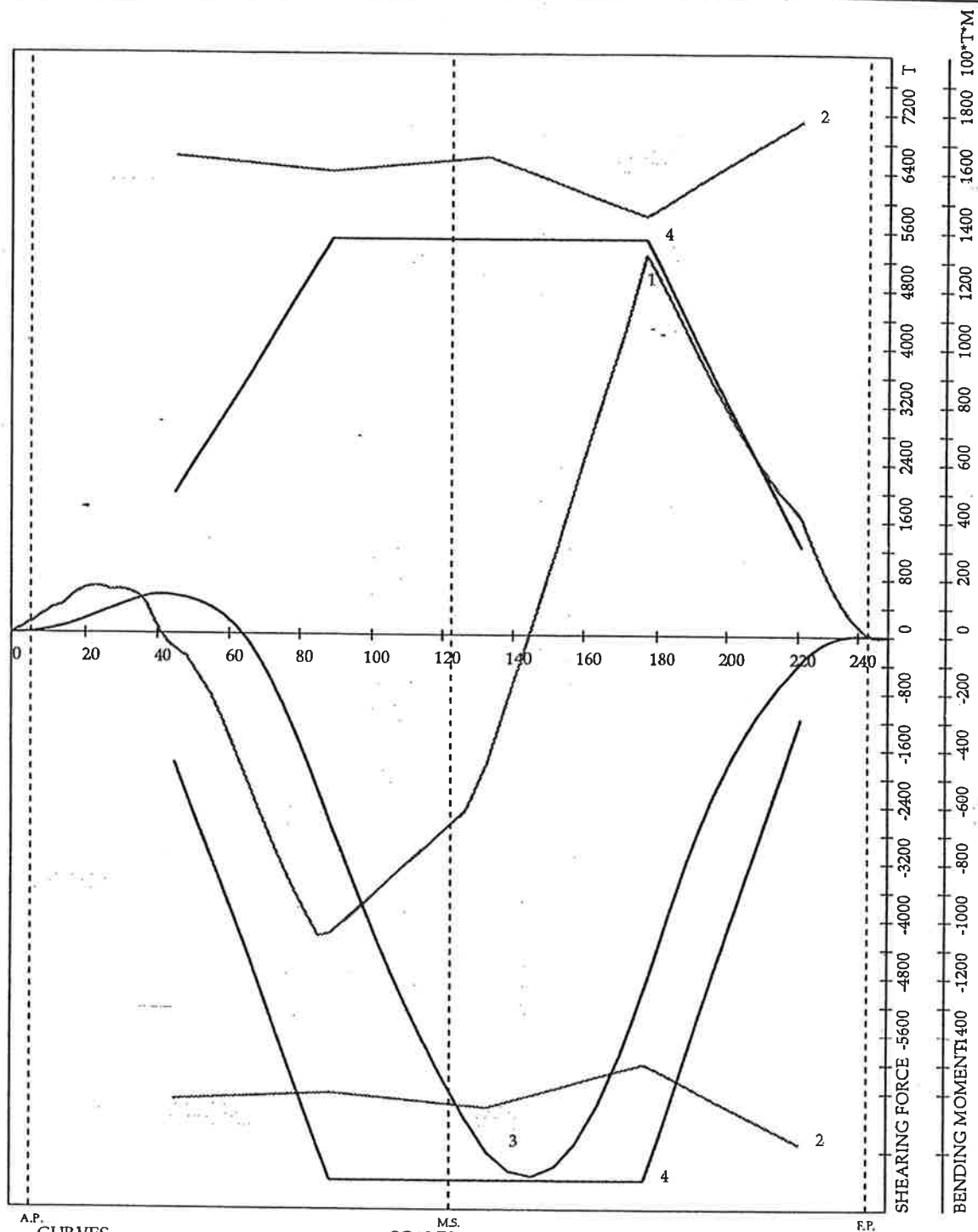
45.000	-205.159	13301.9
89.000	-4185.763	-67183.0
133.000	-1773.618	-180235.7
177.000	5270.023	-123524.8
221.000	1659.335	-9001.6
229.000	761.780	-1860.8
251.500	0.000	0.0

MAXIMUM SHEAR FORCE = 5270.204 AT FR NO. = 177.000 (90.9%)

MAXIMUM BENDING MOMENT = -188718.3 AT FR NO. = 144.370 (99.3%)
MAX. CORR. SHEAR FORCE = 5270.023 AT FR NO. = 177.000



COND. NO. 25 EXTREME DESIGN LOAD DEP.(GYPSUM,SG.1.442)



A.P.
CURVES

- 1 - SHEARING FORCE DIAGRAM
- 2 - ALLOWABLE SHEAR FORCE
- 3 - BENDING MOMENT DIAGRAM
- 4 - ALLOWABLE BENDING MOMENT

M.S.
SCALES

1 UNIT 400.0 T
1 UNIT 10000.0 T*M

F.P.

MAX. POSITIVE SHEARING F.	5270.2	T	AT	43.600	M. FROM M. S.
MAX. NEGATIVE SHEARING F.	-4223.8	T	AT	-29.508	M. FROM M. S.
MAX. POSITIVE BENDING M.	13716.2	T*M	AT	-65.106	M. FROM M. S.
MAX. NEGATIVE BENDING M.	-188718.4	T*M	AT	17.497	M. FROM M. S.

COND. NO 26 EXTREME DESIGN LOAD ARR. (GYPSUM, SG. 1.442)

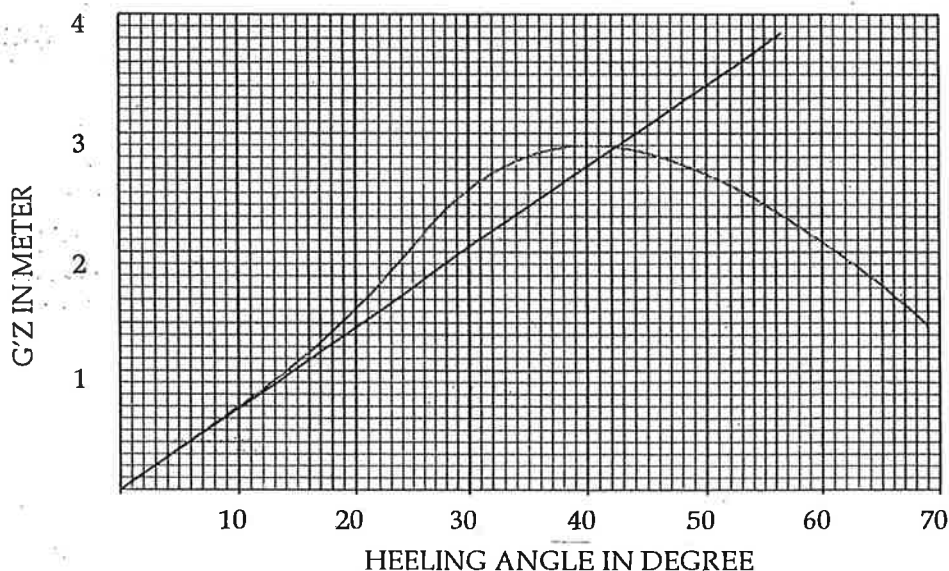
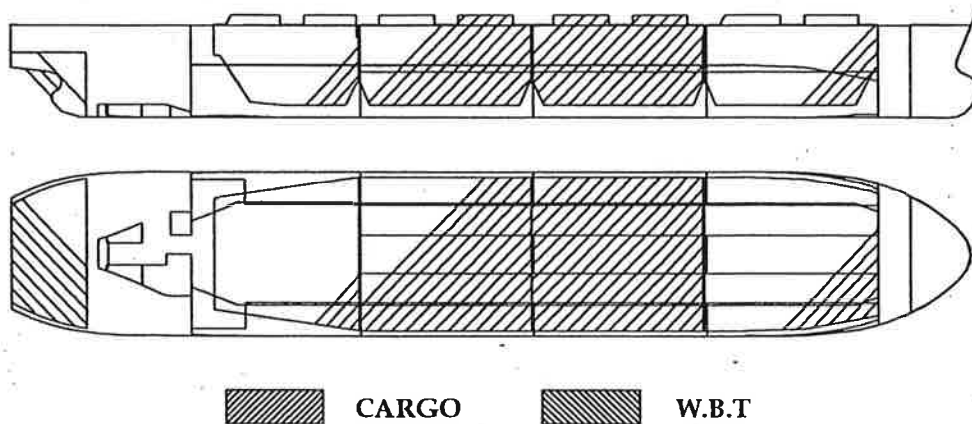
DEADWEIGHT ITEMS	WEIGHT	L.C.G	MOMENT	V.C.G	MOMENT	FREE
		FROM	ABOUT	FROM	ABOUT	SURFACE
	MT.	L/2 M.	L/2 MT-M.	BL M.	BL MT-M.	MOMENT MT-M.
CONSUMABLES ARR. (NO. 48)	373.6	-64.89	-24240.	11.45	4279.	1825.
NO. 1 CARGO HOLD (C) 29%	4942.0	60.17	297350.	6.82	33698.	0.
NO. 2 CARGO HOLD (C) 92%	16500.0	25.60	422353.	11.11	183313.	0.
NO. 3 CARGO HOLD (C) 64%	11500.0	-9.60	-110400.	9.28	106724.	0.
NO. 4 CARGO HOLD (C) 24%	3160.0	-38.97	-123146.	6.81	21522.	0.
A.P.T. (C)	800.0	-88.23	-70583.	8.98	7185.	21041.
DEADWEIGHT	37275.6	10.50	391334.	9.57	356721.	22866.
LIGHT SHIP WEIGHT	12398.0	-12.47	-154615.	10.51	130266.	
DISPLACEMENT	49673.6	4.77	236719.	9.80	486987.	22866.
DRAFT EQUIV.	9.72 M		TRANSV. METACENTRE	KMT		14.12 M
TRIM BY STERN	-0.64 M		VERT CENTRE OF GRAV	KG		9.80 M
DRAFT FORWARD	9.40 M		METAC. HEIGHT	GM		4.32 M
DRAFT AFT	10.03 M		FREE SURFACE CORR.	GG'		0.46 M
DRAFT MEAN	9.72 M		CORR. METAC. HEIGHT	G'M		3.86 M
L. C. B.	5.79 M					
L. C. F.	-1.88 M		PROPELLER IMMERSION			86.4 %
M. T. C.	796.5 MT-M					
T. P. C.	57.51 MT/CM					

COND. NO 26 EXTREME DESIGN LOAD ARR. (GYPSUM, SG. 1.442)

INCLINATION V	5.00	10.00	20.00	30.00	40.00	50.00	60.00	70.00
SIN V	0.087	0.174	0.342	0.500	0.643	0.766	0.866	0.940
KN	1.233	2.472	5.004	7.630	9.502	10.555	11.039	11.031
KG * SIN V	0.854	1.702	3.353	4.902	6.302	7.510	8.490	9.213
CORR	0.040	0.080	0.157	0.230	0.296	0.353	0.399	0.433
G'Z =								
KN-KG*SIN V - CORR	0.338	0.690	1.493	2.498	2.904	2.692	2.150	1.386
GZ AREA (M-RAD)	0.015	0.060	0.246	0.597	1.079	1.574	2.001	2.312

MAX GZ 2.906 M AT 40.60 DEGREE
GZ 1.386 M AT 70.00 DEGREE

ANGLE	2.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00
GZ	0.133	0.270	0.408	0.548	0.690	0.833	0.981	1.138
GZ AREA	0.002	0.009	0.021	0.038	0.060	0.086	0.118	0.155
ANGLE	18.00	20.00	22.00	24.00	26.00	28.00	30.00	32.00
GZ	1.308	1.494	1.697	1.911	2.122	2.322	2.497	2.640
GZ AREA	0.197	0.246	0.302	0.365	0.435	0.513	0.597	0.687
ANGLE	34.00	36.00	38.00	40.00	42.00	44.00	46.00	48.00
GZ	2.751	2.831	2.881	2.904	2.902	2.876	2.831	2.768
GZ AREA	0.781	0.878	0.978	1.079	1.181	1.282	1.381	1.479
ANGLE	50.00	52.00	54.00	56.00	58.00	60.00	62.00	64.00
GZ	2.692	2.604	2.506	2.397	2.278	2.150	2.013	1.868
GZ AREA	1.574	1.667	1.756	1.842	1.923	2.001	2.073	2.141
ANGLE	66.00	68.00	70.00					
GZ	1.714	1.554	1.386					
GZ AREA	2.204	2.261	2.312					



STABILITY CRITERIA ACCORDING TO IMO RES. A.749(18)	ACTUAL	REQUIREMENT
AREA UNDER CURVE UP TO 30(DEG)	0.597 M-RAD	0.055 M-RAD
AREA UNDER CURVE UP TO 40(DEG) or θ_f WHICHEVER IS LESS	1.079 M-RAD	0.09 M-RAD
AREA BETWEEN 30 AND 40(DEG) or θ_f WHICHEVER IS LESS	0.482 M-RAD	0.03 M-RAD
G'Z AT GREATER THAN 30(DEG)	2.906 M	0.20 M
THE ANGLE AT WHICH THE MAX. G'Z OCCURS	40.60 DEG	30 DEG
THE INITIAL METACENTRIC HEIGHT G'M	3.856 M	0.15 M
NOTE : FLOODING ANGLE $\theta_f \geq 40.0(\text{DEG})$ SO 40.0(DEG) IS ADOPTED		

CONDITION NO 26 EXTREME DESIGN LOAD ARR. (GYPSUM, SG.1.442)
LONGITUDINAL STRENGTH CALCULATION.

FRAME	SHEAR FORCE	BENDING MOMENT
LONGITUDINAL STRENGTH VALUES WHEN SHEAR FORCE = 0.		
47.511	0.000	29315.4
145.361	0.000	-185586.0
245.567	0.000	187.9

LONGITUDINAL STRENGTH VALUES ON THE BULKHEADS.

45.000	359.151 (5.4%)	28963.2 (59.1%)
89.000	-4403.373 (68.8%)	-56433.7 (29.7%)
133.000	-1944.761 (29.5%)	-175741.0 (92.5%)
177.000	5165.209 (89.1%)	-123049.8 (64.8%)
221.000	1636.467 (23.0%)	-9629.7 (33.2%)
229.000	751.802 (14.4%)	-2353.9 (0.0%)
251.500	0.000 (-)	0.0 (-)

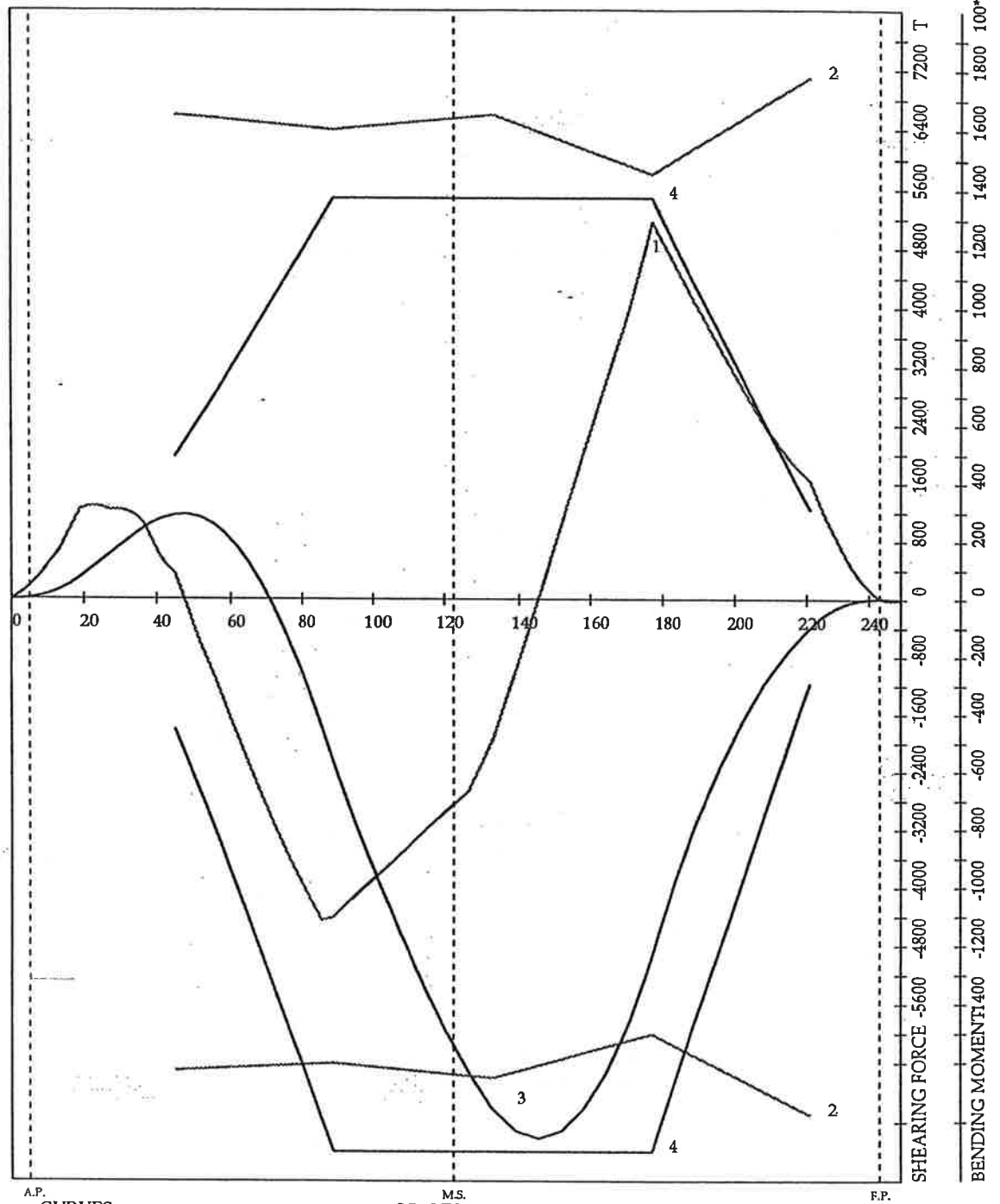
CORRECTED PEAK SHEAR FORCE ON THE BULKHEADS.

45.000	359.151	28963.2
89.000	-4403.250	-56433.7
133.000	-1944.884	-175741.0
177.000	5165.033	-123049.8
221.000	1636.644	-9629.7
229.000	751.846	-2353.9
251.500	0.000	0.0

MAXIMUM SHEAR FORCE = 5165.209 AT FR NO. = 177.000 (89.1%)

MAXIMUM BENDING MOMENT = -185586.0 AT FR NO. = 145.361 (97.7%)

MAX. CORR. SHEAR FORCE = 5165.033 AT FR NO. = 177.000



A.P.

M.S.

F.P.

CURVES

SCALES

1 - SHEARING FORCE DIAGRAM	1 UNIT	400.0	T
2 - ALLOWABLE SHEAR FORCE			
3 - BENDING MOMENT DIAGRAM	1 UNIT	10000.0	T*M
4 - ALLOWABLE BENDING MOMENT			

MAX. POSITIVE SHEARING F.	5165.2	T	AT	43.600	M. FROM M. S.
MAX. NEGATIVE SHEARING F.	-4444.0	T	AT	-29.508	M. FROM M. S.
MAX. POSITIVE BENDING M.	29315.4	T*M	AT	-59.991	M. FROM M. S.
MAX. NEGATIVE BENDING M.	-185586.1	T*M	AT	18.290	M. FROM M. S.

COND. NO 27 EXTREME HALF LOAD DEP. (GYPSUM, SG. 1.442)

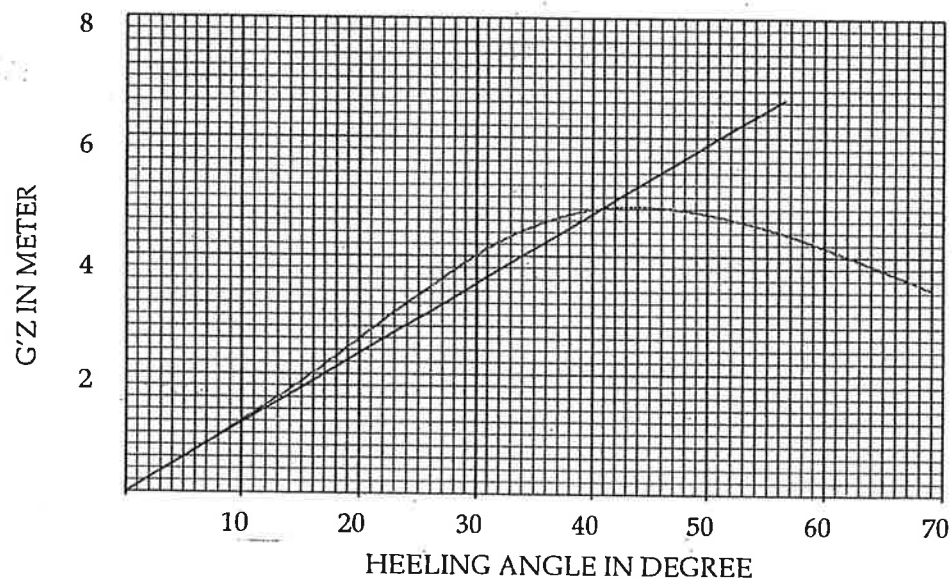
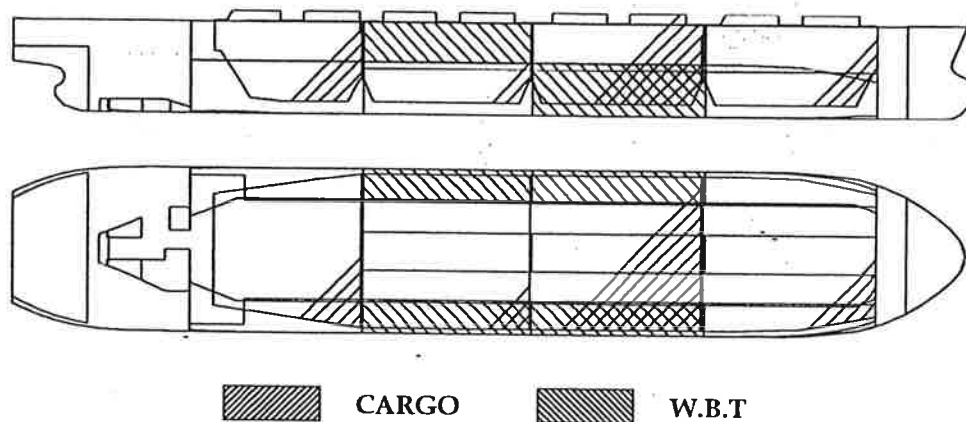
DEADWEIGHT ITEMS	WEIGHT	L.C.G FROM	MOMENT ABOUT	V.C.G FROM	MOMENT ABOUT	FREE SURFACE
	MT.	L/2 M.	L/2 MT-M.	BL M.	BL MT-M.	MOMENT MT-M.
CONSUMABLES DEP. (NO. 47)	1343.1	-60.53	-81298.	8.98	12064.	1825.
NO. 1 CARGO HOLD (C) 21%	3600.0	60.10	216352.	6.13	22082.	0.
NO. 2 CARGO HOLD (C) 44%	7800.0	25.60	199680.	7.91	61716.	0.
NO. 3 CARGO HOLD (C) 17%	3000.0	-9.60	-28800.	5.69	17071.	0.
NO. 4 CARGO HOLD (C) 28%	3600.0	-39.11	-140800.	7.10	25553.	0.
NO. 2 L.W.W.B.T. (P)	1710.9	26.00	44484.	4.22	7215.	0.
NO. 2 L.W.W.B.T. (S)	1710.9	26.00	44484.	4.22	7215.	0.
NO. 3 U.W.W.B.T. (P)	771.0	-9.20	-7093.	15.52	11966.	0.
NO. 3 U.W.W.B.T. (S)	771.0	-9.20	-7093.	15.52	11966.	0.
NO. 3 W.B.T. (C)	0.0	-9.20	0.	0.12	0.	1268.
E/R DB.W.B.T. (C)	0.0	-65.54	-1.	0.05	0.	1657.
A.P.T.	80.0	-85.21	-6817.	3.00	240.	16.
DEADWEIGHT	24387.0	9.56	233096.	7.26	177087.	4766.
LIGHT SHIP WEIGHT	12398.0	-12.47	-154615.	10.51	130266.	
DISPLACEMENT	36785.0	2.13	78480.	8.36	307353.	4766.
DRAFT EQUIV.	7.39 M		TRANSV. METACENTRE	KMT	15.15 M	
TRIM BY STERN	-2.90 M		VERT CENTRE OF GRAV	KG	8.36 M	
DRAFT FORWARD	6.01 M		METAC. HEIGHT	GM	6.80 M	
DRAFT AFT	8.91 M		FREE SURFACE CORR.	GG'	0.13 M	
DRAFT MEAN	7.46 M		CORR. METAC. HEIGHT	G'M	6.67 M	
L. C. B.	7.22 M					
L. C. F.	4.72 M		PROPELLER IMMERSION		70.8 %	
M. T. C.	644.9 MT-M					
T. P. C.	53.54 MT/CM					

COND. NO 27 EXTREME HALF LOAD DEP. (GYPSUM, SG. 1.442)

INCLINATION V	5.00	10.00	20.00	30.00	40.00	50.00	60.00	70.00
SIN V	0.087	0.174	0.342	0.500	0.643	0.766	0.866	0.940
KN	1.326	2.668	5.460	8.210	10.234	11.250	11.577	11.430
KG * SIN V	0.728	1.451	2.858	4.178	5.371	6.401	7.236	7.852
CORR	0.011	0.023	0.044	0.065	0.083	0.099	0.112	0.122
G'Z =								
KN-KG*SINV - CORR	0.586	1.195	2.558	3.968	4.780	4.751	4.229	3.457
GZ AREA (M-RAD)	0.026	0.103	0.428	1.001	1.776	2.618	3.407	4.080

MAX GZ 4.855 M AT 44.10 DEGREE
GZ 3.457 M AT 70.00 DEGREE

ANGLE	2.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00
GZ	0.234	0.468	0.705	0.947	1.195	1.451	1.716	1.989
GZ AREA	0.004	0.016	0.037	0.066	0.103	0.149	0.204	0.269
ANGLE	18.00	20.00	22.00	24.00	26.00	28.00	30.00	32.00
GZ	2.270	2.558	2.853	3.149	3.438	3.713	3.968	4.195
GZ AREA	0.343	0.428	0.522	0.627	0.742	0.867	1.001	1.143
ANGLE	34.00	36.00	38.00	40.00	42.00	44.00	46.00	48.00
GZ	4.392	4.556	4.686	4.780	4.835	4.855	4.844	4.808
GZ AREA	1.293	1.450	1.611	1.776	1.944	2.114	2.283	2.451
ANGLE	50.00	52.00	54.00	56.00	58.00	60.00	62.00	64.00
GZ	4.750	4.675	4.583	4.478	4.359	4.229	4.088	3.940
GZ AREA	2.618	2.783	2.944	3.103	3.257	3.407	3.552	3.692
ANGLE	66.00	68.00	70.00					
GZ	3.784	3.623	3.457					
GZ AREA	3.827	3.956	4.080					



STABILITY CRITERIA ACCORDING TO IMO RES. A.749(18)	ACTUAL	REQUIREMENT
AREA UNDER CURVE UP TO 30(DEG)	1.001 M-RAD	0.055 M-RAD
AREA UNDER CURVE UP TO 40(DEG) or θ_f WHICHEVER IS LESS	1.776 M-RAD	0.09 M-RAD
AREA BETWEEN 30 AND 40(DEG) or θ_f WHICHEVER IS LESS	0.776 M-RAD	0.03 M-RAD
G'Z AT GREATER THAN 30(DEG)	4.855 M	0.20 M
THE ANGLE AT WHICH THE MAX. G'Z OCCURS	44.10 DEG	30 DEG
THE INITIAL METACENTRIC HEIGHT G'M	6.666 M	0.15 M
NOTE : FLOODING ANGLE $\theta_f \geq 40.0(\text{DEG})$ SO 40.0(DEG) IS ADOPTED		

CONDITION NO 27 EXTREME HALF LOAD DEP. (GYPSUM, SG.1.442)
LONGITUDINAL STRENGTH CALCULATION.

FRAME	SHEAR FORCE	BENDING MOMENT
-------	----------------	-------------------

LONGITUDINAL STRENGTH VALUES WHEN SHEAR FORCE = 0.

65.667	0.000	39069.5
158.665	0.000	-67254.3
243.941	0.000	-2.5

LONGITUDINAL STRENGTH VALUES ON THE BULKHEADS.

45.000	907.580 (13.8%)	28975.1 (59.1%)
89.000	-780.189 (12.2%)	28663.1 (20.9%)
133.000	-2768.587 (41.9%)	-38657.1 (20.3%)
177.000	2232.346 (38.5%)	-51858.4 (27.3%)
221.000	725.751 (10.2%)	-4688.7 (16.2%)
229.000	328.671 (6.3%)	-1310.5 (0.0%)
251.500	0.000 (-)	0.0 (-)

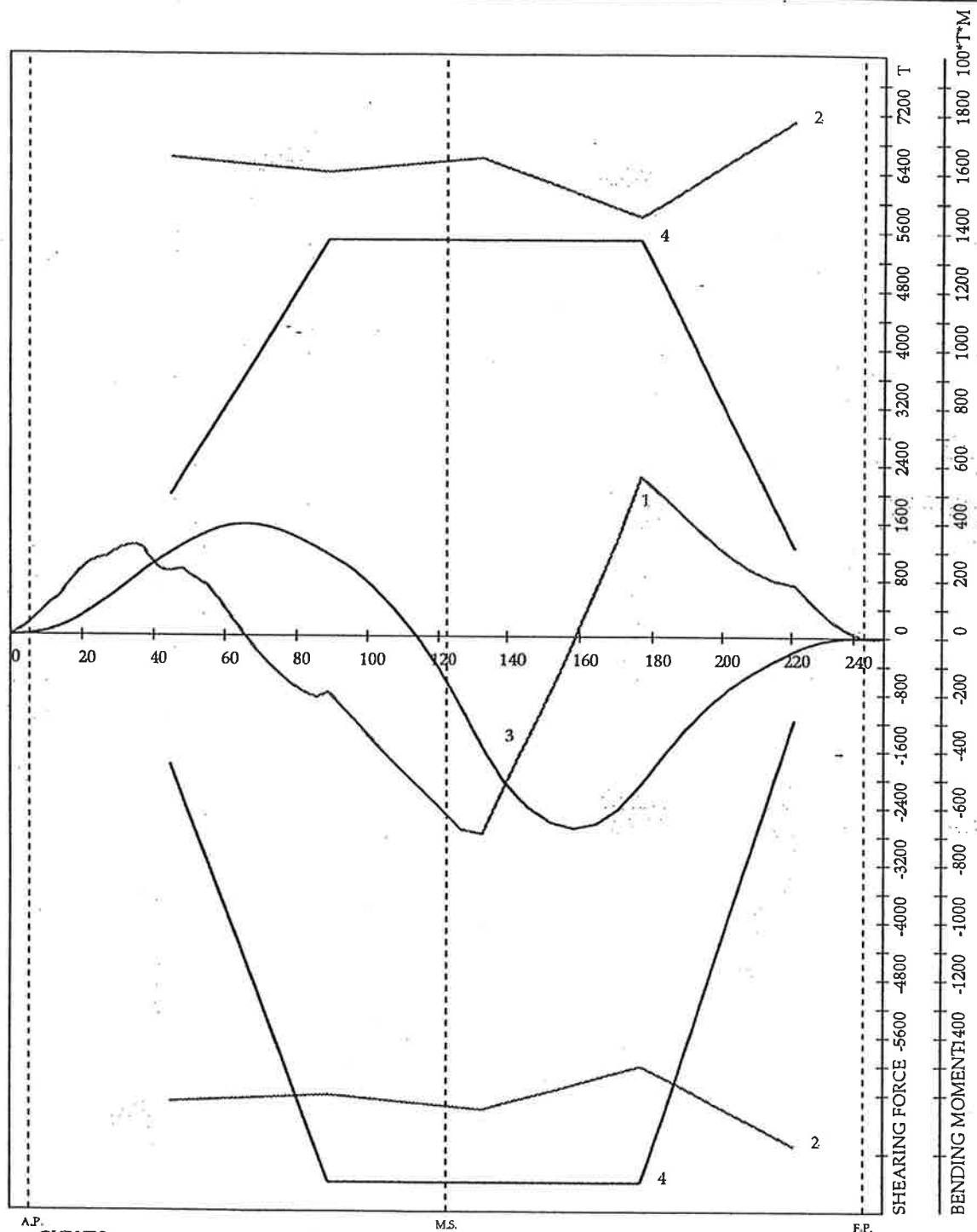
CORRECTED PEAK SHEAR FORCE ON THE BULKHEADS.

45.000	907.580	28975.1
89.000	-780.288	28663.1
133.000	-2768.488	-38657.1
177.000	2232.271	-51858.4
221.000	725.827	-4688.7
229.000	328.691	-1310.5
251.500	0.000	0.0

MAXIMUM SHEAR FORCE = -2768.587 AT FR NO. = 133.000 (41.9%)

MAXIMUM BENDING MOMENT = -67254.3 AT FR NO. = 158.665 (35.4%)

MAX. CORR. SHEAR FORCE = -2768.488 AT FR NO. = 133.000



A.P.

M.S.

F.P.

CURVES

SCALES

- | | | | |
|------------------------------|--------|---------|-----|
| 1 - SHEARING FORCE DIAGRAM | 1 UNIT | 400.0 | T |
| 2 - ALLOWABLE SHEAR FORCE | | | |
| 3 - BENDING MOMENT DIAGRAM | 1 UNIT | 10000.0 | T*M |
| 4 - ALLOWABLE BENDING MOMENT | | | |

MAX. POSITIVE SHEARING F.	2232.3	T	AT	43.600	M. FROM M. S.
MAX. NEGATIVE SHEARING F.	-2768.6	T	AT	8.400	M. FROM M. S.
MAX. POSITIVE BENDING M.	39069.5	T*M	AT	-45.466	M. FROM M. S.
MAX. NEGATIVE BENDING M.	-67254.4	T*M	AT	28.933	M. FROM M. S.

COND. NO 28 EXTREME HALF LOAD ARR. (GYPSUM, SG. 1.442)

DEADWEIGHT ITEMS	WEIGHT	L.C.G FROM	MOMENT ABOUT	V.C.G FROM	MOMENT ABOUT	FREE SURFACE
	MT.	L/2 M.	L/2 MT-M.	BL M.	BL MT-M.	MOMENT MT-M.
CONSUMABLES ARR. (NO. 48)	373.6	-64.89	-24240.	11.45	4279.	1825.
NO. 1 CARGO HOLD (C) 21%	3600.0	60.10	216352.	6.13	22082.	0.
NO. 2 CARGO HOLD (C) 44%	7800.0	25.60	199680.	7.91	61716.	0.
NO. 3 CARGO HOLD (C) 17%	3000.0	-9.60	-28800.	5.69	17071.	0.
NO. 4 CARGO HOLD (C) 28%	3600.0	-39.11	-140800.	7.10	25553.	0.
NO. 2 L.W.W.B.T. (P)	1710.9	26.00	44484.	4.22	7215.	0.
NO. 2 L.W.W.B.T. (S)	1710.9	26.00	44484.	4.22	7215.	0.
NO. 3 U.W.W.B.T. (P)	771.0	-9.20	-7093.	15.52	11966.	0.
NO. 3 U.W.W.B.T. (S)	771.0	-9.20	-7093.	15.52	11966.	0.
NO. 3 W.B.T. (C)	1819.5	-9.57	-17406.	3.58	6505.	1268.
E/R DB.W.B.T. (C)	180.2	-66.83	-12041.	1.17	211.	1657.
A.P.T.	80.0	-85.21	-6817.	3.00	240.	16.
DEADWEIGHT	25417.1	10.26	260708.	6.93	176018.	4766.
LIGHT SHIP WEIGHT	12398.0	-12.47	-154615.	10.51	130266.	
DISPLACEMENT	37815.1	2.81	106092.	8.10	306283.	4766.
DRAFT EQUIV.	7.58 M		TRANSV. METACENTRE	KMT	14.99 M	
TRIM BY STERN	-2.52 M		VERT CENTRE OF GRAV	KG	8.10 M	
DRAFT FORWARD	6.38 M		METAC. HEIGHT	GM	6.89 M	
DRAFT AFT	8.90 M		FREE SURFACE CORR.	GG'	0.13 M	
DRAFT MEAN	7.64 M		CORR. METAC. HEIGHT	G'M	6.77 M	
L. C. B.	7.15 M					
L. C. F.	4.37 M		PROPELLER IMMERSION		70.6 %	
M. T. C.	652.0 MT-M					
T. P. C.	53.74 MT/CM					

COND. NO 28 EXTREME HALF LOAD ARR. (GYPSUM, SG.1.442)

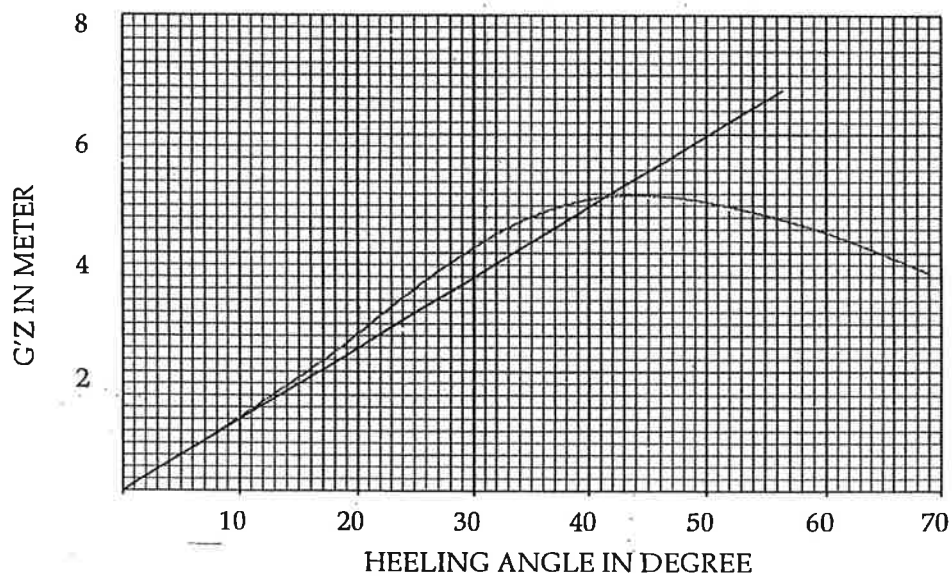
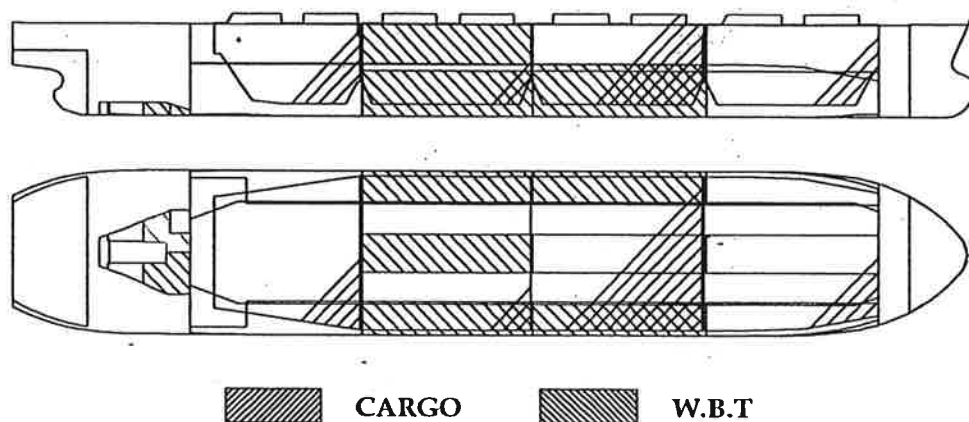
INCLINATION V	5.00	10.00	20.00	30.00	40.00	50.00	60.00	70.00
SIN V	0.087	0.174	0.342	0.500	0.643	0.766	0.866	0.940
KN	1.312	2.642	5.405	8.159	10.186	11.197	11.537	11.402
KG * SIN V	0.706	1.406	2.770	4.050	5.206	6.205	7.014	7.611
CORR	0.011	0.022	0.043	0.063	0.081	0.097	0.109	0.118
G'Z =								
KN-KG*SIN V - CORR	0.596	1.213	2.592	4.046	4.899	4.896	4.414	3.672
GZ AREA (M-RAD)	0.026	0.105	0.434	1.016	1.809	2.674	3.491	4.200

MAX GZ 4.985 M AT 44.80 DEGREE
GZ 3.672 M AT 70.00 DEGREE

ANGLE	2.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00
GZ	0.237	0.475	0.717	0.962	1.213	1.472	1.739	2.014
GZ AREA	0.004	0.017	0.037	0.067	0.105	0.152	0.207	0.273
ANGLE	18.00	20.00	22.00	24.00	26.00	28.00	30.00	32.00
GZ	2.298	2.592	2.894	3.198	3.496	3.782	4.046	4.283
GZ AREA	0.348	0.434	0.529	0.636	0.752	0.879	1.016	1.162
ANGLE	34.00	36.00	38.00	40.00	42.00	44.00	46.00	48.00
GZ	4.489	4.661	4.799	4.898	4.959	4.984	4.979	4.947
GZ AREA	1.315	1.475	1.640	1.809	1.981	2.155	2.329	2.502
ANGLE	50.00	52.00	54.00	56.00	58.00	60.00	62.00	64.00
GZ	4.895	4.827	4.743	4.646	4.535	4.413	4.281	4.140
GZ AREA	2.674	2.844	3.011	3.175	3.335	3.491	3.643	3.790
ANGLE	66.00	68.00	70.00					
GZ	3.991	3.834	3.672					
GZ AREA	3.932	4.069	4.200					



COND. NO. 28 EXTREME HALF LOAD ARR.(GYPSUM,SG.1.442)



STABILITY CRITERIA ACCORDING TO IMO RES. A.749(18)	ACTUAL	REQUIREMENT
AREA UNDER CURVE UP TO 30(DEG)	1.016 M-RAD	0.055 M-RAD
AREA UNDER CURVE UP TO 40(DEG) or θf WHICHEVER IS LESS	1.809 M-RAD	0.09 M-RAD
AREA BETWEEN 30 AND 40(DEG) or θf WHICHEVER IS LESS	0.793 M-RAD	0.03 M-RAD
G'Z AT GREATER THAN 30(DEG)	4.985 M	0.20 M
THE ANGLE AT WHICH THE MAX. G'Z OCCURS	44.80 DEG	30 DEG
THE INITIAL METACENTRIC HEIGHT G'M	6.768 M	0.15 M
NOTE : FLOODING ANGLE $\theta f \geq 40.0(\text{DEG})$ SO 40.0(DEG) IS ADOPTED		

CONDITION NO 28 EXTREME HALF LOAD ARR. (GYPSUM, SG.1.442)
LONGITUDINAL STRENGTH CALCULATION.

FRAME	SHEAR FORCE	BENDING MOMENT
LONGITUDINAL STRENGTH VALUES WHEN SHEAR FORCE = 0.		
54.371	0.000	29541.1
153.268	0.000	-87239.3
244.309	0.000	-76.1

LONGITUDINAL STRENGTH VALUES ON THE BULKHEADS.

45.000	906.221 (13.7%)	26327.8 (53.7%)
89.000	-1696.201 (26.5%)	-1045.1 (0.6%)
133.000	-2055.601 (31.1%)	-70727.7 (37.2%)
177.000	2671.604 (46.1%)	-62987.3 (33.2%)
221.000	826.857 (11.6%)	-5740.2 (19.8%)
229.000	378.308 (7.2%)	-1775.4 (0.0%)
251.500	0.000 (-)	0.0 (-)

CORRECTED PEAK SHEAR FORCE ON THE BULKHEADS.

45.000	906.221	26327.8
89.000	-1696.219	-1045.1
133.000	-2055.583	-70727.7
177.000	2671.511	-62987.3
221.000	826.949	-5740.2
229.000	378.330	-1775.4
251.500	0.000	0.0

MAXIMUM SHEAR FORCE = 2671.604 AT FR NO. = 177.000 (46.1%)

MAXIMUM BENDING MOMENT = -87239.3 AT FR NO. = 153.268 (45.9%)

MAX. CORR. SHEAR FORCE = 2671.511 AT FR NO. = 177.000

COND. NO 29 HOMO SUMMER LOAD DEP. (GYPSUM, SG.1.442)

DEADWEIGHT ITEMS	WEIGHT	L.C.G FROM	MOMENT ABOUT	V.C.G FROM	MOMENT ABOUT	FREE SURFACE
	MT.	L/2 M.	L/2 MT-M.	BL M.	BL MT-M.	MOMENT MT-M.
CONSUMABLES DEP. (NO.45)	2490.9	-62.15	-154812.	11.72	29196.	1825.
NO.1 CARGO HOLD(C)	69% 11770.7	60.31	709938.	9.55	112384.	0.
NO.2 CARGO HOLD(C)	69% 12242.4	25.60	313405.	9.54	116845.	0.
NO.3 CARGO HOLD(C)	69% 12242.4	-9.60	-117527.	9.54	116845.	0.
NO.4 CARGO HOLD(C)	69% 8934.7	-40.17	-358941.	10.00	89336.	-0.
A.P.T. (C)	80.0	-85.21	-6817.	3.00	240.	21041.
DEADWEIGHT	47761.1	8.07	385246.	9.73	464847.	22866.
LIGHT SHIP WEIGHT	12398.0	-12.47	-154615.	10.51	130266.	
DISPLACEMENT	-60159.1	3.83	230631.	9.89	595113.	22866.
DRAFT EQUIV.	11.52 M		TRANSV. METACENTRE	KMT	13.87 M	
TRIM BY STERN	-0.28 M		VERT CENTRE OF GRAV	KG	9.89 M	
DRAFT FORWARD	11.37 M		METAC. HEIGHT	GM	3.98 M	
DRAFT AFT	11.65 M		FREE SURFACE CORR.	GG'	0.38 M	
DRAFT MEAN	11.51 M		CORR. METAC. HEIGHT	G'M	3.60 M	
L. C. B.	4.23 M					
L. C. F.	-3.90 M		PROPELLER IMMERSION		108.8 %	
M. T. C.	858.7 MT-M					
T. P. C.	59.16 MT/CM					

COND. NO 29 HOMO SUMMER LOAD DEP. (GYPSUM, SG. 1.442)

INCLINATION V 5.00 10.00 20.00 30.00 40.00 50.00 60.00 70.00

SIN V 0.087 0.174 0.342 0.500 0.643 0.766 0.866 0.940

KN 1.211 2.423 4.872 7.106 8.814 9.961 10.546 10.678

KG * SIN V 0.862 1.718 3.383 4.946 6.359 7.578 8.567 9.296

CORR 0.033 0.066 0.130 0.190 0.244 0.291 0.329 0.357

G'Z =

KN-KG*SINV - CORR 0.315 0.639 1.359 1.970 2.211 2.092 1.650 1.025

GZ AREA (M-RAD) 0.014 0.055 0.229 0.523 0.894 1.275 1.605 1.840

MAX GZ 2.215 M AT 41.30 DEGREE

GZ 1.025 M AT 70.00 DEGREE

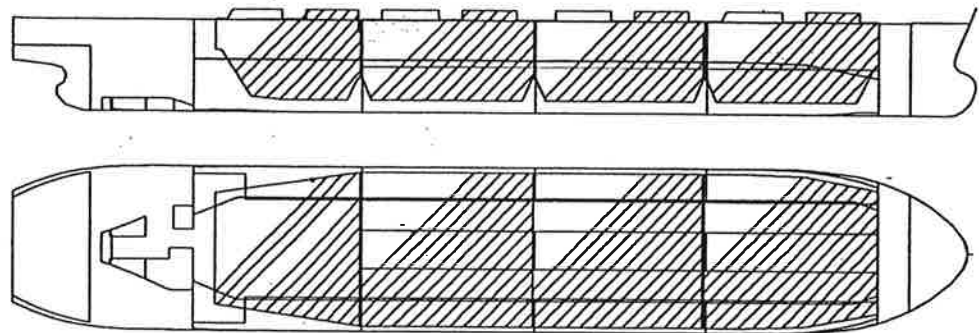
ANGLE	2.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00
GZ	0.127	0.253	0.378	0.507	0.639	0.778	0.921	1.067
GZ AREA	0.002	0.009	0.020	0.035	0.055	0.080	0.110	0.144

ANGLE	18.00	20.00	22.00	24.00	26.00	28.00	30.00	32.00
GZ	1.214	1.359	1.500	1.634	1.759	1.872	1.970	2.050
GZ AREA	0.184	0.229	0.279	0.334	0.393	0.456	0.523	0.594

ANGLE	34.00	36.00	38.00	40.00	42.00	44.00	46.00	48.00
GZ	2.114	2.161	2.193	2.211	2.215	2.205	2.181	2.143
GZ AREA	0.666	0.741	0.817	0.894	0.971	1.049	1.125	1.201

ANGLE	50.00	52.00	54.00	56.00	58.00	60.00	62.00	64.00
GZ	2.092	2.026	1.948	1.858	1.759	1.650	1.534	1.413
GZ AREA	1.275	1.346	1.416	1.482	1.546	1.605	1.661	1.712

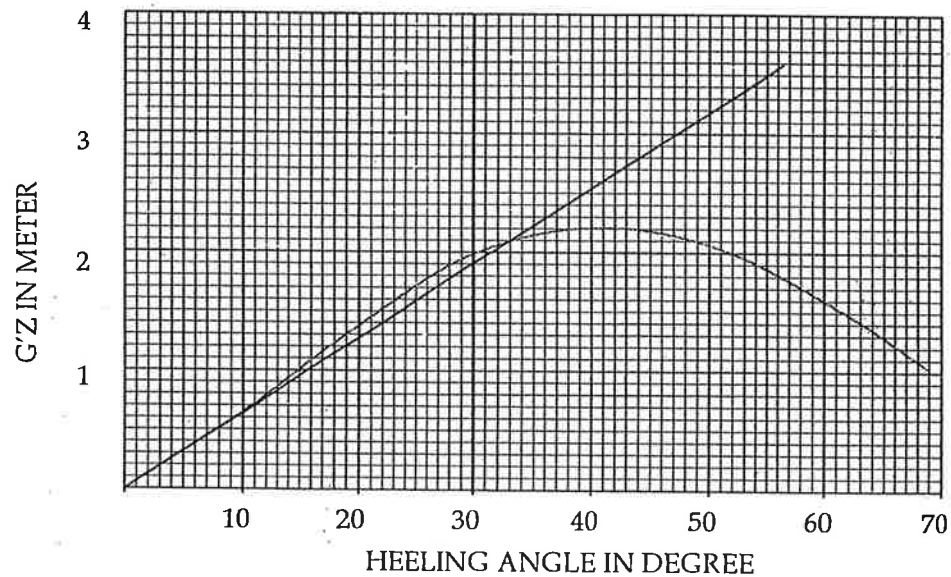
ANGLE	66.00	68.00	70.00
GZ	1.286	1.156	1.025
GZ AREA	1.759	1.802	1.840



CARGO



W.B.T



STABILITY CRITERIA ACCORDING TO IMO RES. A.749(18)	ACTUAL	REQUIREMENT
AREA UNDER CURVE UP TO 30(DEG)	0.523 M-RAD	0.055 M-RAD
AREA UNDER CURVE UP TO 40(DEG) or θ_f WHICHEVER IS LESS	0.734 M-RAD	0.09 M-RAD
AREA BETWEEN 30 AND 40(DEG) or θ_f WHICHEVER IS LESS	0.210 M-RAD	0.03 M-RAD
G'Z AT GREATER THAN 30(DEG)	2.215 M	0.20 M
THE ANGLE AT WHICH THE MAX. G'Z OCCURS	41.30 DEG	30 DEG
THE INITIAL METACENTRIC HEIGHT G'M	3.598 M	0.15 M
NOTE : FLOODING ANGLE θ_f < 40.0(DEG) SO 35.68 (DEG) IS ADOPTED		

CONDITION NO 29 HOMO SUMMER LOAD DEP. (GYPSUM, SG.1.442)
LONGITUDINAL STRENGTH CALCULATION.

FRAME	SHEAR FORCE	BENDING MOMENT
LONGITUDINAL STRENGTH VALUES WHEN SHEAR FORCE = 0.		
26.196	0.000	3844.7
130.048	0.000	-78305.3
245.673	0.000	468.4

LONGITUDINAL STRENGTH VALUES ON THE BULKHEADS.

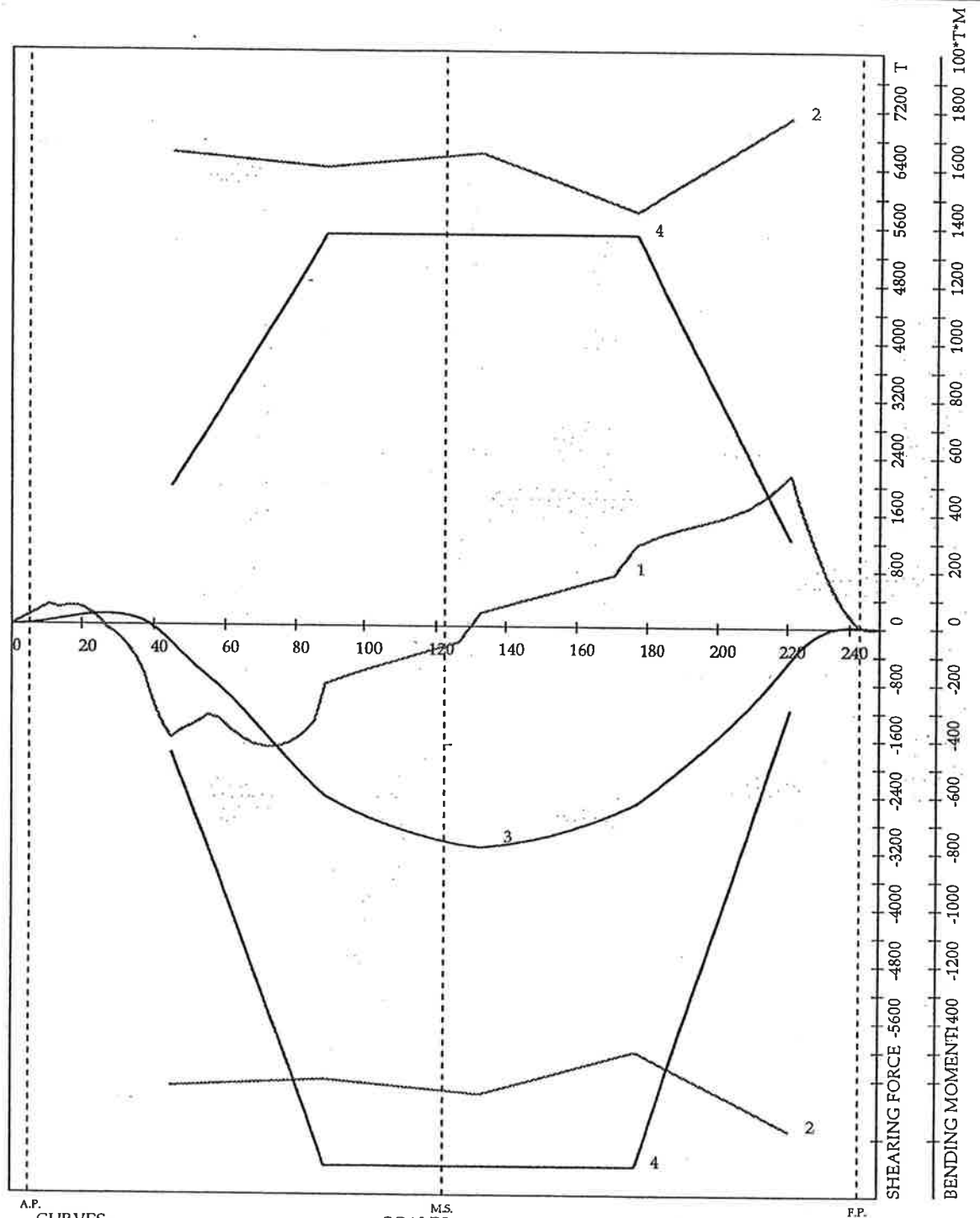
45.000	-1592.308 (	24.5%)	-6354.8 (	14.1%)
89.000	-822.248 (	12.8%)	-60368.8 (	31.8%)
133.000	195.033 (	3.0%)	-78305.3 (	41.2%)
177.000	1153.347 (	19.9%)	-62789.2 (	33.0%)
221.000	2156.697 (	30.4%)	-11338.1 (	39.1%)
229.000	974.012 (	18.6%)	-2160.1 (	0.0%)
251.500	0.000 (	-)	0.0 (	-)

CORRECTED PEAK SHEAR FORCE ON THE BULKHEADS.

45.000	-1592.308	-6354.8
89.000	-822.287	-60368.8
133.000	195.081	-78305.3
177.000	1153.397	-62789.2
221.000	2156.647	-11338.1
229.000	974.071	-2160.1
251.500	0.000	0.0

MAXIMUM SHEAR FORCE = 2156.697 AT FR NO. = 221.000 (30.4%)

MAXIMUM BENDING MOMENT = -78305.3 AT FR NO. = 130.048 (41.2%)
MAX. CORR. SHEAR FORCE = 2156.647 AT FR NO. = 221.000



A.P.

M.S.

F.P.

CURVES

SCALES

1 - SHEARING FORCE DIAGRAM	1 UNIT	400.0	T
2 - ALLOWABLE SHEAR FORCE			
3 - BENDING MOMENT DIAGRAM	1 UNIT	10000.0	T*M
4 - ALLOWABLE BENDING MOMENT			

MAX. POSITIVE SHEARING F.	2156.7	T	AT	78.800	M. FROM M. S.
MAX. NEGATIVE SHEARING F.	-1720.3	T	AT	-40.338	M. FROM M. S.
MAX. POSITIVE BENDING M.	3844.7	T*M	AT	-77.044	M. FROM M. S.
MAX. NEGATIVE BENDING M.	-78305.4	T*M	AT	6.038	M. FROM M. S.

COND. NO 30 HOMO SUMMER LOAD ARR. (GYPSUM, SG.1.442)

DEADWEIGHT ITEMS	WEIGHT	L.C.G FROM	MOMENT ABOUT	V.C.G FROM	MOMENT ABOUT	FREE SURFACE
	MT.	L/2 M.	L/2 MT-M.	BL M.	BL MT-M.	MOMENT MT-M.
CONSUMABLES ARR. (NO.46)	398.6	-64.78	-25822.	11.60	4622.	1825.
NO.1 CARGO HOLD (C) 69%	11770.7	60.31	709938.	9.55	112384.	0.
NO.2 CARGO HOLD (C) 69%	12242.4	25.60	313405.	9.54	116845.	0.
NO.3 CARGO HOLD (C) 69%	12242.4	-9.60	-117527.	9.54	116845.	0.
NO.4 CARGO HOLD (C) 69%	8934.7	-40.17	-358941.	10.00	89336.	0.
A.P.T. (C)	1384.9	-88.99	-123242.	10.15	14056.	21041.
DEADWEIGHT	46973.7	8.47	397812.	9.67	454089.	22866.
LIGHT SHIP WEIGHT	12398.0	-12.47	-154615.	10.51	130266.	
DISPLACEMENT	59371.7	4.10	243196.	9.84	584355.	22866.
DRAFT EQUIV.	11.38 M		TRANSV. METACENTRE	KMT		13.88 M
TRIM BY STERN	-0.17 M		VERT CENTRE OF GRAV	KG		9.84 M
DRAFT FORWARD	11.29 M		METAC. HEIGHT	GM		4.04 M
DRAFT AFT	11.47 M		FREE SURFACE CORR.	GG'		0.39 M
DRAFT MEAN	11.38 M		CORR. METAC. HEIGHT	G'M		3.65 M
L. C. B.	4.34 M					
L. C. F.	-3.83 M		PROPELLER IMMERSION			106.2 %
M. T. C.	855.9 MT-M					
T. P. C.	59.08 MT/CM					

COND. NO 30 HOMO SUMMER LOAD ARR. (GYPSUM, SG.1.442)

INCLINATION V	5.00	10.00	20.00	30.00	40.00	50.00	60.00	70.00
SIN V	0.087	0.174	0.342	0.500	0.643	0.766	0.866	0.940
KN	1.212	2.425	4.878	7.146	8.865	10.008	10.585	10.705
KG * SIN V	0.858	1.709	3.366	4.921	6.327	7.540	8.524	9.249
CORR	0.034	0.067	0.132	0.193	0.248	0.295	0.334	0.362

G'Z =

KN-KG*SIN V - CORR 0.320 0.649 1.380 2.033 2.291 2.173 1.727 1.094

GZ AREA (M-RAD) 0.014 0.056 0.232 0.534 0.917 1.312 1.656 1.904

MAX GZ 2.295 M AT 42.00 DEGREE
GZ 1.094 M AT 70.00 DEGREE

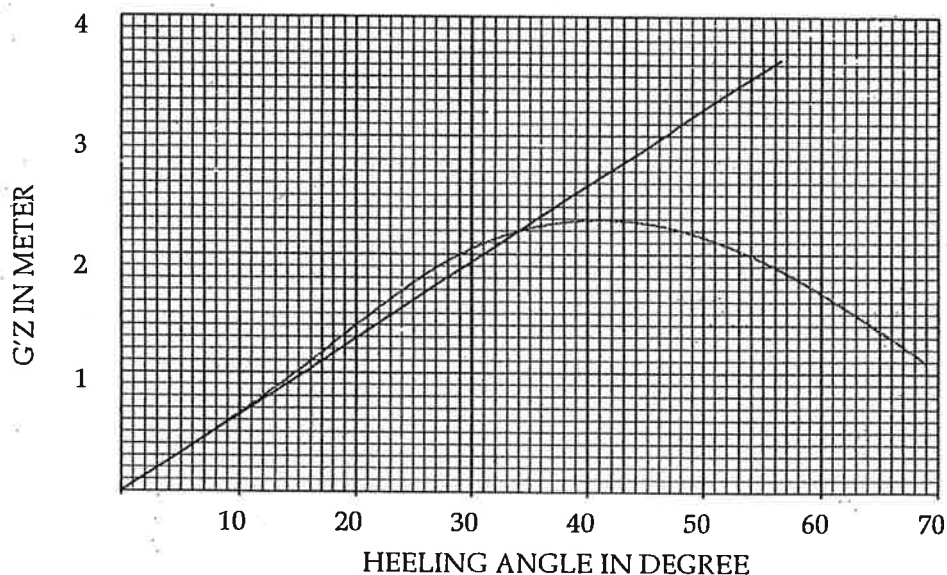
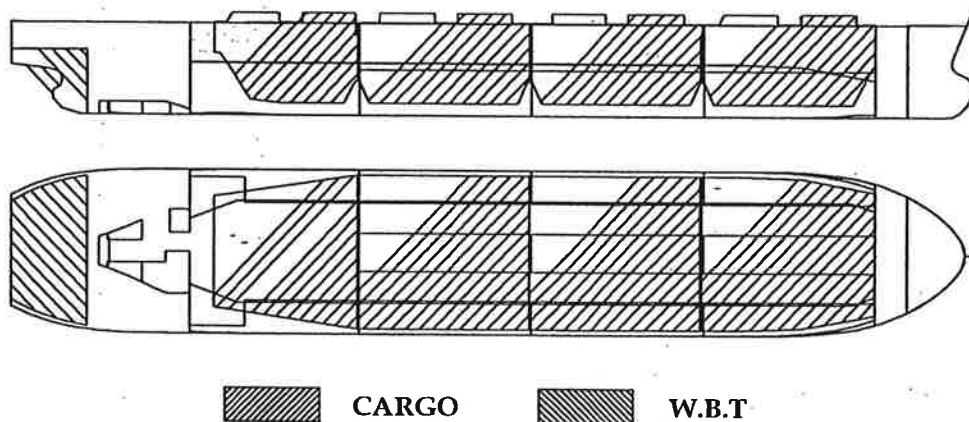
ANGLE	2.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00
GZ	0.129	0.257	0.385	0.515	0.649	0.789	0.934	1.081
GZ AREA	0.002	0.009	0.020	0.036	0.056	0.081	0.111	0.146

ANGLE	18.00	20.00	22.00	24.00	26.00	28.00	30.00	32.00
GZ	1.231	1.380	1.528	1.671	1.805	1.927	2.033	2.119
GZ AREA	0.187	0.232	0.283	0.339	0.400	0.465	0.534	0.607

ANGLE	34.00	36.00	38.00	40.00	42.00	44.00	46.00	48.00
GZ	2.187	2.238	2.272	2.291	2.295	2.286	2.262	2.225
GZ AREA	0.682	0.759	0.838	0.917	0.998	1.078	1.157	1.235

ANGLE	50.00	52.00	54.00	56.00	58.00	60.00	62.00	64.00
GZ	2.173	2.107	2.028	1.938	1.837	1.727	1.610	1.487
GZ AREA	1.312	1.387	1.459	1.528	1.594	1.656	1.715	1.769

ANGLE	66.00	68.00	70.00
GZ	1.359	1.228	1.094
GZ AREA	1.819	1.864	1.904



STABILITY CRITERIA ACCORDING TO IMO RES. A.749(18)	ACTUAL	REQUIREMENT
AREA UNDER CURVE UP TO 30(DEG)	0.534 M-RAD	0.055 M-RAD
AREA UNDER CURVE UP TO 40(DEG) or θ_f WHICHEVER IS LESS	0.770 M-RAD	0.09 M-RAD
AREA BETWEEN 30 AND 40(DEG) or θ_f WHICHEVER IS LESS	0.236 M-RAD	0.03 M-RAD
G'Z AT GREATER THAN 30(DEG)	2.295 M	0.20 M
THE ANGLE AT WHICH THE MAX. G'Z OCCURS	42.00 DEG	30 DEG
THE INITIAL METACENTRIC HEIGHT G'M	3.653 M	0.15 M

NOTE : FLOODING ANGLE $\theta_f < 40.0(\text{DEG})$ SO 36.14 (DEG) IS ADOPTED

CONDITION NO 30 HOMO SUMMER LOAD ARR. (GYPSUM, SG.1.442)
LONGITUDINAL STRENGTH CALCULATION.

FRAME	SHEAR FORCE	BENDING MOMENT
LONGITUDINAL STRENGTH VALUES WHEN SHEAR FORCE = 0.		
40.245	0.000	23545.2
136.962	0.000	-72199.6
245.656	0.000	- 292.3

LONGITUDINAL STRENGTH VALUES ON THE BULKHEADS.

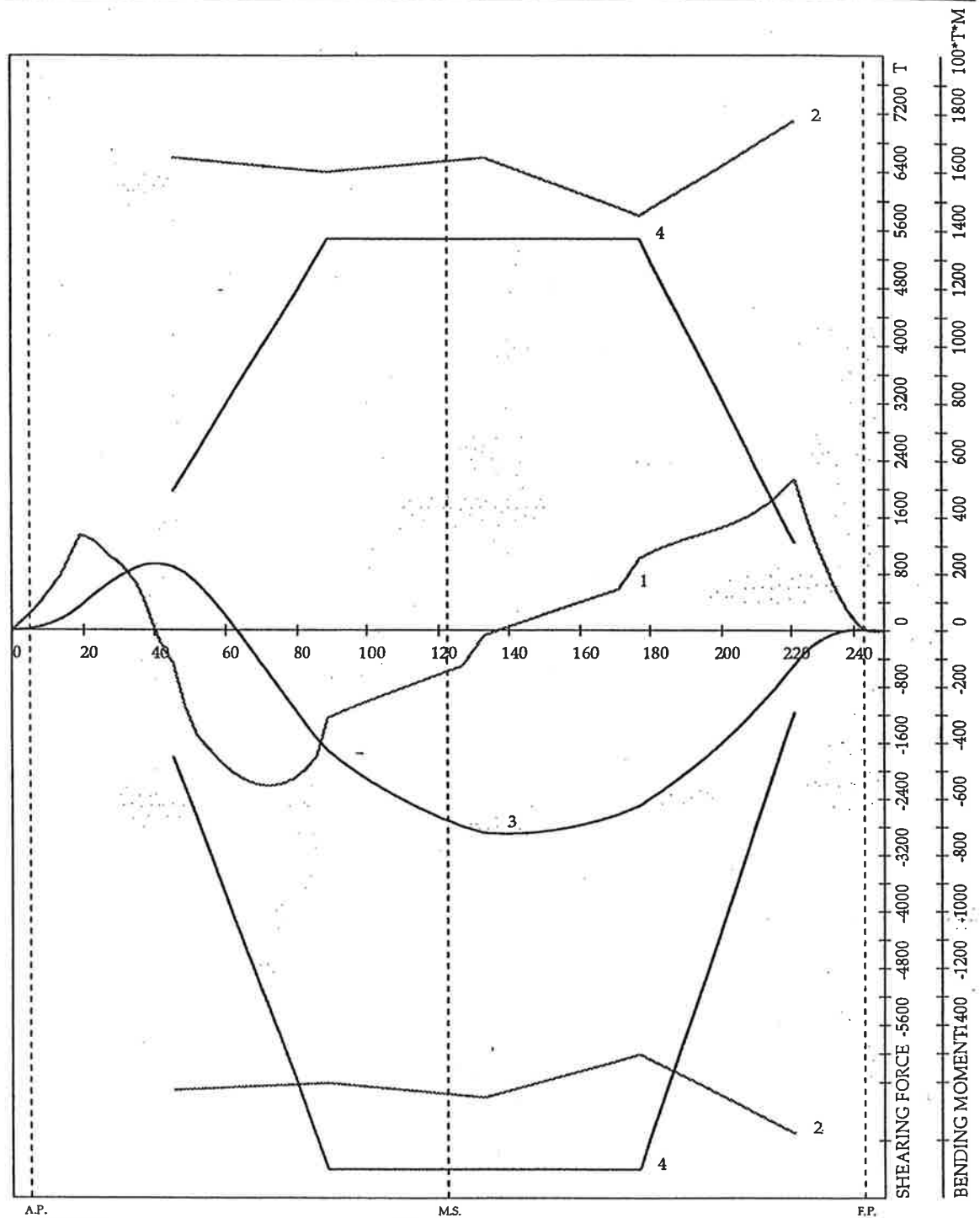
45.000	-465.122 (7.2%)	22500.5 (45.9%)
89.000	-1246.554 (19.5%)	-42672.6 (22.5%)
133.000	-70.168 (1.1%)	-71938.1 (37.9%)
177.000	1023.419 (17.6%)	-62280.0 (32.8%)
221.000	2134.265 (30.1%)	-12077.3 (41.6%)
229.000	964.533 (18.4%)	-2728.3 (0.0%)
251.500	0.000 (-)	0.0 (-)

CORRECTED PEAK SHEAR FORCE ON THE BULKHEADS.

45.000	-465.122	22500.5
89.000	-1246.515	-42672.6
133.000	-70.227	-71938.1
177.000	1023.474	-62280.0
221.000	2134.210	-12077.3
229.000	964.592	-2728.3
251.500	0.000	0.0

MAXIMUM SHEAR FORCE = -2212.104 AT FR NO. = 72.077 (34.4%)

MAXIMUM BENDING MOMENT = -72199.6 AT FR NO. = 136.962 (38.0%)
MAX. CORR. SHEAR FORCE = 2134.210 AT FR NO. = 221.000



A.P.

M.S.

F.P.

CURVES

SCALES

- 1 - SHEARING FORCE DIAGRAM
- 2 - ALLOWABLE SHEAR FORCE
- 3 - BENDING MOMENT DIAGRAM
- 4 - ALLOWABLE BENDING MOMENT

1 UNIT 400.0 T
1 UNIT 10000.0 T*M

MAX. POSITIVE SHEARING F.	2134.3	T	AT	78.800	M. FROM M. S.
MAX. NEGATIVE SHEARING F.	-2212.1	T	AT	-40.338	M. FROM M. S.
MAX. POSITIVE BENDING M.	2354.2	T*M	AT	-65.805	M. FROM M. S.
MAX. NEGATIVE BENDING M.	-7219.8	T*M	AT	11.571	M. FROM M. S.

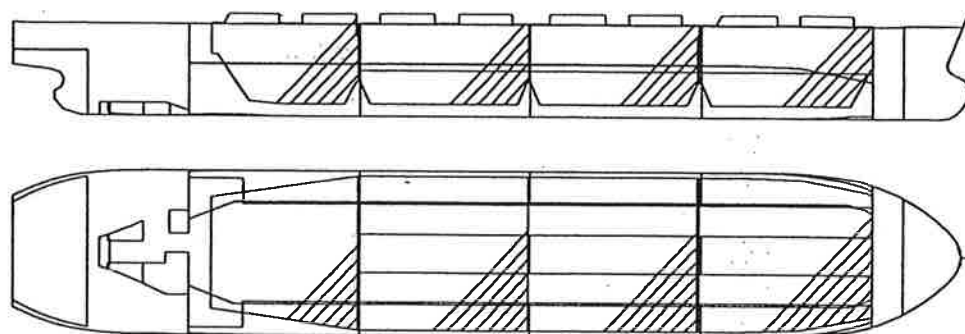
COND. NO 31 HOMO. SUMMER LOAD DEP. (HOT BRIQUETTED IRON, SG 2.857)

DEADWEIGHT ITEMS	WEIGHT	L.C.G FROM	MOMENT ABOUT	V.C.G FROM	MOMENT ABOUT	FREE SURFACE
	MT.	L/2 M.	L/2 MT-M.	BL M.	BL MT-M.	MOMENT MT-M.
CONSUMABLES DEP. (NO.45)	2490.9	-62.15	-154812.	11.72	29196.	1825.
NO.1 CARGO HOLD (C) 35%	11990.0	60.20	721855.	7.32	87724.	0.
NO.2 CARGO HOLD (C) 34%	12100.0	25.60	309760.	7.23	87429.	0.
NO.3 CARGO HOLD (C) 34%	12100.0	-9.60	-116160.	7.23	87429.	0.
NO.4 CARGO HOLD (C) 35%	9000.2	-39.34	-354086.	7.68	69082.	0.
A.P.T. (C)	80.0	-85.21	-6817.	3.00	240.	21041.
DEADWEIGHT	47761.1	8.37	399740.	7.56	361101.	22866.
LIGHT SHIP WEIGHT	12398.0	-12.47	-154615.	10.51	130266.	
DISPLACEMENT	60159.1	4.07	245125.	8.17	491366.	22866.
DRAFT EQUIV.	11.52 M		TRANSV. METACENTRE	KMT	13.87 M	
TRIM BY STERN	-0.11 M		VERT CENTRE OF GRAV	KG	8.17 M	
DRAFT FORWARD	11.46 M		METAC. HEIGHT	GM	5.70 M	
DRAFT AFT	11.57 M		FREE SURFACE CORR.	GG'	0.38 M	
DRAFT MEAN	11.51 M		CORR. METAC. HEIGHT	G'M	5.32 M	
L. C. B.	4.23 M					
L. C. F.	-3.90 M		PROPELLER IMMERSION		107.7 %	
M. T. C.	858.7 MT-M					
T. P. C.	59.16 MT/CM					

COND. NO 31 HOMO. SUMMER LOAD DEP. (HOT BRIQUETTED IRON, SG 2.857)									
INCLINATION V	5.00	10.00	20.00	30.00	40.00	50.00	60.00	70.00	
SIN V	0.087	0.174	0.342	0.500	0.643	0.766	0.866	0.940	
KN	1.211	2.423	4.872	7.106	8.814	9.961	10.546	10.678	
KG * SIN V	0.712	1.418	2.794	4.084	5.250	6.257	7.074	7.675	
CORR	0.033	0.066	0.130	0.190	0.244	0.291	0.329	0.357	
G'Z =									
KN-KG*SINV - CORR	0.466	0.939	1.948	2.832	3.320	3.413	3.144	2.645	
GZ AREA (M-RAD)	0.020	0.082	0.333	0.755	1.298	1.891	2.467	2.975	
MAX GZ	3.426 M	AT	47.60	DEGREE					
GZ	2.645 M	AT	70.00	DEGREE					
ANGLE	2.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00	
GZ	0.188	0.373	0.559	0.747	0.939	1.136	1.338	1.543	
GZ AREA	0.003	0.013	0.029	0.052	0.082	0.118	0.161	0.211	
ANGLE	18.00	20.00	22.00	24.00	26.00	28.00	30.00	32.00	
GZ	1.747	1.948	2.146	2.335	2.515	2.682	2.832	2.964	
GZ AREA	0.269	0.333	0.405	0.483	0.568	0.658	0.755	0.856	
ANGLE	34.00	36.00	38.00	40.00	42.00	44.00	46.00	48.00	
GZ	3.078	3.175	3.255	3.320	3.369	3.403	3.422	3.425	
GZ AREA	0.961	1.070	1.183	1.298	1.414	1.533	1.652	1.771	
ANGLE	50.00	52.00	54.00	56.00	58.00	60.00	62.00	64.00	
GZ	3.413	3.385	3.343	3.288	3.221	3.144	3.057	2.963	
GZ AREA	1.891	2.009	2.127	2.243	2.356	2.467	2.576	2.681	
ANGLE	66.00	68.00	70.00						
GZ	2.862	2.755	2.645						
GZ AREA	2.782	2.880	2.975						



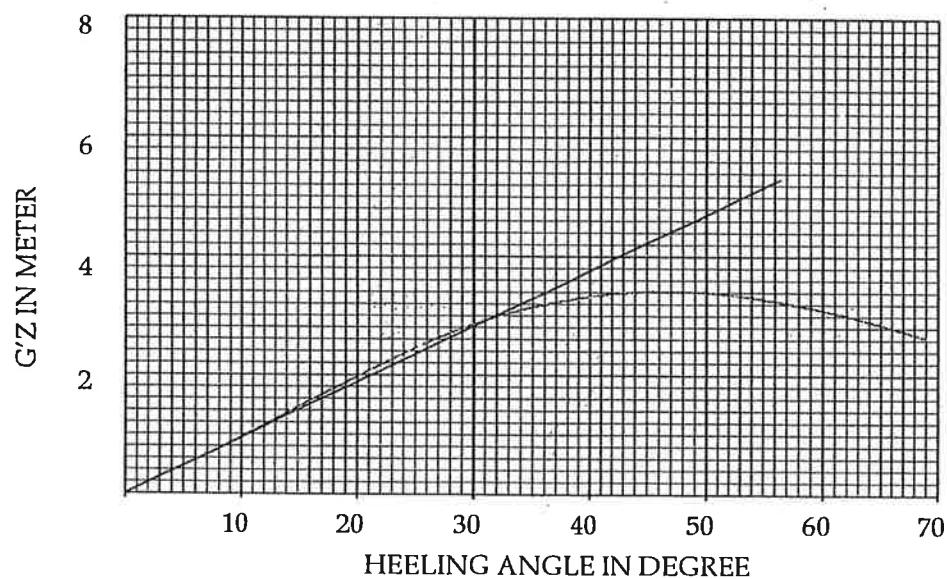
COND. NO. 31 HOMO. SUMMER LOAD DEP.(HOT BRIQUETTED IRON,SG 2.857)



CARGO



W.B.T



STABILITY CRITERIA ACCORDING TO IMO RES. A.749(18)	ACTUAL	REQUIREMENT
AREA UNDER CURVE UP TO 30(DEG)	0.755 M-RAD	0.055 M-RAD
AREA UNDER CURVE UP TO 40(DEG) or θf WHICHEVER IS LESS	1.063 M-RAD	0.09 M-RAD
AREA BETWEEN 30 AND 40(DEG) or θf WHICHEVER IS LESS	0.308 M-RAD	0.03 M-RAD
G'Z AT GREATER THAN 30(DEG)	3.426 M	0.20 M
THE ANGLE AT WHICH THE MAX. G'Z OCCURS	47.60 DEG	30 DEG
THE INITIAL METACENTRIC HEIGHT G'M	5.323 M	0.15 M
NOTE : FLOODING ANGLE $\theta f < 40.0(\text{DEG})$ SO 35.68 (DEG) IS ADOPTED		

CONDITION NO 31 HOMO. SUMMER LOAD DEP. (HOT BRIQUETTED IRON, SG 2.857)
LONGITUDINAL STRENGTH CALCULATION.

FRAME	SHEAR FORCE	BENDING MOMENT
LONGITUDINAL STRENGTH VALUES WHEN SHEAR FORCE = 0.		
26.899	0.000	4241.1
129.276	0.000	-76555.7
245.666	0.000	461.2

LONGITUDINAL STRENGTH VALUES ON THE BULKHEADS.

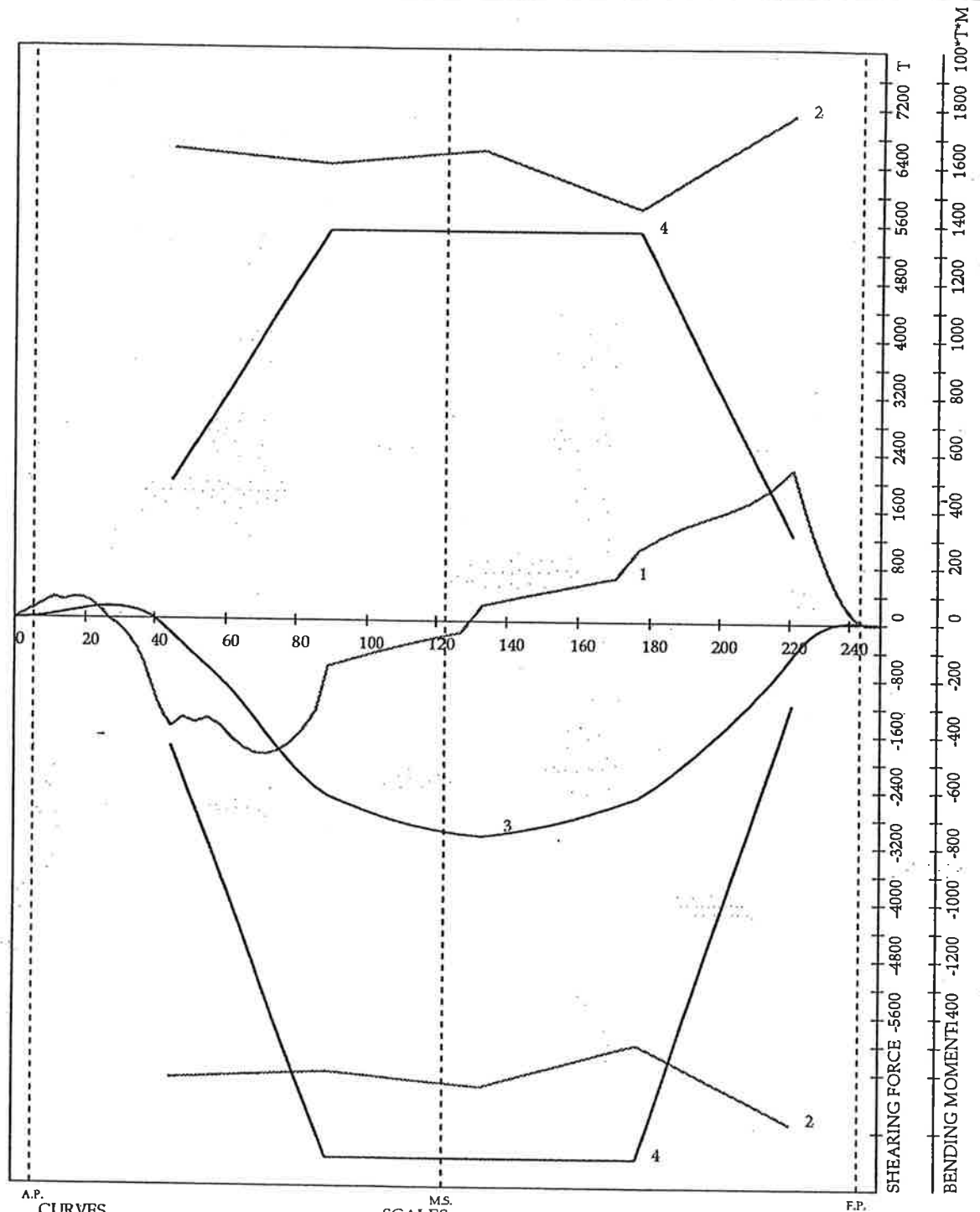
45.000	-1524.163 (	23.4%)	-5142.5 (	11.4%)
89.000	-649.337 (	10.1%)	-62495.1 (	32.9%)
133.000	231.384 (	3.5%)	-76555.7 (	40.3%)
177.000	1029.628 (	17.8%)	-62599.0 (	32.9%)
221.000	2177.864 (	30.7%)	-11504.0 (	39.7%)
229.000	983.418 (	18.8%)	-2217.7 (	0.0%)
251.500	0.000 (	-)	0.0 (	-)

CORRECTED PEAK SHEAR FORCE ON THE BULKHEADS.

45.000	-1524.163	-5142.5
89.000	-649.381	-62495.1
133.000	231.423	-76555.7
177.000	1029.685	-62599.0
221.000	2177.807	-11504.0
229.000	983.477	-2217.7
251.500	0.000	0.0

MAXIMUM SHEAR FORCE = 2177.864 AT FR NO. = 221.000 (30.7%)

MAXIMUM BENDING MOMENT = -76555.7 AT FR NO. = 129.276 (40.3%)
MAX. CORR. SHEAR FORCE = 2177.807 AT FR NO. = 221.000



A.P.

M.S.

F.P.

CURVES

- 1 - SHEARING FORCE DIAGRAM
- 2 - ALLOWABLE SHEAR FORCE
- 3 - BENDING MOMENT DIAGRAM
- 4 - ALLOWABLE BENDING MOMENT

SCALES

1 UNIT	400.0	T
1 UNIT	10000.0	T*M

MAX. POSITIVE SHEARING F.	2177.9	T	AT	78.800	M. FROM M. S.
MAX. NEGATIVE SHEARING F.	-1914.0	T	AT	-40.338	M. FROM M. S.
MAX. POSITIVE BENDING M.	4241.1	T*M	AT	-76.481	M. FROM M. S.
MAX. NEGATIVE BENDING M.	-76555.8	T*M	AT	5.422	M. FROM M. S.

COND. NO 32 HOMO. SUMMER LOAD ARR. (HOT BRIQUETTED IRON, SG 2.857)

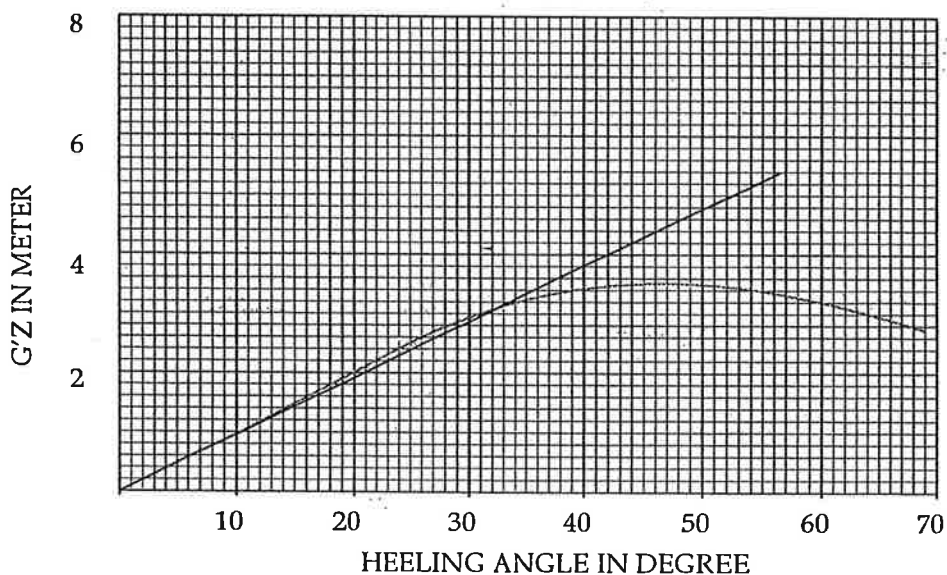
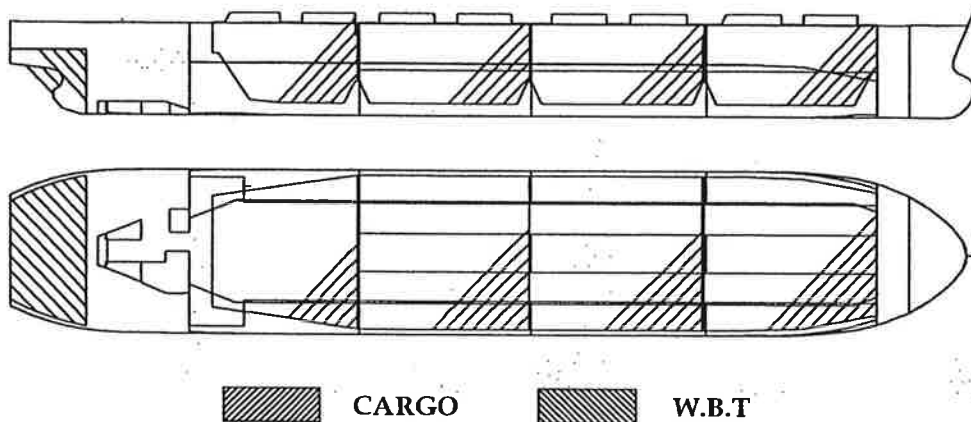
DEADWEIGHT ITEMS	WEIGHT	L.C.G FROM	MOMENT ABOUT	V.C.G FROM	MOMENT ABOUT	FREE SURFACE
	MT.	L/2 M.	L/2 MT-M.	BL M.	BL MT-M.	MOMENT MT-M.
CONSUMABLES DEP. (NO.46)	398.6	-64.78	-25822.	11.60	4622.	1825.
NO.1 CARGO HOLD (C) 35%	11990.0	60.20	721855.	7.32	87724.	0.
NO.2 CARGO HOLD (C) 34%	12100.0	25.60	309760.	7.23	87429.	0.
NO.3 CARGO HOLD (C) 34%	12100.0	-9.60	-116160.	7.23	87429.	0.
NO.4 CARGO HOLD (C) 35%	9000.2	-39.34	-354086.	7.68	69082.	0.
A.P.T. (C)	1384.9	-88.99	-123242.	10.15	14056.	21041.
DEADWEIGHT	46973.7	8.78	412306.	7.46	350342.	22866.
LIGHT SHIP WEIGHT	12398.0	-12.47	-154615.	10.51	130266.	
DISPLACEMENT	59371.7	4.34	257690.	8.09	480608.	22866.
DRAFT EQUIV.	11.38 M		TRANSV. METACENTRE	KMT	13.88 M	
TOTAL TRIM	0.00 M		VERT CENTRE OF GRAV	KG	8.09 M	
DRAFT FORWARD	11.38 M		METAC. HEIGHT	GM	5.79 M	
DRAFT AFT	11.38 M		FREE SURFACE CORR.	GG'	0.39 M	
DRAFT MEAN	11.38 M		CORR. METAC. HEIGHT	G'M	5.40 M	
L. C. B.	4.34 M					
L. C. F.	-3.83 M		PROPELLER IMMERSION		105.1 %	
M. T. C.	855.9 MT-M					
T. P. C.	59.08 MT/CM					

COND. NO 32 HOMO. SUMMER LOAD ARR. (HOT BRIQUETTED IRON, SG 2.857)

INCLINATION V	5.00	10.00	20.00	30.00	40.00	50.00	60.00	70.00
SIN V	0.087	0.174	0.342	0.500	0.643	0.766	0.866	0.940
KN	1.212	2.425	4.878	7.146	8.865	10.008	10.585	10.705
KG * SIN V	0.706	1.406	2.769	4.047	5.203	6.201	7.010	7.607
CORR	0.034	0.067	0.132	0.193	0.248	0.295	0.334	0.362
G'Z =								
KN-KG*SINV - CORR	0.473	0.953	1.978	2.906	3.414	3.512	3.241	2.736
GZ AREA (M-RAD)	0.021	0.083	0.338	0.768	1.326	1.936	2.530	3.054
MAX GZ	3.524 M	AT	47.60	DEGREE				
GZ	2.736 M	AT	70.00	DEGREE				
ANGLE	2.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00
GZ	0.190	0.378	0.567	0.758	0.953	1.152	1.356	1.563
GZ AREA	0.003	0.013	0.030	0.053	0.083	0.119	0.163	0.214
ANGLE	18.00	20.00	22.00	24.00	26.00	28.00	30.00	32.00
GZ	1.771	1.978	2.182	2.382	2.571	2.747	2.906	3.045
GZ AREA	0.272	0.338	0.410	0.490	0.577	0.669	0.768	0.872
ANGLE	34.00	36.00	38.00	40.00	42.00	44.00	46.00	48.00
GZ	3.164	3.265	3.347	3.414	3.465	3.500	3.519	3.523
GZ AREA	0.981	1.093	1.208	1.326	1.446	1.568	1.691	1.814
ANGLE	50.00	52.00	54.00	56.00	58.00	60.00	62.00	64.00
GZ	3.511	3.484	3.442	3.386	3.319	3.241	3.153	3.058
GZ AREA	1.936	2.058	2.179	2.299	2.416	2.530	2.642	2.750
ANGLE	66.00	68.00	70.00					
GZ	2.955	2.848	2.736					
GZ AREA	2.855	2.957	3.054					



COND. NO. 32 HOMO. SUMMER LOAD ARR.(HOT BRIQUETTED IRON,SG 2.857)



STABILITY CRITERIA ACCORDING TO IMO RES. A.749(18)	ACTUAL	REQUIREMENT
AREA UNDER CURVE UP TO 30(DEG)	0.768 M-RAD	0.055 M-RAD
AREA UNDER CURVE UP TO 40(DEG) or θ_f WHICHEVER IS LESS	1.111 M-RAD	0.09 M-RAD
AREA BETWEEN 30 AND 40(DEG) or θ_f WHICHEVER IS LESS	0.343 M-RAD	0.03 M-RAD
G'Z AT GREATER THAN 30(DEG)	3.524 M	0.20 M
THE ANGLE AT WHICH THE MAX. G'Z OCCURS	47.60 DEG	30 DEG
THE INITIAL METACENTRIC HEIGHT G'M	5.401 M	0.15 M
NOTE : FLOODING ANGLE $\theta_f < 40.0$ (DEG) SO 36.14 (DEG) IS ADOPTED		

CONDITION NO 32 HOMO. SUMMER LOAD ARR. (HOT BRIQUETTED IRON, SG 2.857)
LONGITUDINAL STRENGTH CALCULATION.

FRAME	SHEAR FORCE	BENDING MOMENT
LONGITUDINAL STRENGTH VALUES WHEN SHEAR FORCE = 0.		
40.704	0.000	24519.2
135.355	0.000	-70302.5
245.647	0.000	286.6

LONGITUDINAL STRENGTH VALUES ON THE BULKHEADS.

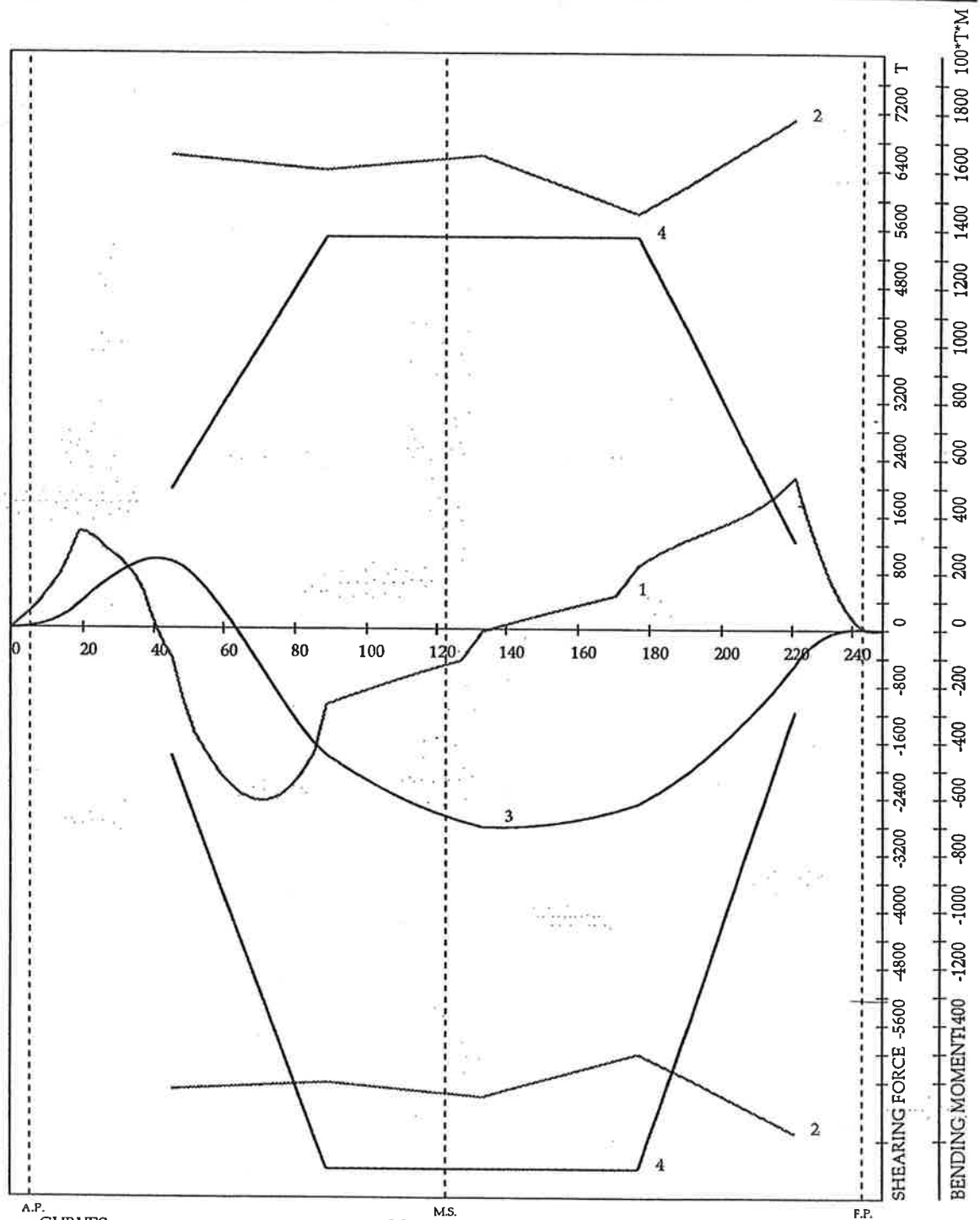
45.000	-396.754 (6.1%)	23715.1 (48.4%)
89.000	-1073.284 (16.8%)	-44790.6 (23.6%)
133.000	-33.435 (0.5%)	-70174.5 (36.9%)
177.000	899.987 (15.5%)	-62073.7 (32.7%)
221.000	2155.500 (30.4%)	-12234.8 (42.2%)
229.000	973.964 (18.6%)	-2780.2 (0.0%)
251.500	0.000 (-)	0.0 (-)

CORRECTED PEAK SHEAR FORCE ON THE BULKHEADS.

45.000	-396.754	23715.1
89.000	-1073.250	-44790.6
133.000	-33.487	-70174.5
177.000	900.050	-62073.7
221.000	2155.441	-12234.8
229.000	974.023	-2780.2
251.500	0.000	0.0

MAXIMUM SHEAR FORCE = -2436.567 AT FR NO. = 72.077 (37.8%)

MAXIMUM BENDING MOMENT = -70302.5 AT FR NO. = 135.355 (37.0%)
MAX. CORR. SHEAR FORCE = 2155.441 AT FR NO. = 221.000



A.P.

M.S.

F.P.

CURVES

- 1 - SHEARING FORCE DIAGRAM
- 2 - ALLOWABLE SHEAR FORCE
- 3 - BENDING MOMENT DIAGRAM
- 4 - ALLOWABLE BENDING MOMENT

SCALES

1 UNIT	400.0	T
1 UNIT	10000.0	T*M

MAX. POSITIVE SHEARING F.	2155.5	T	AT	78.800	M. FROM M. S.
MAX. NEGATIVE SHEARING F.	-2436.6	T	AT	-40.338	M. FROM M. S.
MAX. POSITIVE BENDING M.	24519.2	T*M	AT	-65.438	M. FROM M. S.
MAX. NEGATIVE BENDING M.	-70302.6	T*M	AT	10.285	M. FROM M. S.

COND. NO 33 HOMO. COAL LOAD DEP. (SG 0.84)

DEADWEIGHT ITEMS	WEIGHT	L.C.G FROM	MOMENT ABOUT	V.C.G FROM	MOMENT ABOUT	FREE SURFACE
	MT.	L/2 M.	L/2 MT-M.	BL M.	BL MT-M.	MOMENT MT-M.
CONSUMABLES DEP. (NO.45)	2490.9	-62.15	-154812.	11.72	29196.	1825.
NO.1 CARGO HOLD (C) 100%	10000.8	60.34	603444.	11.67	116697.	0.
NO.2 CARGO HOLD (C) 100%	10401.6	25.62	266517.	11.69	121549.	0.
NO.3 CARGO HOLD (C) 100%	10401.6	-9.58	-99618.	11.69	121549.	0.
NO.4 CARGO HOLD (C) 100%	7591.3	-40.50	-307461.	12.13	92107.	0.
A.P.T.	80.0	-85.21	-6817.	3.00	240.	16.
DEADWEIGHT	40966.2	7.35	301252.	11.75	481337.	1841.
LIGHT SHIP WEIGHT	12398.0	-12.47	-154615.	10.51	130266.	
DISPLACEMENT	53364.2	2.75	146637.	11.46	611603.	1841.
DRAFT EQUIV.	10.36 M		TRANSV. METACENTRE	KMT	14.00 M	
TRIM BY STERN	-1.60 M		VERT CENTRE OF GRAV	KG	11.46 M	
DRAFT FORWARD	9.54 M		METAC. HEIGHT	GM	2.54 M	
DRAFT AFT	11.13 M		FREE SURFACE CORR.	GG'	0.03 M	
DRAFT MEAN	10.34 M		CORR. METAC. HEIGHT	G'M	2.51 M	
L. C. B.	5.22 M					
L. C. F.	-2.93 M		PROPELLER IMMERSION		101.6 %	
M. T. C.	825.9 MT-M					
T. P. C.	58.27 MT/CM					

COND. NO 33 HOMO. COAL LOAD DEP. (SG 0.84)

INCLINATION V 5.00 10.00 20.00 30.00 40.00 50.00 60.00 70.00

SIN V 0.087 0.174 0.342 0.500 0.643 0.766 0.866 0.940

KN 1.223 2.449 4.941 7.451 9.256 10.354 10.871 10.909

KG * SIN V 0.999 1.990 3.920 5.730 7.367 8.780 9.925 10.770

CORR 0.003 0.006 0.012 0.017 0.022 0.026 0.030 0.032

G'Z =

KN-KG*SINV - CORR 0.221 0.453 1.009 1.704 1.867 1.548 0.916 0.106

GZ AREA (M-RAD) 0.010 0.039 0.163 0.403 0.723 1.027 1.245 1.336

MAX GZ 1.881 M AT 37.80 DEGREE

GZ 0.106 M AT 70.00 DEGREE

ANGLE 2.00 4.00 6.00 8.00 10.00 12.00 14.00 16.00

GZ 0.087 0.176 0.266 0.359 0.453 0.549 0.651 0.759

GZ AREA 0.002 0.006 0.014 0.025 0.039 0.056 0.077 0.102

ANGLE 18.00 20.00 22.00 24.00 26.00 28.00 30.00 32.00

GZ 0.878 1.010 1.155 1.306 1.454 1.590 1.703 1.788

GZ AREA 0.130 0.163 0.201 0.244 0.292 0.345 0.403 0.464

ANGLE 34.00 36.00 38.00 40.00 42.00 44.00 46.00 48.00

GZ 1.844 1.874 1.880 1.866 1.834 1.785 1.720 1.641

GZ AREA 0.527 0.592 0.658 0.723 0.788 0.851 0.912 0.971

ANGLE 50.00 52.00 54.00 56.00 58.00 60.00 62.00 64.00

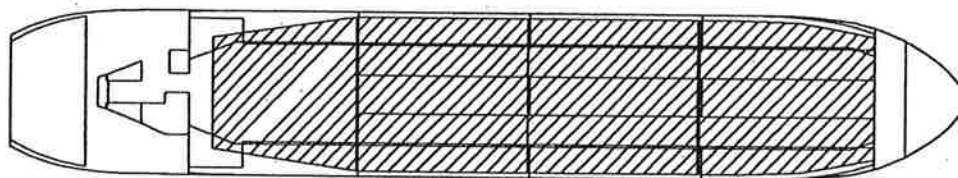
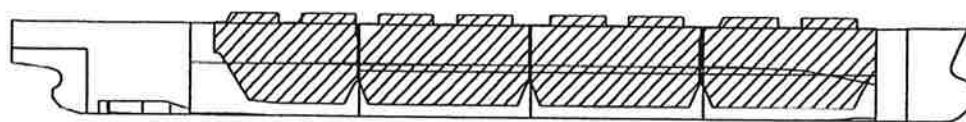
GZ 1.547 1.442 1.325 1.197 1.060 0.916 0.764 0.606

GZ AREA 1.027 1.079 1.127 1.171 1.211 1.245 1.275 1.299

ANGLE 66.00 68.00 70.00

GZ 0.443 0.276 0.106

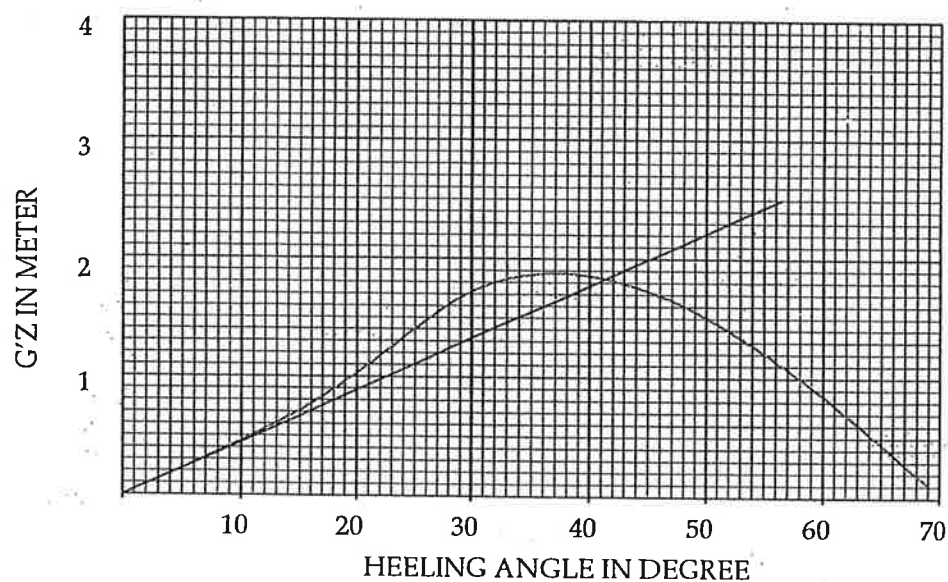
GZ AREA 1.317 1.329 1.336



CARGO



W.B.T



STABILITY CRITERIA ACCORDING TO IMO RES. A.749(18)	ACTUAL	REQUIREMENT
AREA UNDER CURVE UP TO 30(DEG)	0.403 M-RAD	0.055 M-RAD
AREA UNDER CURVE UP TO 40(DEG) or θ_f WHICHEVER IS LESS	0.718 M-RAD	0.09 M-RAD
AREA BETWEEN 30 AND 40(DEG) or θ_f WHICHEVER IS LESS	0.315 M-RAD	0.03 M-RAD
G'Z AT GREATER THAN 30(DEG)	1.881 M	0.20 M
THE ANGLE AT WHICH THE MAX. G'Z OCCURS	37.80 DEG	30 DEG
THE INITIAL METACENTRIC HEIGHT G'M	2.507 M	0.15 M
NOTE : FLOODING ANGLE $\theta_f < 40.0(\text{DEG})$ SO 39.84 (DEG) IS ADOPTED		

CONDITION NO 33 HOMO. COAL LOAD DEP. (SG 0.84)
LONGITUDINAL STRENGTH CALCULATION.

FRAME	SHEAR FORCE	BENDING MOMENT
-------	----------------	-------------------

LONGITUDINAL STRENGTH VALUES WHEN SHEAR FORCE = 0.

34.884	0.000	7808.8
145.054	0.000	-44969.3
245.621	0.000	378.3

LONGITUDINAL STRENGTH VALUES ON THE BULKHEADS.

45.000	-948.622 (14.6%)	3575.1 (7.3%)
89.000	-552.458 (8.6%)	-26090.4 (13.7%)
133.000	-78.435 (1.2%)	-44055.1 (23.2%)
177.000	620.782 (10.7%)	-42512.3 (22.4%)
221.000	1686.952 (23.8%)	-8970.9 (30.9%)
229.000	771.485 (14.7%)	-1770.2 (0.0%)
251.500	0.000 (-)	0.0 (-)

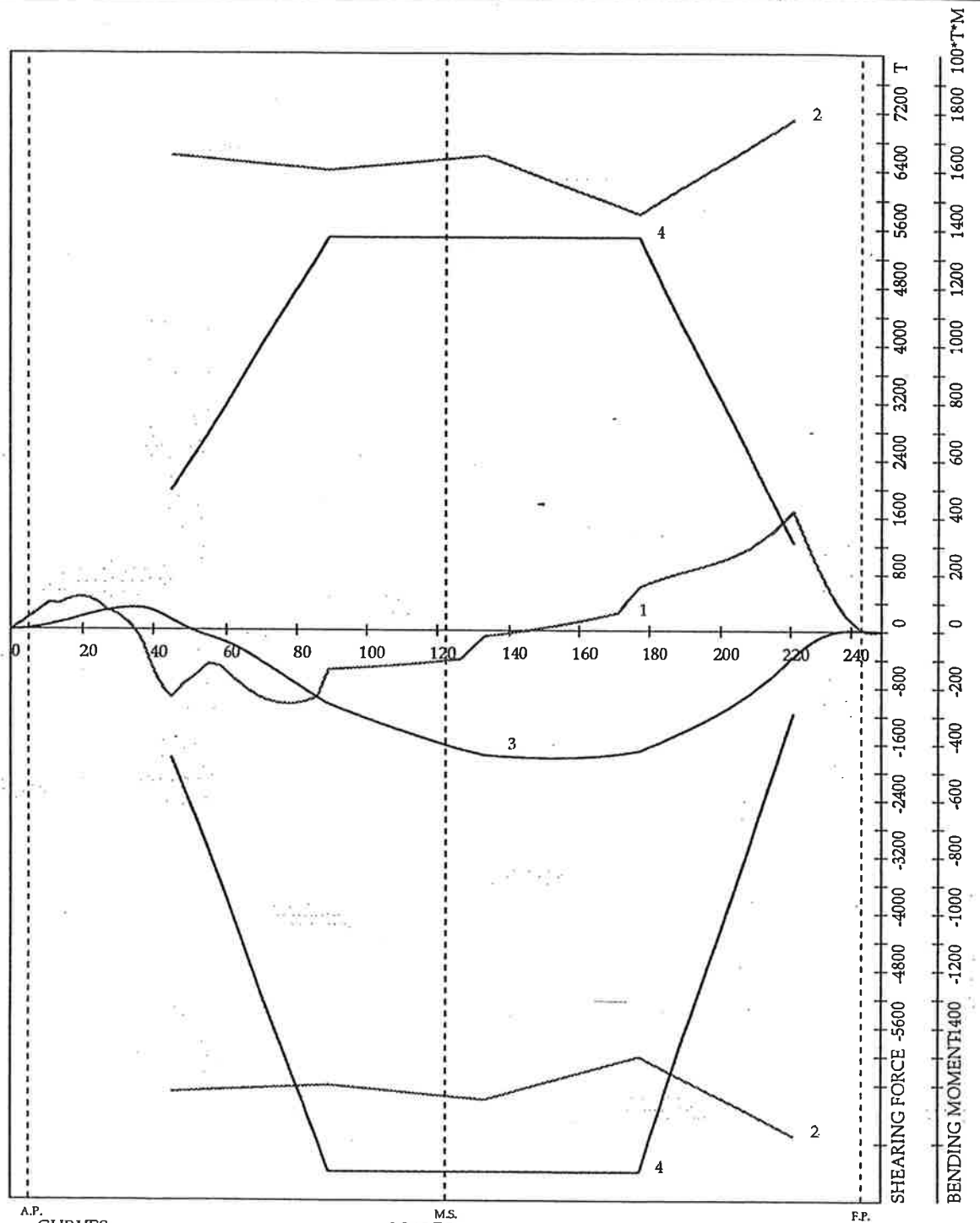
CORRECTED PEAK SHEAR FORCE ON THE BULKHEADS.

45.000	-948.622	3575.1
89.000	-552.477	-26090.4
133.000	-78.459	-44055.1
177.000	620.835	-42512.3
221.000	1686.906	-8970.9
229.000	771.531	-1770.2
251.500	0.000	0.0

MAXIMUM SHEAR FORCE = 1686.952 AT FR NO. = 221.000 (23.8%)

MAXIMUM BENDING MOMENT = -45099.4 AT FR NO. = 151.857 (23.7%)

MAX. CORR. SHEAR FORCE = 1686.906 AT FR NO. = 221.000



A.P.

M.S.

F.P.

CURVES

SCALES

1 - SHEARING FORCE DIAGRAM	1 UNIT	400.0	T
2 - ALLOWABLE SHEAR FORCE			
3 - BENDING MOMENT DIAGRAM	1 UNIT	10000.0	T*M
4 - ALLOWABLE BENDING MOMENT			

MAX. POSITIVE SHEARING F.	1687.0	T	AT	78.800	M. FROM M. S.
MAX. NEGATIVE SHEARING F.	-1041.3	T	AT	-34.923	M. FROM M. S.
MAX. POSITIVE BENDING M.	7808.8	T*M	AT	-70.093	M. FROM M. S.
MAX. NEGATIVE BENDING M.	-45099.5	T*M	AT	23.487	M. FROM M. S.

COND. NO 34 HOMO. COAL LOAD ARR. (SG 0.84)

DEADWEIGHT ITEMS	WEIGHT	L.C.G FROM	MOMENT ABOUT	V.C.G FROM	MOMENT ABOUT	FREE SURFACE
	MT.	L/2 M.	L/2 MT-M.	BL M.	BL MT-M.	MOMENT MT-M.
CONSUMABLES ARR. (NO. 46)	398.6	-64.78	-25822.	11.60	4622.	1825.
NO.1 CARGO HOLD (C) 100%	10000.8	60.34	603444.	11.67	116697.	0.
NO.2 CARGO HOLD (C) 100%	10401.6	25.62	266517.	11.69	121549.	0.
NO.3 CARGO HOLD (C) 100%	10401.6	-9.58	-99618.	11.69	121549.	0.
NO.4 CARGO HOLD (C) 100%	7591.3	-40.50	-307461.	12.13	92107.	0.
A.P.T.	80.0	-85.21	-6817.	3.00	240.	16.
DEADWEIGHT	38873.8	11.07	430243.	11.75	456763.	1841.
LIGHT SHIP WEIGHT	12398.0	-12.47	-154615.	10.51	130266.	
DISPLACEMENT	51271.8	5.38	275627.	11.45	587029.	1841.
DRAFT EQUIV.	10.00 M		TRANSV. METACENTRE		KMT	14.06 M
TRIM BY STERN	-0.11 M		VERT CENTRE OF GRAV		KG	11.45 M
DRAFT FORWARD	9.95 M		METAC. HEIGHT		GM	2.61 M
DRAFT AFT	10.05 M		FREE SURFACE CORR.		GG'	0.04 M
DRAFT MEAN	10.00 M		CORR. METAC. HEIGHT		G'M	2.58 M
L. C. B.	5.54 M					
L. C. F.	-2.43 M		PROPELLER IMMERSION			86.6 %
M. T. C.	811.5 MT-M					
T. P. C.	57.89 MT/CM					

COND. NO 34 HOMO. COAL LOAD ARR. (SG 0.84)

INCLINATION V	5.00	10.00	20.00	30.00	40.00	50.00	60.00	70.00
---------------	------	-------	-------	-------	-------	-------	-------	-------

SIN V	0.087	0.174	0.342	0.500	0.643	0.766	0.866	0.940
-------	-------	-------	-------	-------	-------	-------	-------	-------

KN	1.228	2.462	4.974	7.555	9.396	10.469	10.967	10.978
----	-------	-------	-------	-------	-------	--------	--------	--------

KG * SIN V	0.998	1.988	3.916	5.725	7.359	8.771	9.915	10.759
------------	-------	-------	-------	-------	-------	-------	-------	--------

CORR	0.003	0.006	0.012	0.018	0.023	0.028	0.031	0.034
------	-------	-------	-------	-------	-------	-------	-------	-------

G'Z =

KN-KG*SINV - CORR	0.227	0.467	1.046	1.812	2.014	1.671	1.021	0.186
-------------------	-------	-------	-------	-------	-------	-------	-------	-------

GZ AREA (M-RAD)	0.010	0.040	0.168	0.420	0.764	1.092	1.330	1.437
-----------------	-------	-------	-------	-------	-------	-------	-------	-------

MAX GZ 2.026 M AT 37.80 DEGREE

GZ 0.186 M AT 70.00 DEGREE

ANGLE	2.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00
-------	------	------	------	------	-------	-------	-------	-------

GZ	0.089	0.181	0.275	0.370	0.467	0.566	0.670	0.782
----	-------	-------	-------	-------	-------	-------	-------	-------

GZ AREA	0.002	0.006	0.014	0.025	0.040	0.058	0.080	0.105
---------	-------	-------	-------	-------	-------	-------	-------	-------

ANGLE	18.00	20.00	22.00	24.00	26.00	28.00	30.00	32.00
-------	-------	-------	-------	-------	-------	-------	-------	-------

GZ	0.906	1.046	1.203	1.368	1.532	1.683	1.812	1.909
----	-------	-------	-------	-------	-------	-------	-------	-------

GZ AREA	0.134	0.168	0.208	0.253	0.303	0.359	0.420	0.485
---------	-------	-------	-------	-------	-------	-------	-------	-------

ANGLE	34.00	36.00	38.00	40.00	42.00	44.00	46.00	48.00
-------	-------	-------	-------	-------	-------	-------	-------	-------

GZ	1.976	2.014	2.025	2.013	1.980	1.927	1.856	1.770
----	-------	-------	-------	-------	-------	-------	-------	-------

GZ AREA	0.553	0.623	0.694	0.764	0.834	0.902	0.968	1.032
---------	-------	-------	-------	-------	-------	-------	-------	-------

ANGLE	50.00	52.00	54.00	56.00	58.00	60.00	62.00	64.00
-------	-------	-------	-------	-------	-------	-------	-------	-------

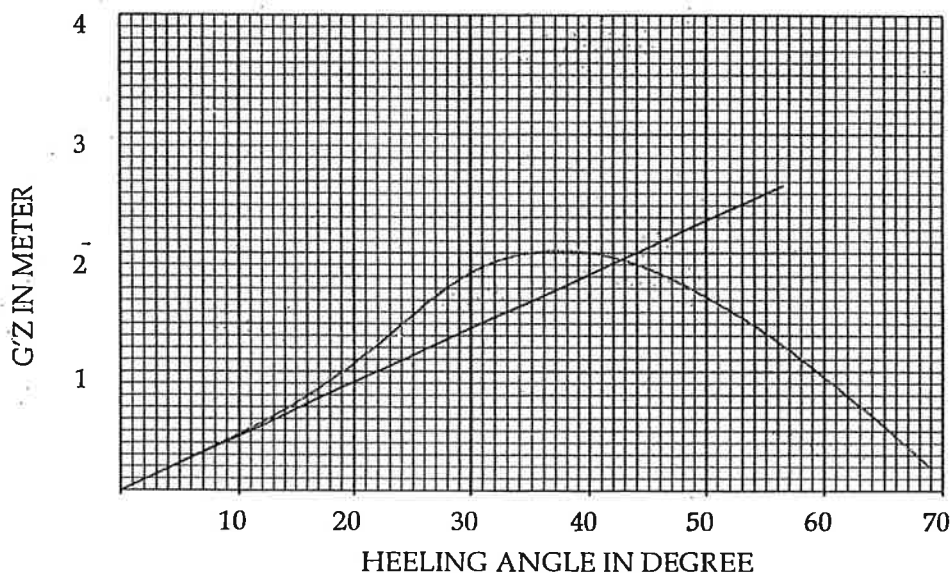
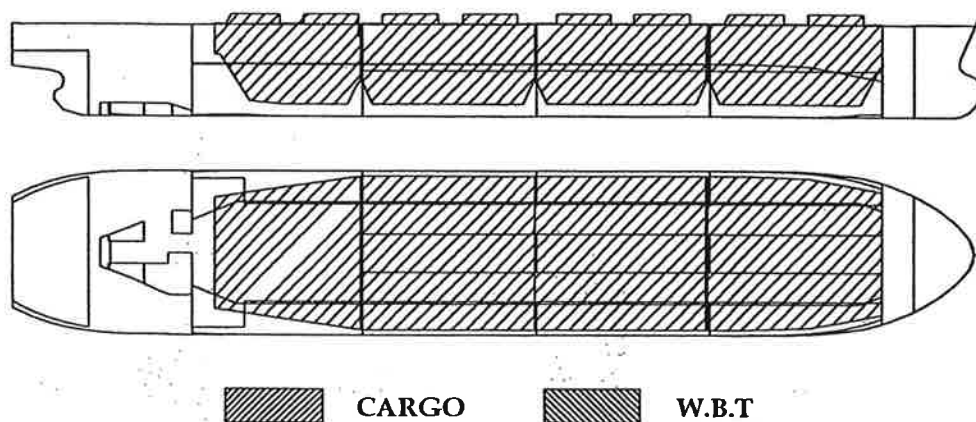
GZ	1.671	1.560	1.439	1.308	1.168	1.020	0.865	0.703
----	-------	-------	-------	-------	-------	-------	-------	-------

GZ AREA	1.092	1.148	1.200	1.248	1.292	1.330	1.363	1.390
---------	-------	-------	-------	-------	-------	-------	-------	-------

ANGLE	66.00	68.00	70.00
-------	-------	-------	-------

GZ	0.536	0.363	0.186
----	-------	-------	-------

GZ AREA	1.412	1.428	1.437
---------	-------	-------	-------



STABILITY CRITERIA ACCORDING TO IMO RES. A.749(18)	ACTUAL	REQUIREMENT
AREA UNDER CURVE UP TO 30(DEG)	0.420 M-RAD	0.055 M-RAD
AREA UNDER CURVE UP TO 40(DEG) or θ_f WHICHEVER IS LESS	0.764 M-RAD	0.09 M-RAD
AREA BETWEEN 30 AND 40(DEG) or θ_f WHICHEVER IS LESS	0.344 M-RAD	0.03 M-RAD
G'Z AT GREATER THAN 30(DEG)	2.026 M	0.20 M
THE ANGLE AT WHICH THE MAX. G'Z OCCURS	37.80 DEG	30 DEG
THE INITIAL METACENTRIC HEIGHT G'M	2.577 M	0.15 M

NOTE : FLOODING ANGLE $\theta_f \geq 40.0(\text{DEG})$ SO 40.0(DEG) IS ADOPTED

CONDITION NO 34 HOMO. COAL LOAD ARR. (SG 0.84)
LONGITUDINAL STRENGTH CALCULATION.

FRAME	SHEAR FORCE	BENDING MOMENT
LONGITUDINAL STRENGTH VALUES WHEN SHEAR FORCE = 0.		
39.200	0.000	10532.9
132.746	0.000	-61328.7
245.565	0.000	205.1

LONGITUDINAL STRENGTH VALUES ON THE BULKHEADS.

45.000	-395.482 (6.1%)	9388.5 (19.2%)
89.000	-935.075 (14.6%)	-39949.5 (21.0%)
133.000	15.029 (0.2%)	-61328.7 (32.3%)
177.000	866.582 (14.9%)	-51854.1 (27.3%)
221.000	1773.427 (25.0%)	-10367.3 (35.7%)
229.000	811.122 (15.5%)	-2499.8 (0.0%)
251.500	0.000 (-)	0.0 (-)

CORRECTED PEAK SHEAR FORCE ON THE BULKHEADS.

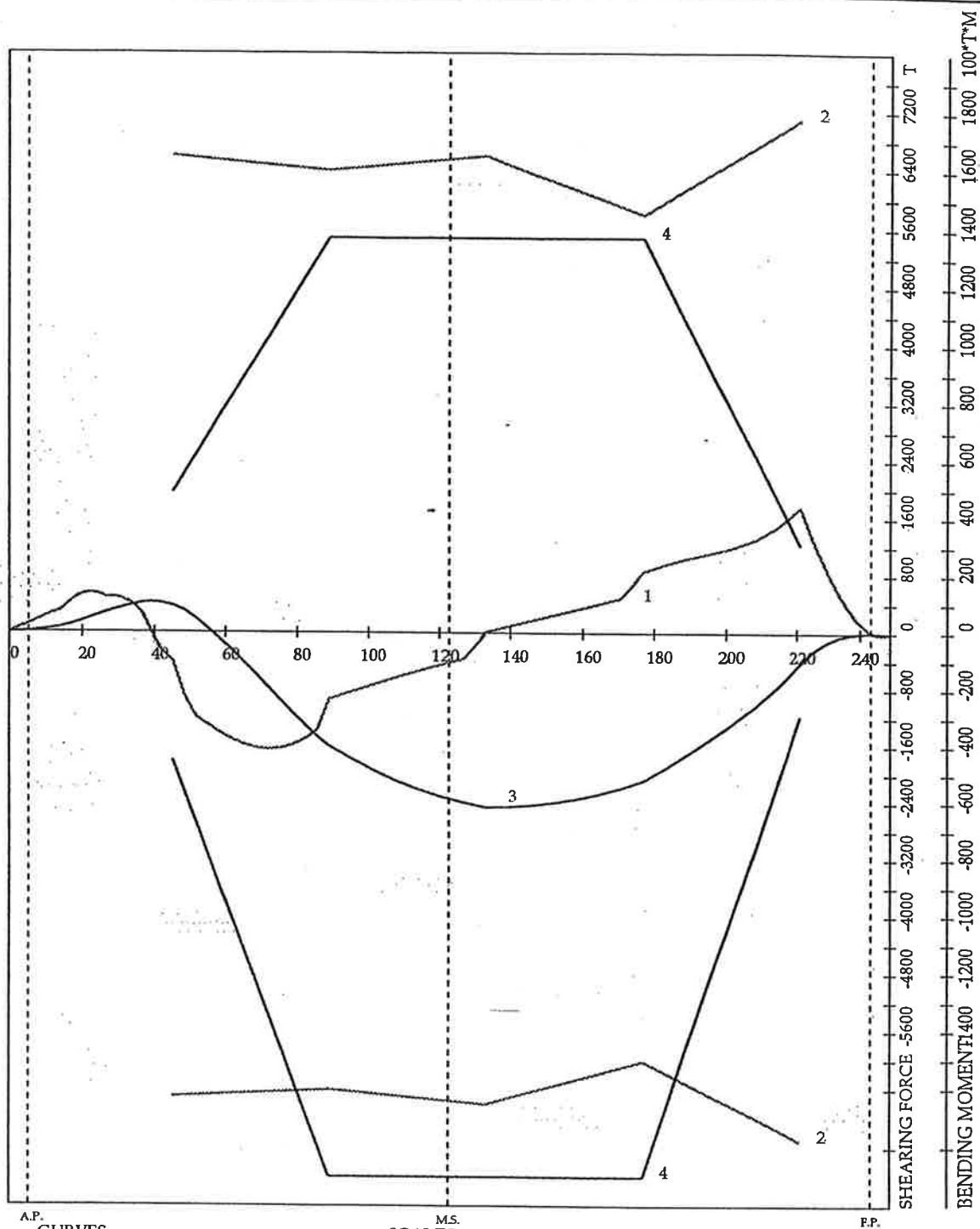
45.000	-395.482	9388.5
89.000	-935.048	-39949.5
133.000	15.071	-61328.7
177.000	866.627	-51854.1
221.000	1773.382	-10367.3
229.000	811.171	-2499.8
251.500	0.000	0.0

MAXIMUM SHEAR FORCE = 1773.427 AT FR NO. = 221.000 (25.0%)

MAXIMUM BENDING MOMENT = -61328.7 AT FR NO. = 132.746 (32.3%)
MAX. CORR. SHEAR FORCE = 1773.382 AT FR NO. = 221.000



COND. NO. 34 HOMO. COAL LOAD ARR.(SG 0.84)



A.P. CURVES

M.S. SCALES

F.P.

- | | | | |
|------------------------------|--------|---------|-----|
| 1 - SHEARING FORCE DIAGRAM | 1 UNIT | 400.0 | T |
| 2 - ALLOWABLE SHEAR FORCE | | | |
| 3 - BENDING MOMENT DIAGRAM | 1 UNIT | 10000.0 | T*M |
| 4 - ALLOWABLE BENDING MOMENT | | | |

MAX. POSITIVE SHEARING F.	1773.4	T	AT	78.800 M. FROM M. S.
MAX. NEGATIVE SHEARING F.	-1641.7	T	AT	-40.338 M. FROM M. S.
MAX. POSITIVE BENDING M.	10532.9	T*M	AT	-66.640 M. FROM M. S.
MAX. NEGATIVE BENDING M.	-61328.8	T*M	AT	8.198 M. FROM M. S.

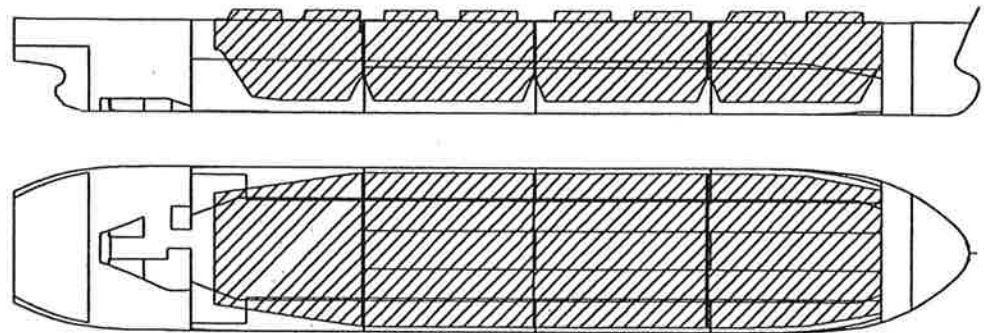
COND. NO 35 HOMO. SUMMER LOAD DEP. (FULLY FILLED, SG 0.989)

DEADWEIGHT ITEMS	WEIGHT	L.C.G FROM	MOMENT ABOUT	V.C.G FROM	MOMENT ABOUT	FREE SURFACE
	MT.	L/2 M.	L/2 MT-M.	BL M.	BL MT-M.	MOMENT MT-M.
CONSUMABLES DEP. (NO.45)	2490.9	-62.15	-154812.	11.72	29196.	1825.
NO.1 CARGO HOLD (C) 100%	11770.7	60.34	710238.	11.67	137350.	0.
NO.2 CARGO HOLD (C) 100%	12242.4	25.62	313683.	11.69	143060.	0.
NO.3 CARGO HOLD (C) 100%	12242.4	-9.58	-117248.	11.69	143060.	0.
NO.4 CARGO HOLD (C) 100%	8934.7	-40.50	-361873.	12.13	108407.	0.
A.P.T. (C)	80.0	-85.21	-6817.	3.00	240.	21041.
DEADWEIGHT	47761.1	8.02	383170.	11.75	561312.	22866.
LIGHT SHIP WEIGHT	12398.0	-12.47	-154615.	10.51	130266.	
DISPLACEMENT	60159.1	3.80	228555.	11.50	691578.	22866.
DRAFT EQUIV.	11.52 M		TRANSV. METACENTRE	KMT	13.87 M	
TRIM BY STERN	-0.30 M		VERT CENTRE OF GRAV	KG	11.50 M	
DRAFT FORWARD	11.36 M		METAC. HEIGHT	GM	2.37 M	
DRAFT AFT	11.66 M		FREE SURFACE CORR.	GG'	0.38 M	
DRAFT MEAN	11.51 M		CORR. METAC. HEIGHT	G'M	1.99 M	
L. C. B.	4.23 M					
L. C. F.	-3.90 M		PROPELLER IMMERSION		109.0 %	
M. T. C.	858.7 MT-M					
T. P. C.	59.16 MT/CM					

COND. NO 35 HOMO. SUMMER LOAD DEP. (FULLY FILLED, SG 0.989)									
INCLINATION V	5.00	10.00	20.00	30.00	40.00	50.00	60.00	70.00	
SIN V	0.087	0.174	0.342	0.500	0.643	0.766	0.866	0.940	
KN	1.211	2.423	4.872	7.106	8.814	9.961	10.546	10.678	
KG * SIN V	1.002	1.996	3.932	5.748	7.389	8.806	9.956	10.803	
CORR	0.033	0.066	0.130	0.190	0.244	0.291	0.329	0.357	
G'Z =									
KN-KG*SINV - CORR	0.176	0.361	0.810	1.168	1.181	0.863	0.262	-0.482	
GZ AREA (M-RAD)	0.008	0.031	0.132	0.309	0.519	0.702	0.803	0.812	
MAX GZ 1.220 M AT 35.00 DEGREE									
RANGE OF STABILITY 64.31 DEGREE									
ANGLE	2.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00	
GZ	0.071	0.141	0.211	0.283	0.361	0.445	0.533	0.625	
GZ AREA	0.001	0.005	0.011	0.020	0.031	0.045	0.062	0.082	
ANGLE	18.00	20.00	22.00	24.00	26.00	28.00	30.00	32.00	
GZ	0.718	0.810	0.899	0.982	1.056	1.119	1.168	1.201	
GZ AREA	0.106	0.132	0.162	0.195	0.231	0.269	0.309	0.350	
ANGLE	34.00	36.00	38.00	40.00	42.00	44.00	46.00	48.00	
GZ	1.217	1.219	1.206	1.180	1.142	1.091	1.028	0.952	
GZ AREA	0.392	0.435	0.477	0.519	0.559	0.598	0.635	0.670	
ANGLE	50.00	52.00	54.00	56.00	58.00	60.00	62.00	64.00	
GZ	0.863	0.763	0.651	0.529	0.399	0.261	0.119	-0.029	
GZ AREA	0.702	0.730	0.755	0.776	0.792	0.803	0.810	0.812	
ANGLE	66.00	68.00	70.00						
GZ	-0.179	-0.330	-0.482						
GZ AREA	0.812	0.812	0.812						



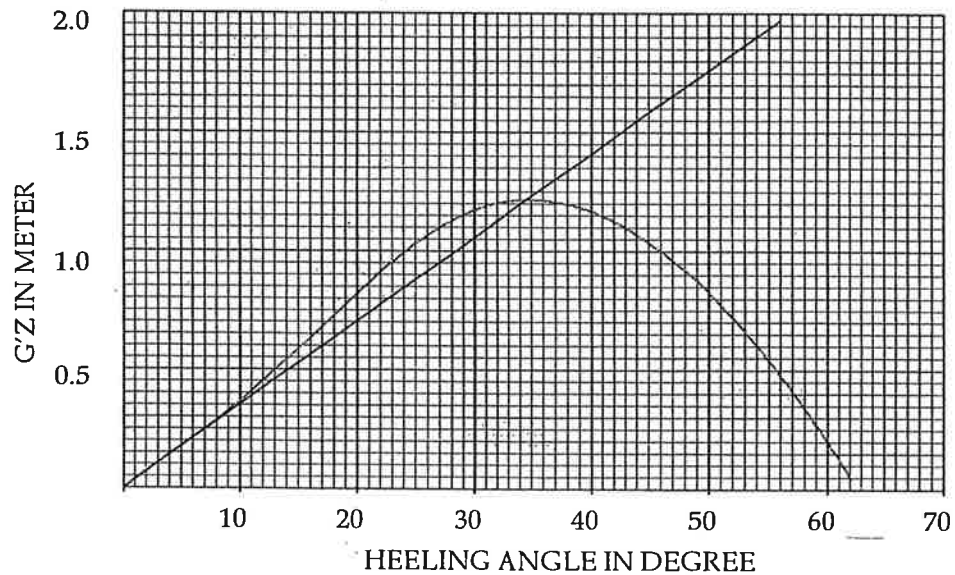
COND. NO. 35 HOMO. SUMMER LOAD DEP.(FULLY FILLED,SG 0.989)



CARGO



W.B.T



STABILITY CRITERIA ACCORDING TO IMO RES. A.749(18)	ACTUAL	REQUIREMENT
AREA UNDER CURVE UP TO 30(DEG)	0.309 M-RAD	0.055 M-RAD
AREA UNDER CURVE UP TO 40(DEG) or θ_f WHICHEVER IS LESS	0.428 M-RAD	0.09 M-RAD
AREA BETWEEN 30 AND 40(DEG) or θ_f WHICHEVER IS LESS	0.119 M-RAD	0.03 M-RAD
G'Z AT GREATER THAN 30(DEG)	1.220 M	0.20 M
THE ANGLE AT WHICH THE MAX. G'Z OCCURS	35.00 DEG	30 DEG
THE INITIAL METACENTRIC HEIGHT G'M	1.995 M	0.15 M
NOTE : FLOODING ANGLE $\theta_f < 40.0(\text{DEG})$ SO 35.68 (DEG) IS ADOPTED		

CONDITION NO 35 HOMO. SUMMER LOAD DEP. (FULLY FILLED, SG 0.989)
LONGITUDINAL STRENGTH CALCULATION.

FRAME	SHEAR FORCE	BENDING MOMENT
LONGITUDINAL STRENGTH VALUES WHEN SHEAR FORCE = 0.		
26.099	0.000	3789.7
130.345	0.000	-76886.3
245.674	0.000	469.5

LONGITUDINAL STRENGTH VALUES ON THE BULKHEADS.

45.000	-1602.069 (24.6%)	-6528.4 (14.5%)
89.000	-839.098 (13.1%)	-58078.9 (30.6%)
133.000	177.346 (2.7%)	-76886.3 (40.5%)
177.000	1140.001 (19.7%)	-62179.9 (32.7%)
221.000	2153.662 (30.3%)	-11314.5 (39.0%)
229.000	972.669 (18.6%)	-2151.5 (0.0%)
251.500	0.000 (-)	0.0 (-)

CORRECTED PEAK SHEAR FORCE ON THE BULKHEADS.

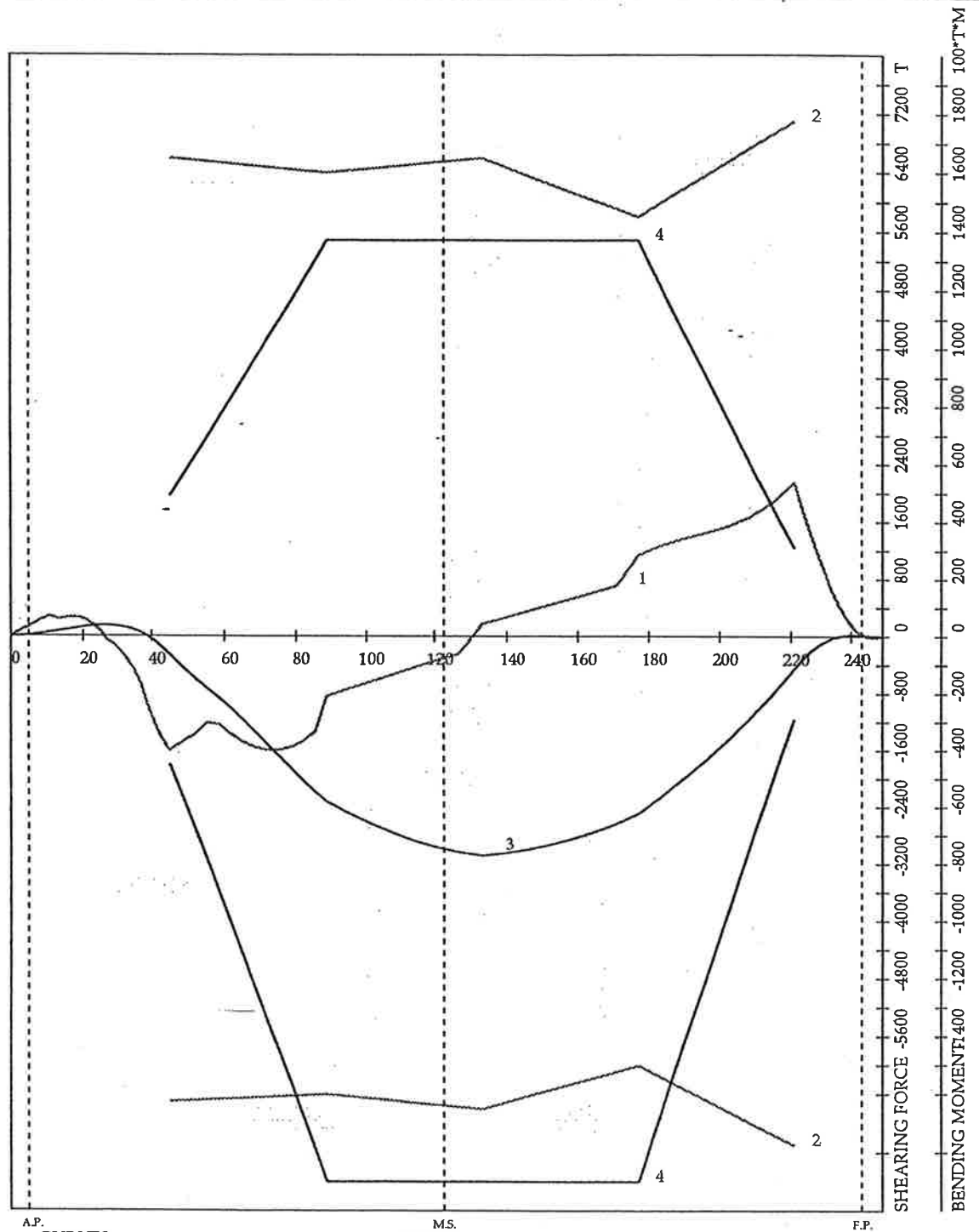
45.000	-1602.069	-6528.4
89.000	-839.136	-58078.9
133.000	177.394	-76886.3
177.000	1140.052	-62179.9
221.000	2153.612	-11314.5
229.000	972.728	-2151.5
251.500	0.000	0.0

MAXIMUM SHEAR FORCE = 2153.662 AT FR NO. = 221.000 (30.3%)

MAXIMUM BENDING MOMENT = -76886.3 AT FR NO. = 130.345 (40.5%)
MAX. CORR. SHEAR FORCE = 2153.612 AT FR NO. = 221.000



COND. NO. 35 HOMO. SUMMER LOAD DEP.(FULLY FILLED,SG 0.989)



CURVES	M.S.			F.P.
	1 UNIT	400.0	T	
1 - SHEARING FORCE DIAGRAM	1 UNIT	10000.0	T*M	
2 - ALLOWABLE SHEAR FORCE				
3 - BENDING MOMENT DIAGRAM				
4 - ALLOWABLE BENDING MOMENT				
MAX. POSITIVE SHEARING F.	2153.7	T	AT	78.800 M. FROM M. S.
MAX. NEGATIVE SHEARING F.	-1602.1	T	AT	-62.000 M. FROM M. S.
MAX. POSITIVE BENDING M.	3789.7	T*M	AT	-77.122 M. FROM M. S.
MAX. NEGATIVE BENDING M.	-76886.4	T*M	AT	6.277 M. FROM M. S.

COND. NO 36 HOMO. SUMMER LOAD ARR. (FULLY FILLED, SG 0.989)

DEADWEIGHT ITEMS	WEIGHT	L.C.G FROM	MOMENT ABOUT	V.C.G FROM	MOMENT ABOUT	FREE SURFACE
	MT.	L/2 M.	L/2 MT-M.	BL M.	BL MT-M.	MOMENT MT-M.
CONSUMABLES ARR. (NO. 46)	398.6	-64.78	-25822.	11.60	4622.	1825.
NO. 1 CARGO HOLD (C) 100%	11770.7	60.34	710238.	11.67	137350.	0.
NO. 2 CARGO HOLD (C) 100%	12242.4	25.62	313683.	11.69	143060.	0.
NO. 3 CARGO HOLD (C) 100%	12242.4	-9.58	-117248.	11.69	143060.	0.
NO. 4 CARGO HOLD (C) 100%	8934.7	-40.50	-361873.	12.13	108407.	0.
A.P.T. (C)	1384.9	-88.99	-123242.	10.15	14056.	21041.
DEADWEIGHT	46973.7	8.42	395736.	11.72	550554.	22866.
LIGHT SHIP WEIGHT	12398.0	-12.47	-154615.	10.51	130266.	
DISPLACEMENT	59371.7	4.06	241120.	11.47	680820.	22866.
DRAFT EQUIV.	11.38 M		TRANSV. METACENTRE		KMT	13.88 M
TRIM BY STERN	-0.19 M		VERT CENTRE OF GRAV		KG	11.47 M
DRAFT FORWARD	11.28 M		METAC. HEIGHT		GM	2.41 M
DRAFT AFT	11.48 M		FREE SURFACE CORR.		GG'	0.39 M
DRAFT MEAN	11.38 M		CORR. METAC. HEIGHT		G'M	2.03 M
L. C. B.	4.34 M					
L. C. F.	-3.83 M		PROPELLER IMMERSION			106.4 %
M. T. C.	855.9 MT-M					
T. P. C.	59.08 MT/CM					

COND. NO 36 HOMO. SUMMER LOAD ARR. (FULLY FILLED, SG 0.989)

INCLINATION V	5.00	10.00	20.00	30.00	40.00	50.00	60.00	70.00
SIN V	0.087	0.174	0.342	0.500	0.643	0.766	0.866	0.940
KN	1.212	2.425	4.878	7.146	8.865	10.008	10.585	10.705
KG * SIN V	0.999	1.991	3.922	5.734	7.371	8.784	9.931	10.776
CORR	0.034	0.067	0.132	0.193	0.248	0.295	0.334	0.362

G'Z =

KN-KG*SINV - CORR	0.179	0.367	0.824	1.220	1.246	0.928	0.320	-0.433
-------------------	-------	-------	-------	-------	-------	-------	-------	--------

GZ AREA (M-RAD)	0.008	0.032	0.134	0.316	0.537	0.732	0.844	0.856
-----------------	-------	-------	-------	-------	-------	-------	-------	-------

MAX GZ 1.283 M AT 35.70 DEGREE
RANGE OF STABILITY 64.36 DEGREE

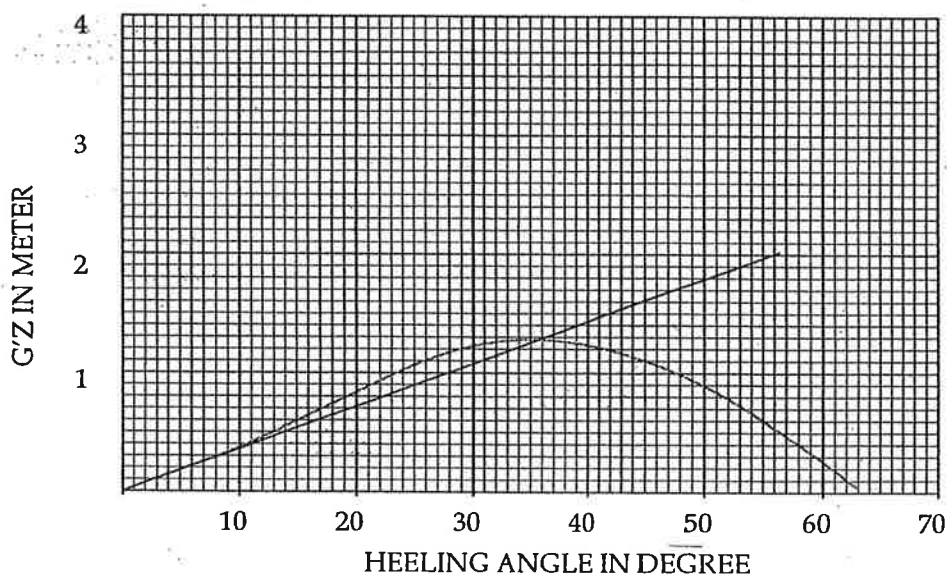
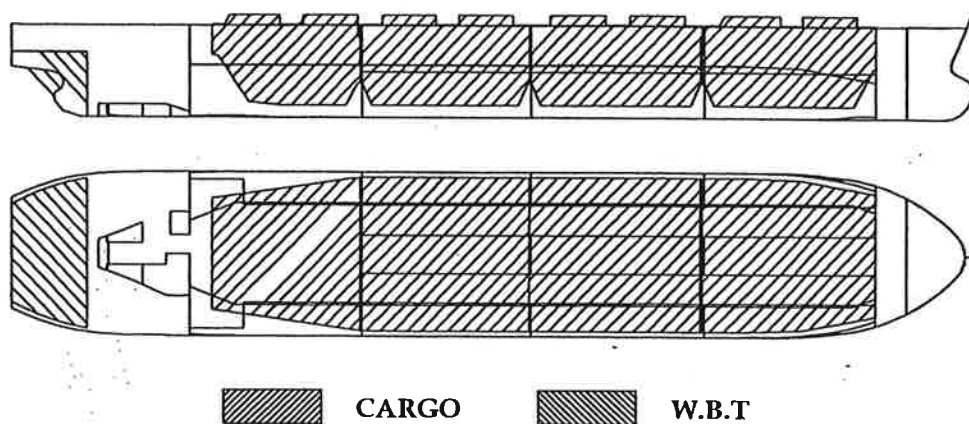
ANGLE	2.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00
GZ	0.072	0.143	0.215	0.289	0.367	0.451	0.541	0.633
GZ AREA	0.001	0.005	0.011	0.020	0.032	0.046	0.063	0.084

ANGLE	18.00	20.00	22.00	24.00	26.00	28.00	30.00	32.00
GZ	0.728	0.824	0.919	1.010	1.093	1.164	1.220	1.258
GZ AREA	0.107	0.134	0.165	0.199	0.235	0.275	0.316	0.360

ANGLE	34.00	36.00	38.00	40.00	42.00	44.00	46.00	48.00
GZ	1.279	1.283	1.271	1.246	1.208	1.157	1.094	1.017
GZ AREA	0.404	0.449	0.493	0.537	0.580	0.622	0.661	0.698

ANGLE	50.00	52.00	54.00	56.00	58.00	60.00	62.00	64.00
GZ	0.928	0.827	0.714	0.591	0.459	0.320	0.176	0.027
GZ AREA	0.732	0.762	0.789	0.812	0.830	0.844	0.853	0.856

ANGLE	66.00	68.00	70.00
GZ	-0.125	-0.279	-0.433
GZ AREA	0.856	0.856	0.856



STABILITY CRITERIA ACCORDING TO IMO RES. A.749(18)	ACTUAL	REQUIREMENT
AREA UNDER CURVE UP TO 30(DEG)	0.316 M-RAD	0.055 M-RAD
AREA UNDER CURVE UP TO 40(DEG) or θf WHICHEVER IS LESS	0.452 M-RAD	0.09 M-RAD
AREA BETWEEN 30 AND 40(DEG) or θf WHICHEVER IS LESS	0.136 M-RAD	0.03 M-RAD
G'Z AT GREATER THAN 30(DEG)	1.283 M	0.20 M
THE ANGLE AT WHICH THE MAX. G'Z OCCURS	35.70 DEG	30 DEG
THE INITIAL METACENTRIC HEIGHT G'M	2.029 M	0.15 M

NOTE : FLOODING ANGLE $\theta f < 40.0(\text{DEG})$ SO 36.14 (DEG) IS ADOPTED

CONDITION NO 36 HOMO. SUMMER LOAD ARR. (FULLY FILLED, SG 0.989)
LONGITUDINAL STRENGTH CALCULATION.

FRAME	SHEAR FORCE	BENDING MOMENT
40.180	0.000	23407.6
138.198	0.000	-70885.7
245.657	0.000	293.1

LONGITUDINAL STRENGTH VALUES WHEN SHEAR FORCE = 0.

LONGITUDINAL STRENGTH VALUES ON THE BULKHEADS.

45.000	-474.914 (7.3%)	22326.5 (45.6%)
89.000	-1263.456 (19.7%)	-40383.7 (21.3%)
133.000	-87.905 (1.3%)	-70521.0 (37.1%)
177.000	1010.042 (17.4%)	-61672.3 (32.5%)
221.000	2131.222 (30.0%)	-12054.9 (41.6%)
229.000	963.182 (18.4%)	-2720.9 (0.0%)
251.500	0.000 (-)	0.0 (-)

CORRECTED PEAK SHEAR FORCE ON THE BULKHEADS.

45.000	-474.914	22326.5
89.000	-1263.417	-40383.7
133.000	-87.964	-70521.0
177.000	1010.098	-61672.3
221.000	2131.166	-12054.9
229.000	963.240	-2720.9
251.500	0.000	0.0

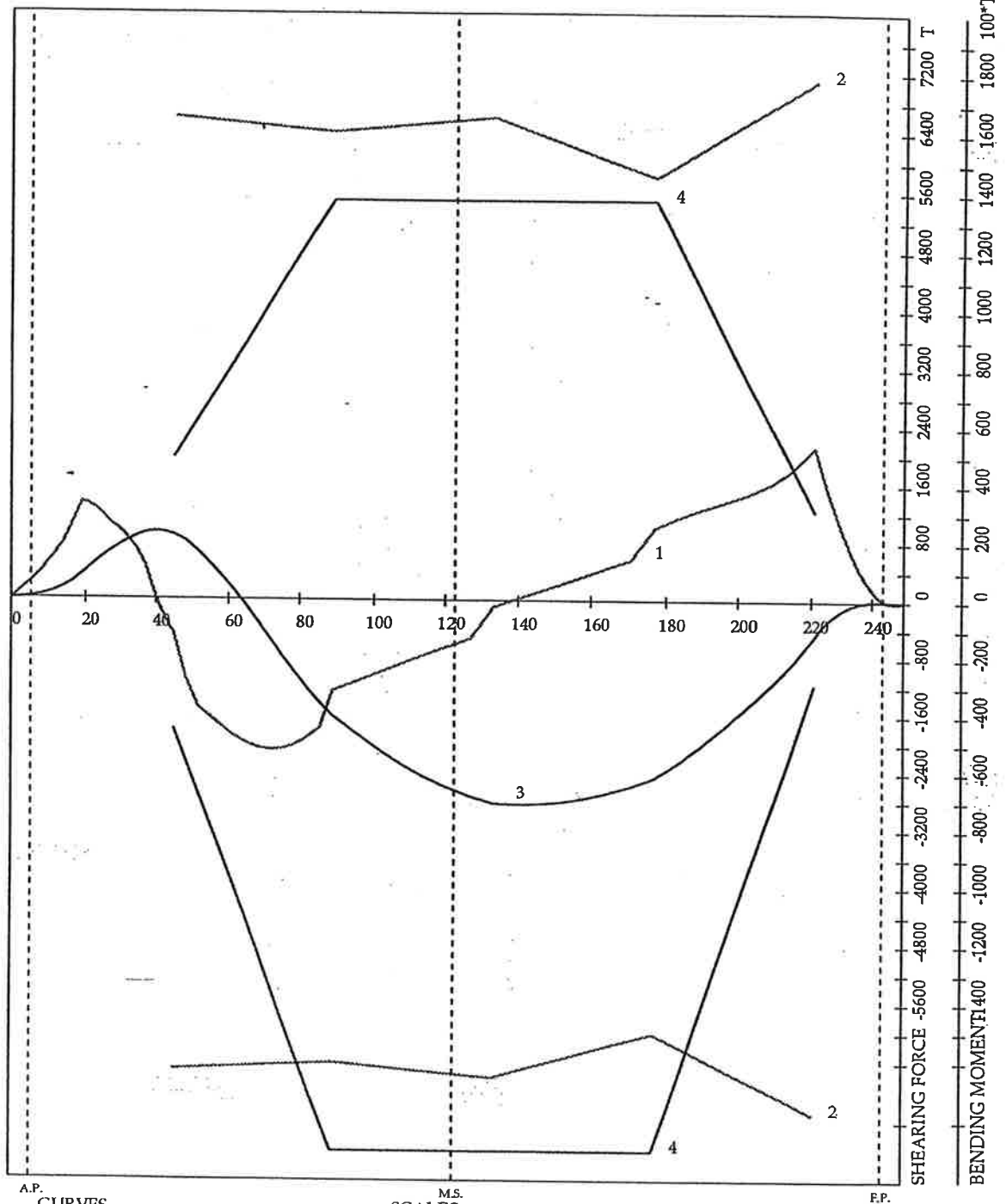
MAXIMUM SHEAR FORCE = 2131.222 AT FR NO. = 221.000 (30.0%)

MAXIMUM BENDING MOMENT = -70885.7 AT FR NO. = 138.198 (37.3%)

MAX. CORR. SHEAR FORCE = 2131.166 AT FR NO. = 221.000



COND. NO. 36 HOMO. SUMMER LOAD ARR.(FULLY FILLED,SG 0.989)



CURVES		M.S.		F.P.	
1	- SHEARING FORCE DIAGRAM	1 UNIT	400.0	T	
2	- ALLOWABLE SHEAR FORCE				
3	- BENDING MOMENT DIAGRAM	1 UNIT	10000.0	T*M	
4	- ALLOWABLE BENDING MOMENT				
MAX. POSITIVE SHEARING F.		2131.2	T	AT	78.800 M. FROM M. S.
MAX. NEGATIVE SHEARING F.		-2087.7	T	AT	-40.338 M. FROM M. S.
MAX. POSITIVE BENDING M.		23407.6	T*M	AT	-65.856 M. FROM M. S.
MAX. NEGATIVE BENDING M.		-70885.8	T*M	AT	12.558 M. FROM M. S.

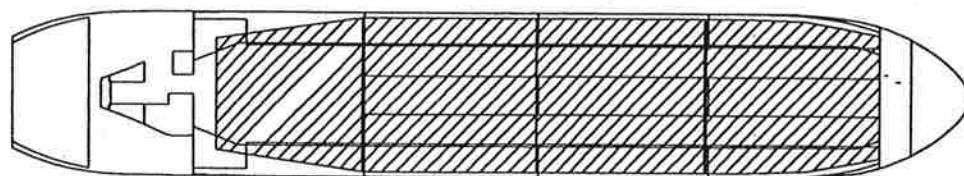
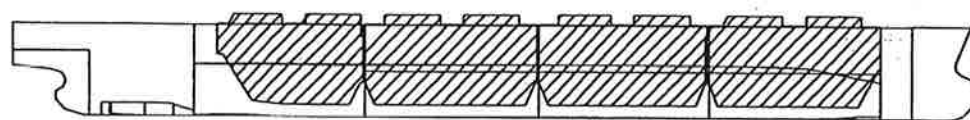
COND. NO 37 HOMO. COAL LOAD DEP. (SG 0.84) - IN FRESH WATER

DEADWEIGHT ITEMS	WEIGHT	L.C.G FROM	MOMENT ABOUT	V.C.G FROM	MOMENT ABOUT	FREE SURFACE
	MT.	L/2 M.	L/2 MT-M.	BL M.	BL MT-M.	MOMENT MT-M.
CONSUMABLES DEP. (NO.47)	1343.1	-60.53	-81298.	8.98	12064.	1825.
NO.1 CARGO HOLD (C) 100%	10000.8	60.34	603444.	11.67	116697.	0.
NO.2 CARGO HOLD (C) 100%	10401.6	25.62	266517.	11.69	121549.	0.
NO.3 CARGO HOLD (C) 100%	10401.6	-9.58	-99618.	11.69	121549.	0.
NO.4 CARGO HOLD (C) 100%	7591.3	-40.50	-307461.	12.13	92107.	0.
NO.4 U.W.W.B.T. (P)	0.0	-44.17	0.	10.22	0.	661.
NO.4 U.W.W.B.T. (S)	0.0	-44.17	0.	10.22	0.	661.
A.P.T.	80.0	-85.21	-6817.	3.00	240.	16.
DEADWEIGHT	39818.4	9.41	374766.	11.66	464206.	3164.
LIGHT SHIP WEIGHT	12398.0	-12.47	-154615.	10.51	130266.	
DISPLACEMENT	52216.4	4.22	220150.	11.38	594471.	3164.
DRAFT EQUIV.	10.39 M		TRANSV. METACENTRE	KMT	14.00 M	
TRIM BY STERN	-0.63 M		VERT CENTRE OF GRAV	KG	11.38 M	
DRAFT FORWARD	10.06 M		METAC. HEIGHT	GM	2.61 M	
DRAFT AFT	10.69 M		FREE SURFACE CORR.	GG'	0.06 M	
DRAFT MEAN	10.38 M		CORR. METAC. HEIGHT	G'M	2.55 M	
L. C. B.	5.19 M					
L. C. F.	-2.97 M		PROPELLER IMMERSION		95.5 %	
M. T. C.	806.8 MT-M					
T. P. C.	58.30 MT/CM					

COND. NO	37	HOMO. COAL LOAD DEP. (SG 0.84) - IN FRESH WATER							
INCLINATION V		5.00	10.00	12.00	20.00	30.00	40.00	50.00	60.00
SIN V		0.087	0.174	0.208	0.342	0.500	0.643	0.766	0.866
KN		1.222	2.448	2.941	4.939	7.443	9.245	10.345	10.864
KG * SIN V		0.992	1.977	2.367	3.894	5.692	7.318	8.721	9.860
CORR		0.005	0.011	0.013	0.021	0.030	0.039	0.046	0.052
G'Z =									
KN-KG*SINV - CORR		0.225	0.461	0.561	1.024	1.721	1.888	1.577	0.952
GZ AREA (M-RAD)		0.010	0.040	0.057	0.166	0.409	0.732	1.040	1.265
MAX GZ	1.901 M	AT 37.80 DEGREE							
GZ	0.952 M	AT 60.00 DEGREE							
ANGLE	2.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00	
GZ	0.089	0.179	0.271	0.364	0.461	0.561	0.665	0.774	
GZ AREA	0.002	0.006	0.014	0.025	0.040	0.057	0.075	0.104	
ANGLE	18.00	20.00	22.00	24.00	26.00	28.00	30.00	32.00	
GZ	0.893	1.024	1.169	1.321	1.470	1.606	1.721	1.806	
GZ AREA	0.133	0.166	0.205	0.248	0.297	0.351	0.409	0.470	
ANGLE	34.00	36.00	38.00	40.00	42.00	44.00	46.00	48.00	
GZ	1.862	1.893	1.901	1.888	1.857	1.810	1.746	1.669	
GZ AREA	0.534	0.600	0.666	0.732	0.798	0.862	0.924	0.984	
ANGLE	50.00	52.00	54.00	56.00	58.00	60.00			
GZ	1.577	1.473	1.357	1.231	1.096	0.952			
GZ AREA	1.040	1.094	1.143	1.188	1.229	1.265			



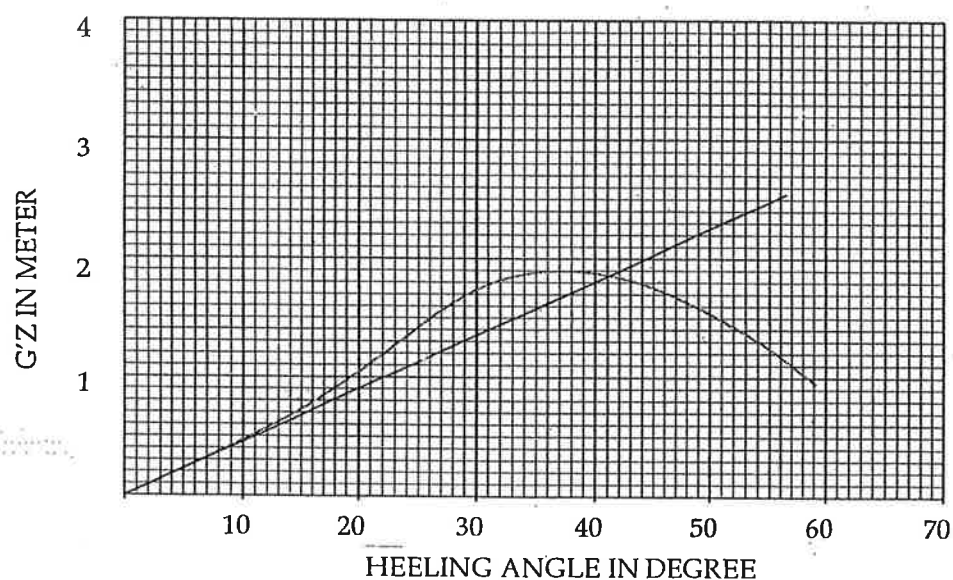
COND. NO. 37 HOMO. COAL LOAD DEP.(SG 0.84) - IN FRESH WATER



CARGO



W.B.T



STABILITY CRITERIA ACCORDING TO IMO RES. A.749(18)	ACTUAL	REQUIREMENT
AREA UNDER CURVE UP TO 30(DEG)	0.409 M-RAD	0.055 M-RAD
AREA UNDER CURVE UP TO 40(DEG) or θ_f WHICHEVER IS LESS	0.724 M-RAD	0.09 M-RAD
AREA BETWEEN 30 AND 40(DEG) or θ_f WHICHEVER IS LESS	0.315 M-RAD	0.03 M-RAD
G'Z AT GREATER THAN 30(DEG)	1.901 M	0.20 M
THE ANGLE AT WHICH THE MAX. G'Z OCCURS	37.80 DEG	30 DEG
THE INITIAL METACENTRIC HEIGHT G'M	2.553 M	0.15 M
NOTE : FLOODING ANGLE θ_f < 40.0(DEG) SO 39.74 (DEG) IS ADOPTED		

CONDITION NO 37 HOMO. COAL LOAD DEP. (SG 0.84)
 - IN FRESH WATER
 LONGITUDINAL STRENGTH CALCULATION.

FRAME	SHEAR FORCE	BENDING MOMENT
-------	----------------	-------------------

LONGITUDINAL STRENGTH VALUES WHEN SHEAR FORCE = 0.

36.970	0.000	7465.9
132.574	0.000	-55378.8
245.418	0.000	368.0

LONGITUDINAL STRENGTH VALUES ON THE BULKHEADS.

45.000	-710.099 (10.9%)	4718.5 (9.6%)
89.000	-748.862 (11.7%)	-36431.0 (19.2%)
133.000	24.007 (0.4%)	-55378.8 (29.1%)
177.000	809.583 (14.0%)	-48019.5 (25.3%)
221.000	1749.504 (24.6%)	-9379.2 (32.3%)
229.000	797.681 (15.2%)	-1879.9 (0.0%)
251.500	0.000 (-)	0.0 (-)

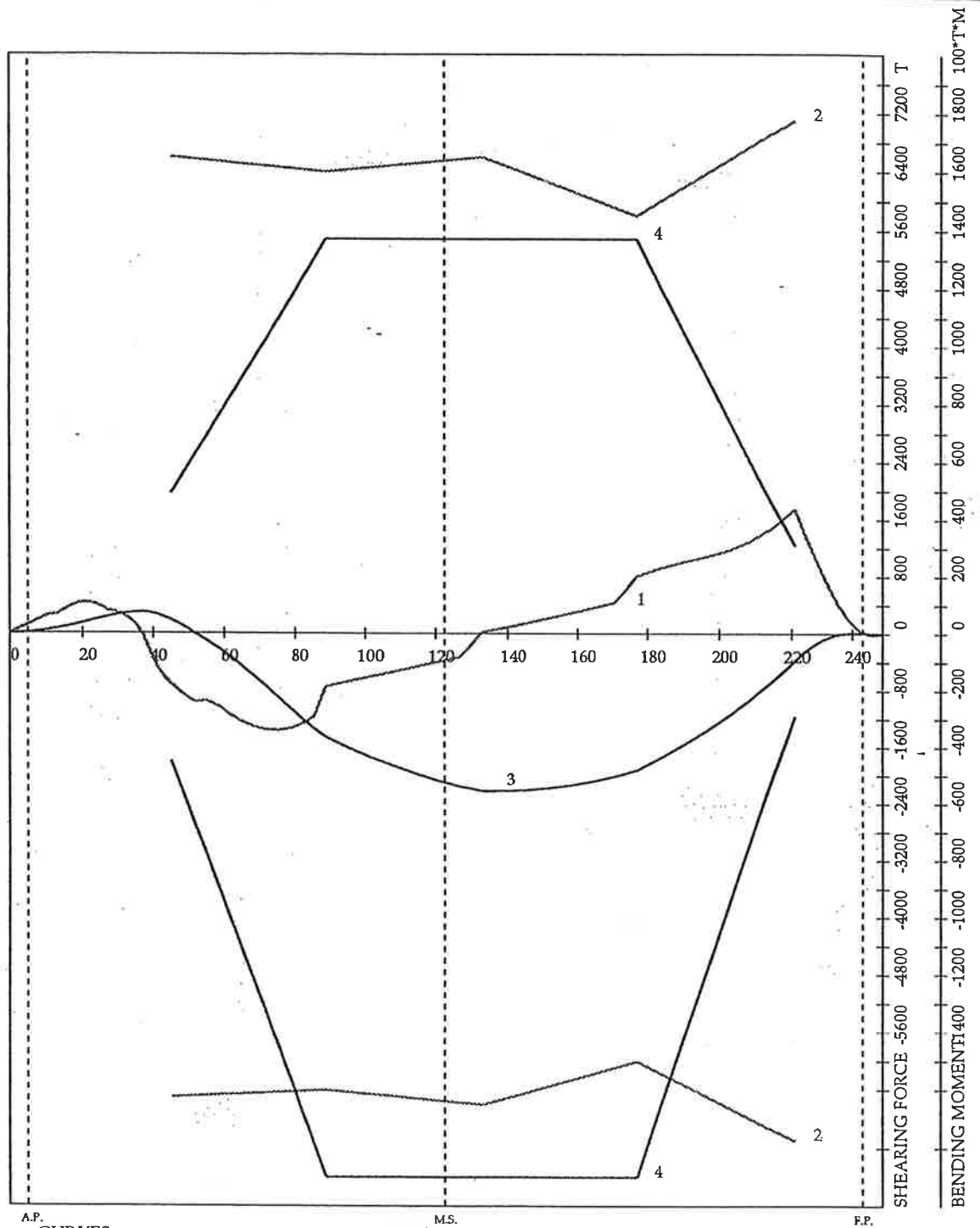
CORRECTED PEAK SHEAR FORCE ON THE BULKHEADS.

45.000	-710.099	4718.5
89.000	-748.860	-36431.0
133.000	24.046	-55378.8
177.000	809.630	-48019.5
221.000	1749.457	-9379.2
229.000	797.729	-1879.9
251.500	0.000	0.0

MAXIMUM SHEAR FORCE = 1749.504 AT FR NO. = 221.000 (24.6%)

MAXIMUM BENDING MOMENT = -55378.8 AT FR NO. = 132.574 (29.1%)

MAX. CORR. SHEAR FORCE = 1749.457 AT FR NO. = 221.000



A.P.

M.S.

F.P.

CURVES

SCALES

1 - SHEARING FORCE DIAGRAM	1 UNIT	400.0	T
2 - ALLOWABLE SHEAR FORCE			
3 - BENDING MOMENT DIAGRAM	1 UNIT	10000.0	T*M
4 - ALLOWABLE BENDING MOMENT			

MAX. POSITIVE SHEARING F.	1749.5	T	AT	78.800	M. FROM M. S.
MAX. NEGATIVE SHEARING F.	-1363.8	T	AT	-37.631	M. FROM M. S.
MAX. POSITIVE BENDING M.	7465.9	T*M	AT	-68.424	M. FROM M. S.
MAX. NEGATIVE BENDING M.	-55378.9	T*M	AT	8.059	M. FROM M. S.

COND. NO 38 HOMO. COAL LOAD ARR. (SG 0.84) - IN FRESH WATER

DEADWEIGHT ITEMS	WEIGHT	L.C.G FROM	MOMENT ABOUT	V.C.G FROM	MOMENT ABOUT	FREE SURFACE
	MT.	L/2 M.	L/2 MT-M.	BL M.	BL MT-M.	MOMENT MT-M.
CONSUMABLES ARR. (NO.48)	373.6	-64.89	-24240.	11.45	4279.	1825.
NO.1 CARGO HOLD(C) 100%	10000.8	60.34	603444.	11.67	116697.	0.
NO.2 CARGO HOLD(C) 100%	10401.6	25.62	266517.	11.69	121549.	0.
NO.3 CARGO HOLD(C) 100%	10401.6	-9.58	-99618.	11.69	121549.	0.
NO.4 CARGO HOLD(C) 100%	7591.3	-40.50	-307461.	12.13	92107.	0.
NO.4 U.W.W.B.T. (P)	817.3	-42.34	-34603.	14.61	11940.	661.
NO.4 U.W.W.B.T. (S)	817.3	-42.34	-34603.	14.61	11940.	661.
A.P.T.	80.0	-85.21	-6817.	3.00	240.	16.
DEADWEIGHT	40483.5	8.96	362618.	11.86	480300.	3164.
LIGHT SHIP WEIGHT	12398.0	-12.47	-154615.	10.51	130266.	
DISPLACEMENT	52881.5	3.93	208002.	11.55	610566.	3164.
DRAFT EQUIV.	10.50 M		TRANSV. METACENTRE	KMT	13.98 M	
TRIM BY STERN	-0.76 M		VERT CENTRE OF GRAV	KG	11.55 M	
DRAFT FORWARD	10.11 M		METAC. HEIGHT	GM	2.44 M	
DRAFT AFT	10.87 M		FREE SURFACE CORR.	GG'	0.06 M	
DRAFT MEAN	10.49 M		CORR. METAC. HEIGHT	G'M	2.38 M	
L. C. B.	5.09 M					
L. C. F.	-3.12 M		PROPELLER IMMERSION		98.0 %	
M. T. C.	811.1 MT-M					
T. P. C.	58.42 MT/CM					

COND. NO 38 HOMO. COAL LOAD ARR. (SG 0.84) - IN FRESH WATER

INCLINATION V	5.00	10.00	12.00	20.00	30.00	40.00	50.00	60.00
---------------	------	-------	-------	-------	-------	-------	-------	-------

SIN V	0.087	0.174	0.208	0.342	0.500	0.643	0.766	0.866
-------	-------	-------	-------	-------	-------	-------	-------	-------

KN	1.221	2.445	2.937	4.929	7.410	9.200	10.306	10.832
----	-------	-------	-------	-------	-------	-------	--------	--------

KG * SIN V	1.006	2.005	2.401	3.949	5.773	7.422	8.845	9.999
------------	-------	-------	-------	-------	-------	-------	-------	-------

CORR	0.005	0.010	0.012	0.020	0.030	0.038	0.046	0.052
------	-------	-------	-------	-------	-------	-------	-------	-------

G'Z =

KN-KG*SINV - CORR	0.209	0.430	0.524	0.960	1.607	1.740	1.416	0.781
-------------------	-------	-------	-------	-------	-------	-------	-------	-------

GZ AREA (M-RAD)	0.009	0.037	0.054	0.156	0.382	0.683	0.964	1.159
-----------------	-------	-------	-------	-------	-------	-------	-------	-------

MAX GZ 1.760 M AT 37.20 DEGREE

GZ 0.781 M AT 60.00 DEGREE

ANGLE	2.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00
-------	------	------	------	------	-------	-------	-------	-------

GZ	0.083	0.167	0.252	0.340	0.430	0.524	0.621	0.724
----	-------	-------	-------	-------	-------	-------	-------	-------

GZ AREA	0.001	0.006	0.013	0.023	0.037	0.054	0.074	0.097
---------	-------	-------	-------	-------	-------	-------	-------	-------

ANGLE	18.00	20.00	22.00	24.00	26.00	28.00	30.00	32.00
-------	-------	-------	-------	-------	-------	-------	-------	-------

GZ	0.836	0.960	1.096	1.238	1.376	1.502	1.607	1.683
----	-------	-------	-------	-------	-------	-------	-------	-------

GZ AREA	0.124	0.156	0.191	0.232	0.278	0.328	0.382	0.440
---------	-------	-------	-------	-------	-------	-------	-------	-------

ANGLE	34.00	36.00	38.00	40.00	42.00	44.00	46.00	48.00
-------	-------	-------	-------	-------	-------	-------	-------	-------

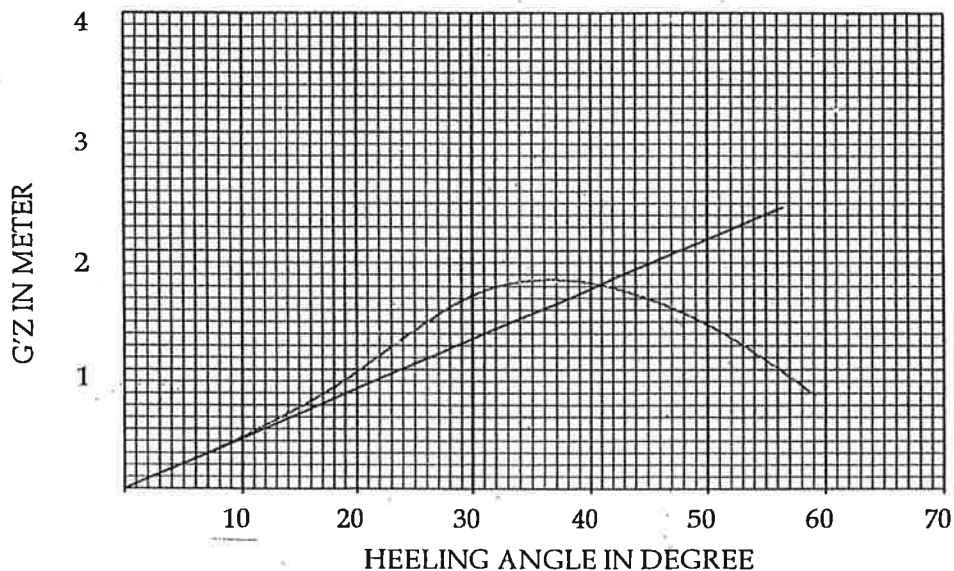
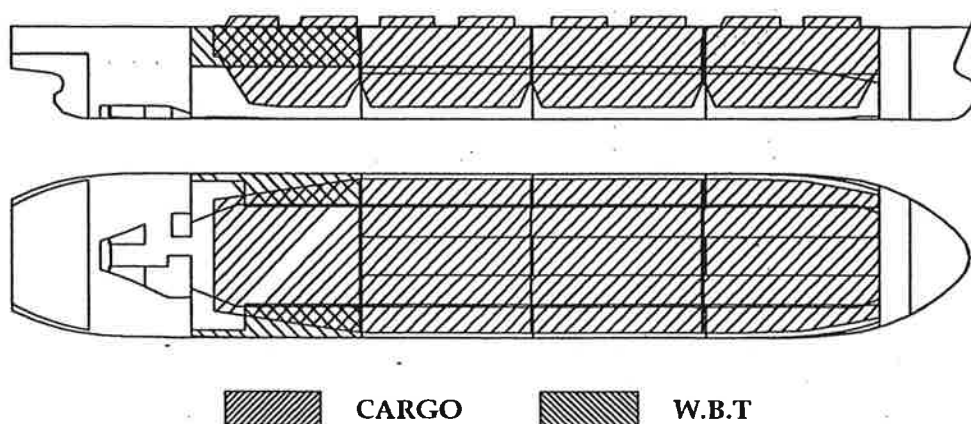
GZ	1.732	1.756	1.758	1.740	1.705	1.654	1.589	1.509
----	-------	-------	-------	-------	-------	-------	-------	-------

GZ AREA	0.500	0.560	0.622	0.683	0.743	0.802	0.858	0.913
---------	-------	-------	-------	-------	-------	-------	-------	-------

ANGLE	50.00	52.00	54.00	56.00	58.00	60.00
-------	-------	-------	-------	-------	-------	-------

GZ	1.415	1.310	1.193	1.065	0.927	0.781
----	-------	-------	-------	-------	-------	-------

GZ AREA	0.964	1.011	1.055	1.094	1.129	1.159
---------	-------	-------	-------	-------	-------	-------



STABILITY CRITERIA ACCORDING TO IMO RES. A.749(18)	ACTUAL	REQUIREMENT
AREA UNDER CURVE UP TO 30(DEG)	0.382 M-RAD	0.055 M-RAD
AREA UNDER CURVE UP TO 40(DEG) or θ_f WHICHEVER IS LESS	0.662 M-RAD	0.09 M-RAD
AREA BETWEEN 30 AND 40(DEG) or θ_f WHICHEVER IS LESS	0.280 M-RAD	0.03 M-RAD
G'Z AT GREATER THAN 30(DEG)	1.760 M	0.20 M
THE ANGLE AT WHICH THE MAX. G'Z OCCURS	37.20 DEG	30 DEG
THE INITIAL METACENTRIC HEIGHT G'M	2.375 M	0.15 M
NOTE : FLOODING ANGLE $\theta_f < 40.0(\text{DEG})$ SO 39.30 (DEG) IS ADOPTED		

CONDITION NO 38 HOMO. COAL LOAD ARR. (SG 0.84)
 - IN FRESH WATER
 LONGITUDINAL STRENGTH CALCULATION.

FRAME	SHEAR FORCE	BENDING MOMENT
-------	----------------	-------------------

LONGITUDINAL STRENGTH VALUES WHEN SHEAR FORCE = 0.

32.821	0.000	3779.0
128.610	0.000	-64887.2
245.445	0.000	249.7

LONGITUDINAL STRENGTH VALUES ON THE BULKHEADS.

45.000	-1025.509 (15.8%)	-1105.4 (2.5%)
89.000	-400.931 (6.3%)	-56179.4 (29.6%)
133.000	234.283 (3.5%)	-64887.2 (34.2%)
177.000	908.162 (15.7%)	-51482.5 (27.1%)
221.000	1765.448 (24.9%)	-10057.7 (34.7%)
229.000	804.334 (15.4%)	-2306.4 (0.0%)
251.500	0.000 (-)	0.0 (-)

CORRECTED PEAK SHEAR FORCE ON THE BULKHEADS.

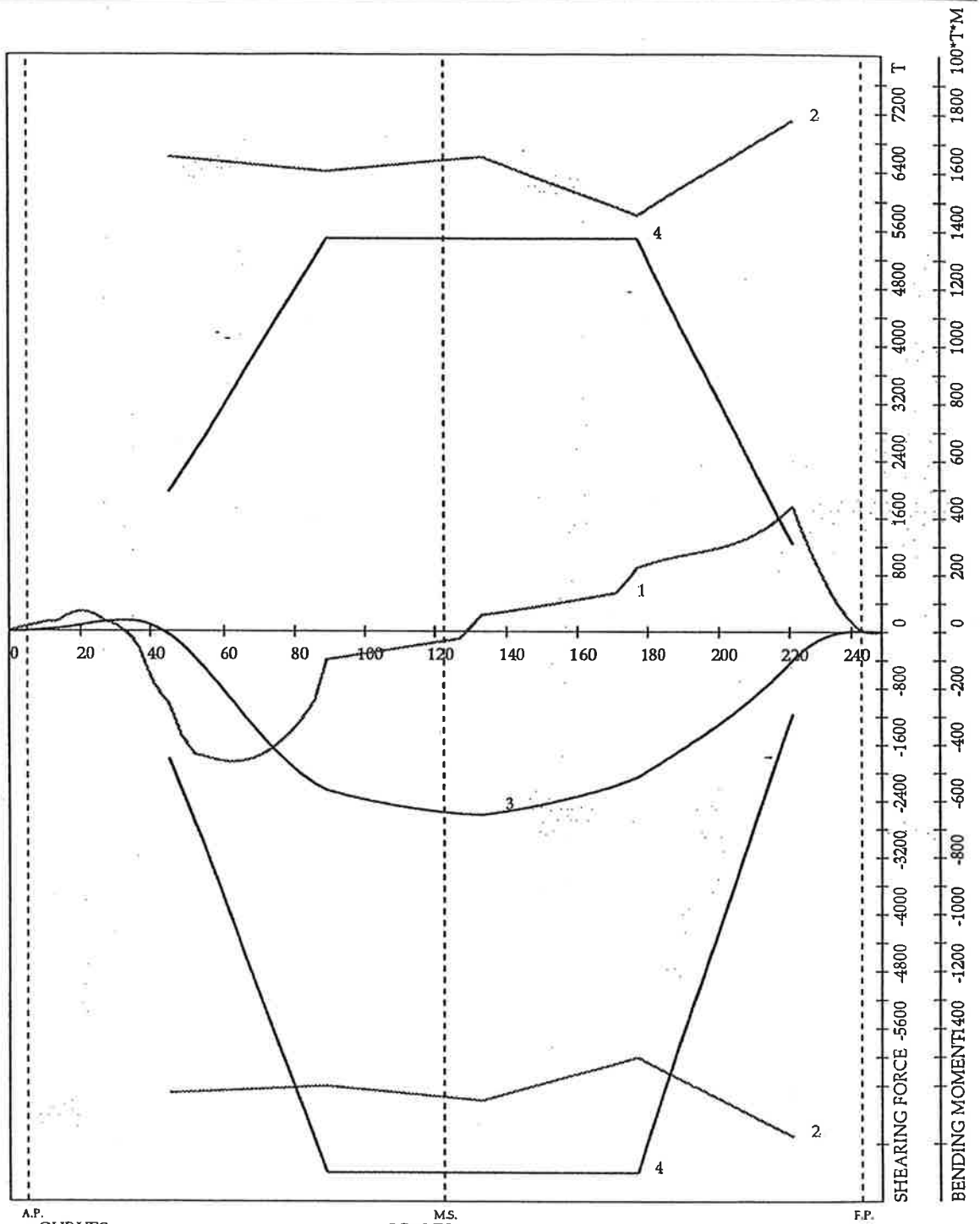
45.000	-1025.509	-1105.4
89.000	-400.962	-56179.4
133.000	234.317	-64887.2
177.000	908.205	-51482.5
221.000	1765.406	-10057.7
229.000	804.382	-2306.4
251.500	0.000	0.0

MAXIMUM SHEAR FORCE = -1847.456 AT FR NO. = 61.924 (28.6%)

MAXIMUM BENDING MOMENT = -64887.2 AT FR NO. = 128.610 (34.2%)
 MAX. CORR. SHEAR FORCE = 1765.406 AT FR NO. = 221.000



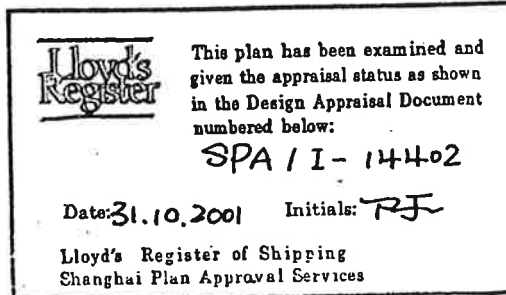
COND. NO. 38 HOMO. COAL LOAD ARR.(SG 0.84) - IN FRESH WATER



CURVES		M.S.		F.P.	
		SCALES			
1	- SHEARING FORCE DIAGRAM	1 UNIT	400.0	T	
2	- ALLOWABLE SHEAR FORCE				
3	- BENDING MOMENT DIAGRAM	1 UNIT	10000.0	T*M	
4	- ALLOWABLE BENDING MOMENT				
MAX. POSITIVE SHEARING F.		1765.4	T	AT	78.800 M. FROM M. S.
MAX. NEGATIVE SHEARING F.		-1847.5	T	AT	-48.462 M. FROM M. S.
MAX. POSITIVE BENDING M.		3779.0	T*M	AT	-71.744 M. FROM M. S.
MAX. NEGATIVE BENDING M.		-64887.3	T*M	AT	4.888 M. FROM M. S.

PLAN HISTORY

DATE	REV	DESCRIPTION	CHECKED
OCT. 22, 2001	ORI	ORIGINALLY PREPARED	



FOR APPROVAL

TOTAL (15) SHEETS WITH A COVER

DEP'T NO 5600	SHIP DESIGN DEP'T BASIC DESIGN TEAM	SHIP TYPE 38000 DWT SELF UNLOADING BULK CARRIER	
TEL NO. 3981	SHIP NO. 9927	SHIP NAME GYP SUM CENTENNIAL	
DATE 2001. 10. 22	APPROVED: S.K.LEE <i>S.K. Lee</i>	NAME OF DRAWING THE RESULT OF INCLINING EXPERIMENT & DEADWEIGHT MEASUREMENT	
	CHECKED : C.S.LIM <i>C.S. Lim</i>		
DRAWN : Y.S.LEE <i>Y.S. Lee</i>			
	HYUNDAI Mipo Dockyard Co., Ltd. Ulsan Korea	SCALE	DRAWING NO. 3A000B004
		CONSOLIDATED	REV. NO. ORI



HYUNDAI MIPO DOCKYARD

INCLINING EXPERIMENT RESULT

*** INDEX ***

1. GENERAL	2
2. INCLINING CONDITION	2
3. REPRESENTATIVES PRESENT	2
4. DRAFT READINGS	2
5. CORRECTION FOR DEFLECTION	3
6. CORRECTION FOR TRIM	3
7. DISPLACEMENT AT EQUIVALENT DRAFT	3
8. CORRECTION FOR SPECIFIC GRAVITY OF SEA WATER	3
9. HEELING MOMENTS CALCULATION AND GG_n CALCULATION	4
10. SUMMARY OF PENDULUM READING	5
11. PLOT OF TANGENT Vs SHIFTING MOMENT	5
12. VERTICAL CENTER OF GRAVITY ABOVE BASE LINE-LEAST SQUARE METHOD	6
13. LONGITUDINAL CENTER OF GRAVITY FORM MIDSHIP	7
14. SUMMARY OF LIGHT SHIP CONDITION	8
15. ITEMS TO BE DEDUCTED / RELOCATED.....	9



HYUNDAI MIPO DOCKYARD

INCLINING EXPERIMENT RESULT

1 GENERAL

NAME OF SHIP	M/V "GYPSUM CENTENNIAL"
LENGTH B. P.	188.400 M
BREADTH (MOLDED)	32.200 M
DEPTH (MOLDED)	17.750 M
DATE OF INCLINING EXPERIMENT	OCT. 19, 2001.
PLACE OF INCLINING EXPERIMENT	NO.1 DOCK

2 INCLINING CONDITION

WEATHER	FINE
WIND SPEED / DIRECTION	1M ~ 2M/SEC / STB'D 175 DEG.
SEA WATER TEMPERATURE	15 DEG.
SPECIFIC GRAVITY AT EXPERIMENT	1.0240 T/M ³

3 REPRESENTATIVES PRESENT

OWNER	Mr. JOHN HENDRY
CLASS	Mr. I.D. INGRAM
YARD	Mr. C.S. LIM

4 DRAFT READINGS

UNIT : METER

POSITION	AT DRAFT MARKS			DRAFT CORRECTION	CORRECTED DRAFT AT PERPENDICULARS	
	PORT	STAB'D	MEAN			
FWD	3.348	3.437	3.393	-0.047	F.P	3.346
MIDSHIP	3.877	4.036	3.957	0.000	MIDSHIP	3.957
AFT	4.650	4.665	4.658	0.078	A.P	4.736
FWD DRAFT FROM F.P				-6.400	MEAN DRAFT	4.041
MIDSHIP DRAFT FROM MIDSHIP				0.000	DEFLECT. (HOG)	0.084
AFT DRAFT FROM A.P				10.550	TRIM BY HEAD	-1.390



HYUNDAI MIPO DOCKYARD INCLINING EXPERIMENT RESULT

5 CORRECTION FOR DEFLECTION

DRAFT	F.P	3.346 * 1	3.346
	MID	3.957 * 6	23.742
	A.P	4.736 * 1	4.736

8) 31.824

CORRECTED DRAFT (Dc) = 3.978 M

6 CORRECTION FOR TRIM

L.C.F AT DRAFT 3.978 M = 7.567 M

CORRECTION (δ Dc) = (L.C.F X TRIM) / L.B.P
= (7.567 X -1.390) / 188.400 = -0.056 M

EQUIVALENT DRAFT (Deq) = Dc + (δ Dc)
= 3.978 + (-0.056) = 3.922 M

7 DISPLACEMENT AT 3.922 M DRAFT (Di)

DRAFT (M)	DISP'T (T)
3.920	18658.0
3.922	18668.1
3.940	18759.0

Di = 18668.1

8 CORRECTION FOR SPECIFIC GRAVITY OF SEA WATER

S.G OF SEA WATER AT THE INCLINING EXPERIMENT : 1.024 T/M³

CORRECTED DISPLACEMENT (DISP'T) = (Di X S.G.) / 1.025 : 18649.9 TON



HYUNDAI MIPO DOCKYARD

INCLINING EXPERIMENT RESULT

J. HEELING MOMENTS CALCULATION AND GGn CALCULATION

1) HEELING MOMENTS CALCULATION

NO.2 LW WBT

S.G = 1.024

NO.	PORT TANK				STB'D TANK				MOMENT	H.CHANGE
	S.DEPTH (M)	VOLUME (M3)	T.C.G (M)	MOMENT (MT-M)	S.DEPTH (M)	VOLUME (M3)	T.C.G (M)	MOMENT (MT-M)	TOTAL (MT-M)	MOMENT (MT-M)
0	6.138	1080.6	-13.014	-14400	6.028	1060.9	13.012	14136	-264	0
1	5.493	963.3	-13.003	-12826	6.707	1178.3	13.035	15728	2902	3166
2	4.229	732.1	-12.983	-9733	8.231	1409.5	13.149	18978	9245	9509
3	4.896	854.2	-12.995	-11367	7.390	1287.4	13.078	17241	5874	6138
4	6.133	1079.7	-13.014	-14388	6.033	1061.8	13.012	14148	-240	24
5	6.827	1198.2	-13.042	-16002	5.384	943.4	13.002	12560	-3442	-3178
6	8.248	1411.8	-13.150	-19011	4.216	729.7	12.983	9701	-9310	-9046
7	7.531	1309.3	-13.088	-17547	4.776	832.2	12.994	11073	-6474	-6210

* HEELING MOMENT = (VOLUME)*(T.C.G)*(S.G)

2) INCREASE OF METACENTER DUE TO WATER SHIFTING (GGn)

NO.2 LW WBT

S.G = 1.024

NO.	PORT TANK			STB'D TANK			MOMENT	MOMENT	GGn
	VOLUME (M3)	V.C.G (M)	MOMENT (MT-M)	VOLUME (M3)	V.C.G (M)	MOMENT (MT-M)	TOTAL (MT-M)	CHANGE (MT-M)	
0	1080.6	2.654	2937	1060.9	2.607	2832	5769	0	-
1	963.3	2.376	2344	1178.3	2.887	3483	5827	58	0.003
2	732.1	1.827	1370	1409.5	3.461	4995	6365	596	0.032
3	854.2	2.117	1852	1287.4	3.153	4157	6009	240	0.013
4	1079.7	2.652	2932	1061.8	2.610	2838	5770	1	0.000
5	1198.2	2.935	3601	943.4	2.328	2249	5850	81	0.004
6	1411.8	3.467	5012	729.7	1.821	1361	6373	604	0.032
7	1309.3	3.207	4300	832.2	2.064	1759	6059	290	0.016

MEAN GGn = 0.013

* VERTICAL MOMENT = (VOLUME)*(V.C.G)*(S.G)

* GGn = (VERTICAL VOLUME MOMENT CHANGE) / (DISPLACEMENT)



HYUNDAI MIPO DOCKYARD INCLINING EXPERIMENT RESULT

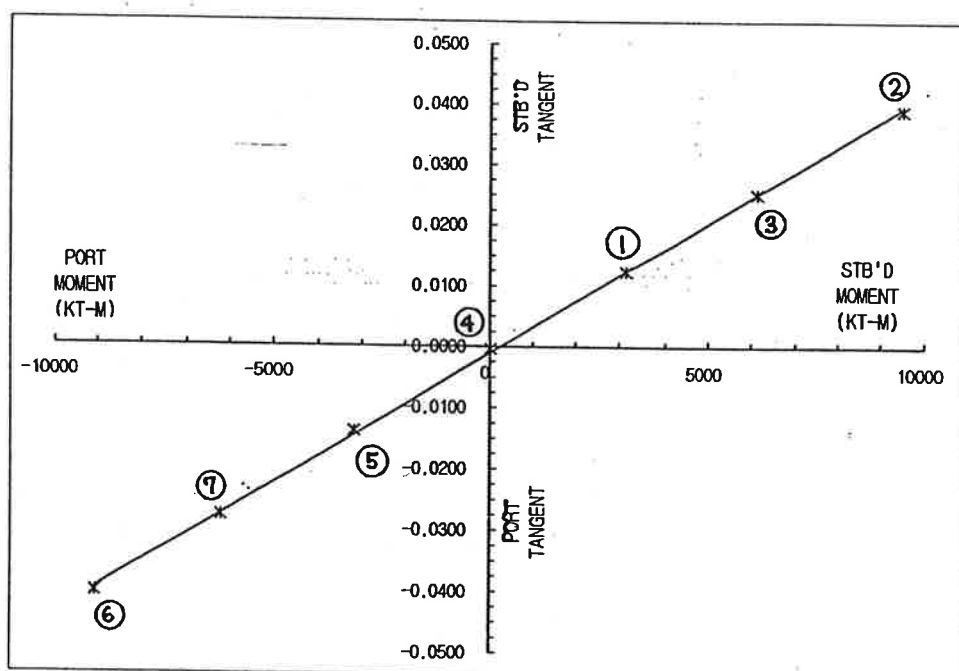
10. SUMMARY OF PENDULUM READING

ROUND NO.	SHIFTING MOMENT (T-M)	SHIFTING NO.5 W.B.T(OW)		FORE		AFT		MEAN
		PORT	STAB'D	DEV. (MM)	TAN θ ($\times 10^2$)	DEV. (MM)	TAN θ ($\times 10^2$)	TAN θ ($\times 10^2$)
0	0.00			0	0.0000	0	0.0000	0.0000
1	3166.00			109	1.0888	81	1.3792	1.2340
2	9509.00			380	3.7958	236	4.0184	3.9071
3	6138.00			239	2.3874	155	2.6392	2.5133
4	24.00			-16	-0.1598	5	0.0851	-0.0374
5	-3178.00			-154	-1.5383	-74	-1.2600	-1.3992
6	-9046.00			-418	-4.1754	-230	-3.9162	-4.0458
7	-6210.00			-292	-2.9168	-155	-2.6392	-2.7780

PENDULUM LENGTH : FORE
PENDULUM LENGTH : AFT

10011 MM
5873 MM

11. PLOT OF TANGENT Vs SHIFTING MOMENT





HYUNDAI MIPO DOCKYARD

INCLINING EXPERIMENT RESULT

12. VERTICAL CENTER OF GRAVITY ABOVE BASE LINE - LEAST SQUARE METHOD

ROUND NO.	SHIFTING MOMENT (X)	MEAN TAN (Y) (*10 ²)	(X ²)	(X) * (Y) * 10 ²
0	0.00	0.0000	0	0.00
1	3166.00	1.2340	10023556	3906.84
2	9509.00	3.9071	90421081	37152.61
3	6138.00	2.5133	37675044	15426.64
4	24.00	-0.0374	576	-0.90
5	-3178.00	-1.3992	10099684	4446.66
6	-9046.00	-4.0458	81830116	36598.31
7	-6210.00	-2.7780	38564100	17251.38
n= 8	Σ(X)= 6613.00	Σ(Y)= 2.1720	Σ(X ²)= 230050057	Σ(X) * (Y)= 97530.16

$$Y = d + \beta * X$$

$$\beta = \frac{n * \Sigma(X) * (Y) - \Sigma(X) * \Sigma(Y)}{n * \Sigma(X^2) - [\Sigma(X)]^2} * 10^{-2}$$

$$= 4.262766E-06$$

$$\beta = 4.262766 * 10^{-6}$$

β is the Tangent / Moment or Slope.

$$1/\beta = \text{Moment} / \text{Tangent} = 234,589$$

$$d = Y - \beta X = \frac{\Sigma(Y)}{n} - \beta * \frac{\Sigma(X)}{n}$$

$$d = 0.2679763$$

$$Y = 0.2679763 + 4.2627660 * 10^{-6} * X$$



HYUNDAI MIPO DOCKYARD

INCLINING EXPERIMENT RESULT

DISPLACEMENT AT THE EXPERIMENT	:	18649.9 TON
CORRESPONDING DRAFT BY HYDROSTATIC TABLE	:	3.922 M
KMT AT THE DRAFT OF 3.922 M	:	22.589 M
$G'M = (1/\beta) / \Delta$	:	12.579 M
GGn =	:	0.013 M
GG' = Total F.S Moment / Disp't	:	0.115 M
KG = KMT - G'M - GG' - GGn	:	9.882 M
TOTAL FREE SURFACE MOMENT	:	2153 T-M

13 LONGITUDINAL CENTER OF GRAVITY FROM MIDSHIP

DISPLACEMENT AT THE EXPERIMENT	:	18649.9 TON
CORRESPONDING DRAFT BY HYDROSTATIC TABLE	:	3.922 M
LONGITUDINAL CENTER OF BUOYANCY	:	7.976 M
MOMENT TO CHANGE TRIM PER 1CM	:	569.4 T-M
$BGL = (TRIM * MTC * 100) / Disp't$	:	-4.243 M
$L.C.G = (BGL + L.C.B)$	:	3.733 M



HYUNDAI MIPO DOCKYARD

INCLINING EXPERIMENT RESULT

14 SUMMARY OF LIGHT SHIP CONDITION

ITEM	WEIGHT - (T)	L.C.G FROM L/2 (M)	MOMENT FROM L/2 (T-M)	V.C.G ABOVE B.L (M)	MOMENT ABOVE B.L (T-M)
CONDITION AT INCL. COND	18649.9	3.733	69620	9.882	184298
ITEM TO BE TAKEN OFF	-6251.9		-224236		-54036
TOTAL	12398.0	-12.471	-154616	10.507	130262

	ITEMS TO BE TAKEN ON & TAKEN OFF	REV.	STANDARD NO.
		ORI	

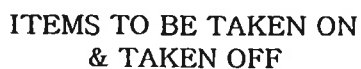
I N D E X

1. SUMMARY OF DEDUCTED ITEMS

1.1 TANKS

- WATER BALLAST TANKS
- F.O. TANKS
- M.D.O TANKS
- POT.W. TANKS
- L.O. TANKS
- SMALL TANKS IN E/R AND DECK

1.2 DEDUCTED WEIGHT



STANDARD NO.

ORI

1. SUMMARY OF DEDUCTED ITEMS

NO	ITEM	WEIGHT (TON)	L.C.G FROM L/2 (M)	MOM'T FROM L/2 (T-M)	V.C.G ABOVE BL. (M)	MOM'T ABOVE BL. (T- M)	FREE SUR- FACE MOM'T (T- M)
1	WATER BALLAST TANKS	5998.39	40.140	240746	8.560	51370	1893
2	FUEL OIL TANKS	97.61	-63.160	-6165	9.866	963	56
3	M.D.O. TANKS	25.01	-60.816	-1521	8.597	215	11
4	POT. W. TANKS	54.14	-93.461	-5060	13.687	741	150
5	LUB. OIL TANKS	21.16	-68.573	-1451	6.758	143	21
6	MISC. HULL TANKS	25.32	-69.076	-1749	5.648	143	22
7	SMALL TANKS IN E/R AND DECK	13.96	-57.450	-802	13.830	193	
8	DEDUCTED WEIGHT	16.34	14.570	238	16.400	268	
TOTAL		6251.93	35.867	224236	8.643	54036	2153

HYUNDAI MIPO DOCKYARD CO., LTD.

		ITEMS TO BE TAKEN ON & TAKEN OFF				REV.	STANDARD NO.
						ORI	
NO	ITEM	WEIGHT (MT)	L.C.G FROM L/2 (M)	MOM'T FROM L/2 (T-M)	V.C.G ABOVE BL. (M)	MOM'T ABOVE BL. (T- M)	FREE SUR- FACE MOM'T (T- M)
FUEL OIL TANKS							
1	F.O.T.(P)	1.07	-58.967	-63	0.975	1	46
2	F.O.T.(S)	0.00					
3	NO.1 FO SETT.T(P)	37.11	-63.200	-2345	10.987	408	2
4	NO.2 FO SETT.T(P)	28.07	-63.200	-1774	10.083	283	2
5	NO.1 FO SERV.T.(P)	13.73	-63.200	-868	8.734	120	2
6	NO.2 FO SERV.T.(P)	16.68	-63.200	-1054	9.048	151	2
7	F.O. OVERFLOW T.(P)	0.95	-63.746	-61	0.082	0	2
	TOTAL	97.61	-63.160	-6165	9.866	963	56
M.D.O. TANKS							
1	NO.1 M.D.O. SERV.T.(S)	19.21	-60.800	-1168	8.834	170	5
2	NO.2 M.D.O. SERV.T.(S)	5.80	-60.800	-353	7.720	45	6
	TOTAL	25.01	-60.816	-1521	8.597	215	11
POT.W.TANKS							
1	POT.W.T.(P)	24.79	-93.457	-2317	13.653	338	75
2	POT.W.T.(S)	29.35	-93.457	-2743	13.718	403	75
	TOTAL	54.14	-93.461	-5060	13.687	741	150
LUB. OIL TANKS							
1	LO HOLDING T.(S)	0.00					
2	LO STOR. T.(S)	5.38	-64.000	-344	13.113	71	2
3	CYL. LO STOR.T.(S)	4.67	-64.800	-303	12.766	60	5
4	SSDG LO HOLDING T.(S)	0.00					
5	SSDG LO STOR. T.(S)	0.00					
6	L.O.SUMP.T.(C)	11.11	-72.400	-804	1.083	12	14
	TOTAL	21.16	-68.573	-1451	6.758	143	21
MISC. HULL TANKS							
1	P.A.T.(S)	14.16	-63.032	-893	9.783	139	1
2	WASTE O.T.(S)	1.27	-73.497	-93	0.225	0	1
3	OILY W.T.(P)	3.66	-73.872	-270	0.414	2	2
4	CLEAN W.T.(C)	6.23	-79.161	-493	0.386	2	18
	TOTAL	25.32	-69.076	-1749	5.648	143	22
	TOTAL	223.24	-71.43	-15946	9.88	2205	260

HYUNDAI MIPO DOCKYARD CO., LTD.

