THE NAPIER CO. (ARBROATH) LTD.

4.5.94

R.V. "MEDEIA"

FRESH WATER TANK CALIBRATIONS - FRAMES 46-42 STBD
BASED ON SIGHT GAGE ON AFT E.R.BHD. 5'-10" IN FROM SHIP'S SIDE

LEVEL TRIM

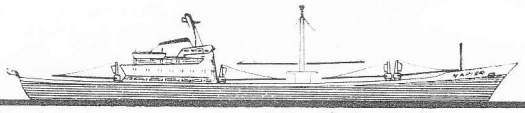
SOUNDING FT	SOUNDING INS	CAPACITY U.S. GALS.	VCG FT	TR. INERT FT**4	TCG FT	LCG FT
0	0	9.0	2.18	1.64	-5.55	27.10
0	3	25.4	2.36	7.11	-5.81	26.54
0	6	56.1	2.55	19.83	-6.07	26.00
0	9	101.7	2.73	42.83	-6.35	25.63
1	0	162.3	2.91	80.20	-6.66	25.39
1	3	237.9	3.08	136.59	-6.98	25.22
1	6	328.4	3.25	201.09	-7.30	25.10
1	9	429.4	3.41	241.53	-7.57	24.99
2	0	535.6	3.57	252.83	-7.77	24.90
2	3	641.9	3.71	255.42	-7.92	24.83
2	6	748.1	3.85	258.04	-8.02	24.78
2	9	855.1	3.99	260.68	-8.10	24.75
3	0	962.8	4.12	263.34	-8.16	24.72
3	3	1070.5	4.26	266.04	-8.21	24.70
3	6	1179.0	4.39	268.75	-8.26	24.68
3	9	1287.5	4.52	271.47	-8.29	24.67
4	0	1396.0	4.65	274.18	-8.33	24.65
4	3	1505.2	4.78	276.92	-8.35	24.64
4	6	1615.1	4.91	279.68	-8.38	24.63
4	9	1725.1	5.04	282.46	-8.40	24.63
5	0	1835.1	5.17	285.28	-8.43	24.62
5	3	1945.8	5.30	288.11	-8.45	24.61
5	6	2056.5	5.43	290.98	-8.46	24.61
5	9	2168.0	5.56	293.84	-8.48	24.60
6	0	2280.2	5.69	296.70	-8.50	24.60
6	3	2392.4	5.82	299.58	-8.51	24.59
6	6	2504.6	5.95	302.49	-8.53	24.59
6	9	2617.6	6.08	305.43	-8.54	24.58
7	0	2730.6	6.20	308.39	-8.55	24.58
7	3	2844.3	6.33	311.38	-8.57	24.58
7	6	2958.0	6.46	314.39	-8.58	24.57
7	9	3072.4	6.59	317.41	-8.59	24.57
8	0	3186.9	6.72	320.42	-8.60	24.57
8	3	3302.1	6.85	323.46	-8.61	24.57
8	6	3417.3	6.98	326.52	-8.62	24.56
8	9	3533.3	7.11	329.61	-8.64	24.56
9	0	3649.2	7.24	332.72	-8.65	24.56
9	3	3765.9	7.37	335.86	-8.66	24.56
9	6	3882.6	7.50	339.03	-8.67	24.56
9	9	3993.4	7.62	66.02	-8.67	24.56
10	0	4006.1	7.64	0.00	-8.66	24.55

FOR FULL TANK
LCG ---- 24 FT 6-11/16 INS. FWD OF ORIGIN.
VCG ---- 7 FT 7-11/16 INS. ABOVE BASE LINE
TOTAL VOLUME ---- 4006.1 U.S. GALLONS

Telephone: 0241-75112
Fax: 0241-71712

THE
NAPIER COMPANY
(ARBROATH) LTD.
NAVAL ARCHITECTS/MARINE CONSULTANTS

WEST GRIMSBY STREET
ARBROATH DD11 1PF
SCOTLAND



Alaska Department of Fish and Game,
Box 240020,
Douglas,
AK 99824,
United States of America.

8 December 1993

For the Attention of Wade Loofbourrow

R.V. 'MEDEIA'

Dear Wade,

We enclose a copy of the Stability Calculations, which we are pleased to say show good characteristics, permitting the carriage of up to 38 tons (2240 lb) on deck at a center of gravity 4 feet above the false decking, and a longitudinal center 34 feet forward of the transom. (We used this height lest you carry containers any time.) Arrival with 10% fuel and fresh water is the worst condition, because fuel has been used low down, raising the center of gravity. Please however note the comments in the booklet about loading notes etc., since any different heights and/or centers of gravity, areas subjected to icing, etc. will affect the critical loading. We hope however that the acceptable range of deck cargo is enough to satisfy your needs.

Adding water ballast in any of the aft tanks makes stability worse, and so we have allowed only for the use of the fore peak in arrival conditions. We appreciate that adding ballast will improve seakindliness, and so a compromise is probably appropriate - all ships are a compromise.

The deck loading naturally has to be reduced when any risk of icing up occurs. At the same VCG and LCG and under the same other conditions, the maximum deck cargo then becomes 25 tons, based on Coastguard merchant ship standards. However we must draw your attention to the fact that we have had to use the supply vessel type criteria for GZs in conjunction with the fishing vessel GM. We started with fishing vessel criteria, but this requires maximum GZ at not less than 25 degrees and positive GZ up to 50 or 60 degrees. The peak in some conditions is just below 25 degrees, and with the stipulated crab traps on deck and when iced up, she does not quite meet the latter limit in the arrival condition with 10% consumables. Thus this must be avoided by keeping more fuel aboard, reducing deck load and/or height when any risk of icing exists. We have included an alternative Arrival Condition with 20% consumables (oil fuel and fresh water) whilst maintaining the same deck loading which complies with the range of GZ criteria and trust that this is of assistance to you. The supply vessel criteria (or more precisely, for vessels of unusual proportions or form, such as the 'MEDEIA') permit a lower peak provided that the areas under the GZ curve are greater than normal. In her case, they are, and we have no hesitation in adopting this alternative.

Naturally we would like to avoid any condition that fails to meet the criteria, but the only apparent ways to do so in this case would be adding permanent ballast or converting a pair of fuel tanks into water ballast - since they are low down, their contents improve stability, in contrast to the aft ballast tanks which are higher. This would also help trim considerably - any

vessel carrying deck cargo aft should have water ballast tanks low down forward to compensate trim and stability. Might this be worth considering in due course, if you do not need the existing fuel capacity ? We do have the irony that when she is not fishing, there is no stipulation for minimum range of positive GZs.

In 10% arrival conditions with deck cargo the positive GZ ceases below 50 degrees, even without icing up, whereas it would be prudent to achieve 50 degrees plus if at all reasonably possible. For the future, fitting a Forecastle and enclosing the spaces beside the deckhouse watertight would probably improve the situation quite considerably. Once you comment on the conditions shown, we will gladly run others free of charge to a reasonable degree if you want to expand the range in the book.

We would appreciate your sending a copy of our stability data to each yard so that they have a full picture of the proposals.

We look forward keenly to developments, but meantime all comments will be welcome,

Yours sincerely,

A. D. Reid.

P.P. Maurice J. Napier

P.S. Our invoice is also enclosed.

Encl.

ALASKA DEPARTMENT OF FISH AND GAME

R.V. "MEDEIA"

STABILITY DATA

THE NAPIER CO. (ARBROATH) LTD., SCOTLAND. | DECEMBER 1993

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THE NAPIER CO. (ARBROATH) LTD.
ADR. 8/12/93

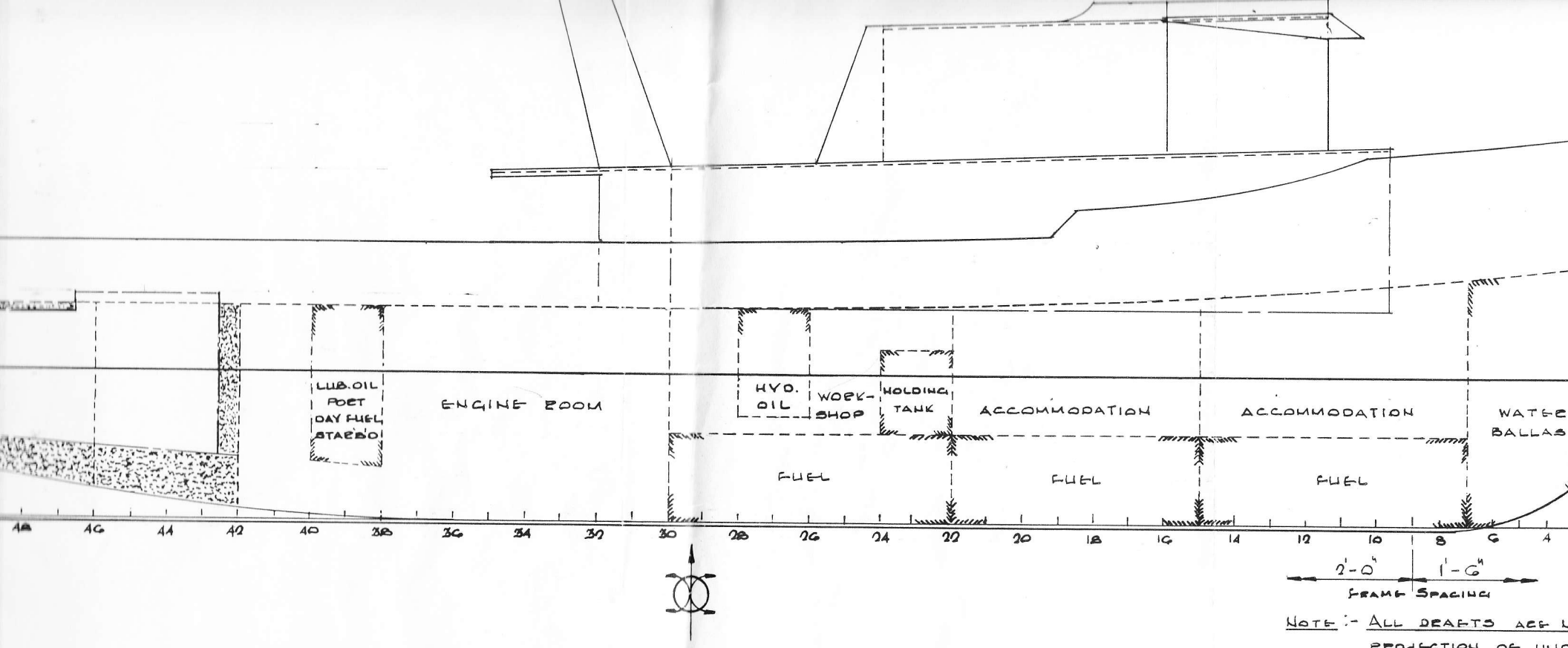
GENERAL PARTICULARS

Steel Research Vessel	- "MEDEIA"	
Port of Registry	- Juneau, Alaska	
Owner	- Alaska Department of Fish and Game, Douglas, Alaska 99824-0020	
Builders	- Universal Iron Works, Houma, Louisiana.	
Yard Number	- 192	
Delivered	- 1982	
Dimensions -	Length Over All	- 110'-9" ex Rubrails
	Length Between Perps.	- 108'-0"
	Breadth Molded	- 26'-0"
	Depth Molded	- 12'-0"
	Keel Depth	- 2"
Draft Maximum		- 8.15 ft
Corresponding Minimum Freeboard		- 4.02 ft
Displacement in Salt Water		- 382.7 t
Corresponding Deadweight		- 137.7 t
Main Engine	Two Detroit Diesel 16V92s	

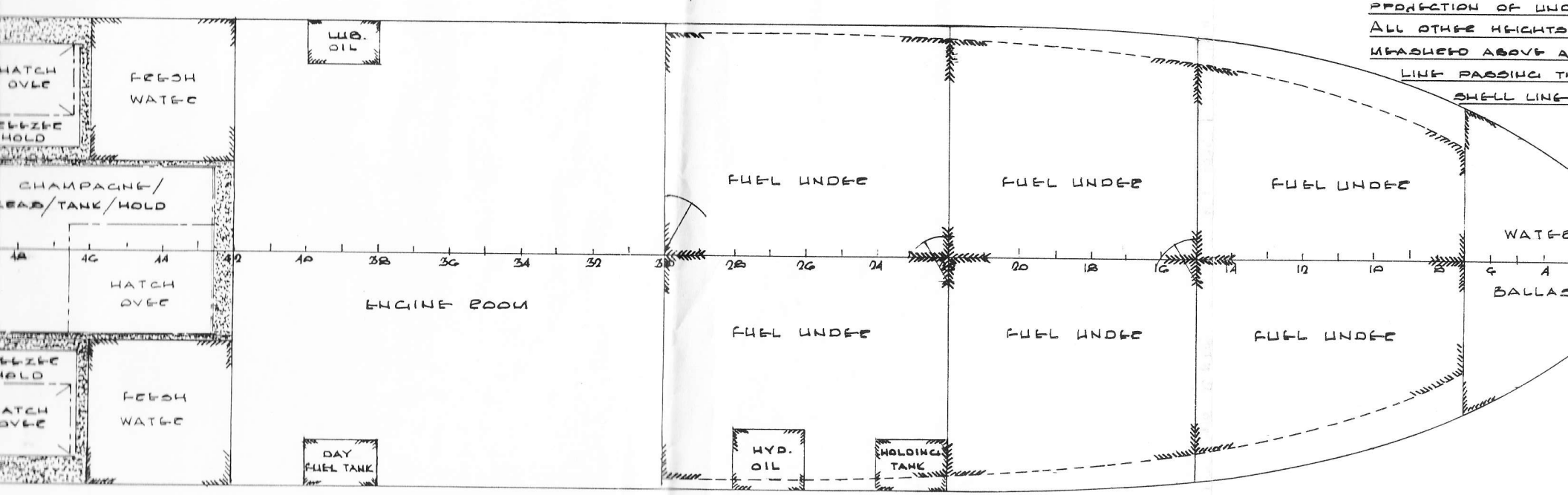
Stability data compiled by

THE NAPIER CO. (ARBROATH) LTD ,
WEST GRIMSBY STREET,
ARBROATH,
SCOTLAND.
DD11 1PF

TEL. 011-44-241-75112
FAX. 011-44-241-71712



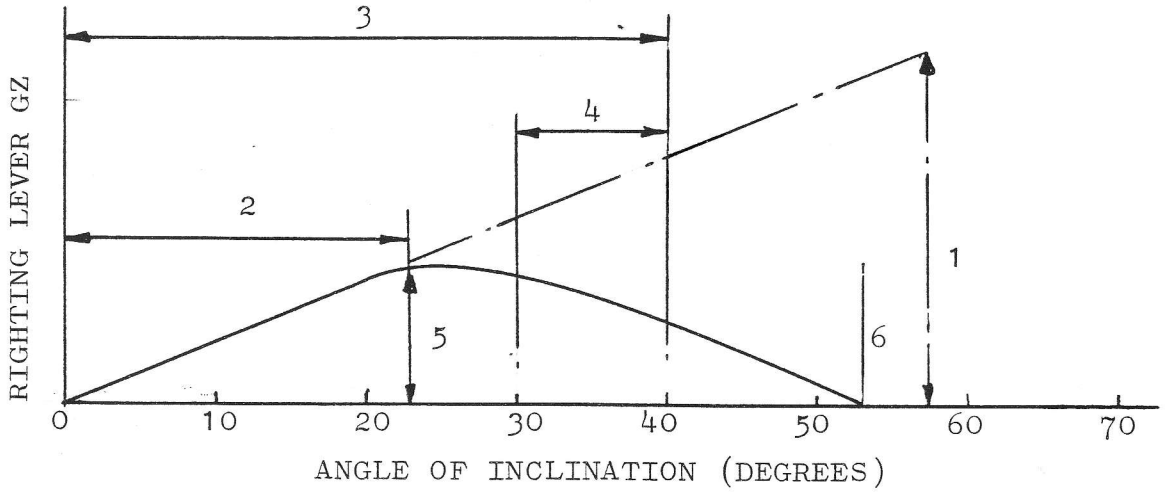
NOTE :- ALL DRAFTS ACF L
PROJECTION OF UNC
ALL OTHER HEIGHTS
MEASURED ABOVE A
LINE PASSING T
SHELL LINE



NOTES REGARDING THE STABILITY AND LOADING OF THE VESSEL

In order to comply with the Coast Guard, Department of Transportation Rules 46 CFR 170.173 para (c), it is most important to ensure that in any sailing condition the stability is at least sufficient to meet the following minimum criteria:-

STATICAL STABILITY CURVE



1. Initial GM to be not less than 1.15 ft.

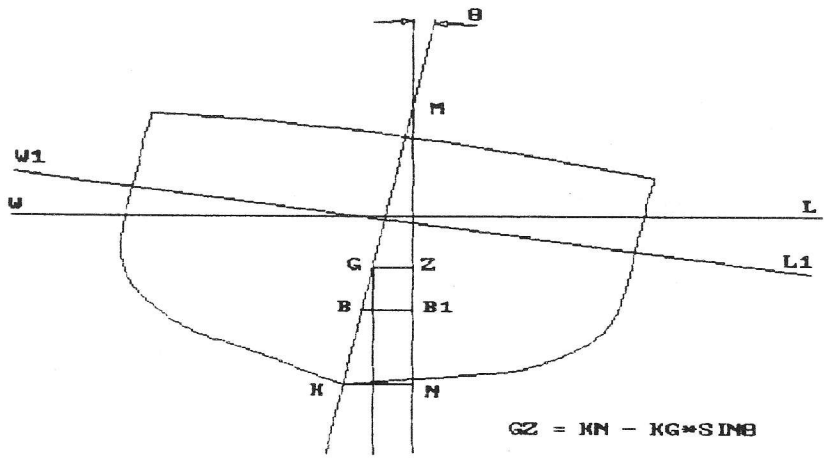
2. Area under curve up to the angle of maximum righting arm is not less than 10.3 + 0.187 (30-y) foot degrees. (y = the actual angle)

3. Area under curve up to 40^{o}, or lesser angle at which lower edges of non-weathertight openings are immersed, to be not less than 16.9 foot degrees.

4. Area between 30^{o} and 40^{o}, or angle defined above, to be not less than 5.6 foot degrees.

5. Maximum GZ to occur at an angle not less than 15^{o}

6. Positive righting arm through an angle of heel of 50^{o} when fishing (This does not apply for icing up conditions)



HYDROSTATIC PROPERTIES

TRIM = 0.000 FEET RELATIVE TO U/S OF KEEL
WATER DENSITY = 0.02857 TONS/CUBIC FOOT

DRAFT TO U/S KEEL FEET	DISPL EXTREME TONS	TONS PER IN IMMERS-N TONS	MOMENT TO CHANGE TRIM 1 IN TON FEET	VCB ABOVE BASE FEET	TRANSV MTC ABOVE BASE FEET	LONGIT-L CENTRE BUOYANCY FROM A.P. FEET	LONGIT-L CENTRE FLOTAT-N FEET
6.100	235.48	5.616	41.67	3.878	17.298	52.60	47.51
6.175	240.53	5.633	41.95	3.922	17.130	52.50	47.44
6.250	245.60	5.647	42.20	3.966	16.964	52.40	47.40
6.325	250.68	5.659	42.41	4.010	16.799	52.30	47.36
6.400	255.78	5.670	42.58	4.053	16.637	52.21	47.34
6.475	260.89	5.680	42.73	4.097	16.477	52.12	47.33
6.550	266.01	5.688	42.86	4.140	16.319	52.03	47.33
6.625	271.15	5.695	42.96	4.184	16.165	51.94	47.34
6.700	276.29	5.701	43.05	4.227	16.014	51.85	47.35
6.775	281.45	5.707	43.12	4.270	15.867	51.77	47.37
6.850	286.62	5.712	43.18	4.313	15.725	51.69	47.40
6.925	291.79	5.716	43.23	4.356	15.586	51.61	47.42
7.000	296.97	5.721	43.28	4.398	15.453	51.54	47.45
7.075	302.15	5.725	43.32	4.441	15.324	51.46	47.48
7.150	307.34	5.729	43.37	4.483	15.201	51.39	47.51
7.225	312.54	5.734	43.42	4.526	15.084	51.33	47.54
7.300	317.73	5.738	43.48	4.568	14.973	51.26	47.56
7.375	322.93	5.744	43.55	4.610	14.868	51.20	47.58
7.450	328.13	5.750	43.63	4.652	14.770	51.14	47.60
7.525	333.32	5.757	43.73	4.694	14.679	51.09	47.61
7.675	343.72	5.775	43.99	4.777	14.518	50.99	47.60
7.750	348.93	5.781	44.08	4.819	14.436	50.94	47.61
7.825	354.16	5.788	44.17	4.860	14.358	50.89	47.62
7.900	359.39	5.794	44.26	4.902	14.283	50.84	47.64
7.975	364.63	5.800	44.35	4.943	14.211	50.79	47.65
8.050	369.87	5.807	44.45	4.984	14.142	50.75	47.66
8.125	375.12	5.813	44.54	5.025	14.076	50.70	47.67
8.200	380.37	5.820	44.63	5.066	14.013	50.66	47.68
8.275	385.63	5.826	44.72	5.107	13.953	50.62	47.69
8.350	390.90	5.833	44.81	5.148	13.895	50.58	47.70
8.425	396.17	5.839	44.90	5.189	13.840	50.54	47.71
8.500	401.45	5.846	44.99	5.230	13.788	50.51	47.72
8.575	406.73	5.852	45.08	5.271	13.738	50.47	47.73
8.650	412.02	5.859	45.17	5.313	13.691	50.43	47.74
8.725	417.31	5.865	45.26	5.354	13.645	50.40	47.75
8.800	422.61	5.871	45.35	5.394	13.602	50.37	47.76

HYDROSTATIC PROPERTIES

TRIM = 1.000 FOOT BY THE HEAD RELATIVE TO U/S OF KEEL
WATER DENSITY = 0.02857 TONS/CUBIC FOOT

DRAFT TO U/S KEEL FEET	DISPL EXTREME TONS	TONS PER IN IMMERS-N TONS	MOMENT TO CHANGE TRIM 1 IN TON FEET	VCB ABOVE BASE FEET	TRANSV MTC ABOVE BASE FEET	LONGIT-L CENTRE BUOYANCY FROM FEET	LONGIT-L CENTRE FLOTAT-N A.P. FEET
6.100	231.85	5.477	38.86	3.855	16.906	54.76	49.00
6.175	236.82	5.503	39.33	3.899	16.775	54.64	48.85
6.250	241.82	5.528	39.78	3.942	16.647	54.51	48.71
6.325	246.85	5.551	40.21	3.986	16.523	54.39	48.58
6.400	251.89	5.573	40.62	4.029	16.401	54.27	48.46
6.475	256.96	5.595	41.01	4.073	16.282	54.15	48.35
6.550	262.05	5.614	41.37	4.116	16.166	54.03	48.25
6.625	267.15	5.633	41.71	4.159	16.051	53.91	48.16
6.700	272.27	5.651	42.03	4.202	15.939	53.80	48.08
6.775	277.41	5.667	42.33	4.245	15.829	53.69	48.00
6.850	282.56	5.682	42.60	4.288	15.721	53.58	47.94
6.925	287.72	5.696	42.86	4.331	15.615	53.47	47.89
7.000	292.89	5.709	43.08	4.373	15.509	53.36	47.85
7.075	298.07	5.721	43.29	4.416	15.405	53.26	47.82
7.150	303.26	5.732	43.48	4.458	15.302	53.16	47.79
7.225	308.46	5.741	43.64	4.501	15.200	53.07	47.78
7.300	313.66	5.750	43.78	4.543	15.098	52.98	47.77
7.375	318.86	5.757	43.89	4.585	14.997	52.89	47.77
7.450	324.06	5.764	43.98	4.627	14.896	52.81	47.79
7.525	329.26	5.769	44.05	4.668	14.795	52.73	47.81
7.600	334.47	5.774	44.10	4.710	14.694	52.65	47.84
7.675	339.67	5.778	44.13	4.751	14.594	52.58	47.88
7.750	344.89	5.783	44.20	4.793	14.506	52.51	47.90
7.825	350.12	5.789	44.27	4.834	14.422	52.44	47.91
7.900	355.36	5.795	44.35	4.876	14.342	52.37	47.93
7.975	360.59	5.801	44.44	4.917	14.267	52.30	47.94
8.050	365.84	5.808	44.54	4.959	14.197	52.24	47.95
8.125	371.08	5.815	44.64	5.000	14.132	52.18	47.95
8.200	376.33	5.823	44.75	5.041	14.070	52.12	47.95
8.275	381.59	5.829	44.84	5.082	14.007	52.06	47.96
8.350	386.86	5.836	44.93	5.123	13.948	52.00	47.97
8.425	392.13	5.842	45.02	5.165	13.891	51.95	47.99
8.500	397.41	5.849	45.11	5.206	13.837	51.89	48.00
8.575	402.70	5.855	45.20	5.247	13.785	51.84	48.01
8.650	407.99	5.862	45.29	5.288	13.736	51.79	48.02
8.725	413.29	5.868	45.38	5.329	13.689	51.74	48.03
8.800	418.59	5.875	45.47	5.370	13.644	51.69	48.05

HYDROSTATIC PROPERTIES

TRIM = 1.000 FOOT BY THE STERN RELATIVE TO U/S OF KEEL
WATER DENSITY = 0.02857 TONS/CUBIC FOOT

DRAFT TO U/S KEEL FEET	DISPL EXTREME TONS	TONS PER IN IMMERS-N TONS	MOMENT TO CHANGE TRIM 1 IN TON FEET	VCB ABOVE BASE FEET	TRANSV MTC ABOVE BASE FEET	LONGIT-L CENTRE BUOYANCY FROM A.P. FEET	LONGIT-L CENTRE FLOTAT-N FEET
6.100	239.71	5.625	41.76	3.924	17.220	50.41	47.06
6.175	244.79	5.637	41.95	3.968	17.038	50.34	47.05
6.250	249.88	5.648	42.13	4.012	16.860	50.28	47.04
6.325	254.98	5.658	42.29	4.055	16.686	50.22	47.04
6.400	260.09	5.666	42.43	4.099	16.518	50.16	47.05
6.475	265.20	5.674	42.55	4.142	16.355	50.10	47.06
6.550	270.32	5.682	42.66	4.185	16.196	50.04	47.07
6.625	275.45	5.689	42.76	4.228	16.042	49.99	47.09
6.700	280.59	5.695	42.84	4.271	15.894	49.94	47.11
6.775	285.74	5.701	42.92	4.314	15.751	49.89	47.13
6.850	290.89	5.706	42.99	4.356	15.613	49.84	47.15
6.925	296.05	5.711	43.06	4.399	15.480	49.80	47.18
7.000	301.21	5.717	43.12	4.441	15.352	49.75	47.20
7.075	306.38	5.722	43.18	4.483	15.230	49.71	47.22
7.150	311.56	5.727	43.25	4.525	15.114	49.67	47.25
7.225	316.74	5.732	43.31	4.567	15.003	49.63	47.27
7.300	321.92	5.738	43.39	4.609	14.897	49.60	47.29
7.375	327.11	5.743	43.46	4.651	14.797	49.56	47.30
7.450	332.30	5.750	43.55	4.693	14.703	49.53	47.31
7.525	337.50	5.756	43.64	4.734	14.615	49.49	47.32
7.600	342.70	5.764	43.75	4.776	14.533	49.46	47.32
7.675	347.91	5.772	43.87	4.817	14.455	49.43	47.32
7.750	353.12	5.778	43.96	4.859	14.377	49.40	47.33
7.825	358.34	5.785	44.05	4.900	14.302	49.37	47.34
7.900	363.57	5.791	44.14	4.941	14.230	49.34	47.36
7.975	368.80	5.797	44.23	4.983	14.161	49.31	47.37
8.050	374.04	5.804	44.33	5.024	14.095	49.29	47.38
8.125	379.29	5.810	44.42	5.065	14.031	49.26	47.39
8.200	384.54	5.817	44.51	5.106	13.970	49.24	47.40
8.275	389.80	5.823	44.61	5.147	13.912	49.21	47.41
8.350	395.06	5.830	44.70	5.188	13.857	49.19	47.42
8.425	400.33	5.836	44.79	5.229	13.804	49.17	47.43
8.500	405.60	5.843	44.88	5.269	13.753	49.15	47.44
8.575	410.88	5.849	44.97	5.310	13.705	49.13	47.45
8.650	416.17	5.856	45.06	5.351	13.658	49.11	47.46
8.725	421.46	5.862	45.15	5.391	13.614	49.09	47.47
8.800	426.76	5.868	45.24	5.432	13.572	49.07	47.49

HYDROSTATIC PROPERTIES

TRIM = 2.000 FEET BY THE STERN RELATIVE TO U/S OF KEEL
WATER DENSITY = 0.02857 TONS/CUBIC FOOT

DRAFT TO U/S KEEL FEET	DISPL EXTREME TONS	TONS PER IN IMMERS-N TONS	MOMENT TO CHANGE TRIM 1 IN TON FEET	VCB ABOVE BASE FEET	TRANSV MTC ABOVE BASE FEET	LONGIT-L CENTRE BUOYANCY FROM FEET	LONGIT-L CENTRE FLOTAT-N A.P. FEET
6.100	244.13	5.617	41.46	3.990	17.077	48.30	46.68
6.175	249.21	5.626	41.61	4.034	16.885	48.27	46.71
6.250	254.30	5.635	41.75	4.077	16.701	48.24	46.74
6.325	259.40	5.643	41.88	4.120	16.525	48.21	46.76
6.400	264.50	5.651	42.01	4.163	16.358	48.19	46.79
6.475	269.61	5.659	42.14	4.205	16.197	48.16	46.81
6.550	274.73	5.667	42.26	4.248	16.044	48.14	46.83
6.625	279.85	5.674	42.38	4.290	15.898	48.12	46.85
6.700	284.98	5.682	42.49	4.333	15.759	48.10	46.87
6.775	290.12	5.689	42.60	4.375	15.626	48.08	46.89
6.850	295.26	5.696	42.71	4.417	15.499	48.06	46.91
6.925	300.41	5.703	42.81	4.459	15.377	48.04	46.93
7.000	305.57	5.710	42.92	4.500	15.261	48.03	46.94
7.075	310.73	5.717	43.01	4.542	15.151	48.01	46.96
7.150	315.90	5.723	43.11	4.584	15.044	48.00	46.97
7.225	321.07	5.730	43.21	4.625	14.943	47.98	46.98
7.300	326.25	5.737	43.30	4.666	14.845	47.97	47.00
7.375	331.44	5.743	43.40	4.708	14.752	47.96	47.01
7.450	336.63	5.750	43.49	4.749	14.662	47.95	47.02
7.525	341.82	5.756	43.58	4.790	14.575	47.93	47.03
7.600	347.02	5.763	43.67	4.831	14.491	47.92	47.04
7.675	352.23	5.770	43.77	4.872	14.410	47.91	47.05
7.750	357.44	5.776	43.86	4.913	14.334	47.90	47.06
7.825	362.66	5.782	43.95	4.954	14.261	47.89	47.07
7.900	367.88	5.789	44.04	4.995	14.192	47.88	47.08
7.975	373.11	5.795	44.13	5.036	14.125	47.87	47.09
8.050	378.35	5.801	44.22	5.077	14.061	47.86	47.10
8.125	383.59	5.808	44.31	5.117	13.999	47.85	47.11
8.200	388.84	5.814	44.40	5.158	13.940	47.85	47.12
8.275	394.09	5.820	44.49	5.199	13.884	47.84	47.13
8.350	399.35	5.827	44.58	5.239	13.830	47.83	47.14
8.425	404.62	5.833	44.68	5.280	13.779	47.82	47.15
8.500	409.89	5.840	44.77	5.320	13.730	47.82	47.16
8.575	415.17	5.847	44.86	5.361	13.684	47.81	47.17
8.650	420.45	5.853	44.96	5.402	13.639	47.81	47.18
8.725	425.74	5.860	45.04	5.442	13.596	47.80	47.20
8.800	431.03	5.865	45.11	5.483	13.556	47.79	47.22

HYDROSTATIC PROPERTIES

TRIM = 3.000 FEET BY THE STERN RELATIVE TO U/S OF KEEL
WATER DENSITY = 0.02857 TONS/CUBIC FOOT

DRAFT TO U/S KEEL FEET	DISPL EXTREME TONS	TONS PER IN IMMERS-N TONS	MOMENT TO CHANGE TRIM 1 IN TON FEET	VCB ABOVE BASE FEET	TRANSV MTC ABOVE BASE FEET	LONGIT-L CENTRE BUOYANCY FROM A.P. FEET	LONGIT-L CENTRE FLOTAT-N FEET
6.100	248.76	5.601	41.01	4.076	16.929	46.28	46.29
6.175	253.82	5.611	41.18	4.118	16.746	46.29	46.33
6.250	258.89	5.621	41.34	4.161	16.571	46.29	46.36
6.325	263.97	5.630	41.49	4.203	16.404	46.30	46.40
6.400	269.06	5.639	41.64	4.244	16.245	46.30	46.43
6.475	274.16	5.648	41.79	4.286	16.092	46.31	46.46
6.550	279.26	5.656	41.93	4.328	15.947	46.31	46.49
6.625	284.38	5.664	42.07	4.369	15.808	46.32	46.52
6.700	289.50	5.673	42.20	4.410	15.675	46.33	46.55
6.775	294.62	5.681	42.33	4.452	15.548	46.33	46.57
6.850	299.76	5.688	42.45	4.493	15.426	46.34	46.59
6.925	304.90	5.696	42.58	4.534	15.310	46.35	46.61
7.000	310.05	5.704	42.69	4.575	15.199	46.36	46.63
7.075	315.21	5.711	42.81	4.616	15.093	46.37	46.65
7.150	320.37	5.718	42.92	4.657	14.991	46.37	46.67
7.225	325.54	5.726	43.03	4.698	14.894	46.38	46.69
7.300	330.71	5.733	43.14	4.738	14.800	46.39	46.70
7.375	335.89	5.740	43.25	4.779	14.710	46.40	46.72
7.450	341.08	5.747	43.35	4.820	14.623	46.41	46.73
7.525	346.27	5.754	43.45	4.860	14.539	46.42	46.74
7.600	351.47	5.761	43.55	4.901	14.458	46.42	46.76
7.675	356.68	5.768	43.65	4.941	14.379	46.43	46.77
7.750	361.89	5.774	43.75	4.982	14.306	46.44	46.78
7.825	367.10	5.781	43.84	5.022	14.235	46.45	46.79
7.900	372.32	5.787	43.94	5.063	14.168	46.46	46.80
7.975	377.55	5.794	44.03	5.103	14.103	46.46	46.81
8.050	382.79	5.800	44.12	5.143	14.041	46.47	46.82
8.125	388.02	5.807	44.21	5.183	13.981	46.48	46.83
8.200	393.27	5.812	44.30	5.224	13.924	46.49	46.84
8.275	398.52	5.818	44.37	5.264	13.870	46.49	46.86
8.350	403.77	5.823	44.43	5.304	13.818	46.50	46.88
8.425	409.03	5.828	44.48	5.344	13.768	46.51	46.90
8.500	414.29	5.832	44.53	5.384	13.721	46.52	46.93
8.575	419.55	5.836	44.56	5.424	13.675	46.53	46.96
8.650	424.82	5.839	44.58	5.464	13.632	46.54	47.00
8.725	430.10	5.843	44.62	5.504	13.590	46.54	47.03
8.800	435.38	5.847	44.66	5.544	13.551	46.55	47.06

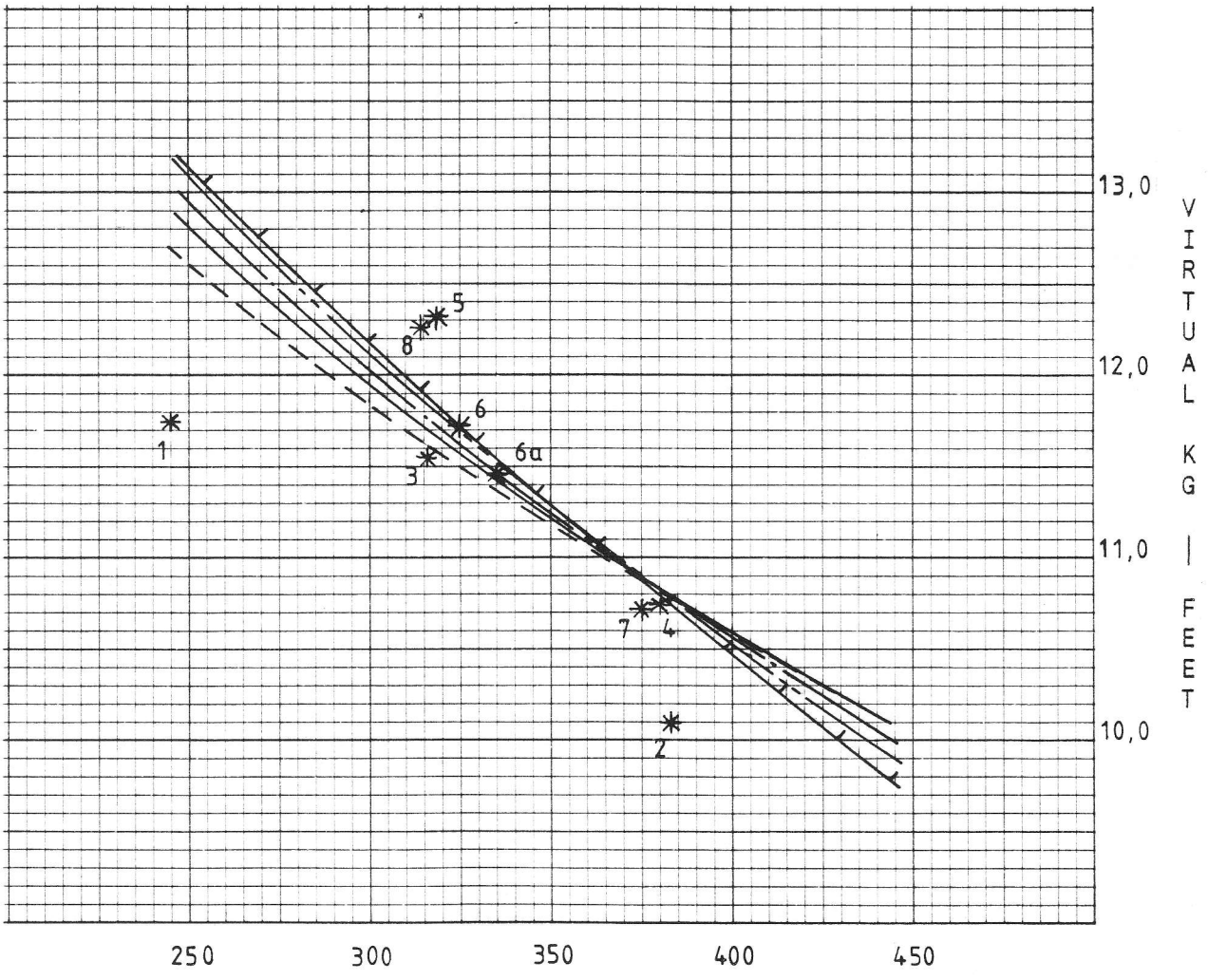
MAXIMUM KG FOR ADEQUATE STABILITY

EXAMPLE

CONDITION No.2

DISPLACEMENT	-	382.7 TONS
KG	-	9.75 FEET
FREE SURFACE CORRECTION	-	0.35 FEET
VIRTUAL KG	-	10.09 FEET

PLOTTING THE VIRTUAL KG AGAINST THE DISPLACEMENT SHOWS THAT THE VALUE IS LESS THAN THE MAXIMUM PERMISSIBLE KG FOR THE PARTICULAR TRIM, THEREFORE, THE VESSEL MEETS STABILITY REQUIREMENTS IN THIS CONDITION.



NUMBERED ASTERISKS SHOW THE KG FOR THE CONDITIONS INVESTIGATED.

LEVEL TRIM
1.00 FEET TRIM BY HEAD
1.00 FEET TRIM BY STERN
2.00 FEET TRIM BY STERN
3.00 FEET TRIM BY STERN

N.B. - ALL TRIMS RELATIVE TO UNDERSIDE OF KEEL

TABLE OF RIGHTING LEVERS (KN)- FEET

CALCULATIONS INCLUDE MAIN HULL & DECKHOUSE
INITIAL TRIM = 0.00 FT RELATIVE TO THE UNDER SIDE OF KEEL
ASSUMED KG = 0.00 FT FREE TRIMMING ASSUMED
WATER DENSITY = 0.02857 TONS/CUBIC FOOT

DISPLACEMENT TONS	ANGLE OF HEEL - DEGREES 10.0	20.0	30.0	40.0	50.0	60.0	70.0
245.00	2.892	5.448	7.362	8.590	9.287	9.743	10.059
250.00	2.869	5.428	7.345	8.559	9.259	9.726	10.044
255.00	2.847	5.408	7.327	8.529	9.231	9.708	10.027
260.00	2.825	5.387	7.308	8.498	9.204	9.691	10.010
265.00	2.803	5.367	7.289	8.467	9.177	9.674	9.993
270.00	2.782	5.347	7.268	8.436	9.151	9.657	9.974
275.00	2.762	5.327	7.247	8.404	9.125	9.640	9.956
280.00	2.742	5.307	7.225	8.373	9.099	9.624	9.936
285.00	2.722	5.287	7.201	8.342	9.074	9.607	9.917
290.00	2.704	5.268	7.177	8.311	9.049	9.590	9.896
295.00	2.685	5.248	7.152	8.280	9.025	9.574	9.876
300.00	2.668	5.228	7.125	8.249	9.001	9.557	9.856
305.00	2.650	5.208	7.098	8.218	8.978	9.540	9.835
310.00	2.634	5.188	7.069	8.187	8.954	9.524	9.814
315.00	2.618	5.168	7.039	8.157	8.932	9.507	9.794
320.00	2.602	5.148	7.009	8.127	8.909	9.490	9.773
325.00	2.587	5.128	6.977	8.097	8.887	9.473	9.753
330.00	2.573	5.108	6.943	8.067	8.865	9.455	9.733
335.00	2.559	5.088	6.909	8.037	8.843	9.438	9.713
340.00	2.546	5.068	6.874	8.008	8.822	9.420	9.693
345.00	2.533	5.047	6.840	7.978	8.800	9.402	9.673
350.00	2.521	5.026	6.806	7.949	8.777	9.384	9.653
355.00	2.509	5.004	6.771	7.919	8.753	9.365	9.634
360.00	2.497	4.982	6.737	7.890	8.729	9.346	9.614
365.00	2.485	4.960	6.703	7.861	8.705	9.327	9.595
370.00	2.474	4.937	6.670	7.832	8.679	9.308	9.576
375.00	2.464	4.913	6.636	7.803	8.654	9.288	9.558
380.00	2.453	4.889	6.602	7.774	8.630	9.269	9.539
385.00	2.444	4.864	6.567	7.745	8.606	9.249	9.521
390.00	2.434	4.839	6.532	7.715	8.583	9.229	9.502
395.00	2.425	4.812	6.498	7.686	8.561	9.209	9.483
400.00	2.416	4.785	6.463	7.657	8.539	9.188	9.465
405.00	2.408	4.757	6.429	7.628	8.518	9.168	9.446
410.00	2.399	4.728	6.394	7.599	8.497	9.147	9.428
415.00	2.392	4.699	6.359	7.567	8.475	9.127	9.410
420.00	2.384	4.671	6.324	7.535	8.453	9.106	9.392
425.00	2.377	4.642	6.289	7.501	8.430	9.085	9.374
430.00	2.370	4.613	6.254	7.466	8.407	9.064	9.356

TABLE OF RIGHTING LEVERS (KN)- FEET

CALCULATIONS INCLUDE MAIN HULL & DECKHOUSE
INITIAL TRIM = 1.00 FT BY THE HEAD RELATIVE TO THE UNDER SIDE OF KEEL
ASSUMED KG = 0.00 FT FREE TRIMMING ASSUMED
WATER DENSITY = 0.02857 TONS/CUBIC FOOT

DISPLACEMENT TONS	ANGLE OF HEEL - DEGREES 10.0	20.0	30.0	40.0	50.0	60.0	70.0
245.00	2.851	5.391	7.292	8.551	9.273	9.762	10.100
250.00	2.830	5.372	7.279	8.524	9.249	9.748	10.086
255.00	2.810	5.354	7.266	8.496	9.225	9.734	10.071
260.00	2.790	5.335	7.252	8.469	9.201	9.720	10.055
265.00	2.771	5.317	7.236	8.441	9.178	9.707	10.038
270.00	2.752	5.298	7.220	8.414	9.155	9.693	10.021
275.00	2.734	5.280	7.203	8.386	9.133	9.679	10.003
280.00	2.716	5.261	7.185	8.358	9.111	9.665	9.985
285.00	2.699	5.243	7.166	8.330	9.089	9.651	9.966
290.00	2.682	5.224	7.146	8.301	9.067	9.637	9.947
295.00	2.666	5.205	7.124	8.273	9.045	9.622	9.928
300.00	2.650	5.187	7.102	8.245	9.024	9.608	9.909
305.00	2.635	5.168	7.077	8.217	9.002	9.593	9.889
310.00	2.620	5.149	7.052	8.189	8.981	9.578	9.870
315.00	2.606	5.130	7.025	8.161	8.960	9.563	9.850
320.00	2.592	5.110	6.996	8.134	8.939	9.547	9.830
325.00	2.578	5.091	6.966	8.106	8.918	9.531	9.811
330.00	2.565	5.071	6.934	8.078	8.896	9.515	9.792
335.00	2.552	5.051	6.900	8.051	8.875	9.498	9.773
340.00	2.539	5.031	6.868	8.024	8.854	9.481	9.753
345.00	2.527	5.012	6.837	7.996	8.834	9.464	9.734
350.00	2.516	4.993	6.805	7.969	8.813	9.447	9.715
355.00	2.504	4.974	6.773	7.941	8.793	9.429	9.695
360.00	2.493	4.955	6.741	7.914	8.772	9.412	9.676
365.00	2.483	4.936	6.710	7.886	8.752	9.393	9.657
370.00	2.473	4.918	6.678	7.859	8.731	9.375	9.639
375.00	2.463	4.898	6.646	7.832	8.711	9.356	9.620
380.00	2.453	4.877	6.613	7.804	8.691	9.337	9.601
385.00	2.444	4.855	6.581	7.777	8.671	9.318	9.583
390.00	2.435	4.832	6.548	7.750	8.650	9.299	9.564
395.00	2.426	4.809	6.515	7.723	8.630	9.280	9.546
400.00	2.417	4.784	6.482	7.695	8.610	9.260	9.528
405.00	2.409	4.758	6.450	7.668	8.590	9.240	9.510
410.00	2.401	4.732	6.416	7.640	8.570	9.220	9.492
415.00	2.394	4.707	6.383	7.610	8.549	9.200	9.474
420.00	2.386	4.680	6.350	7.580	8.528	9.180	9.456
425.00	2.379	4.654	6.316	7.549	8.507	9.160	9.438
430.00	2.373	4.627	6.283	7.517	8.485	9.139	9.420

TABLE OF RIGHTING LEVERS (KN)- FEET

CALCULATIONS INCLUDE MAIN HULL & DECKHOUSE
INITIAL TRIM = 1.00 FT BY THE STERN RELATIVE TO THE UNDER SIDE OF KEEL
ASSUMED KG = 0.00 FT FREE TRIMMING ASSUMED
WATER DENSITY = 0.02857 TONS/CUBIC FOOT

DISPLACEMENT TONS	ANGLE OF HEEL - DEGREES 10.0	20.0	30.0	40.0	50.0	60.0	70.0
245.00	2.925	5.499	7.425	8.618	9.293	9.719	9.995
250.00	2.900	5.477	7.403	8.585	9.261	9.698	9.979
255.00	2.875	5.455	7.380	8.552	9.229	9.677	9.962
260.00	2.851	5.432	7.357	8.518	9.198	9.657	9.945
265.00	2.828	5.410	7.332	8.484	9.168	9.636	9.927
270.00	2.805	5.388	7.307	8.450	9.138	9.617	9.908
275.00	2.783	5.366	7.281	8.416	9.109	9.597	9.890
280.00	2.761	5.345	7.254	8.381	9.080	9.578	9.870
285.00	2.740	5.323	7.226	8.347	9.052	9.559	9.851
290.00	2.720	5.301	7.197	8.313	9.024	9.540	9.831
295.00	2.700	5.280	7.168	8.279	8.997	9.522	9.810
300.00	2.681	5.258	7.137	8.245	8.970	9.503	9.790
305.00	2.663	5.237	7.106	8.211	8.944	9.484	9.769
310.00	2.645	5.216	7.074	8.177	8.919	9.466	9.749
315.00	2.627	5.195	7.042	8.144	8.894	9.447	9.728
320.00	2.611	5.174	7.008	8.111	8.870	9.428	9.708
325.00	2.595	5.153	6.974	8.079	8.846	9.410	9.687
330.00	2.579	5.132	6.940	8.046	8.823	9.391	9.667
335.00	2.565	5.111	6.904	8.015	8.800	9.372	9.647
340.00	2.551	5.090	6.868	7.984	8.777	9.352	9.627
345.00	2.537	5.070	6.832	7.953	8.756	9.333	9.608
350.00	2.524	5.047	6.796	7.922	8.731	9.314	9.588
355.00	2.511	5.023	6.760	7.890	8.705	9.294	9.568
360.00	2.499	4.998	6.724	7.859	8.679	9.274	9.548
365.00	2.487	4.973	6.688	7.827	8.652	9.255	9.529
370.00	2.476	4.946	6.652	7.796	8.623	9.235	9.510
375.00	2.465	4.918	6.617	7.765	8.594	9.214	9.491
380.00	2.454	4.889	6.581	7.734	8.563	9.194	9.472
385.00	2.444	4.861	6.545	7.700	8.537	9.174	9.453
390.00	2.434	4.832	6.509	7.666	8.511	9.153	9.434
395.00	2.425	4.803	6.472	7.630	8.485	9.132	9.416
400.00	2.416	4.773	6.436	7.593	8.461	9.111	9.397
405.00	2.408	4.743	6.399	7.555	8.438	9.090	9.379
410.00	2.400	4.712	6.362	7.515	8.416	9.069	9.360
415.00	2.392	4.681	6.325	7.474	8.396	9.048	9.342
420.00	2.385	4.650	6.288	7.438	8.372	9.027	9.324
425.00	2.378	4.619	6.251	7.402	8.348	9.005	9.306
430.00	2.371	4.588	6.214	7.367	8.324	8.984	9.288

TABLE OF RIGHTING LEVERS (KN)- FEET

CALCULATIONS INCLUDE MAIN HULL & DECKHOUSE
INITIAL TRIM = 2.00 FT BY THE STERN RELATIVE TO THE UNDER SIDE OF KEEL
ASSUMED KG = 0.00 FT FREE TRIMMING ASSUMED
WATER DENSITY = 0.02857 TONS/CUBIC FOOT

DISPLACEMENT TONS	ANGLE OF HEEL - DEGREES 10.0	20.0	30.0	40.0	50.0	60.0	70.0
245.00	2.948	5.546	7.469	8.637	9.292	9.688	9.910
250.00	2.921	5.523	7.443	8.600	9.256	9.664	9.894
255.00	2.895	5.500	7.416	8.563	9.220	9.640	9.877
260.00	2.870	5.477	7.388	8.526	9.185	9.616	9.860
265.00	2.845	5.455	7.360	8.488	9.151	9.593	9.842
270.00	2.821	5.432	7.330	8.451	9.118	9.571	9.824
275.00	2.798	5.410	7.300	8.413	9.085	9.549	9.805
280.00	2.775	5.387	7.269	8.376	9.053	9.527	9.786
285.00	2.753	5.364	7.237	8.339	9.021	9.505	9.767
290.00	2.731	5.342	7.205	8.302	8.991	9.484	9.748
295.00	2.711	5.319	7.172	8.265	8.961	9.463	9.728
300.00	2.691	5.296	7.138	8.228	8.931	9.442	9.708
305.00	2.671	5.272	7.104	8.192	8.903	9.421	9.688
310.00	2.653	5.249	7.069	8.156	8.875	9.401	9.668
315.00	2.635	5.225	7.034	8.120	8.848	9.380	9.648
320.00	2.617	5.201	6.998	8.085	8.821	9.360	9.629
325.00	2.600	5.176	6.962	8.050	8.796	9.340	9.609
330.00	2.584	5.151	6.926	8.016	8.771	9.320	9.589
335.00	2.569	5.126	6.889	7.982	8.747	9.299	9.570
340.00	2.554	5.100	6.852	7.949	8.724	9.279	9.550
345.00	2.540	5.074	6.815	7.916	8.701	9.259	9.531
350.00	2.527	5.047	6.777	7.884	8.678	9.238	9.513
355.00	2.514	5.020	6.740	7.851	8.652	9.218	9.493
360.00	2.501	4.992	6.702	7.817	8.624	9.198	9.474
365.00	2.489	4.963	6.664	7.784	8.594	9.177	9.455
370.00	2.478	4.934	6.626	7.751	8.564	9.156	9.436
375.00	2.467	4.904	6.588	7.718	8.531	9.135	9.418
380.00	2.457	4.873	6.550	7.684	8.497	9.114	9.399
385.00	2.447	4.842	6.512	7.650	8.462	9.093	9.381
390.00	2.437	4.811	6.473	7.614	8.432	9.072	9.362
395.00	2.428	4.780	6.435	7.575	8.404	9.050	9.344
400.00	2.419	4.748	6.397	7.536	8.376	9.029	9.325
405.00	2.411	4.716	6.358	7.494	8.350	9.007	9.307
410.00	2.403	4.684	6.320	7.451	8.326	8.986	9.289
415.00	2.395	4.652	6.281	7.406	8.304	8.964	9.271
420.00	2.387	4.620	6.242	7.360	8.283	8.942	9.253
425.00	2.380	4.586	6.198	7.320	8.259	8.920	9.235
430.00	2.373	4.551	6.153	7.281	8.235	8.898	9.217

TABLE OF RIGHTING LEVERS (KN)- FEET

CALCULATIONS INCLUDE MAIN HULL & DECKHOUSE
INITIAL TRIM = 3.00 FT BY THE STERN RELATIVE TO THE UNDER SIDE OF KEEL
ASSUMED KG = 0.00 FT FREE TRIMMING ASSUMED
WATER DENSITY = 0.02857 TONS/CUBIC FOOT

DISPLACEMENT TONS	ANGLE OF HEEL - DEGREES 10.0	20.0	30.0	40.0	50.0	60.0	70.0
245.00	2.961	5.586	7.492	8.643	9.281	9.650	9.804
250.00	2.933	5.560	7.463	8.602	9.243	9.623	9.788
255.00	2.906	5.536	7.434	8.561	9.206	9.596	9.771
260.00	2.880	5.511	7.403	8.520	9.170	9.570	9.754
265.00	2.854	5.486	7.372	8.478	9.134	9.544	9.737
270.00	2.830	5.461	7.340	8.437	9.099	9.519	9.719
275.00	2.806	5.436	7.307	8.396	9.065	9.494	9.701
280.00	2.782	5.411	7.273	8.356	9.031	9.469	9.683
285.00	2.760	5.386	7.239	8.315	8.998	9.445	9.665
290.00	2.738	5.361	7.204	8.275	8.966	9.422	9.647
295.00	2.717	5.336	7.168	8.235	8.934	9.398	9.628
300.00	2.697	5.310	7.132	8.196	8.903	9.375	9.610
305.00	2.678	5.284	7.095	8.157	8.872	9.352	9.591
310.00	2.659	5.258	7.057	8.118	8.842	9.330	9.572
315.00	2.641	5.232	7.018	8.080	8.812	9.308	9.554
320.00	2.623	5.205	6.979	8.043	8.783	9.285	9.535
325.00	2.606	5.177	6.939	8.007	8.755	9.264	9.516
330.00	2.590	5.149	6.898	7.971	8.726	9.242	9.498
335.00	2.575	5.121	6.857	7.936	8.699	9.221	9.479
340.00	2.560	5.092	6.815	7.901	8.671	9.199	9.461
345.00	2.546	5.062	6.772	7.868	8.644	9.178	9.442
350.00	2.532	5.032	6.729	7.836	8.617	9.157	9.424
355.00	2.519	5.002	6.685	7.803	8.590	9.136	9.406
360.00	2.507	4.971	6.642	7.764	8.559	9.115	9.388
365.00	2.495	4.940	6.599	7.724	8.528	9.093	9.369
370.00	2.483	4.909	6.556	7.683	8.495	9.072	9.351
375.00	2.472	4.877	6.513	7.639	8.461	9.050	9.333
380.00	2.462	4.845	6.470	7.593	8.425	9.028	9.315
385.00	2.452	4.812	6.427	7.545	8.388	9.006	9.297
390.00	2.442	4.779	6.384	7.497	8.351	8.984	9.279
395.00	2.433	4.745	6.340	7.455	8.318	8.962	9.262
400.00	2.424	4.709	6.296	7.414	8.288	8.940	9.244
405.00	2.415	4.673	6.252	7.374	8.259	8.918	9.227
410.00	2.407	4.636	6.207	7.336	8.231	8.896	9.209
415.00	2.399	4.598	6.162	7.300	8.206	8.874	9.192
420.00	2.391	4.559	6.117	7.267	8.184	8.853	9.175
425.00	2.383	4.519	6.072	7.234	8.162	8.831	9.158
430.00	2.375	4.481	6.027	7.199	8.137	8.810	9.141

EXAMPLE SHOWING USE OF RIGHTING LEVERS (KN)

The purpose of the righting levers is to enable statical stability curves to be drawn for the ship in any sailing condition, e.g. :-

Assume the displacement of the ship to be 382.7 tons and the vertical centre of gravity to be 10.09 feet above base with the addition of the free surface correction (where applicable) as in Condition 2.

Then the righting lever GZ = KN - KG SIN θ

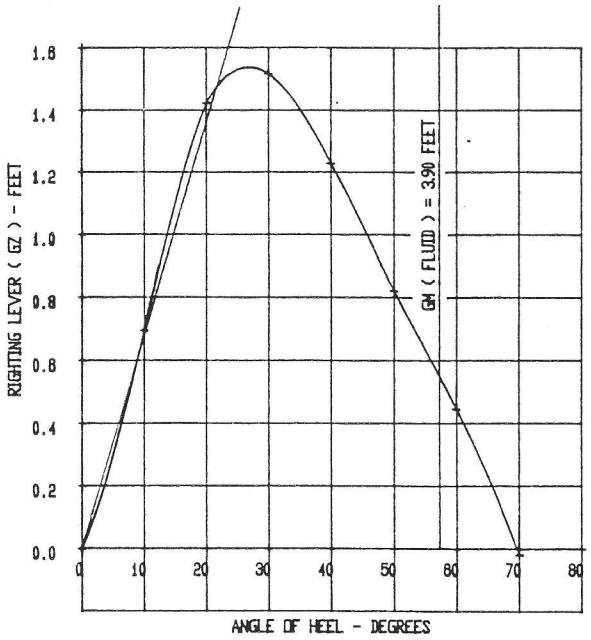
Where KN = righting lever at the appropriate trim
KG = centre of gravity above base (after free surface correction)
θ = angle of inclination

KN (AT DISPLACEMENT = 382.7 T)	θ DEG.	SIN θ	KG SIN θ (Ft)	GZ = KN-(KG SIN θ) (Ft)
2.449	10	0.17365	1.753	0.696
4.874	20	0.34202	3.453	1.421
6.562	30	0.50000	5.047	1.514
7.714	40	0.64279	6.489	1.225
8.550	50	0.76604	7.733	0.817
9.183	60	0.86603	8.742	0.441
9.462	70	0.93969	9.486	-0.024

Then by using the GZ values in the last column, a statical stability curve can be drawn for the ship at the displacement and kg used.

By erecting the gm(fluid) at 57° 18' and connecting this point to the origin, the initial slope of the curve is obtained.

GM(FLUID) = 3.90 Ft.



CAPACITIES AND CENTERS OF GRAVITY

1 HOLD

COMPARTMENT	LOCATION (FRAMES)	CAPACITY (CUBIC FEET)	CENTER OF GRAVITY (FEET)		FREE SURFACE MOMENT @ SG 0.02778
			VERTICAL A.B.	LONGL. FWD A.P.	
CRAB TANK	42-50	949.62	8.02	20.41	27.03 (HOLD
FREEZER HOLDS	46-50	475.00	8.02	16.66	4.22 HATCH)

2 CREW, STORES & GEAR

ITEM	WEIGHT (TONS)	CENTER OF GRAVITY	
		VERTICAL A.B.	LONGL. FWD A.P.
CREW, EFFECTS	0.70	16.00	74.00
CRAB POTS	6.90	17.13	23.40
BUOYS & LINES	2.10	17.13	23.40

3 OIL FUEL TANKS *

COMPARTMENT	LOCATION (FRAMES)	CAPACITIES			CENTER OF GRAVITY (FEET)		FREE SURFACE MOMENT @ SG 0.02778
		100 %	98 %				
		CUBIC FEET	CUBIC FEET	TONS @ SG = 0.02381	VERTL A.B.	LONGL FWD AP	
OIL FUEL P&S	30-22	1381.66	1292.29	30.77	3.17	60.44	138.59
OIL FUEL P&S	22-15	994.64	974.75	23.21	3.24	75.19	100.07
OIL FUEL P&S	15-07	652.86	639.80	15.23	3.32	88.99	46.98
OIL FUEL P&S	40-38	72.81	71.35	1.70	7.85	34.50	0.14
TOTAL		3038.97	2978.19	70.91	3.34	70.78	285.78

4 WATER TANKS

COMPARTMENT	LOCATION (FRAMES)	CAPACITY			CENTER OF GRAVITY (FEET)		FREE SURFACE MOMENT @ SG 0.02778
		CUBIC FEET	TONNES @ SG 0.02778	TONNES @ SG 0.02857	VERT. A.B.	LONGL FWD A.P.	
F.W. P&S	46-42	834.12	23.17	-	7.71	24.55	10.10
W.B. P&S	AFT-54	858.20	-	24.52	8.72	1.45	51.40
W.B. P&S	54-50	1411.30	-	40.32	8.03	8.65	81.21
W.B. FORE PK	7-FWD	815.30	-	23.29	9.41	101.10	38.19

* To obtain actual weight, multiply capacity by actual specific gravity. See following page for notes on free surface moments, and note that the above moments are calculated at a specific gravity of 0.02778 t/ft^3.

LOADING NOTES

1. The vessel is assumed to depart from port with 98% of the fuel tank capacity full and to arrive in port with 10% of the tank capacity full.

2. The vessel is assumed to depart from port with 100% of the fresh water tank capacity full and to arrive in port with 10% of the tank capacity full.

3. The conditions with crab traps on deck show the crab tank full when leaving port, since this gives worse characteristics than when it is empty and it may be filled soon after leaving port.

4. When fishing, crabbing imposes the worst stability characteristics since the weight of trawl deck machinery and fishing gear proposed is less onerous than the weight of crab traps. If heavier trawl equipment and/or gear is to be used however, appropriate consideration must be given to the stability implications.

5. Since the vessel's use may vary considerably, calculations have been undertaken to determine the maximum deck cargo which can be carried when not subject to icing up (38 tons at a VCG 4 feet above false decking) and when subject to icing up (25 tons at the same VCG) both being at 34 feet forward of the transom. The figures are very dependent on the vertical and longitudinal centers of gravity and if these are higher and/or further aft than those stipulated, revised calculations are necessary.

6. Calculations have been done for departure from port and arrival in port. Intermediate conditions with varying consumables have intermediate characteristics.

7. Filling water ballast tanks worsens stability due to the reduction in freeboard/reserve buoyancy and to the increase in trim by the stern when aft tanks are filled. Thus the only ballast tank used in conditions is the Fore Peak, to restore satisfactory trim when most fuel has been consumed. Care must however be taken to fill it while at least 30% of

LOADING NOTES Contd...

the fuel remains aboard, because the free surface effect while it is being filled is detrimental. Filling it when little fuel remains results in stability falling below the criteria. It may be desirable to fill ballast tanks for seakindliness, but loading conditions must be re-examined to suit.

8. The number of fuel tanks which are partly full must be minimized to avoid excessive free surfaces. Calculations allow for free surface in the aft fuel tanks, port and starboard only, since these have the biggest free surface effects.

9. Calculations are based on long tons (2240 lbs)

10. The base line for calculations is the horizontal line passing through the molded keel/shell plating intersection (See "General Arrangement" on page 2)

11. Trims stated are relative to the underside of keel i.e. level trim is when draft forward = draft aft.

12. Drafts are measured from a line projected at each end from the underside of keel. It must be noted that the propellers and rudder supports on each side project below this line, but the precise distance is unquantified - an original drawing scales 19 inches but this cannot be guaranteed.

13. Unintentional flooding and damaged stability calculations have not been undertaken at this stage but original data shows that single compartment flooding was satisfactory if draft aft and amidships did not exceed 8.55 feet. It would be prudent to achieve this when possible. Watertight doors in bulkheads must be kept closed to have any prospect of surviving single compartment flooding.

14. Righting levers allow for the reserve buoyancy of the deckhouse on the Main Deck and for its effect on trim when heeled. Thus doors and other openings which might be immersed at dangerous heels must be closed

LOADING NOTES Contd...

weathertight at all times when danger exists.

15. The fishing vessel regulations stipulate positive GZ up to 50^{o} or preferably 60^{o}. This criteria is not achieved in the Crabbing Arrival condition as calculated with 10% fuel and water remaining aboard. Thus it is essential that the vessel is never operated with so little fuel when risks of icing-up exist. An alternative Arrival Condition has been included to show compliance with this criteria which indicates that both fuel and fresh water capacities should not be allowed to fall below 20% under these circumstances.

NOTES ON THE USE OF FREE SURFACE MOMENTS

PARTLY FILLED TANKS - provided that a tank is completely filled with liquid, no movement of the liquid is possible and the effect on the ship's stability is precisely the same as if the tank contained solid material - i.e. nil.

Immediately a quantity of liquid is taken from the tank, the situation changes completely and the stability of the ship is adversely affected by what is known as the "FREE SURFACE EFFECT".

This adverse effect on the stability can be considered as either a "LOSS IN GM" or a "VIRTUAL RISE IN KG", AND IS CALCULATED AS FOLLOWS:-

$$\text{LOSS IN GM DUE TO FREE SURFACE} = \frac{\text{FREE SURFACE MOMENT} \times \text{SPECIFIC GRAVITY OF LIQUID IN TANK}}{\text{DISPLACEMENT OF VESSEL}}$$

OR (IN IMPERIAL UNITS - $FEET^3/TON$)

$$\text{LOSS IN GM DUE TO FREE SURFACE} = \frac{\text{FREE SURFACE MOMENT} \times 36}{\text{STOWAGE RATE OF LIQUID IN TANK} \times \text{DISPLACEMENT OF VESSEL}}$$

The free surface moment for each tank is listed in the last column of the capacity table. The total for all tanks should be taken into account in both Departure and Arrival conditions, but may be ignored if less than 0.01 x displacement.

METRIC CONVERSIONS

METRIC EQUIVALENTS

MULTIPLY BY	TO CONVERT FROM	TO OBTAIN	
0.03937	MILLIMETRES	INCHES	25.4
0.3937	CENTIMETRES	INCHES	2.54
3.2808	METRES	FEET	0.3048
2.2046	KILOGRAMS	POUNDS	0.45359
0.0009842	KILOGRAMS	TONS (2240 LBS)	1016.047
0.9842	TONNES (1000 KGS)	TONS (2240 LBS)	1.016
2.4998	TONNES / CENTIMETRE IMMERSION	TONS / INCH IMMERSION	0.4
8.2014	MOMENT TO CHANGE TRIM ONE CENTIMETRE	MOMENT TO CHANGE TRIM ONE INCH	0.122
187.9767	METRE RADIANS	FEET DEGREES	0.0053
-	TO OBTAIN	TO CONVERT FROM	MULTIPLY BY (ABOVE)

RELATIONSHIP BETWEEN WEIGHT AND VOLUME

10 MILLIMETRES CUBED = 1.0000 CUBIC CENTIMETRE

1 CUBIC CENTIMETRE OF FRESH WATER (S.G. 1.000) = 1.0000 GRAMME

1000 CUBIC CENTIMETRES OF FRESH WATER (S.G. 1.000) = 1.0000 KILOGRAM (1000 GRAMMES)

1 CUBIC METRE OF FRESH WATER (S.G. 1.000) = 1.0000 TONNE (1000 KILOGRAMS)

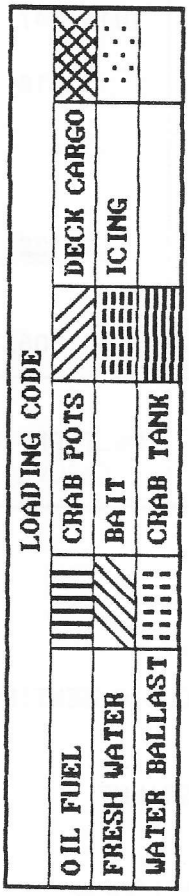
1 CUBIC METRE OF SALT WATER (S.G. 1.025) = 1.0250 TONNES

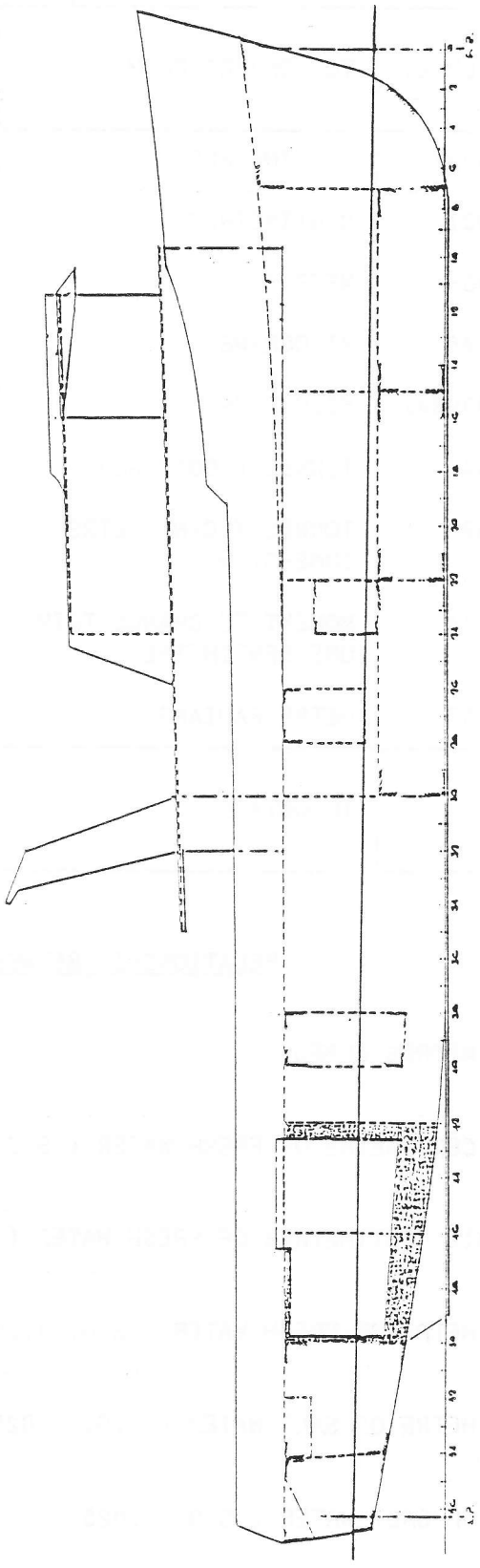
1 TONNE OF SALT WATER (S.G. 1.025) = 0.9750 CUBIC METRES

1 CUBIC METRE = 35.3160 CUBIC FEET

1 CUBIC FOOT = 0.0283 CUBIC METRES

CONDITION NO. 1
LIGHTSHIP





CONDITION NO. 1
LIGHTSHIP

ITEM	WEIGHT TONS	V.C.G. ABOVE MLD. BASE FEET	VERT-L MOMENT ABOVE BASE TON FEET	L.C.G. FROM AP FEET	LONG-L MOMENT ABOUT THE AP TON FEET	FREE SURF. MOMENT TON FEET
DEADWEIGHT	0.0	0.00	0.0	0.0	0.0	0.0
LIGHTSHIP	245.0	11.75	2878.8	49.3	12071.2	0.0
DISPLACEMENT	245.0	11.75	2878.8	49.3	12071.2	0.0

SAILING STATE
DENSITY OF WATER TAKEN AS 0.0286 (TONS/CUBIC FEET)

FULL DRAFT AT L.C.F.	=	6.25 FEET
FULL DRAFT AFT AT A.P.	=	6.91 FEET
FULL DRAFT FWD AT F.P.	=	5.38 FEET
FULL MEAN DRAFT AT MIDSHIPS	=	6.14 FEET
TRIM BY STERN	=	1.52 FEET
K.M.T. ABOVE MLD. BASE	=	17.04 FEET
K.G. ABOVE MLD. BASE	=	11.75 FEET
G.M. (SOLID)	=	5.29 FEET
FREE SURFACE CORRECTION (0.0/245.0)	=	0.00 FEET

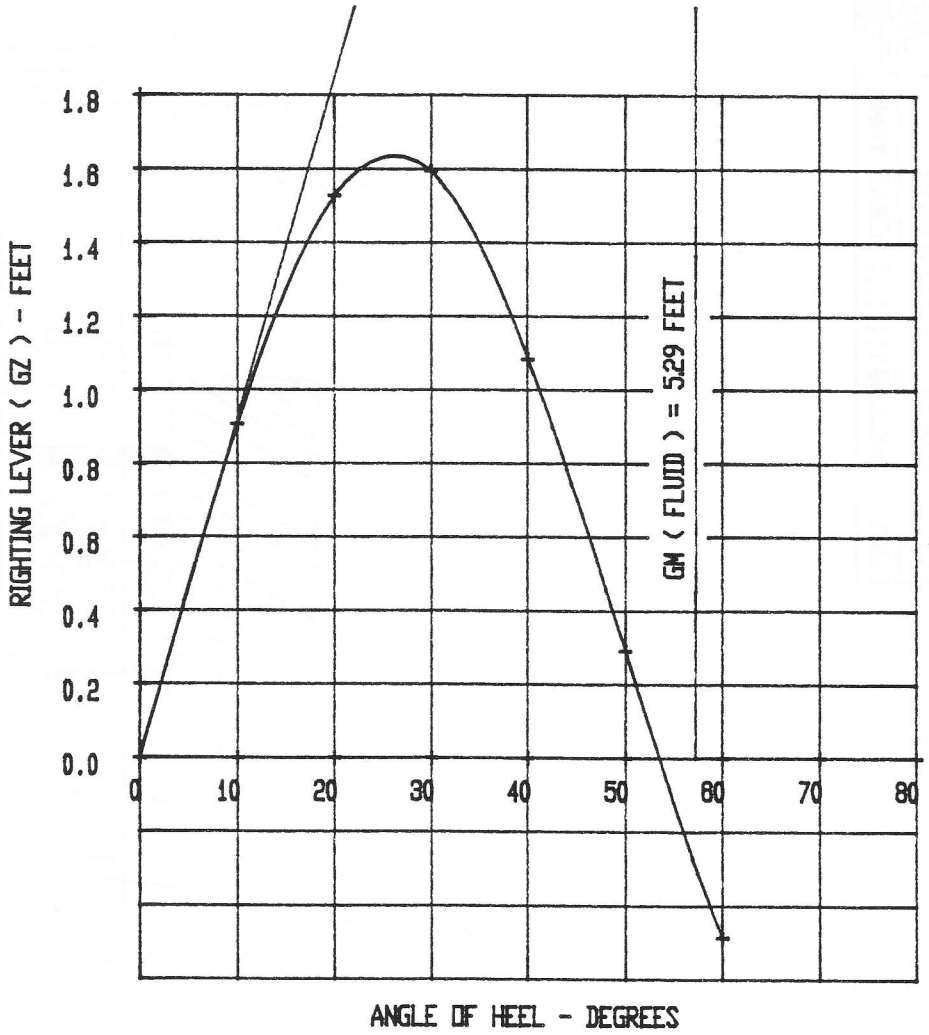
CONDITION NO. 1
LIGHTSHIP

STABILITY INFORMATION

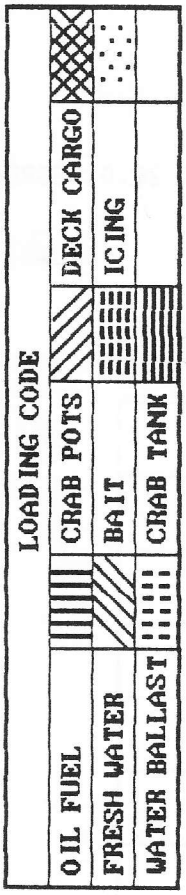
K G ABOVE MLD. BASE = 11.75 FEET
FREE SURFACE CORRECTION = 0.00 FEET
KG CORRECTED (VIRTUAL KG) = 11.75 FEET

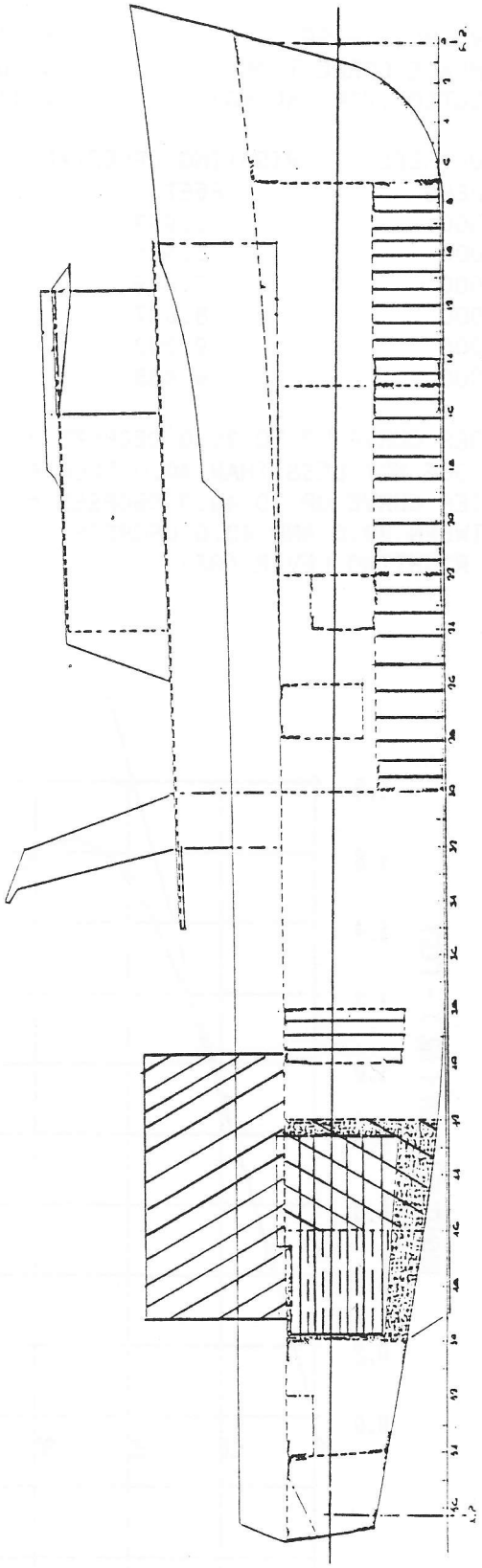
ANGLE OF HEEL DEGREES	RIGHTING LEVER(KN) FEET	KG X SIN(ANGLE) FEET	RIGHTING LEVER (GZ) FEET
10.000	2.948	2.040	0.908
20.000	5.546	4.019	1.527
30.000	7.469	5.875	1.594
40.000	8.637	7.553	1.084
50.000	9.292	9.001	0.291
60.000	9.688	10.176	-0.487

AREA UNDER CURVE UP TO 30.0 DEGREES = 33.29 FEET DEGREES
FLOOD ANGLE NOT LESS THAN 40.0 DEGREES
AREA UNDER CURVE UP TO 40.0 DEGREES = 47.04 FEET DEGREES
AREA BETWEEN 30.0 AND 40.0 DEGREES = 13.75 FEET DEGREES
MAXIMUM RIGHTING LEVER (GZ) = 1.635 FEET AND OCCURS AT 26.0 DEGREES



CONDITION NO. 2
DEPARTURE FOR GROUNDS - CRABBING





CONDITION NO. 2
DEPARTURE FOR GROUNDS - CRABBING

ITEM	WEIGHT TONS	V.C.G. ABOVE MLD. BASE FEET	VERT-L MOMENT ABOVE BASE TON FEET	L.C.G. FROM AP FEET	LONG-L MOMENT ABOUT THE AP TON FEET	FREE SURF. MOMENT TON FEET
CREW & EFFECTS	0.7	16.00	11.4	74.0	52.5	0.0
OF 30-22 P&S	30.8	3.17	97.5	60.4	1859.7	118.8
OF 22-15 P&S	23.2	3.24	75.2	75.2	1745.2	0.0
OF 15-07 P&S	15.2	3.32	50.6	89.0	1355.3	0.0
OF DS 40-38 S	1.7	7.85	13.3	34.5	58.7	0.1
LO STORAGE 40-38 P	1.8	7.85	14.0	34.5	61.4	0.1
FW 46-42 P&S	23.2	7.71	178.6	24.5	568.8	10.0
CRAB POTS ON DECK	6.9	17.13	118.2	23.4	161.4	0.0
BUOYS, LINES ETC.	2.1	17.13	36.0	23.4	49.1	0.0
FROZEN BAIT P&S	5.0	7.80	39.0	16.8	83.8	0.0
CRAB TANK	27.1	8.02	217.6	20.4	553.7	4.1
DEADWEIGHT	137.7	6.18	851.4	47.6	6549.6	133.2
LIGHTSHIP	245.0	11.75	2878.8	49.3	12071.2	0.0
DISPLACEMENT	382.7	9.75	3730.1	48.7	18620.8	133.2

SAILING STATE
DENSITY OF WATER TAKEN AS 0.0286 (TONS/CUBIC FEET)

FULL DRAFT AT L.C.F.	=	8.23 FEET
FULL DRAFT AFT AT A.P.	=	8.86 FEET
FULL DRAFT FWD AT F.P.	=	7.44 FEET
FULL MEAN DRAFT AT MIDSHIPS	=	8.15 FEET
TRIM BY STERN	=	1.42 FEET
K.M.T. ABOVE MLD. BASE	=	13.99 FEET
K.G. ABOVE MLD. BASE	=	9.75 FEET
G.M. (SOLID)	=	4.24 FEET
FREE SURFACE CORRECTION (133.2/382.7)	=	0.35 FEET
G.M. (FLUID)	=	3.89 FEET

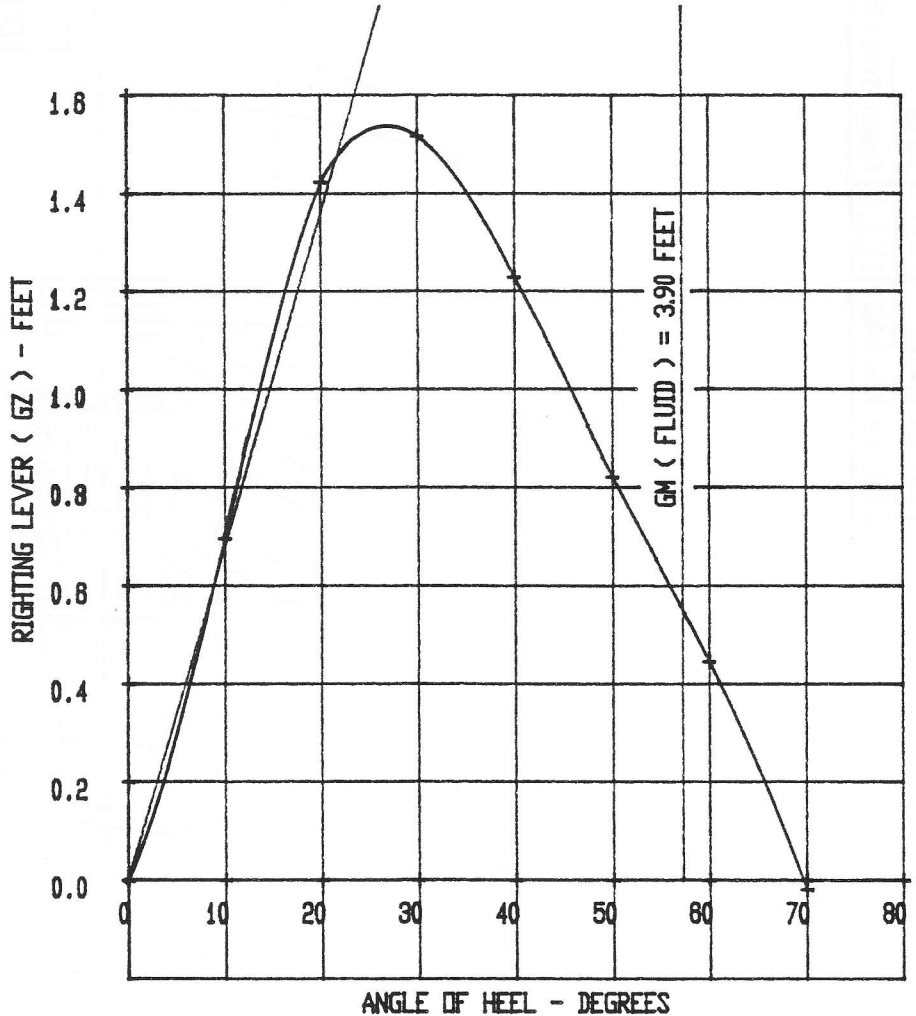
CONDITION NO. 2
DEPARTURE FOR GROUNDS - CRABBING

STABILITY INFORMATION

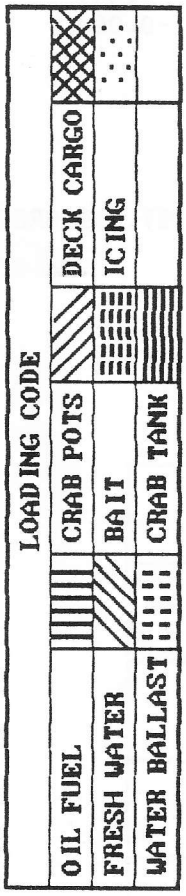
K G ABOVE MLD. BASE = 9.75 FEET
FREE SURFACE CORRECTION = 0.35 FEET
KG CORRECTED (VIRTUAL KG) = 10.09 FEET

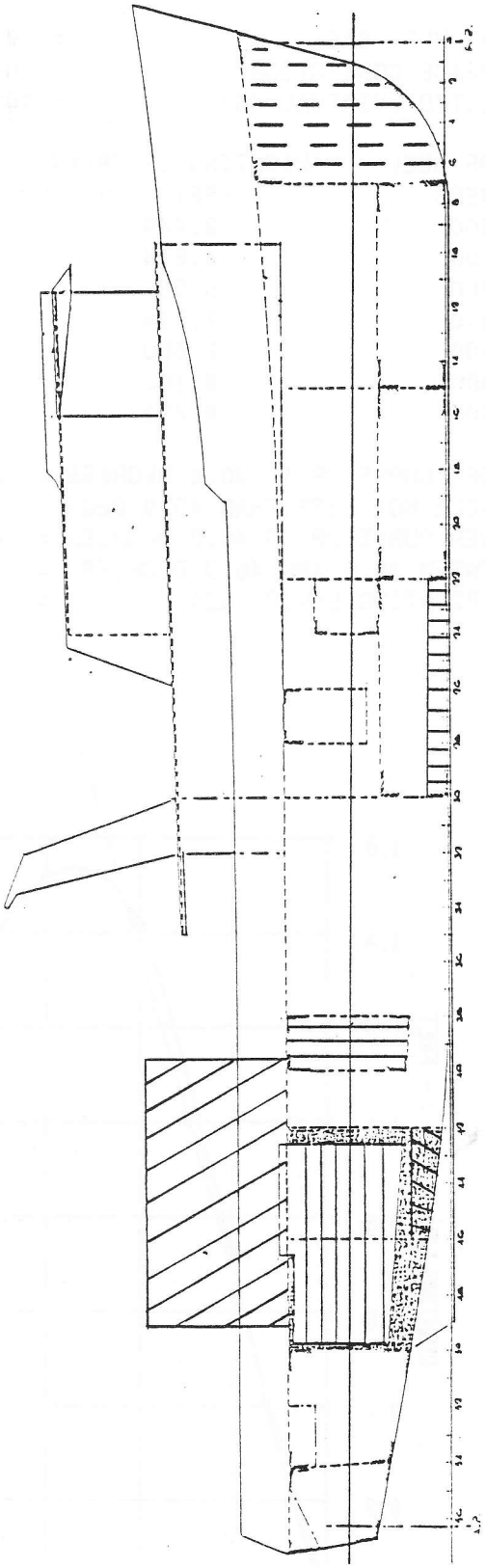
ANGLE OF HEEL DEGREES	RIGHTING LEVER(KN) FEET	KG X SIN(ANGLE) FEET	RIGHTING LEVER (GZ) FEET
10.000	2.449	1.753	0.696
20.000	4.874	3.453	1.421
30.000	6.562	5.047	1.514
40.000	7.714	6.489	1.225
50.000	8.550	7.733	0.817
60.000	9.183	8.742	0.441
70.000	9.462	9.486	-0.024

AREA UNDER CURVE UP TO 30.0 DEGREES = 29.11 FEET DEGREES
FLOOD ANGLE NOT LESS THAN 40.0 DEGREES
AREA UNDER CURVE UP TO 40.0 DEGREES = 43.03 FEET DEGREES
AREA BETWEEN 30.0 AND 40.0 DEGREES = 13.92 FEET DEGREES
MAXIMUM RIGHTING LEVER (GZ) = 1.538 FEET AND OCCURS AT 27.0 DEGREES



CONDITION NO. 3
ARRIVAL AT PORT - CRABBING





CONDITION NO. 3
ARRIVAL AT PORT - CRABBING

ITEM	WEIGHT TONS	V.C.G. ABOVE MLD. BASE FEET	VERT-L MOMENT ABOVE BASE TON FEET	L.C.G. FROM AP FEET	LONG-L MOMENT ABOUT THE AP TON FEET	FREE SURF. MOMENT TON FEET
CREW & EFFECTS	0.7	16.00	11.4	74.0	52.5	0.0
OF 30-22 P&S	5.5	1.30	7.2	60.4	334.8	118.8
OF DS 40-38 S	1.7	7.85	13.3	34.5	58.7	0.1
LO STORAGE 40-38 P	1.8	7.85	14.0	34.5	61.4	0.1
FW 46-42 P&S	2.4	3.61	8.5	24.5	57.9	10.0
WB FORE PEAK	23.3	9.41	219.2	101.1	2353.9	0.0
CRAB POTS ON DECK	6.9	17.13	118.2	23.4	161.4	0.0
BUOYS, LINES ETC.	2.1	17.13	36.0	23.4	49.1	0.0
CRAB TANK	27.1	8.02	217.6	20.4	553.7	4.1
DEADWEIGHT	71.5	9.02	645.3	51.5	3683.5	133.2
LIGHTSHIP	245.0	11.75	2878.8	49.3	12071.2	0.0
DISPLACEMENT	316.5	11.13	3524.1	49.8	15754.7	133.2

SAILING STATE
DENSITY OF WATER TAKEN AS 0.0286 (TONS/CUBIC FEET)

FULL DRAFT AT L.C.F.	=	7.28 FEET
FULL DRAFT AFT AT A.P.	=	7.68 FEET
FULL DRAFT FWD AT F.P.	=	6.77 FEET
FULL MEAN DRAFT AT MIDSHIPS	=	7.23 FEET
TRIM BY STERN	=	0.91 FEET
K.M.T. ABOVE MLD. BASE	=	15.01 FEET
K.G. ABOVE MLD. BASE	=	11.13 FEET
G.M. (SOLID)	=	3.88 FEET
FREE SURFACE CORRECTION (133.2/316.5)	=	0.42 FEET
G.M. (FLUID)	=	3.46 FEET

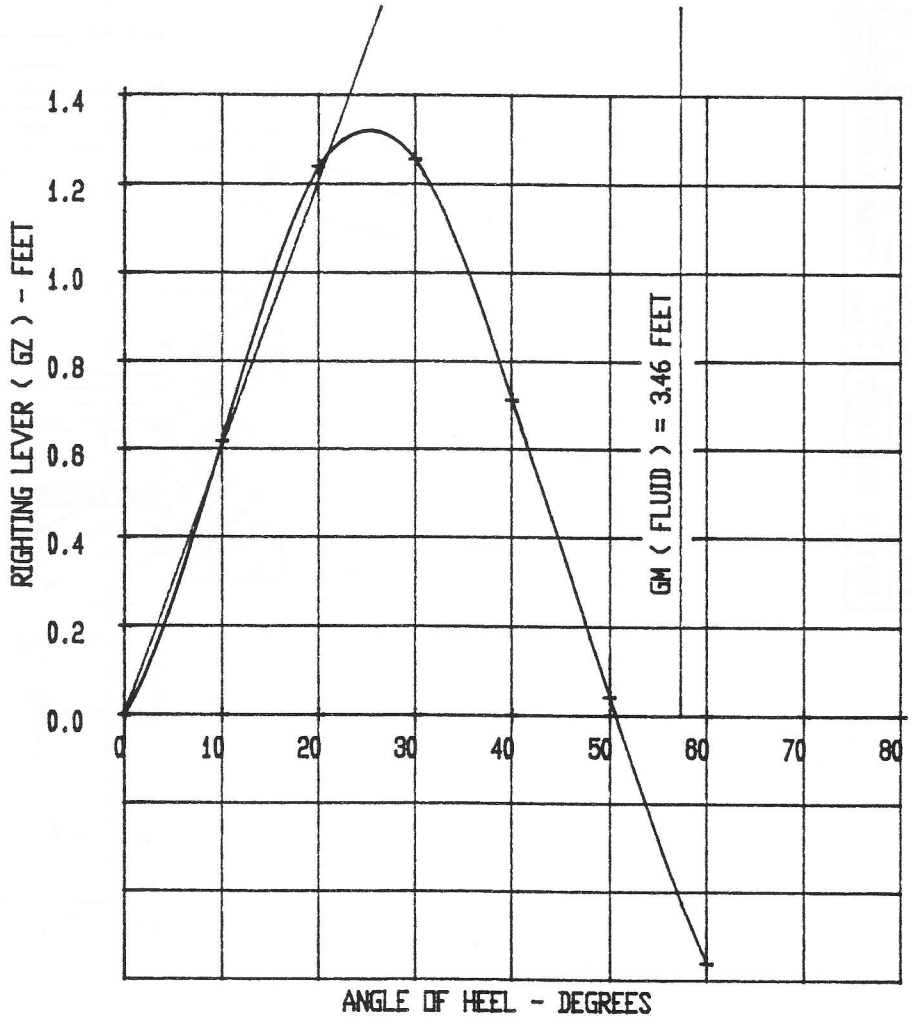
CONDITION NO. 3
ARRIVAL AT PORT - CRABBING

STABILITY INFORMATION

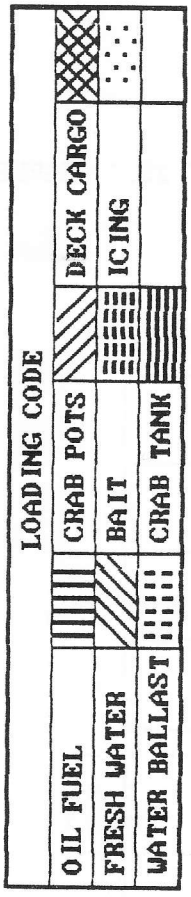
K G ABOVE MLD. BASE = 11.13 FEET
FREE SURFACE CORRECTION = 0.42 FEET
KG CORRECTED (VIRTUAL KG) = 11.55 FEET

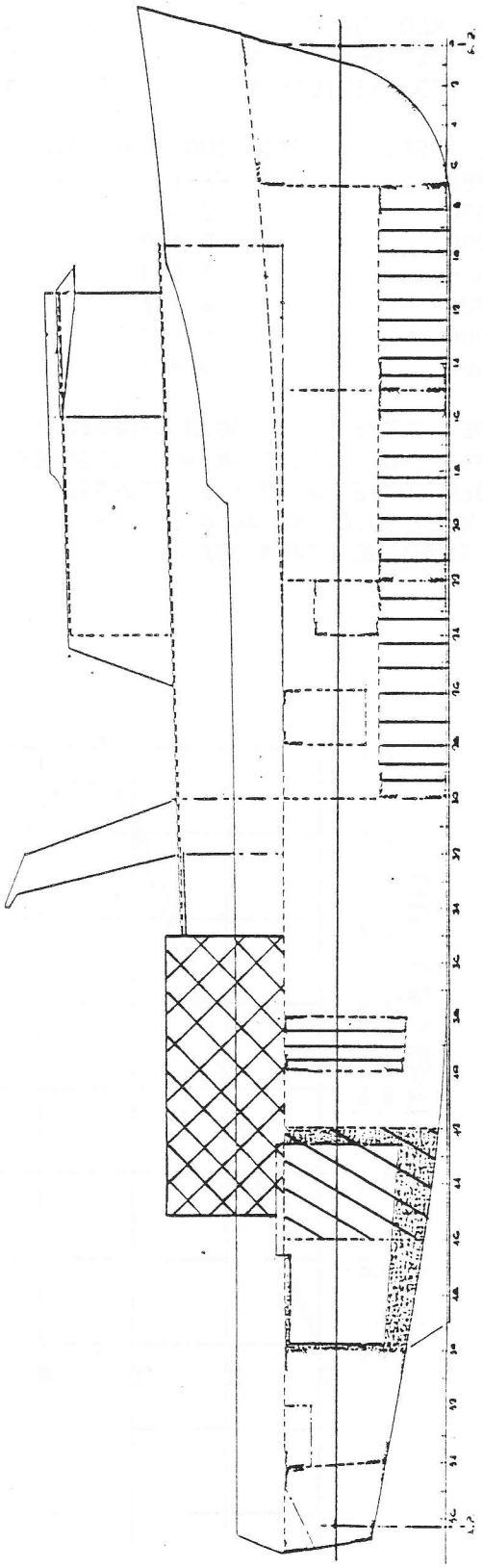
ANGLE OF HEEL DEGREES	RIGHTING LEVER(KN) FEET	KG X SIN(ANGLE) FEET	RIGHTING LEVER (GZ) FEET
10.000	2.623	2.006	0.616
20.000	5.190	3.952	1.238
30.000	7.031	5.777	1.253
40.000	8.135	7.427	0.708
50.000	8.889	8.852	0.037
60.000	9.441	10.007	-0.566

AREA UNDER CURVE UP TO 30.0 DEGREES = 25.27 FEET DEGREES
FLOOD ANGLE NOT LESS THAN 40.0 DEGREES
AREA UNDER CURVE UP TO 40.0 DEGREES = 35.35 FEET DEGREES
AREA BETWEEN 30.0 AND 40.0 DEGREES = 10.08 FEET DEGREES
MAXIMUM RIGHTING LEVER (GZ) = 1.319 FEET AND OCCURS AT 25.0 DEGREES



CONDITION NO. 4
DEPARTURE MAX DECK CARGO





CONDITION NO. 4
DEPARTURE MAX DECK CARGO

ITEM	WEIGHT TONS	V.C.G. ABOVE MLD. BASE FEET	VERT-L MOMENT ABOVE BASE TON FEET	L.C.G. FROM AP FEET	LONG-L MOMENT ABOUT THE AP TON FEET	FREE SURF. MOMENT TON FEET
CREW & EFFECTS	0.7	16.00	11.4	74.0	52.5	0.0
OF 30-22 P&S	30.8	3.17	97.5	60.4	1859.7	118.8
OF 22-15 P&S	23.2	3.24	75.2	75.2	1745.2	0.0
OF 15-07 P&S	15.2	3.32	50.6	89.0	1355.3	0.0
OF DS 40-38 S	1.7	7.85	13.3	34.5	58.7	0.1
LO STORAGE 40-38 P	1.8	7.85	14.0	34.5	61.4	0.1
FW 46-42 P&S	23.2	7.71	178.6	24.5	568.8	10.0
DECK CARGO	38.0	16.67	633.5	32.0	1216.0	0.0
DEADWEIGHT	134.6	7.98	1074.1	51.4	6917.6	129.1
LIGHTSHIP	245.0	11.75	2878.8	49.3	12071.2	0.0
DISPLACEMENT	379.6	10.41	3952.8	50.0	18988.8	129.1

SAILING STATE
DENSITY OF WATER TAKEN AS 0.0286 (TONS/CUBIC FEET)

FULL DRAFT AT L.C.F.	=	8.19 FEET
FULL DRAFT AFT AT A.P.	=	8.39 FEET
FULL DRAFT FWD AT F.P.	=	7.93 FEET
FULL MEAN DRAFT AT MIDSHIPS	=	8.16 FEET
TRIM BY STERN	=	0.46 FEET
K.M.T. ABOVE MLD. BASE	=	14.02 FEET
K.G. ABOVE MLD. BASE	=	10.41 FEET
G.M. (SOLID)	=	3.61 FEET
FREE SURFACE CORRECTION (129.1/379.6)	=	0.34 FEET

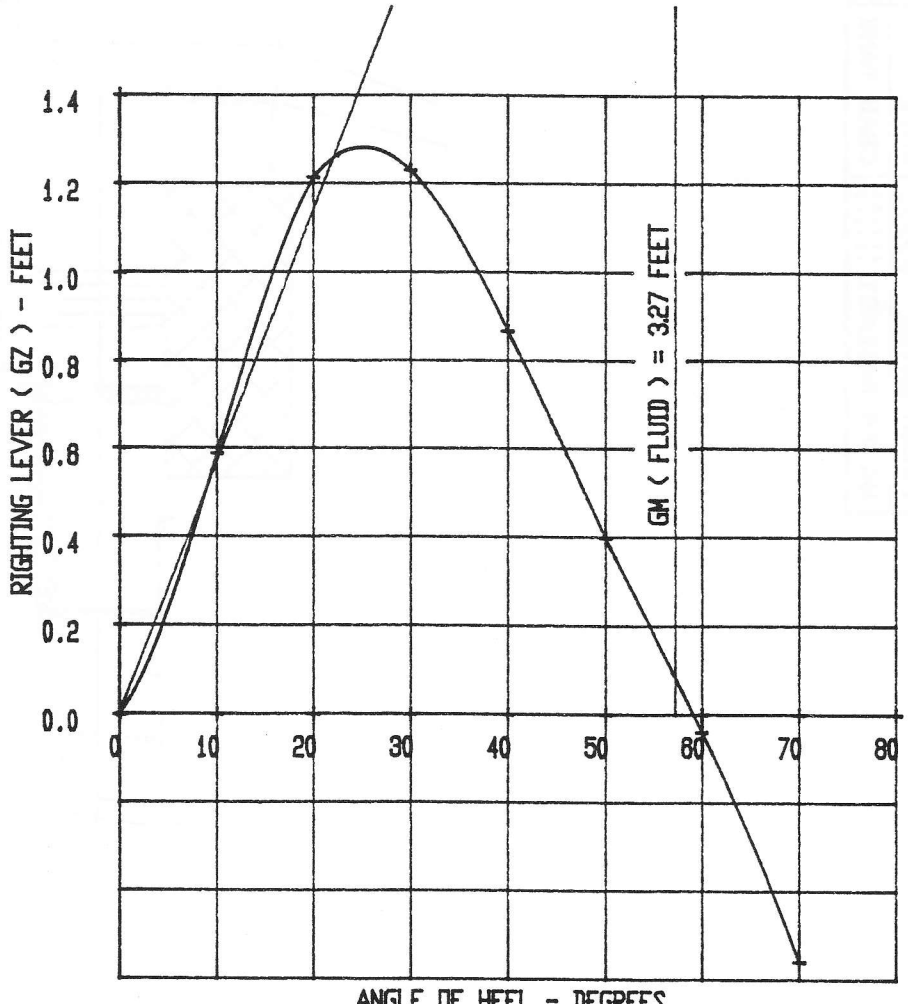
CONDITION NO. 4
DEPARTURE MAX DECK CARGO

STABILITY INFORMATION

K G ABOVE MLD. BASE = 10.41 FEET
FREE SURFACE CORRECTION = 0.34 FEET
KG CORRECTED (VIRTUAL KG) = 10.75 FEET

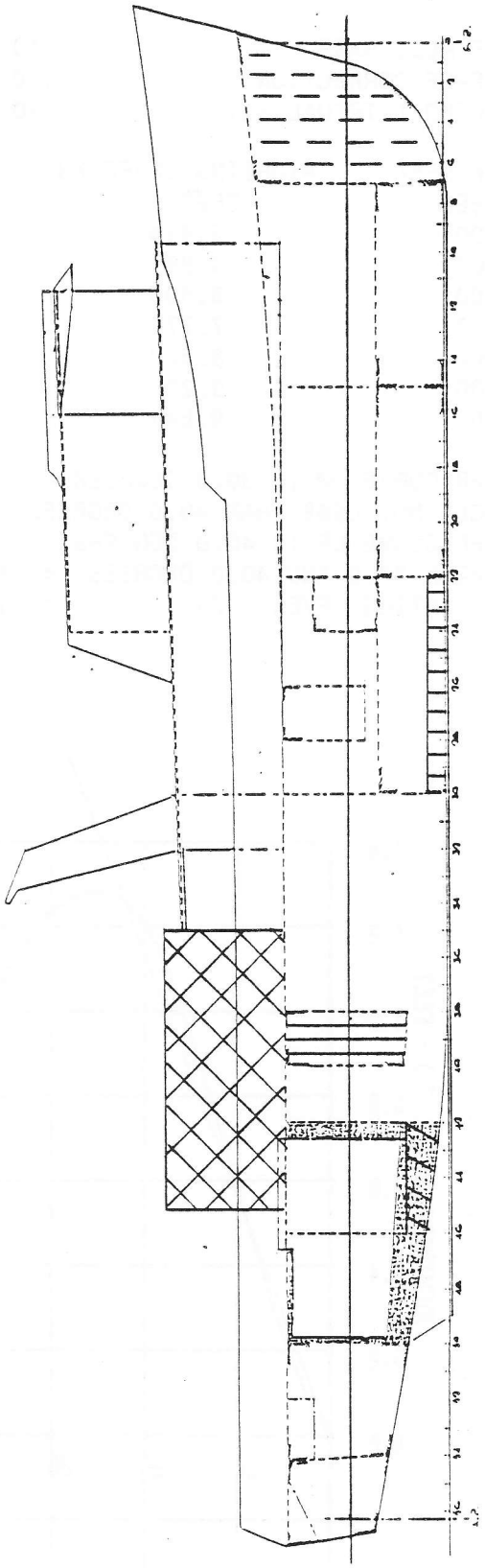
ANGLE OF HEEL DEGREES	RIGHTING LEVER(KN) FEET	KG X SIN(ANGLE) FEET	RIGHTING LEVER (GZ) FEET
10.000	2.454	1.867	0.587
20.000	4.891	3.678	1.213
30.000	6.605	5.377	1.228
40.000	7.777	6.913	0.864
50.000	8.633	8.238	0.395
60.000	9.270	9.313	-0.043
70.000	9.541	10.105	-0.565

AREA UNDER CURVE UP TO 30.0 DEGREES = 24.47 FEET DEGREES
FLOOD ANGLE NOT LESS THAN 40.0 DEGREES
AREA UNDER CURVE UP TO 40.0 DEGREES = 35.12 FEET DEGREES
AREA BETWEEN 30.0 AND 40.0 DEGREES = 10.66 FEET DEGREES
MAXIMUM RIGHTING LEVER (GZ) = 1.282 FEET AND OCCURS AT 25.0 DEGREES



CONDITION NO. 5
ARRIVAL MAX DECK CARGO

LOADING CODE						
OIL FUEL		CRAB POTS		DECK CARGO		
FRESH WATER		BAIT		ICING		
WATER BALLAST		CRAB TANK				



CONDITION NO. 5
ARRIVAL MAX DECK CARGO

ITEM	WEIGHT TONS	V.C.G. ABOVE MLD. BASE FEET	VERT-L MOMENT ABOVE BASE TON FEET	L.C.G. FROM AP FEET	LONG-L MOMENT ABOUT THE AP TON FEET	FREE SURF. MOMENT TON FEET
CREW & EFFECTS	0.7	16.00	11.4	74.0	52.5	0.0
OF 30-22 P&S	5.5	1.30	7.2	60.4	334.8	118.8
OF DS 40-38 S	1.7	7.85	13.3	34.5	58.7	0.1
LO STORAGE 40-38 P	1.8	7.85	14.0	34.5	61.4	0.1
FW 46-42 P&S	2.4	3.61	8.5	24.5	57.9	10.0
WB FORE PEAK	22.6	9.41	213.1	101.1	2289.2	0.0
DECK CARGO	38.0	16.67	633.5	32.0	1216.0	0.0
DEADWEIGHT	72.7	12.39	901.0	56.0	4070.6	129.1
LIGHTSHIP	245.0	11.75	2878.8	49.3	12071.2	0.0
DISPLACEMENT	317.7	11.90	3779.7	50.8	16141.8	129.1

SAILING STATE
DENSITY OF WATER TAKEN AS 0.0286 (TONS/CUBIC FEET)

FULL DRAFT AT L.C.F.	=	7.30 FEET
FULL DRAFT AFT AT A.P.	=	7.42 FEET
FULL DRAFT FWD AT F.P.	=	7.14 FEET
FULL MEAN DRAFT AT MIDSHIPS	=	7.28 FEET
TRIM BY STERN	=	0.28 FEET
K.M.T. ABOVE MLD. BASE	=	14.98 FEET
K.G. ABOVE MLD. BASE	=	11.90 FEET
G.M. (SOLID)	=	3.09 FEET
FREE SURFACE CORRECTION (129.1/317.7)	=	0.41 FEET
G.M. (FLUID)	=	2.68 FEET

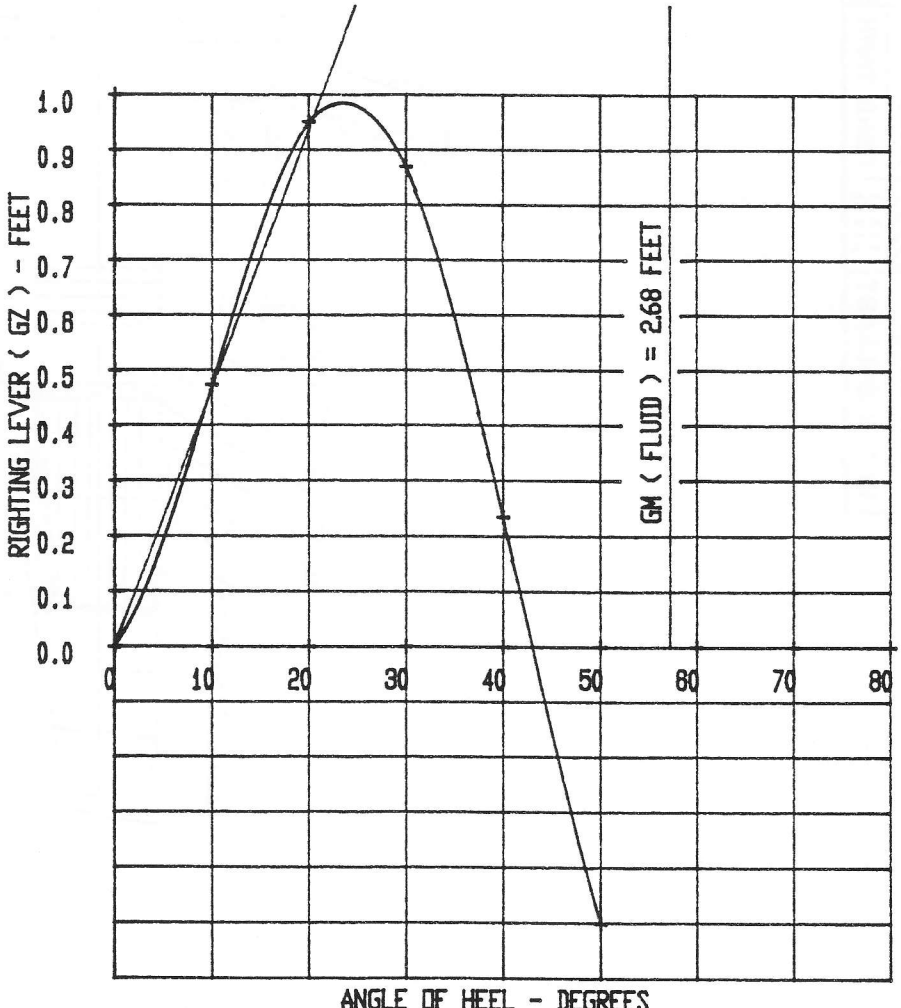
CONDITION NO. 5
ARRIVAL MAX DECK CARGO

STABILITY INFORMATION

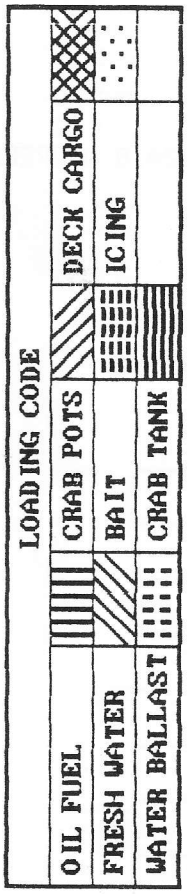
K G ABOVE MLD. BASE = 11.90 FEET
FREE SURFACE CORRECTION = 0.41 FEET
KG CORRECTED (VIRTUAL KG) = 12.30 FEET

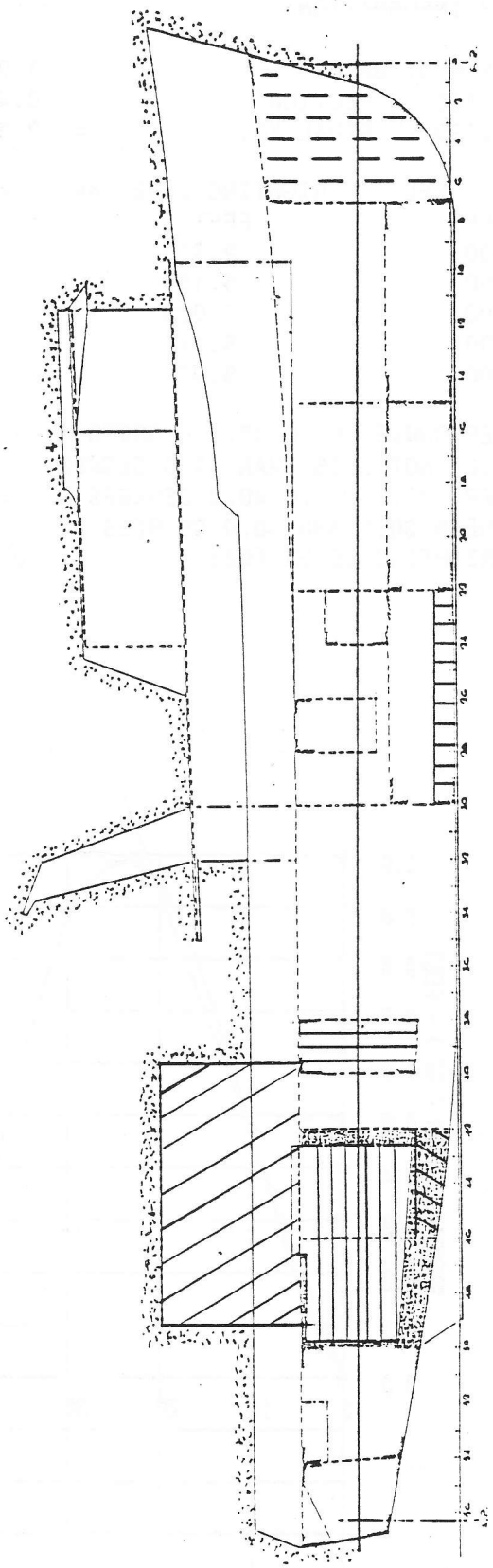
ANGLE OF HEEL DEGREES	RIGHTING LEVER(KN) FEET	KG X SIN(ANGLE) FEET	RIGHTING LEVER (GZ) FEET
10.000	2.610	2.136	0.474
20.000	5.158	4.207	0.950
30.000	7.020	6.151	0.869
40.000	8.141	7.908	0.234
50.000	8.921	9.424	-0.503

AREA UNDER CURVE UP TO 30.0 DEGREES = 19.02 FEET DEGREES
FLOOD ANGLE NOT LESS THAN 40.0 DEGREES
AREA UNDER CURVE UP TO 40.0 DEGREES = 24.81 FEET DEGREES
AREA BETWEEN 30.0 AND 40.0 DEGREES = 5.79 FEET DEGREES
MAXIMUM RIGHTING LEVER (GZ) = 0.984 FEET AND OCCURS AT 24.0 DEGREES



CONDITION NO. 6
ARRIVAL AT PORT - CRABBING WITH HALF ICING





CONDITION NO. 6
ARRIVAL AT PORT - CRABBING WITH HALF ICING

ITEM	WEIGHT TONS	V.C.G. ABOVE MLD. BASE FEET	VERT-L MOMENT ABOVE BASE TON FEET	L.C.G. FROM AP FEET	LONG-L MOMENT ABOUT THE AP TON FEET	FREE SURF. MOMENT TON FEET
CREW & EFFECTS	0.7	16.00	11.4	74.0	52.5	0.0
OF 30-22 P&S	5.5	1.30	7.2	60.4	334.8	118.8
OF DS 40-38 S	1.7	7.85	13.3	34.5	58.7	0.1
LO STORAGE 40-38 P	1.8	7.85	14.0	34.5	61.4	0.1
FW 46-42 P&S	2.4	3.61	8.5	24.5	57.9	10.0
WB FORE PEAK	23.3	9.41	219.2	101.1	2353.9	0.0
CRAB POTS ON DECK	6.9	17.13	118.2	23.4	161.4	0.0
BUOYS, LINES ETC.	2.1	17.13	36.0	23.4	49.1	0.0
CRAB TANK	27.1	8.02	217.6	20.4	553.7	4.1
ICING ALLOWANCE	9.1	17.43	157.7	52.7	477.0	0.0

THIS CONDITION DOES NOT FULLY COMPLY

WITH U.S. COASTGUARD REQUIREMENTS

AND SHOULD BE AVOIDED

See alternative Arrival Condition No. 6a

DEADWEIGHT	80.6	9.97	803.1	51.6	4160.6	133.2
LIGHTSHIP	245.0	11.75	2878.8	49.3	12071.2	0.0
DISPLACEMENT	325.6	11.31	3681.8	49.9	16231.7	133.2

SAILING STATE
DENSITY OF WATER TAKEN AS 0.0286 (TONS/CUBIC FEET)

FULL DRAFT AT L.C.F.	=	7.41 FEET
FULL DRAFT AFT AT A.P.	=	7.77 FEET
FULL DRAFT FWD AT F.P.	=	6.95 FEET
FULL MEAN DRAFT AT MIDSHIPS	=	7.36 FEET
TRIM BY STERN	=	0.82 FEET
K.M.T. ABOVE MLD. BASE	=	14.84 FEET
K.G. ABOVE MLD. BASE	=	11.31 FEET
G.M. (SOLID)	=	3.53 FEET
FREE SURFACE CORRECTION (133.2/325.6)	=	0.41 FEET

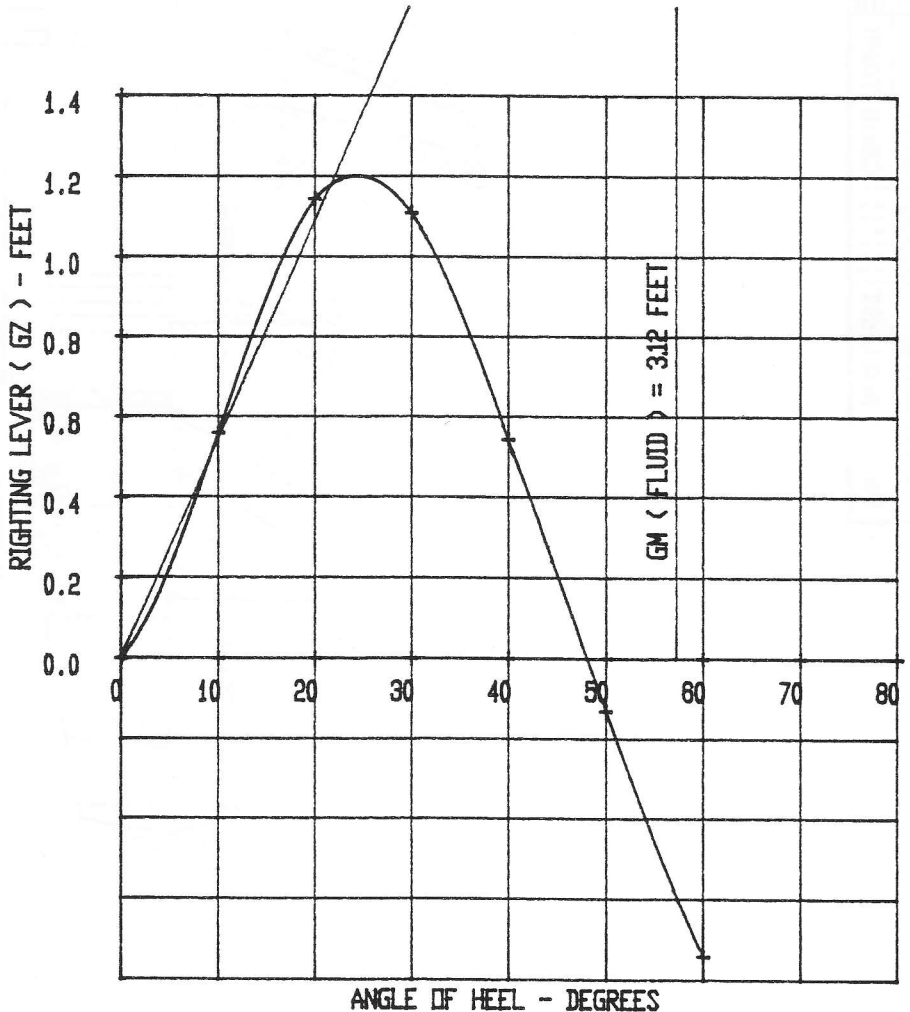
CONDITION NO. 6
ARRIVAL AT PORT - CRABBING WITH HALF ICING

STABILITY INFORMATION

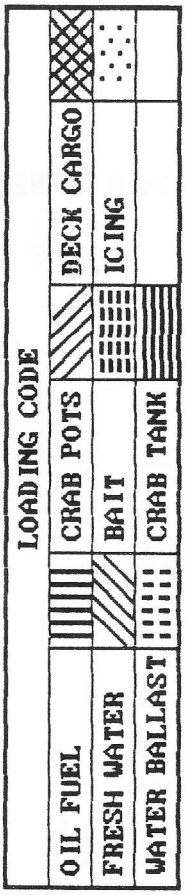
K G ABOVE MLD. BASE = 11.31 FEET
FREE SURFACE CORRECTION = 0.41 FEET
KG CORRECTED (VIRTUAL KG) = 11.72 FEET

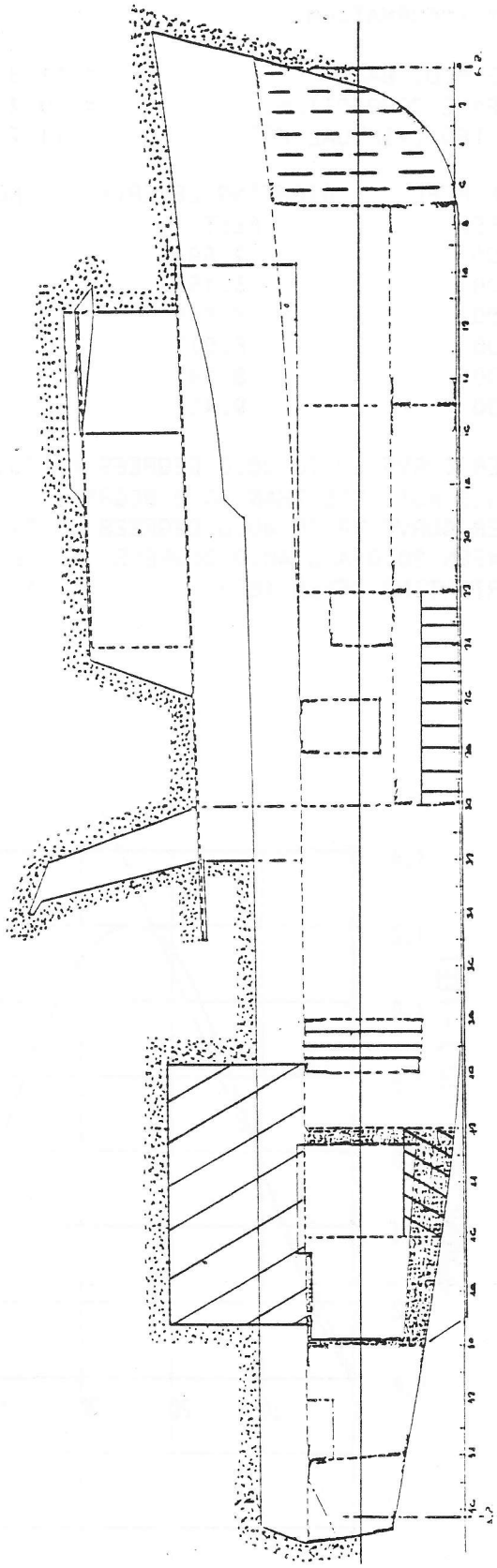
ANGLE OF HEEL DEGREES	RIGHTING LEVER(KN) FEET	KG X SIN(ANGLE) FEET	RIGHTING LEVER (GZ) FEET
10.000	2.594	2.035	0.559
20.000	5.153	4.008	1.145
30.000	6.969	5.859	1.110
40.000	8.077	7.532	0.545
50.000	8.847	8.977	-0.129
60.000	9.407	10.148	-0.741

AREA UNDER CURVE UP TO 30.0 DEGREES = 23.03 FEET DEGREES
FLOOD ANGLE NOT LESS THAN 40.0 DEGREES
AREA UNDER CURVE UP TO 40.0 DEGREES = 31.57 FEET DEGREES
AREA BETWEEN 30.0 AND 40.0 DEGREES = 8.53 FEET DEGREES
MAXIMUM RIGHTING LEVER (GZ) = 1.201 FEET AND OCCURS AT 24.0 DEGREES



CONDITION NO. 6a
ARRIVAL AT PORT 20.0% CONS - CRABBING WITH HALF ICING





CONDITION NO. 6a
ARRIVAL AT PORT 20.0% CONS - CRABBING WITH HALF ICING

ITEM	WEIGHT TONS	V.C.G. ABOVE MLD. BASE FEET	VERT-L MOMENT ABOVE BASE TON FEET	L.C.G. FROM AP FEET	LONG-L MOMENT ABOUT THE AP TON FEET	FREE SURF. MOMENT TON FEET
CREW & EFFECTS	0.7	16.00	11.4	74.0	52.5	0.0
OF 30-22 P&S	12.8	1.97	25.2	60.4	771.8	118.8
OF DS 40-38 S	1.7	7.85	13.3	34.5	58.7	0.1
LO STORAGE 40-38 P	1.8	7.85	14.0	34.5	61.4	0.1
FW 46-42 P&S	4.6	4.11	19.0	24.5	113.7	10.0
WB FORE PEAK	23.3	9.41	219.2	101.1	2353.9	0.0
CRAB POTS ON DECK	6.9	17.13	118.2	23.4	161.4	0.0
BUOYS, LINES ETC.	2.1	17.13	36.0	23.4	49.1	0.0
CRAB TANK	27.1	8.02	217.6	20.4	553.7	4.1
ICING ALLOWANCE	9.1	17.43	157.7	52.7	477.0	0.0
DEADWEIGHT	90.1	9.23	831.5	51.7	4653.3	133.2
LIGHTSHIP	245.0	11.75	2878.8	49.3	12071.2	0.0
DISPLACEMENT	335.1	11.07	3710.3	49.9	16724.4	133.2

SAILING STATE
DENSITY OF WATER TAKEN AS 0.0286 (TONS/CUBIC FEET)

FULL DRAFT AT L.C.F.	=	7.55 FEET
FULL DRAFT AFT AT A.P.	=	7.88 FEET
FULL DRAFT FWD AT F.P.	=	7.14 FEET
FULL MEAN DRAFT AT MIDSHIPS	=	7.51 FEET
TRIM BY STERN	=	0.74 FEET
K.M.T. ABOVE MLD. BASE	=	14.67 FEET
K.G. ABOVE MLD. BASE	=	11.07 FEET
G.M. (SOLID)	=	3.59 FEET
FREE SURFACE CORRECTION (133.2/335.1)	=	0.40 FEET
G.M. (FLUID)	=	3.19 FEET

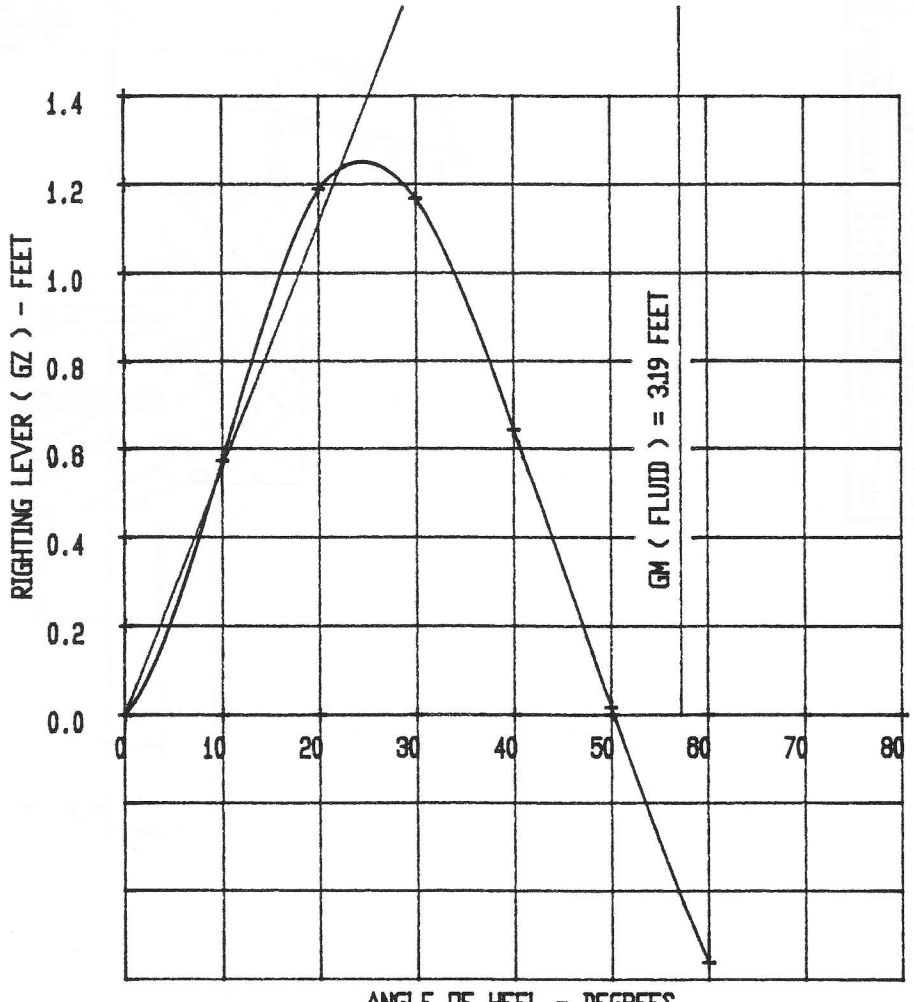
CONDITION NO. 6a
ARRIVAL AT PORT 20.0% CONS - CRABBING WITH HALF ICING

STABILITY INFORMATION

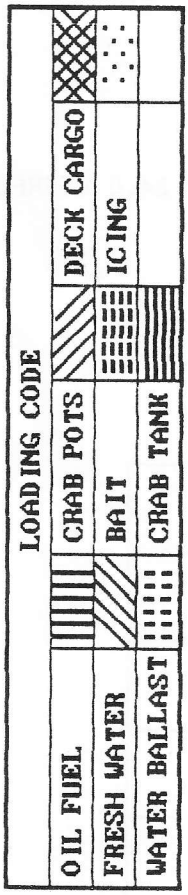
K G ABOVE MLD. BASE = 11.07 FEET
FREE SURFACE CORRECTION = 0.40 FEET
KG CORRECTED (VIRTUAL KG) = 11.47 FEET

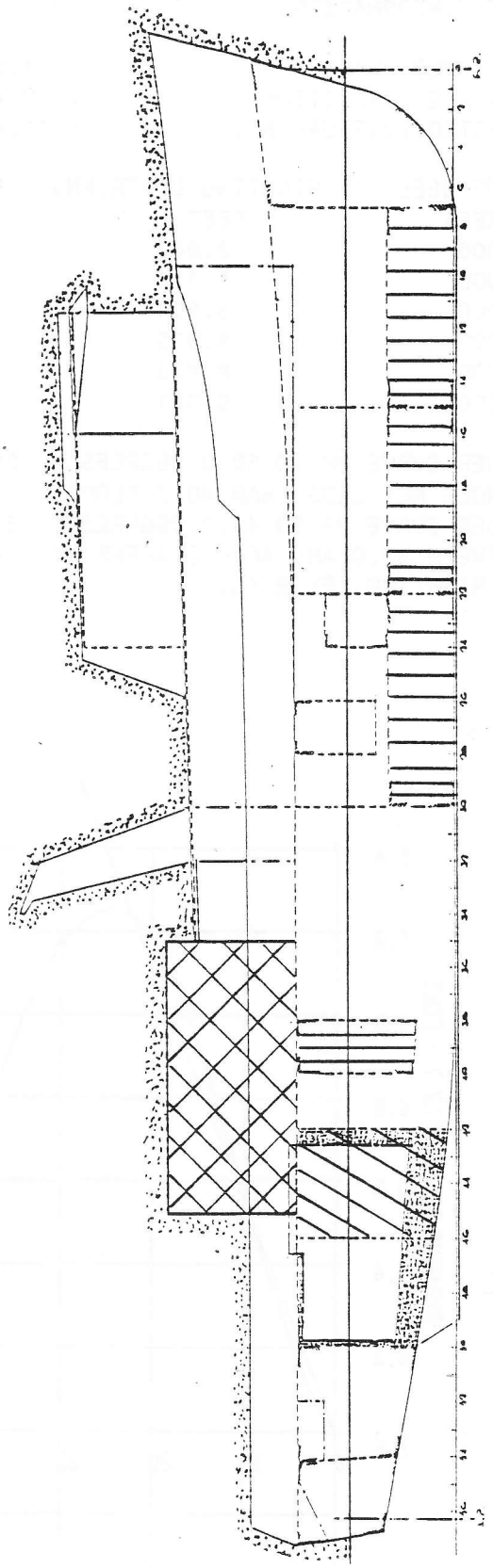
ANGLE OF HEEL DEGREES	RIGHTING LEVER(KN) FEET	KG X SIN(ANGLE) FEET	RIGHTING LEVER (GZ) FEET
10.000	2.565	1.992	0.573
20.000	5.113	3.923	1.190
30.000	6.903	5.735	1.167
40.000	8.016	7.373	0.643
50.000	8.803	8.787	0.016
60.000	9.371	9.934	-0.563

AREA UNDER CURVE UP TO 30.0 DEGREES = 23.89 FEET DEGREES
FLOOD ANGLE NOT LESS THAN 40.0 DEGREES
AREA UNDER CURVE UP TO 40.0 DEGREES = 33.17 FEET DEGREES
AREA BETWEEN 30.0 AND 40.0 DEGREES = 9.28 FEET DEGREES
MAXIMUM RIGHTING LEVER (GZ) = 1.250 FEET AND OCCURS AT 24.0 DEGREES



CONDITION NO. 7
DEPARTURE MAX DECK CARGO WITH HALF ICING





CONDITION NO. 7
DEPARTURE MAX DECK CARGO WITH HALF ICING

ITEM	WEIGHT TONS	V.C.G. ABOVE MLD. BASE FEET	VERT-L MOMENT ABOVE BASE TON FEET	L.C.G. FROM AP FEET	LONG-L MOMENT ABOUT THE AP TON FEET	FREE SURF. MOMENT TON FEET
CREW & EFFECTS	0.7	16.00	11.4	74.0	52.5	0.0
OF 30-22 P&S	30.8	3.17	97.5	60.4	1859.7	118.8
OF 22-15 P&S	23.2	3.24	75.2	75.2	1745.2	0.0
OF 15-07 P&S	15.2	3.32	50.6	89.0	1355.3	0.0
OF DS 40-38 S	1.7	7.85	13.3	34.5	58.7	0.1
LO STORAGE 40-38 P	1.8	7.85	14.0	34.5	61.4	0.1
FW 46-42 P&S	23.2	7.71	178.6	24.5	568.8	10.0
ICING ALLOWANCE	9.1	17.43	157.7	52.7	477.0	0.0
DECK CARGO	25.0	16.67	416.8	32.0	800.0	0.0
DEADWEIGHT	130.6	7.77	1015.1	53.4	6978.7	129.1
LIGHTSHIP	245.0	11.75	2878.8	49.3	12071.2	0.0
DISPLACEMENT	375.6	10.37	3893.9	50.7	19049.8	129.1

SAILING STATE
DENSITY OF WATER TAKEN AS 0.0286 (TONS/CUBIC FEET)

FULL DRAFT AT L.C.F.	=	8.13 FEET
FULL DRAFT AFT AT A.P.	=	8.13 FEET
FULL DRAFT FWD AT F.P.	=	8.14 FEET
FULL MEAN DRAFT AT MIDSHIPS	=	8.13 FEET
TRIM BY BOW	=	0.01 FEET
K.M.T. ABOVE MLD. BASE	=	14.07 FEET
K.G. ABOVE MLD. BASE	=	10.37 FEET
G.M. (SOLID)	=	3.70 FEET
FREE SURFACE CORRECTION (129.1/375.6)	=	0.34 FEET
G.M. (FLUID)	=	3.36 FEET

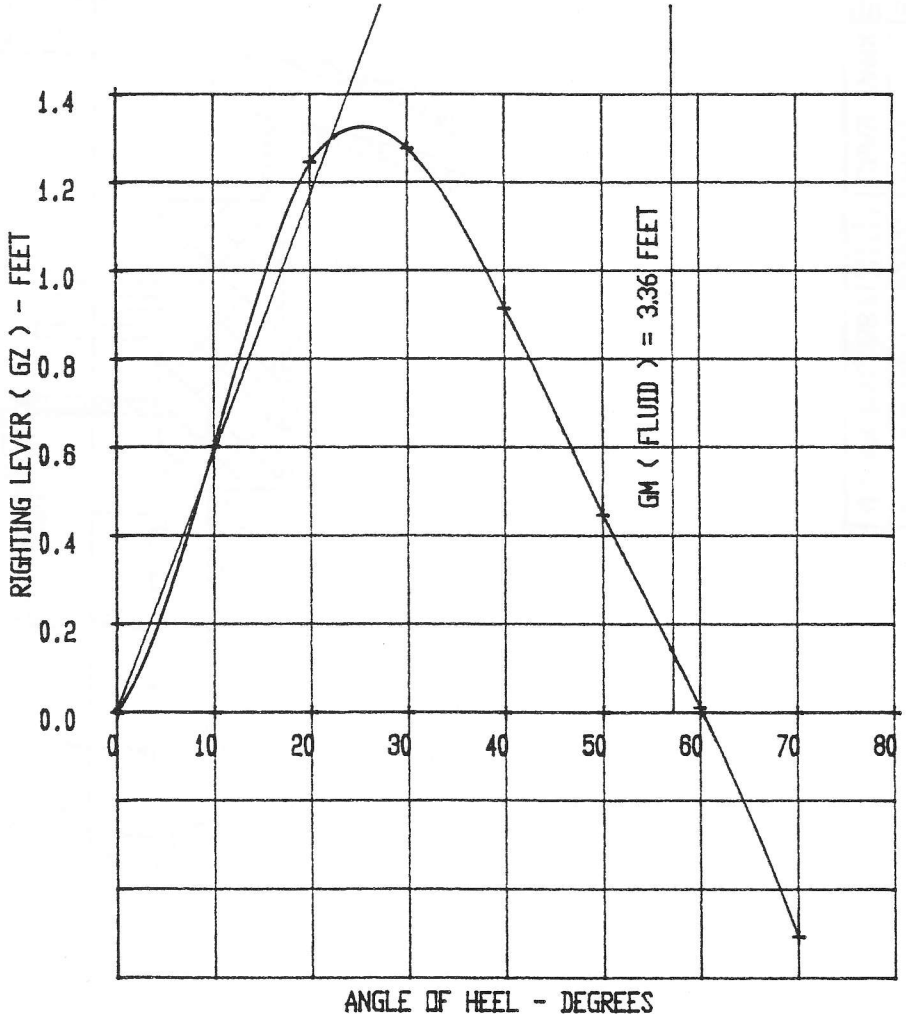
CONDITION NO. 7
DEPARTURE MAX DECK CARGO WITH HALF ICING

STABILITY INFORMATION

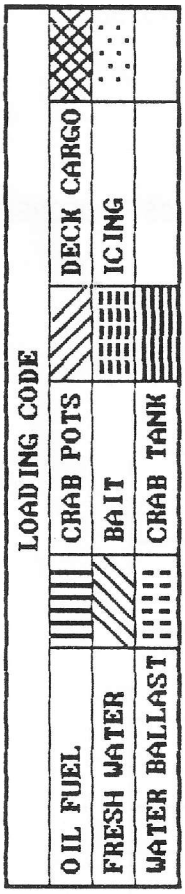
K G ABOVE MLD. BASE = 10.37 FEET
FREE SURFACE CORRECTION = 0.34 FEET
KG CORRECTED (VIRTUAL KG) = 10.71 FEET

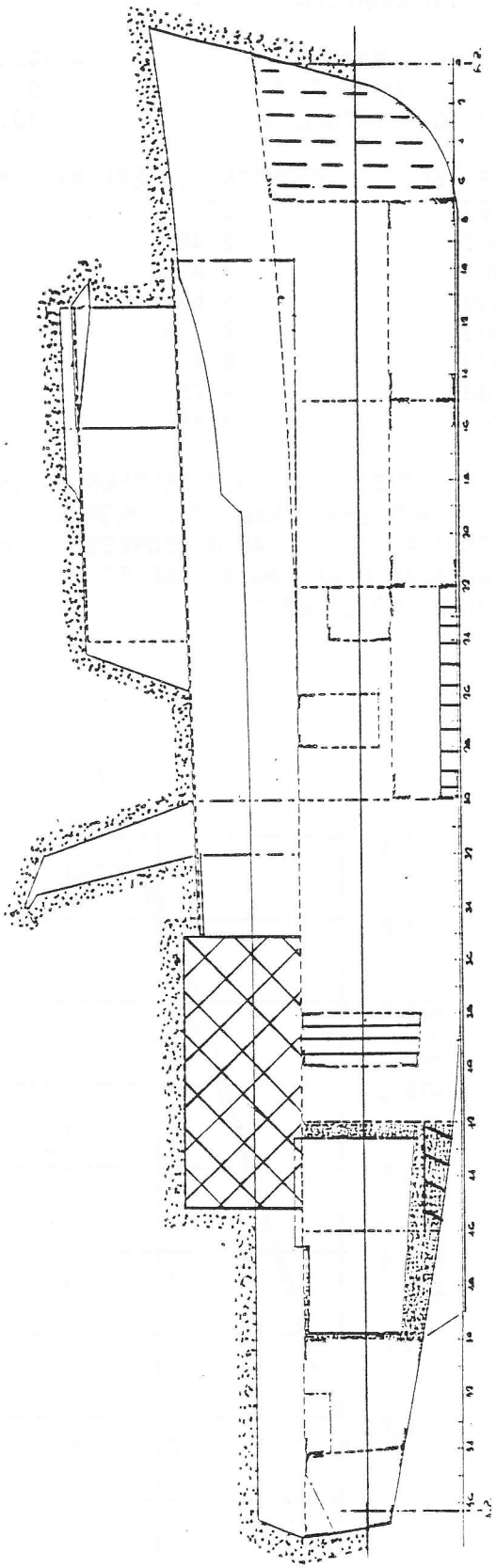
ANGLE OF HEEL DEGREES	RIGHTING LEVER(KN) FEET	KG X SIN(ANGLE) FEET	RIGHTING LEVER (GZ) FEET
10.000	2.462	1.860	0.603
20.000	4.910	3.663	1.247
30.000	6.632	5.355	1.277
40.000	7.799	6.884	0.915
50.000	8.651	8.204	0.446
60.000	9.286	9.275	0.011
70.000	9.556	10.064	-0.508

AREA UNDER CURVE UP TO 30.0 DEGREES = 25.21 FEET DEGREES
FLOOD ANGLE NOT LESS THAN 40.0 DEGREES
AREA UNDER CURVE UP TO 40.0 DEGREES = 36.38 FEET DEGREES
AREA BETWEEN 30.0 AND 40.0 DEGREES = 11.17 FEET DEGREES
MAXIMUM RIGHTING LEVER (GZ) = 1.325 FEET AND OCCURS AT 25.0 DEGREES



CONDITION NO. 8
ARRIVAL MAX DECK CARGO WITH HALF ICING





CONDITION NO. 8
ARRIVAL MAX DECK CARGO WITH HALF ICING

ITEM	WEIGHT TONS	V.C.G. ABOVE MLD. BASE FEET	VERT-L MOMENT ABOVE BASE TON FEET	L.C.G. FROM AP FEET	LONG-L MOMENT ABOUT THE AP TON FEET	FREE SURF. MOMENT TON FEET
CREW & EFFECTS	0.7	16.00	11.4	74.0	52.5	0.0
OF 30-22 P&S	5.5	1.30	7.2	60.4	334.8	118.8
OF DS 40-38 S	1.7	7.85	13.3	34.5	58.7	0.1
LO STORAGE 40-38 P	1.8	7.85	14.0	34.5	61.4	0.1
FW 46-42 P&S	2.4	3.61	8.5	24.5	57.9	10.0
WB FORE PEAK	22.6	9.41	213.1	101.1	2289.2	0.0
ICING ALLOWANCE	9.1	17.43	157.7	52.7	477.0	0.0
DECK CARGO	25.0	16.67	416.8	32.0	800.0	0.0
DEADWEIGHT	68.8	12.24	842.0	60.1	4131.6	129.1
LIGHTSHIP	245.0	11.75	2878.8	49.3	12071.2	0.0
DISPLACEMENT	313.8	11.86	3720.8	51.6	16202.8	129.1

SAILING STATE
DENSITY OF WATER TAKEN AS 0.0286 (TONS/CUBIC FEET)

FULL DRAFT AT L.C.F.	=	7.24 FEET
FULL DRAFT AFT AT A.P.	=	7.16 FEET
FULL DRAFT FWD AT F.P.	=	7.35 FEET
FULL MEAN DRAFT AT MIDSHIPS	=	7.25 FEET
TRIM BY BOW	=	0.19 FEET
K.M.T. ABOVE MLD. BASE	=	15.06 FEET
K.G. ABOVE MLD. BASE	=	11.86 FEET
G.M. (SOLID)	=	3.21 FEET
FREE SURFACE CORRECTION (129.1/313.8)	=	0.41 FEET
G.M. (FLUID)	=	2.80 FEET

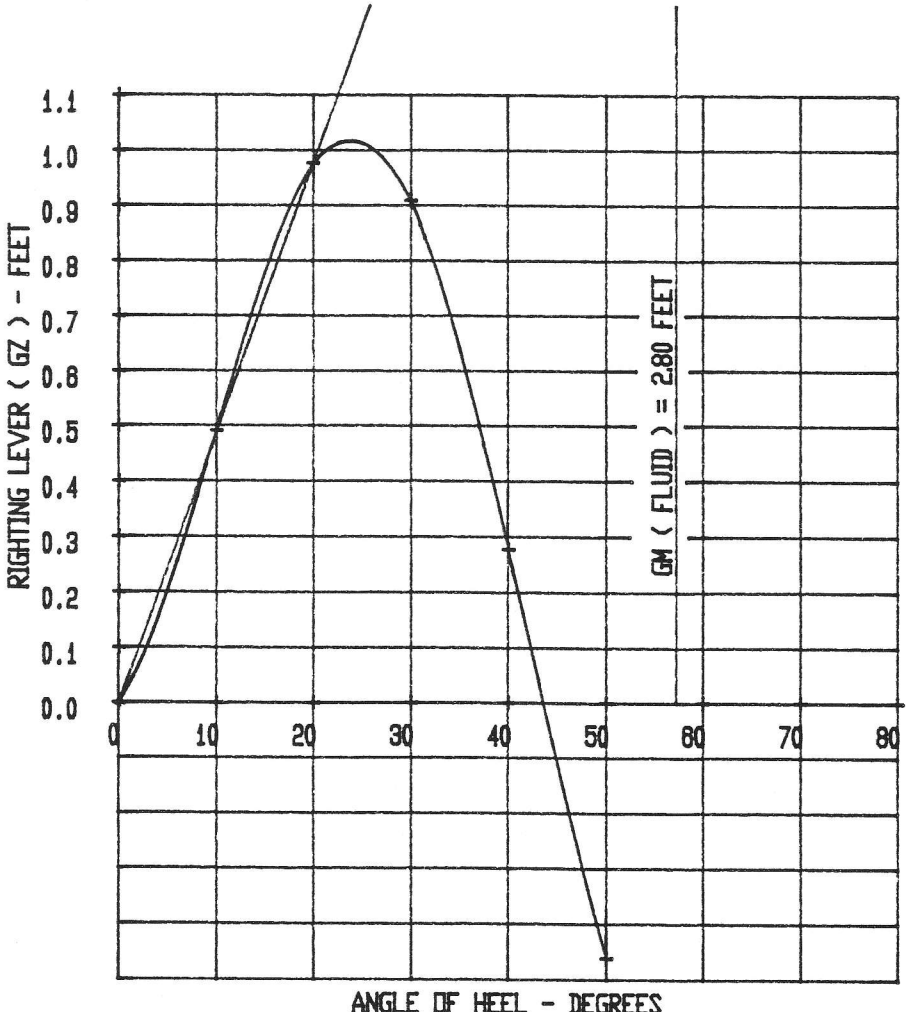
CONDITION NO. 8
ARRIVAL MAX DECK CARGO WITH HALF ICING

STABILITY INFORMATION

K G ABOVE MLD. BASE = 11.86 FEET
FREE SURFACE CORRECTION = 0.41 FEET
KG CORRECTED (VIRTUAL KG) = 12.27 FEET

ANGLE OF HEEL DEGREES	RIGHTING LEVER(KN) FEET	KG X SIN(ANGLE) FEET	RIGHTING LEVER (GZ) FEET
10.000	2.622	2.130	0.491
20.000	5.174	4.196	0.977
30.000	7.044	6.134	0.910
40.000	8.165	7.886	0.279
50.000	8.938	9.398	-0.460

AREA UNDER CURVE UP TO 30.0 DEGREES = 19.71 FEET DEGREES
FLOOD ANGLE NOT LESS THAN 40.0 DEGREES
AREA UNDER CURVE UP TO 40.0 DEGREES = 25.95 FEET DEGREES
AREA BETWEEN 30.0 AND 40.0 DEGREES = 6.25 FEET DEGREES
MAXIMUM RIGHTING LEVER (GZ) = 1.017 FEET AND OCCURS AT 24.0 DEGREES



R.V. "MEDEIA"
INCLINING EXPERIMENT REPORT

Place of experiment - Douglas, Alaska, United States of America
Date and time - Commencing 10.45 hrs on Monday, 18th October 1993
Representatives - Mr. W. Loofbourrow - Alaska Department of Fish & Game
Mr. M. J. Napier - Napier Co. (Arbroath) Ltd.

General conditions - Good

Drafts - Aft at marks - 7'-7.5" port, 7'-5.5" stbd.(7'-6.5" mean)
Fwd at marks - 7'-10"
Full draft at A.P. - 7'-6"
Full draft at F.P. - 7'-10"
Full mean draft amidships - 7'-8"
Trim over LBP = 4" by Head
Keel Depth 2" Molded draft = 7'-6"
Specific gravity of water - 0.02812 tons / Ft.^{3}

The critical hydrostatics have been calculated by computer and the results are as follows :-

On 7'-6" mean molded draft at 0.333' trim by head for actual specific gravity at experiment -

DISPLT (Tons)	KMT (Ft)	LCB (Ft)	VCB (Ft)
337.59	14.55	51.52	4.76

The hydrostatics and righting levers are calculated to the moulded lines except displacement which includes the shell plating and to the top of the deck.

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EXPERIMENT RESULTS

Forward pendulum - 7.021' long
Aft pendulum - 6.000' long
Weights - 1 - 1.893 tons
2 - 1.920 tons for distance moved see table below
3 - 1.929 tons

SHIFT NO.	WEIGHTS PORT (T)	WEIGHTS STBD (T)	WEIGHT MOVED (T)	DIST MOVED (Ft.)	MOMENT (Ft.T)	PORT PENDULUM LENGTH = 7.021' DEF(Ft)	PORT PENDULUM TAN.	STBD PENDULUM LENGTH = 6.000' DEF(FT)	STBD PENDULUM TAN.
0	3.813	1.929	-	-	-	-	-	-	-
1	1.920	3.822	1.893	19.208	36.361	0.1475	0.02101	0.1342	0.02237
2	-	5.742	1.920	19.167	36.801	0.1492	0.02125	0.1283	0.02138
3	3.813	1.929	3.813	19.207	73.237	0.2825	0.04024	0.2425	0.04042
4	5.742	-	1.929	19.167	36.973	0.1525	0.02172	0.1333	0.02222
5	-	5.742	5.742	19.152	109.969	0.4350	0.06196	0.3675	0.06125
6	3.813	1.929	3.813	19.187	73.159	0.2808	0.03999	0.2433	0.04055
7	5.742	-	1.929	19.167	36.973	0.1567	0.02232	0.1283	0.02138
8	3.813	1.929	1.929	19.125	36.892	0.1383	0.01970	0.1133	0.01888

CALCULATION OF METACENTRIC HEIGHT AS INCLINED

Average moment - 55.046

Average tangent for port pendulum - 0.03102
Average tangent for stbd pendulum - 0.03106

Average tangent for both pendulums - 0.03104 <=> 1.78^{o}

$$\text{TAN } \theta = \frac{\text{HEELING MOMENT}}{\text{DISPLT X GM(F)}}$$

$$\Rightarrow \text{GM(F)} = \frac{\text{HEELING MOMENT}}{\text{DISPLT X TAN } \theta}$$

$$= \frac{55.046}{337.59 \text{ X } 0.03104}$$

$$= 5.25 \text{ Ft.}$$

The free surface correction will be insignificantly beneficial and is considered negligible due to the low ullage.

CALCULATION OF VCG AND LCG AS INCLINED

$$\text{VCG} = \text{KMT} - (\text{GMT} + \text{FS CORRTN.})$$

$$= 14.55 - 5.25 + 0$$

$$= 9.30 \text{ Ft.}$$

The LCG is vertically above the LCB (relative to the waterline) :-

$$\text{BG} = \text{VCG} - \text{VCB}$$

$$= 9.30 - 4.86$$

$$= 4.44 \text{ ft.}$$

$$\frac{\text{BG}}{\text{LCG} - \text{LCB}} = \frac{\text{LBP}}{\text{TRIM}}$$

$$\Rightarrow \text{LBP (LCG} - \text{LCB)} = \text{TRIM X BG}$$

$$\Rightarrow \qquad \text{LCG} = \frac{\text{TRIM X BG}}{\text{LBP}} + \text{LCB}$$

$$= \frac{-0.333 \text{ x } 4.44}{108.0} + 51.39$$

$$= 51.38 \text{ Ft.}$$

WEIGHTS TO GO ON	TONS	VCG	VERT MOM	LCG	LONGL MOM
Crab Pot Platform	0.14	15.50	2.17	38.50	5.39

WEIGHTS TO COME OFF	TONNES	VCG	VERT MOM	LCG	LONGL MOM
Inclining weights	5.74	13.96	80.13	20.83	119.56
1 Man on Deck	0.08	15.67	1.25	38.50	3.08
1 Man in Engine Room	0.08	8.00	0.64	40.50	3.24
OF DB 30-22 P + S	31.40	3.17	99.54	60.44	1897.82
OF DB 22-15 P + S	23.68	3.24	76.72	75.19	1780.50
OF DB 15-7 P + S	15.54	3.32	51.59	88.99	1382.90
OF DS 40-38 S	1.20	6.51	7.81	34.50	41.40
WB 50-40 P + S	27.24	7.99	217.65	16.57	451.37
Lub.Oil 40-38 P	1.73	7.64	13.22	34.50	59.68
Total To Come Off	106.69	5.14	548.55	53.80	5739.55

SUMMARY

Vessel as Inclined	337.59	9.30	3139.59	51.38	17345.37
Plus	0.14	15.50	2.17	38.50	5.39
	337.73	9.30	3141.76	51.39	17350.76
Minus	106.69	5.14	548.55	53.80	5739.55
Lightweight	231.04	11.22	2593.21	50.26	11611.21

LIGHTWEIGHT REVISION

Vessel as Inclined	231.04	11.22	2593.21	50.26	11611.21
Less Steel (old)	4.20	12.56	50.30	33.42	133.81
	226.84	11.21	2542.91	50.62	11477.40
Plus Steel (new)	8.81	20.76	174.21	37.01	310.54
Plus O/Fit (new)	7.48	9.56	71.49	25.57	191.29
Revised Lightweight	243.13	11.47	2788.61	49.27	11979.23

Say 245.00 T. @ 11.75 Ft.
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