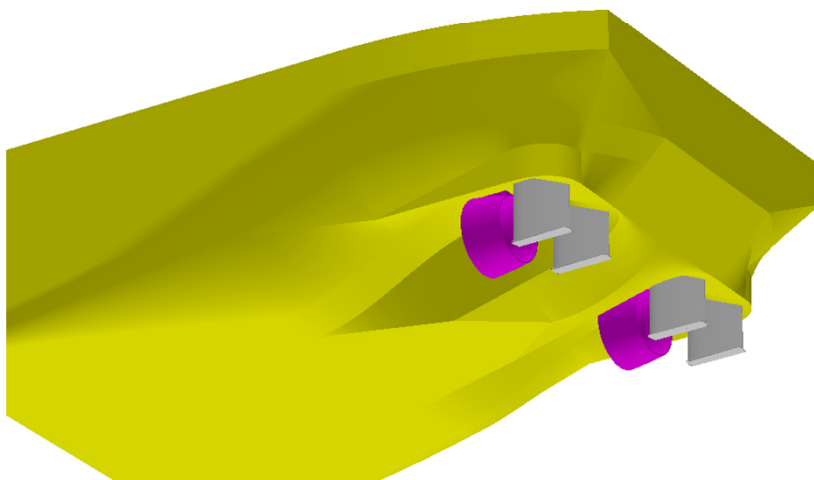
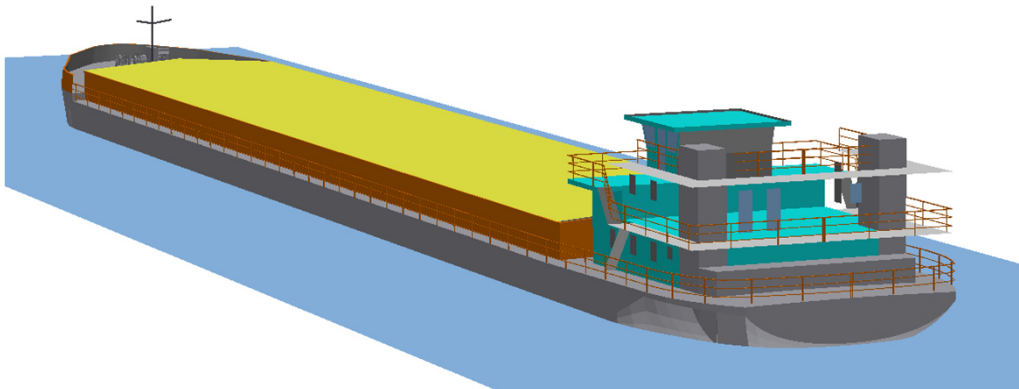
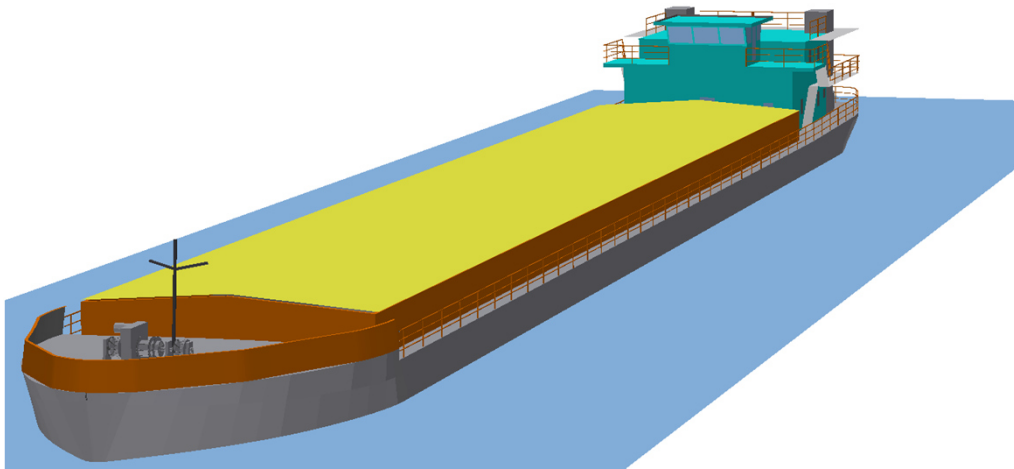


### Bulk Carrier B3



### Main dimensions

Cargo type		Dry Bulk
Hull type		B3
Length o.A.	L	92,00 m
Breadth	B	12,00 m
Depth Main Deck	D	3,70 m
Draught max.	T	2,80 m
Lightweight estimate		680 t
Payload at Tmax		2105 t
Airdraft without cargo load		< 9.00 m

### Applicable regulations

- Vessel built according to Rules and Regulations for the Construction and Classification of Inland Waterways Ships by the Indian Register of Shipping.
- Applicable rules of IWAI for navigation on NW-1, all reaches from Haldia (West Bengal) to Allahabad (Uttar Pradesh).

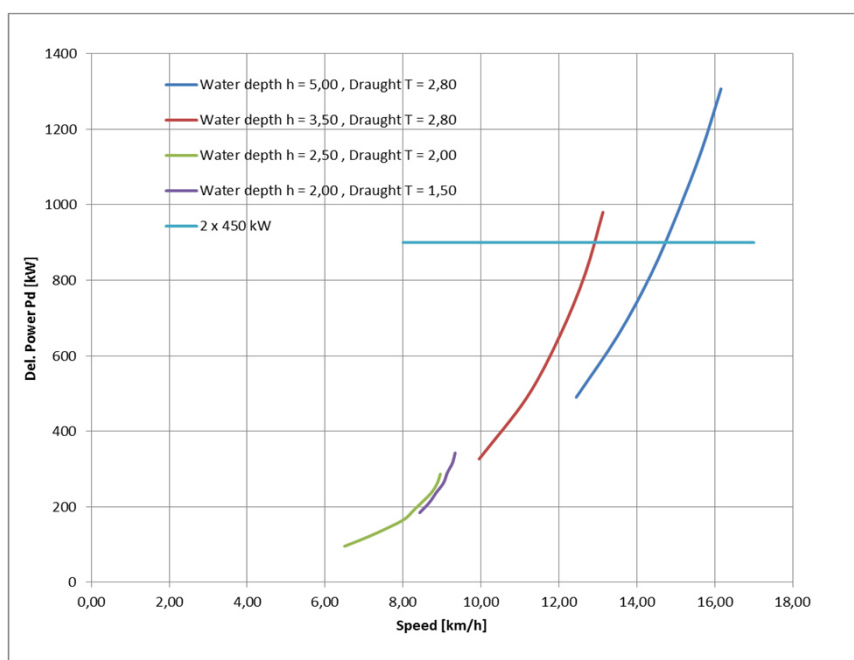
### Powering

Number of Propellers (in nozzles)		2
Propeller diameter	$D_p$	1,45 m
Del. total power	$P_d$	900 kW
Rate of rev.	n [1/min]	390

Reversible gear box

Diesel marine engine 500 kW in rating A (heavy, uninterrupted duty)

### Estimated speed and power



**Cargo hold**

	Lc	Bc	Hc	Volume
Dimensions:	66,0 m	10,1 m	3,9 m	2599,7 m <sup>3</sup>

Sliding hatch cover, with light alloy profile cover, weathertight

**Provisions**

Diesel Oil	30 t
Fresh Water	12 t
Lub Oil	1 t
Sludge	2 t
Black Water	8 t

**Equipment**

- Twin rudder blades with high efficiency profiles behind each propeller.
- Bow thruster with vertical propeller shaft, propeller diameter 0.80 m. Diesel engine drive, 150 kW.
- Two bow rudder flaps in dimension of b x h = 2.0 x 1.0 m
- Two bow anchors, each 1100 kg
- One stern anchor 550 kg

**Accommodation**

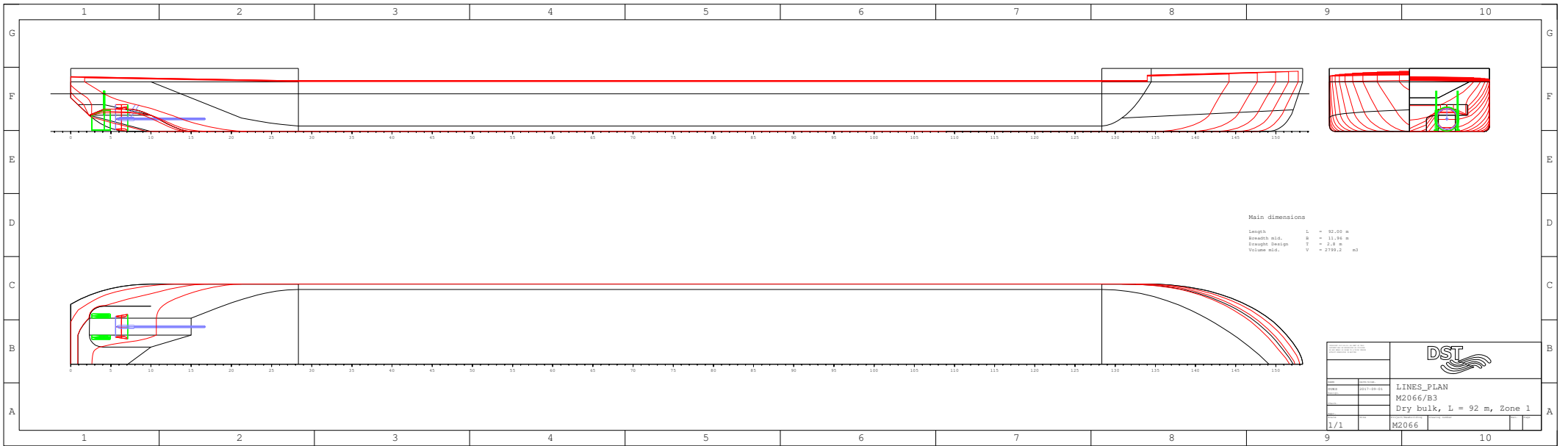
- Accommodation on two decks for crew of max. 12 persons

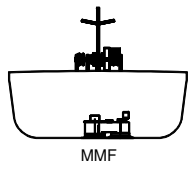
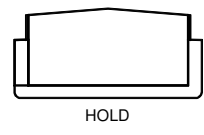
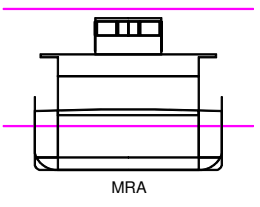
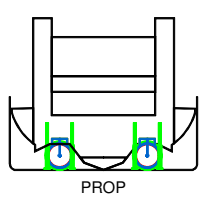
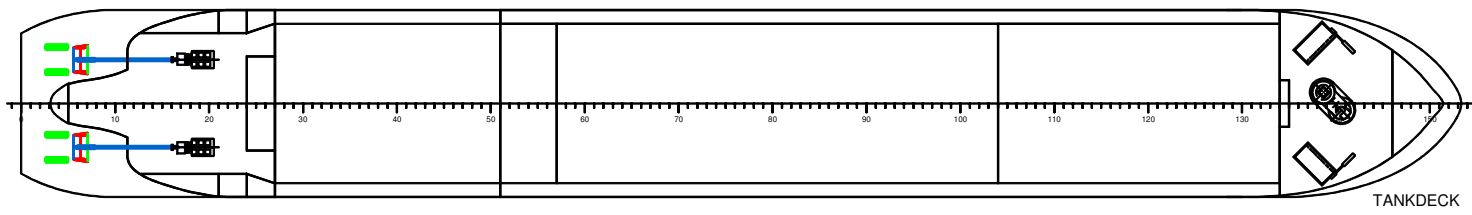
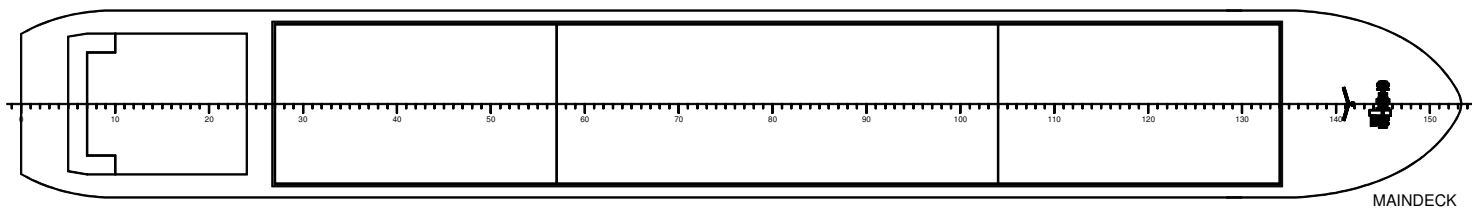
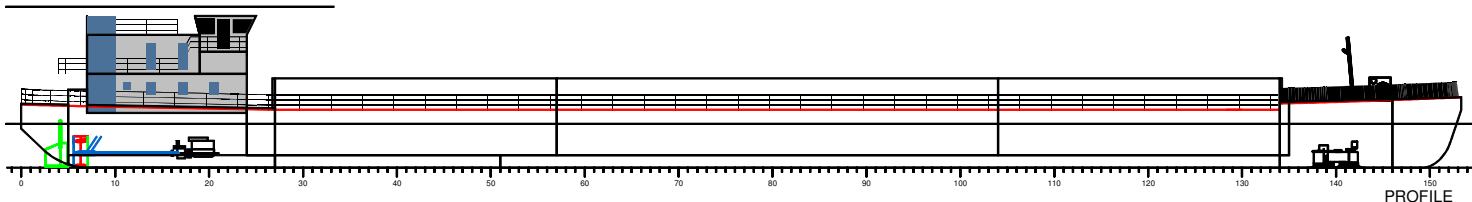
**Weight calculation results for major components**

Steel weight, longt. Framing	545 t
Accommodation	100 t
Machinery & outfitting	50 t
Hatch Cover	17 t
<b>Sum</b>	<b>680 t</b>

**Electric load requirements**

Diesel driven genset, 60 kW output  
 Three-phase AC supply to anchor winches  
 220 V supply to accomadation  
 220 V supply to AC accomodation  
 24 V emergency circuit





Main dimensions

Length	L	=	92.00	m
Breadth moulded	B	=	11.96	m
Breadth oA	BoA	=	12.00	m
Draught max	T	=	2.80	m
Navigation Zone 1				

Model:	2017-08-31
Date:	2017-08-31
Drawn by:	
Scale:	
Sheet:	
Rev:	
1/...	



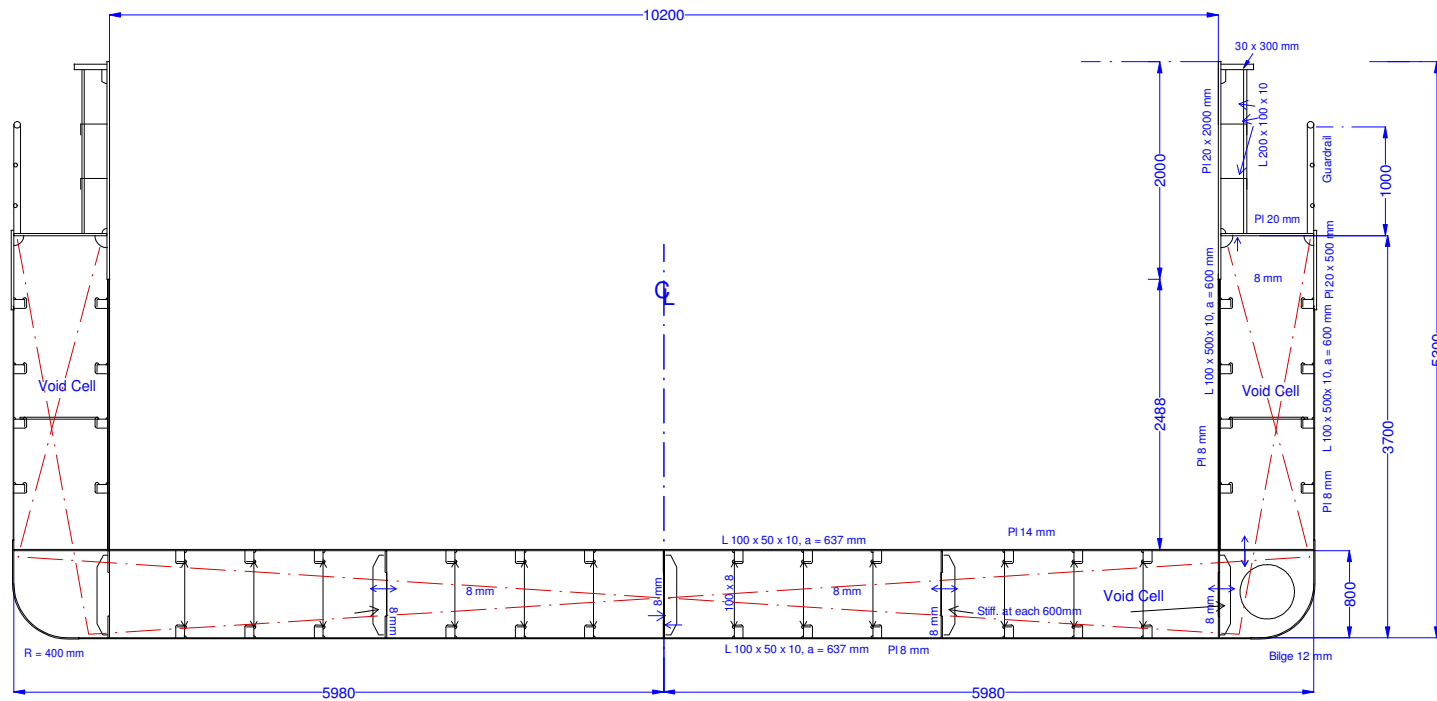
B3  
NW-1

2017-08-31

1


# Bulk Carrier B3 - Main Frame and Scantling

Frame distance 1800 mm



Main Dimensions	
Lenght PP	: 92.000 m
Breadth moulded	: 11.960 m
Breadth o. all	: 12.000 m
Draught design	: 2.800 m
Navigation Zone 1	

Date 16.08.2017

	
<p><b>Bulk Carrier B3</b></p> <p><b>Main Section</b></p>	
<p>1/25</p>	<p>G 1</p>

M2066/B3

## PROJECT INFO

L x B = 92.00 x 11.96 m

Project M2066/B3

T m	DISP t	DW t	MCT tm/cm	TCP t/cm	KMT m	TK m
0.800	762.69	83.7	58.6	9.71	14.764	0.810
0.900	859.98	181.0	59.2	9.75	13.249	0.910
1.000	957.63	278.6	59.8	9.78	12.042	1.010
1.100	1055.60	376.6	60.5	9.81	11.059	1.110
1.200	1154.33	475.3	62.3	9.91	10.319	1.210
1.300	1253.79	574.8	63.5	9.98	9.659	1.310
1.400	1353.82	674.8	64.4	10.02	9.093	1.410
1.500	1454.32	775.3	65.3	10.07	8.607	1.510
1.600	1555.38	876.4	66.8	10.14	8.205	1.610
1.700	1657.46	978.5	68.7	10.25	7.865	1.710
1.800	1760.11	1081.1	69.2	10.27	7.531	1.810
1.900	1862.94	1183.9	69.7	10.30	7.238	1.910
2.000	1965.99	1287.0	70.1	10.32	6.981	2.010
2.100	2069.27	1390.3	70.6	10.35	6.755	2.110
2.200	2172.85	1493.8	71.1	10.37	6.553	2.210
2.300	2276.69	1597.7	71.6	10.40	6.374	2.310
2.400	2380.77	1701.8	72.1	10.42	6.212	2.410
2.500	2485.09	1806.1	72.5	10.44	6.069	2.510
2.600	2589.61	1910.6	72.9	10.46	5.940	2.610
2.700	2694.32	2015.3	73.2	10.48	5.825	2.710
2.800	2799.21	2120.2	73.6	10.50	5.721	2.810
2.900	2904.28	2225.3	73.9	10.51	5.628	2.910
3.000	3009.50	2330.5	74.3	10.53	5.545	3.010

M2066/B3

## PROJECT INFO

L x B = 92.00 x 11.96 m

Project M2066/B3, 2017-09-01

## LOADING CASES

NAME	TEXT	DISP t	MASS t	MASS t	T m	TR m
1-LIGHTSHIP		714.00	0.00	0.00	0.755	-1.331
2-BAL	Ballast condition	742.67	0.00	63.67	0.787	-1.766
3-T280	Full load	2773.96	2094.96	0.00	2.800	-0.004
4-T180	T 180	1749.00	1035.00	0.00	1.790	-0.004
5-T130	Min. load	1254.00	540.00	0.00	1.301	-0.004



M2066/B3

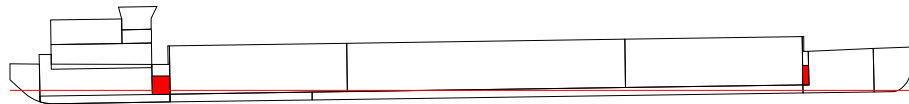
LOADING CONDITION 1-LIGHTSHIP

LOADING COMPONENTS

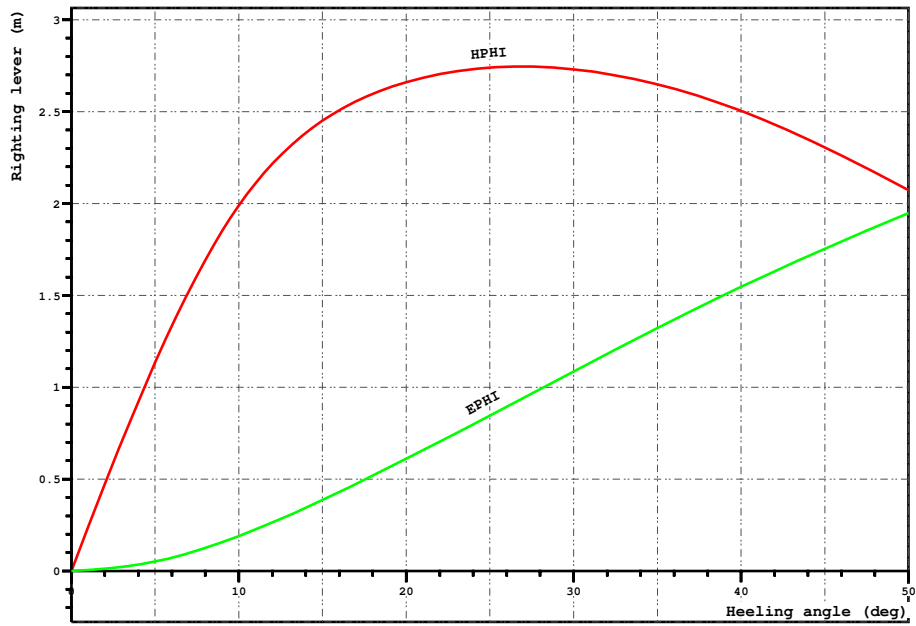
Name		Max. weight	Mass	Center of gravity cgx cgy cgz			Free s. moment
-----							
Diesel Oil, RHO=0.860							
DOA	Diesel oil a.	26.0	17.00	15.30	0.00	1.73	26.93
DOF	Diesel oil f.	4.9	3.00	80.70	0.00	1.79	0.00
-----							
Total of DO		30.9	20.00	25.11	0.00	1.74	26.93
Fresh Water, RHO=1.000							
FW	Side Tanks a.	14.7	10.00	13.50	0.00	1.76	30.43
Deadweight			35.0	19.92	0.00	2.64	57.4
Lightweight			679.0	36.95	0.00	2.49	
Displacement (rho=1.000)			714.0	36.12	0.00	2.50	57.4

FLOATING POSITION

Draught moulded	0.755 m	KM	15.88 m
Trim	-1.331 m	KG	2.50 m
Heel, PS=+	0.0 deg		
TA	1.420 m	GM0	13.38 m
TF	0.089 m	GMCORR	-0.08 m
Trimming moment	-8002 tonm	GM	13.30 m



Loading case1 1-LIGHTSHIP,

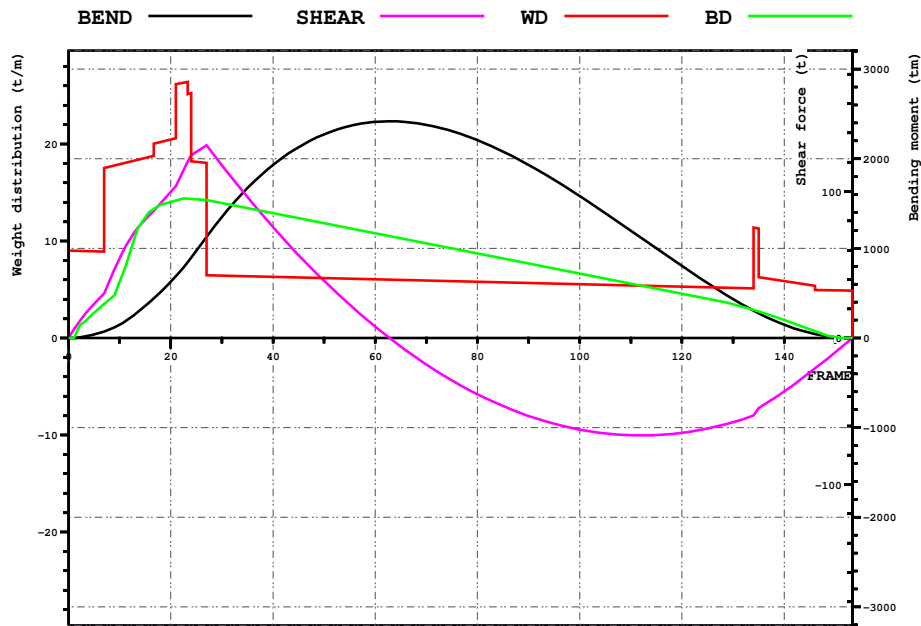


LOADING CONDITION 1-LIGHTSHIP

HEEL deg	MS m	HPHI m	EPHI mrad	FSMOM tm	DGZ m
0.0	0.000	0.00	0.000	0.0	0.000
5.0	-0.026	1.13	0.051	5.0	0.007
10.0	-0.321	1.99	0.190	10.1	0.014
15.0	-0.991	2.45	0.386	15.3	0.021
20.0	-1.889	2.66	0.610	19.4	0.027
30.0	-3.924	2.73	1.086	25.6	0.036
40.0	-6.059	2.50	1.546	27.7	0.039
50.0	-8.141	2.07	1.948	27.2	0.038

M2066/B3

Loading case1 1-LIGHTSHIP,



LOADING CONDITION 1-LIGHTSHIP

X m	FR #	BEND tm	SHEAR t	WD t/m	BD t/m
0.000	0.00	0	0	9.02	0.00
6.000	10.00	149	54	17.92	5.76
12.000	20.00	628	100	20.46	14.04
18.000	30.00	1351	118	6.42	13.92
24.000	40.00	1931	76	6.30	12.88
30.000	50.00	2274	39	6.17	11.84
36.000	60.00	2412	8	6.05	10.80
42.000	70.00	2380	-18	5.92	9.76
48.000	80.00	2209	-38	5.80	8.72
54.000	90.00	1933	-53	5.67	7.68
60.000	100.00	1585	-63	5.54	6.64
66.000	110.00	1198	-66	5.42	5.60
72.000	120.00	804	-65	5.29	4.56
78.000	130.00	436	-58	5.17	3.47
84.000	140.00	148	-36	5.88	1.85
90.000	150.00	9	-10	4.92	0.09

M2066/B3

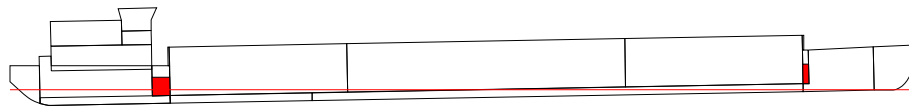
LOADING CONDITION 2-BAL, Ballast condition

L O A D I N G   C O M P O N E N T S

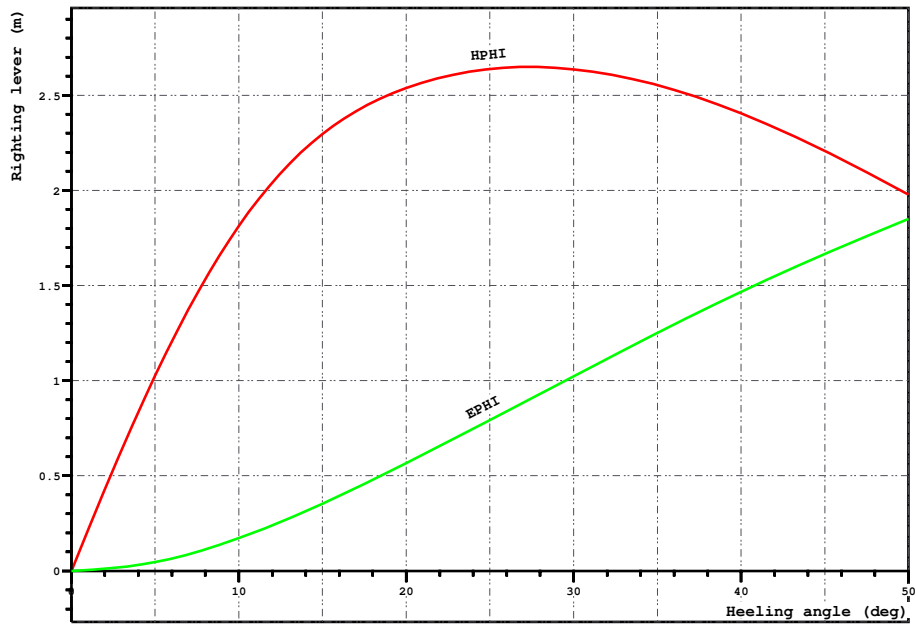
Name		Max. weight	Mass	Center of gravity cgx    cgy    cgz			Free s. moment
-----							
Ballast Water, RHO=1.000							
-----							
TANKS_AFT	Side Tanks a.	63.4	63.42	8.54	0.00	2.59	0.00
Diesel Oil, RHO=0.860							
-----							
DOA	Diesel oil a.	26.0	17.00	15.30	0.00	1.73	26.93
DOF	Diesel oil f.	4.9	3.00	80.70	0.00	1.79	0.00
-----							
Total of DO		30.9	20.00	25.11	0.00	1.74	26.93
Fresh Water, RHO=1.000							
-----							
FW	Side Tanks a.	14.7	10.00	13.50	0.00	1.76	30.43
Deadweight			98.4	12.59	0.00	2.61	57.4
Lightweight			679.0	36.95	0.00	2.49	
Displacement (rho=1.000)			777.4	33.87	0.00	2.51	57.4

FLOATING POSITION

Draught moulded	0.815	m	KM	14.82	m
Trim	-1.708	m	KG	2.51	m
Heel, PS=+	0.0	deg			
TA	1.669	m	GM0	12.31	m
TF	-0.040	m	GMCORR	-0.07	m
Trimming moment	-10532	tonm	GM	12.24	m



Loading case 2-BAL, Ballast condition

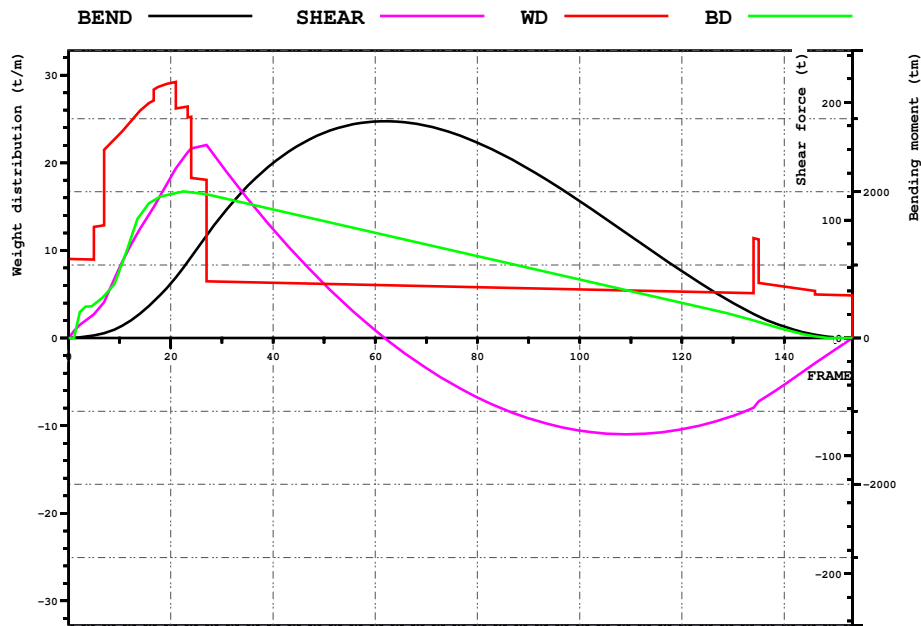


LOADING CONDITION 2-BAL, Ballast condition

HEEL deg	MS m	HPHI m	EPhi mrad	FSMOM tm	DGZ m
0.0	0.000	0.00	0.000	0.0	0.000
5.0	-0.042	1.02	0.046	5.0	0.006
10.0	-0.312	1.81	0.172	10.1	0.013
15.0	-0.871	2.30	0.353	15.3	0.020
20.0	-1.649	2.54	0.565	19.4	0.025
30.0	-3.488	2.64	1.023	25.6	0.033
40.0	-5.475	2.40	1.467	27.7	0.036
50.0	-7.420	1.98	1.851	27.2	0.035

M2066/B3

Loading case 2-BAL, Ballast condition



LOADING CONDITION 2-BAL, Ballast condition

X m	FR #	BEND tm	SHEAR t	WD t/m	BD t/m
0.000	0.00	0	0	9.02	0.00
6.000	10.00	149	60	23.26	7.72
12.000	20.00	746	136	29.10	16.41
18.000	30.00	1677	146	6.42	16.01
24.000	40.00	2391	92	6.30	14.67
30.000	50.00	2805	46	6.17	13.34
36.000	60.00	2960	6	6.05	12.01
42.000	70.00	2901	-26	5.92	10.67
48.000	80.00	2671	-51	5.80	9.34
54.000	90.00	2313	-68	5.67	8.00
60.000	100.00	1872	-79	5.54	6.67
66.000	110.00	1390	-82	5.42	5.33
72.000	120.00	911	-77	5.29	4.00
78.000	130.00	478	-66	5.17	2.64
84.000	140.00	156	-40	5.88	1.01
90.000	150.00	9	-10	4.92	0.01

M2066/B3

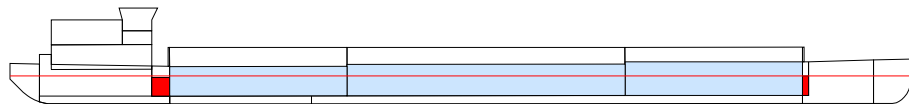
LOADING CONDITION 3-T280, Full load

LOADING COMPONENTS

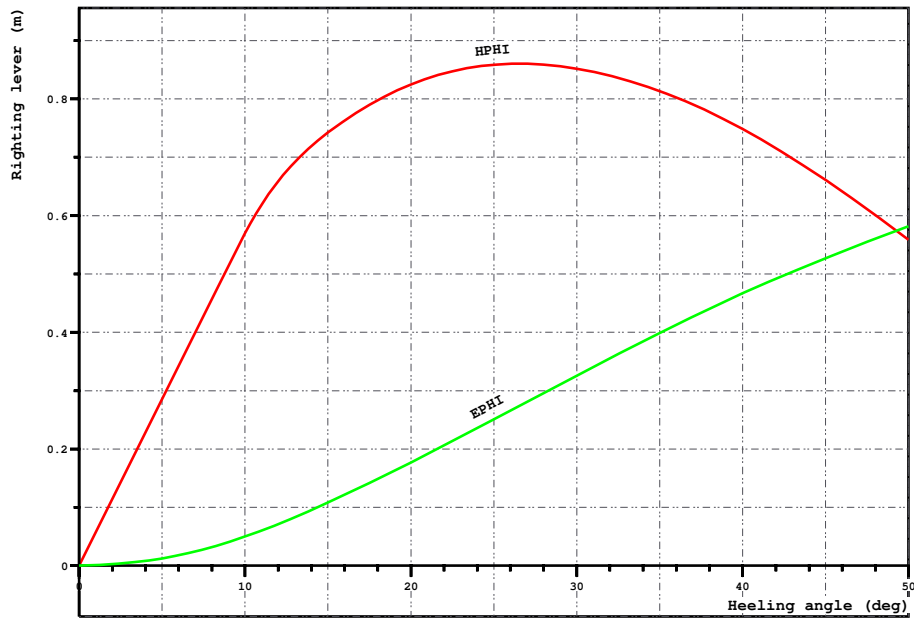
Name		Max. weight	Mass	Center of gravity cgx cgy cgz			Free s. moment
-----							
Solid cargo, RHO=1.000							
LR1	cargo hold	863.5	626.56	71.40	0.00	2.51	0.00
LR2	cargo hold	1353.3	920.22	48.30	0.00	2.40	0.00
LR3	cargo hold	864.1	548.18	25.20	0.00	2.29	0.00
-----							
Total of CAS		3080.8	2094.96	49.16	0.00	2.40	0.00
-----							
Diesel Oil, RHO=0.860							
DOA	Diesel oil a.	26.0	17.00	15.30	0.00	1.73	26.93
DOF	Diesel oil f.	4.9	3.00	80.70	0.00	1.79	0.00
-----							
Total of DO		30.9	20.00	25.11	0.00	1.74	26.93
-----							
Fresh Water, RHO=1.000							
FW	Side Tanks a.	14.7	10.00	13.50	0.00	1.76	30.43
-----							
Deadweight			2130.0	48.68	0.00	2.41	57.4
Lightweight			679.0	36.95	0.00	2.49	
Displacement (rho=1.000)			2809.0	45.85	0.00	2.43	57.4

FLOATING POSITION

Draught moulded	2.809	m	KM	5.71	m
Trim	-0.069	m	KG	2.43	m
Heel, PS=+	0.0	deg			
TA	2.844	m	GM0	3.29	m
TF	2.774	m	GMCORR	-0.02	m
Trimming moment	-509	tonm	GM	3.27	m



Loading case 3-T280, Full load

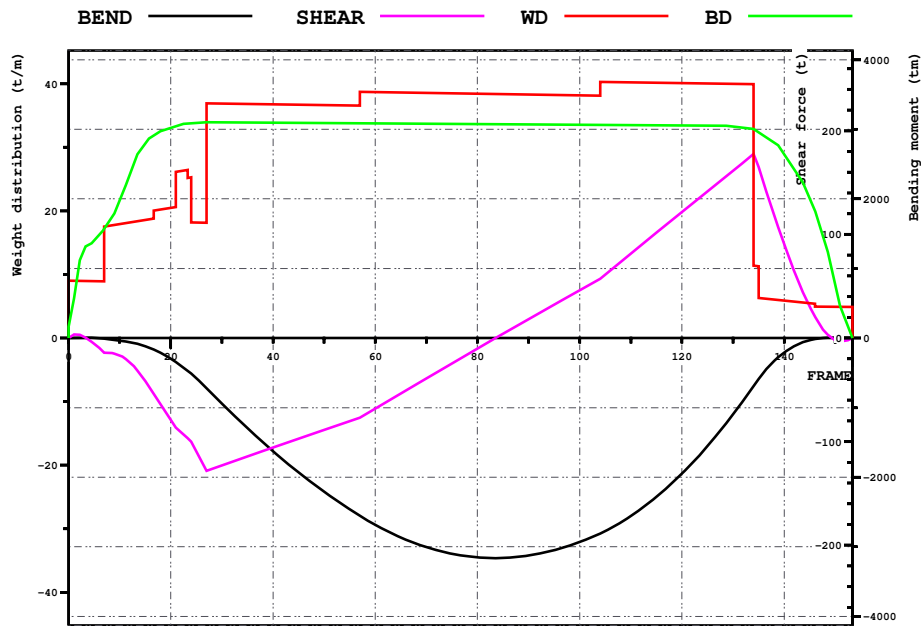


LOADING CONDITION 3-T280, Full load

HEEL deg	MS m	HPHI m	E PHI mrad	FSMOM tm	DGZ m
0.0	0.000	0.00	0.000	0.0	0.000
5.0	0.001	0.29	0.012	5.0	0.002
10.0	0.002	0.57	0.050	10.1	0.004
15.0	-0.103	0.74	0.108	15.3	0.005
20.0	-0.292	0.82	0.177	19.4	0.007
30.0	-0.783	0.85	0.326	25.6	0.009
40.0	-1.355	0.75	0.467	27.7	0.010
50.0	-1.950	0.56	0.582	27.2	0.010



Loading case1 3-T280, Full load



LOADING CONDITION 3-T280, Full load

X m	FR #	BEND tm	SHEAR t	WD t/m	BD t/m
0.000	0.00	0	0	9.02	1.77
6.000	10.00	-36	-17	17.92	21.59
12.000	20.00	-297	-79	20.46	33.06
18.000	30.00	-943	-123	36.88	33.94
24.000	40.00	-1627	-106	36.75	33.89
30.000	50.00	-2209	-89	36.63	33.83
36.000	60.00	-2686	-68	38.68	33.78
42.000	70.00	-3006	-39	38.55	33.72
48.000	80.00	-3152	-10	38.43	33.67
54.000	90.00	-3126	18	38.30	33.61
60.000	100.00	-2932	46	38.18	33.56
66.000	110.00	-2557	81	40.23	33.51
72.000	120.00	-1947	122	40.10	33.45
78.000	130.00	-1098	161	39.98	33.27
84.000	140.00	-208	91	5.88	28.91
90.000	150.00	4	-2	4.92	8.31

M2066/B3

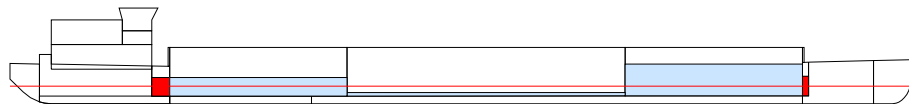
LOADING CONDITION 4-T180, T 180

LOADING COMPONENTS

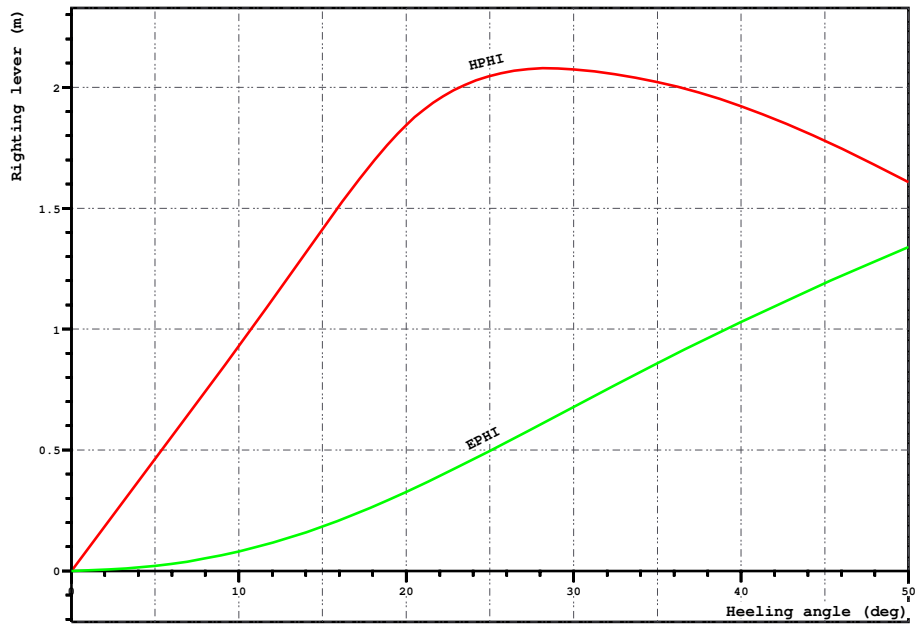
Name		Max. weight	Mass	Center of gravity cgx cgy cgz			Free s. moment
-----							
Solid cargo, RHO=1.000							
LR1	cargo hold	863.5	591.16	71.40	0.00	2.41	0.00
LR2	cargo hold	1353.3	98.84	48.30	0.00	0.97	0.00
LR3	cargo hold	864.1	345.00	25.20	0.00	1.74	0.00
-----							
Total of CAS		3080.8	1035.00	53.79	0.00	2.05	0.00
-----							
Diesel Oil, RHO=0.860							
DOA	Diesel oil a.	26.0	17.00	15.30	0.00	1.73	26.93
DOF	Diesel oil f.	4.9	3.00	80.70	0.00	1.79	0.00
-----							
Total of DO		30.9	20.00	25.11	0.00	1.74	26.93
-----							
Fresh Water, RHO=1.000							
FW	Side Tanks a.	14.7	10.00	13.50	0.00	1.76	30.43
-----							
Deadweight			1070.0	52.69	0.00	2.07	57.4
Lightweight			679.0	36.95	0.00	2.49	
Displacement (rho=1.000)			1749.0	46.58	0.00	2.23	57.4

FLOATING POSITION

Draught moulded	1.790	m	KM	7.56	m
Trim	-0.004	m	KG	2.23	m
Heel, PS=+	0.0	deg			
TA	1.792	m	GM0	5.33	m
TF	1.788	m	GMCORR	-0.03	m
Trimming moment	-26	tonm	GM	5.29	m



Loading case 4-T180, T 180

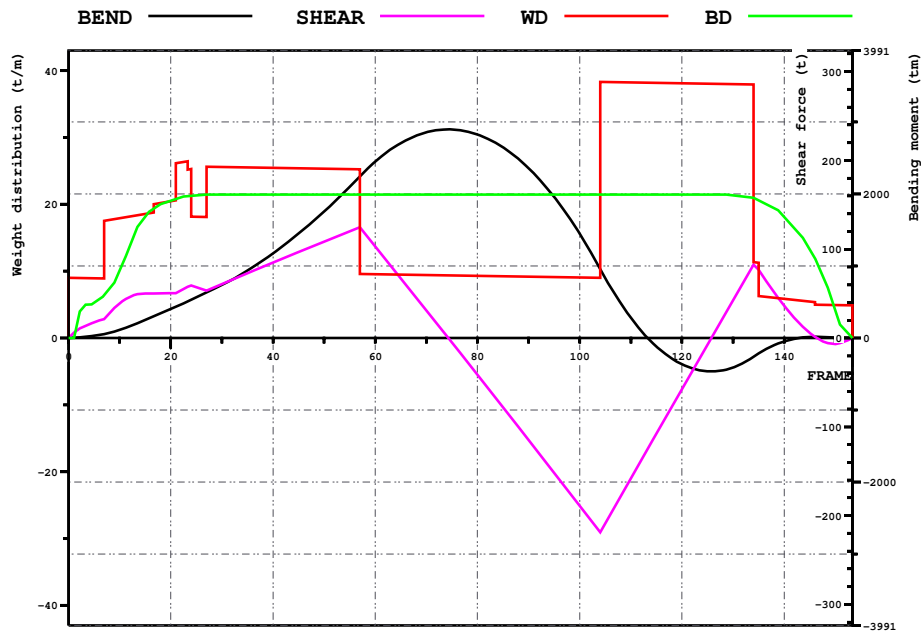


LOADING CONDITION 4-T180, T 180

HEEL deg	MS m	HPHI m	EPII mrad	FSMOM tm	DGZ m
0.0	0.000	0.00	0.000	0.0	0.000
5.0	0.001	0.46	0.020	5.0	0.003
10.0	0.012	0.93	0.081	10.1	0.006
15.0	0.044	1.41	0.183	15.3	0.009
20.0	0.034	1.84	0.326	19.4	0.011
30.0	-0.573	2.07	0.679	25.6	0.015
40.0	-1.485	1.92	1.030	27.7	0.016
50.0	-2.456	1.61	1.340	27.2	0.016

M2066/B3

Loading case 4-T180, T 180



LOADING CONDITION 4-T180, T 180

X m	FR #	BEND tm	SHEAR t	WD t/m	BD t/m
0.000	0.00	0	0	9.02	0.00
6.000	10.00	111	39	17.92	10.06
12.000	20.00	401	50	20.46	20.55
18.000	30.00	735	61	25.59	21.48
24.000	40.00	1174	85	25.46	21.48
30.000	50.00	1756	109	25.34	21.48
36.000	60.00	2450	103	9.55	21.48
42.000	70.00	2855	31	9.43	21.47
48.000	80.00	2826	-41	9.30	21.47
54.000	90.00	2357	-115	9.17	21.47
60.000	100.00	1447	-189	9.05	21.46
66.000	110.00	283	-158	38.26	21.46
72.000	120.00	-364	-58	38.14	21.46
78.000	130.00	-410	42	38.01	21.34
84.000	140.00	-46	36	5.88	18.11
90.000	150.00	8	-7	4.92	4.11

M2066/B3

LOADING CONDITION 5-T130, Min. load

L O A D I N G   C O M P O N E N T S

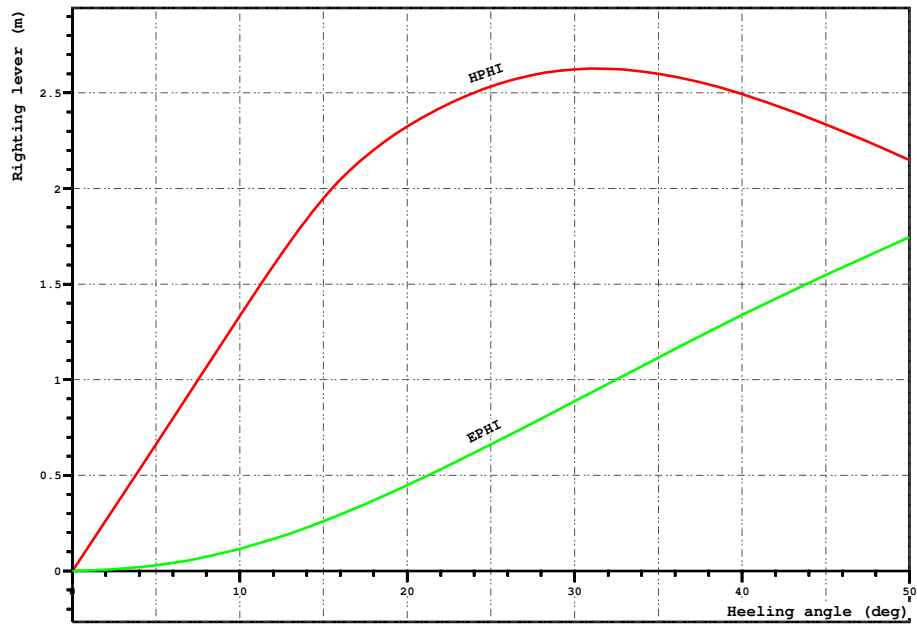
Name		Max. weight	Mass	Center of gravity cgx    cgy    cgz			Free s. moment
-----							
Solid cargo, RHO=1.000							
LR1	cargo hold	863.5	301.24	71.40	0.00	1.62	0.00
LR2	cargo hold	1353.3	238.76	48.30	0.00	1.22	0.00
-----							
Total of CAS		2216.8	540.00	61.19	0.00	1.44	0.00
-----							
Diesel Oil, RHO=0.860							
DOA	Diesel oil a.	26.0	17.00	15.30	0.00	1.73	26.93
DOF	Diesel oil f.	4.9	3.00	80.70	0.00	1.79	0.00
-----							
Total of DO		30.9	20.00	25.11	0.00	1.74	26.93
-----							
Fresh Water, RHO=1.000							
FW	Side Tanks a.	14.7	10.00	13.50	0.00	1.76	30.43
-----							
Deadweight			575.0	58.67	0.00	1.51	57.4
Lightweight			679.0	36.95	0.00	2.49	
Displacement (rho=1.000)			1254.0	46.91	0.00	2.04	57.4

FLOATING POSITION

Draught moulded	1.301	m	KM	9.65	m
Trim	-0.004	m	KG	2.04	m
Heel, PS=+	0.0	deg			
TA	1.303	m	GM0	7.60	m
TF	1.299	m	GMCORR	-0.05	m
Trimming moment	-24	tonm	GM	7.56	m



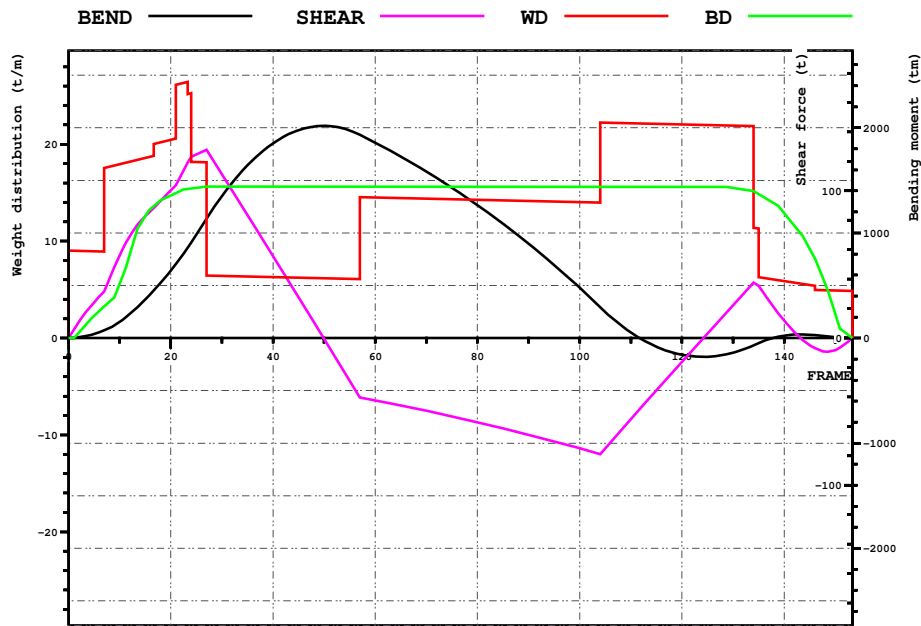
Loading case 5-T130, Min. load



LOADING CONDITION 5-T130, Min. load

HEEL deg	MS m	HPHI m	EPhi mrad	FSMOM tm	DGZ m
0.0	0.000	0.00	0.000	0.0	0.000
5.0	0.003	0.66	0.029	5.0	0.004
10.0	0.022	1.33	0.116	10.1	0.008
15.0	-0.007	1.95	0.260	15.3	0.012
20.0	-0.261	2.32	0.448	19.4	0.015
30.0	-1.158	2.62	0.887	25.6	0.020
40.0	-2.372	2.49	1.339	27.7	0.022
50.0	-3.655	2.15	1.745	27.2	0.022

Loading case 5-T130, Min. load



LOADING CONDITION 5-T130, Min. load

X m	FR #	BEND tm	SHEAR t	WD t/m	BD t/m
0.000	0.00	0	0	9.02	0.00
6.000	10.00	153	56	17.92	5.57
12.000	20.00	642	100	20.46	14.71
18.000	30.00	1349	111	6.42	15.63
24.000	40.00	1851	56	6.30	15.63
30.000	50.00	2019	-1	6.17	15.63
36.000	60.00	1859	-42	14.51	15.62
42.000	70.00	1585	-49	14.39	15.62
48.000	80.00	1266	-57	14.26	15.62
54.000	90.00	898	-66	14.14	15.61
60.000	100.00	478	-75	14.01	15.61
66.000	110.00	54	-55	22.15	15.61
72.000	120.00	-159	-16	22.03	15.60
78.000	130.00	-141	22	21.90	15.49
84.000	140.00	23	12	5.88	12.89
90.000	150.00	8	-8	4.92	2.46