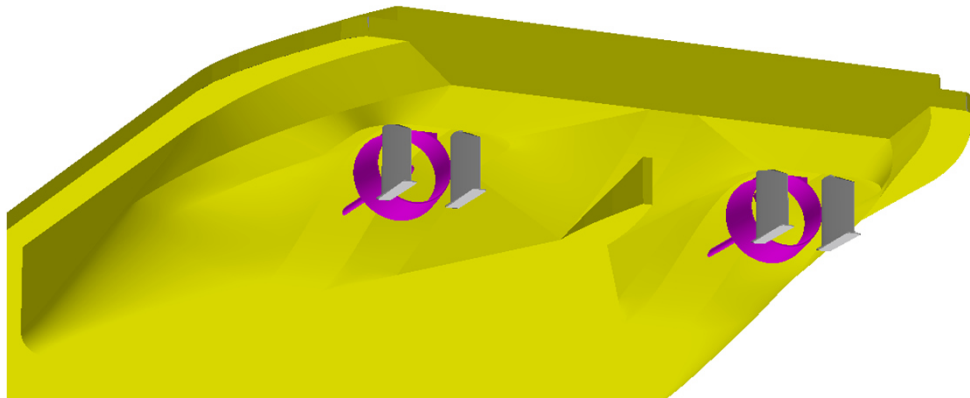
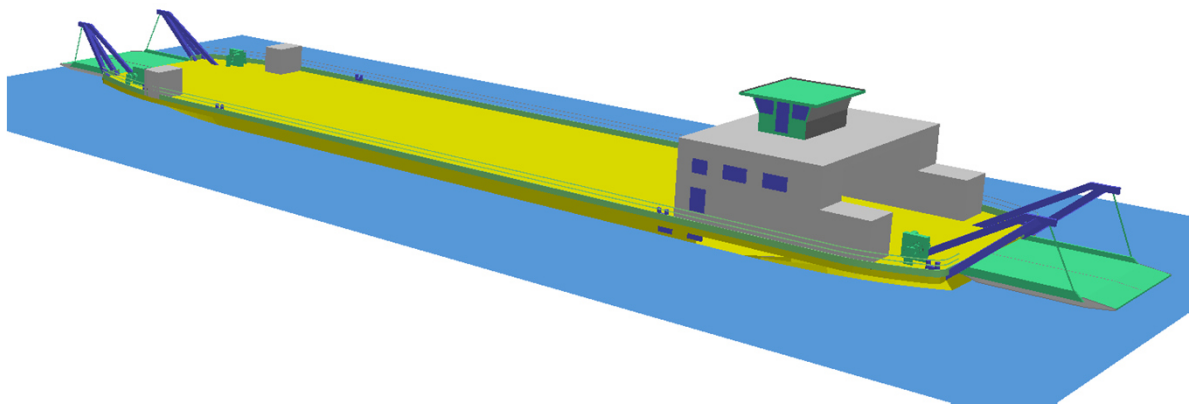
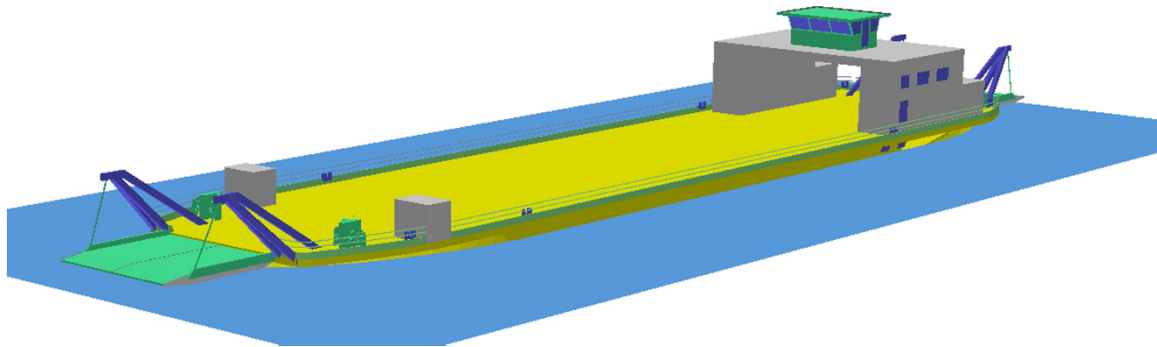


RoRo Vessel



Main dimensions

Cargo type		RoRo
Hull type		RoRo
Length o.A.	L	70.00 m
Breadth moulded	B	14.50 m
Breadth main deck	B oA	15.54 m
Depth Main Deck	D	2.80 m
Draught max.	T	1.70 m
Lightweight estimate		710 t
Payload at Tmax		757 t
Air draft in operation		max 9.50 m

Applicable regulations

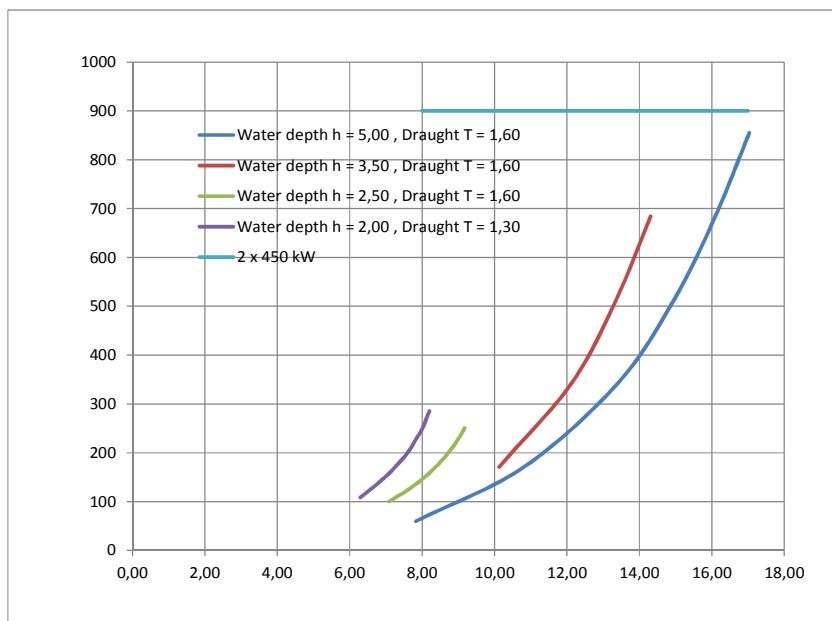
- Vessel built according to Rules and Regulations for the Construction and Classification of Inland Waterways Ships by the Indian Register of Shipping, or to corresponding regulations of internationally approved classification society.
- Applicable rules of IWAI for navigation on NW-1, from Diamond Harbour (West Bengal) to Allahabad (Uttar Pradesh).
Main operation sector are reaches upstream of Farakka.

Powering

Number of Propellers (in nozzles)		2	
Propeller diameter	D_p	1.44 m	
Del. total power	P_d	900 kW	450 kW per engine
Rate of rev.	n [1/min]	390	

Reversible gear box

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



Capacity

Trucks as RoRo on the main deck, on 5 parking lanes

Truck capacity: 18 trucks
280 m Total parking lane length

Allowable axle loads: 10.2 t per single axle, dual tyres
18.0 t per tandem axle

Allowable truck weight: 42.0 t Semi-Trailer Truck type
44.0 t Truck-Trailer combination

Deck plating 12 mm, stiffeners bulb profile 160 x 80 x 10 mm

Hinged ramps an both ends of the vessel

Allowable truck weight and axle load as for the main deck

Length of the ramp: 8.00 m

Breadth of the ramp: 8.00 m

Lifting device for the ramp with cables and winches

Provisions

Diesel Oil	30 t	
Fresh Water	10 t	
Lub Oil	2 t	
Sludge	5 t	
Ballast Water	200 t	in two tanks
Black Water	9 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 anchors, each 790 kg
- One stern anchor 395 kg

Accommodation

- Accomodation on main deck and below main deck for crew of 8 persons

Weight calculation results for major components

Steel weighth, longt. Framing	550 t
Accomodation	65 t
Machinery & outfitting	55 t
Ramp installation	40 t
Sum	710 t

Electric load requirements

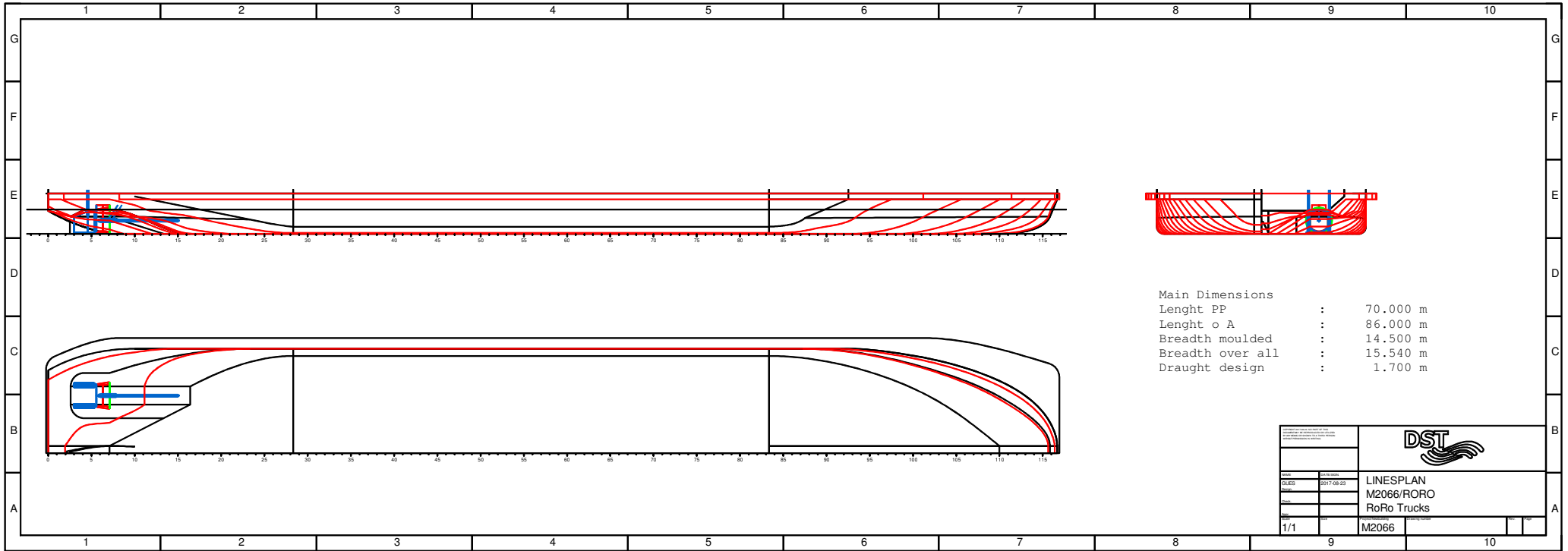
Diesel driven genset, 60 kW output

Three-phase AC supply to anchor winches


220 V supply to accomadation

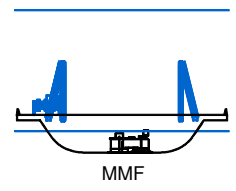
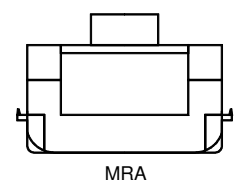
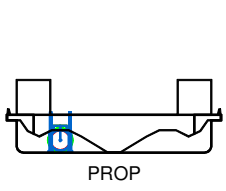
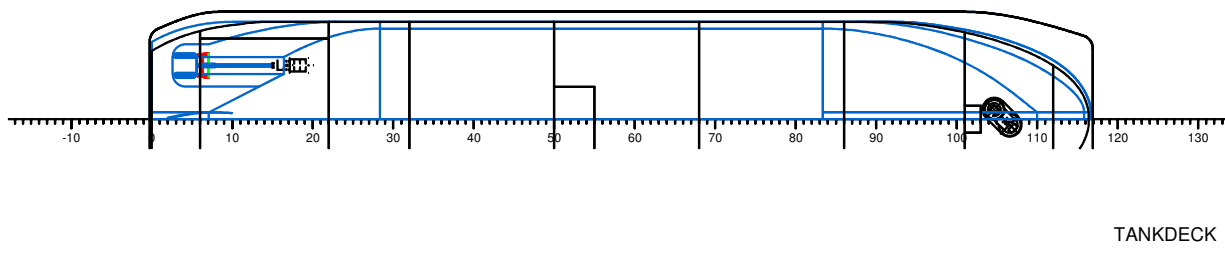
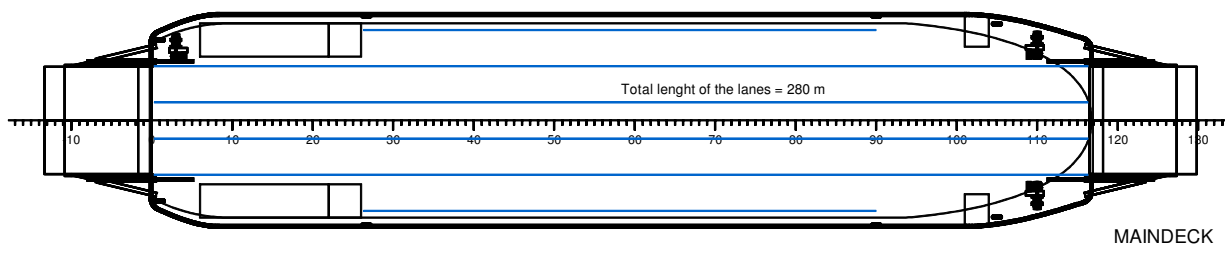
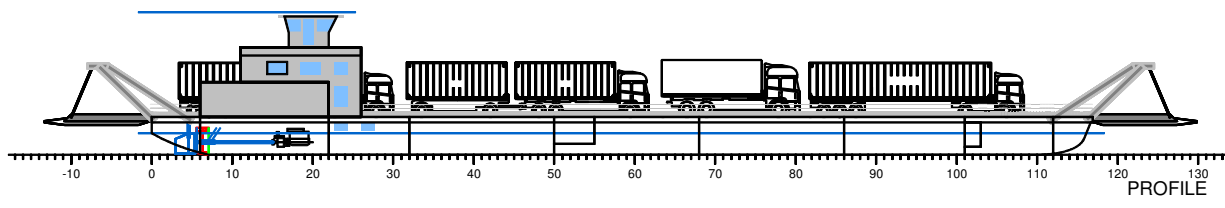
220 V supply to AC accomodation

24 V emergency circuit



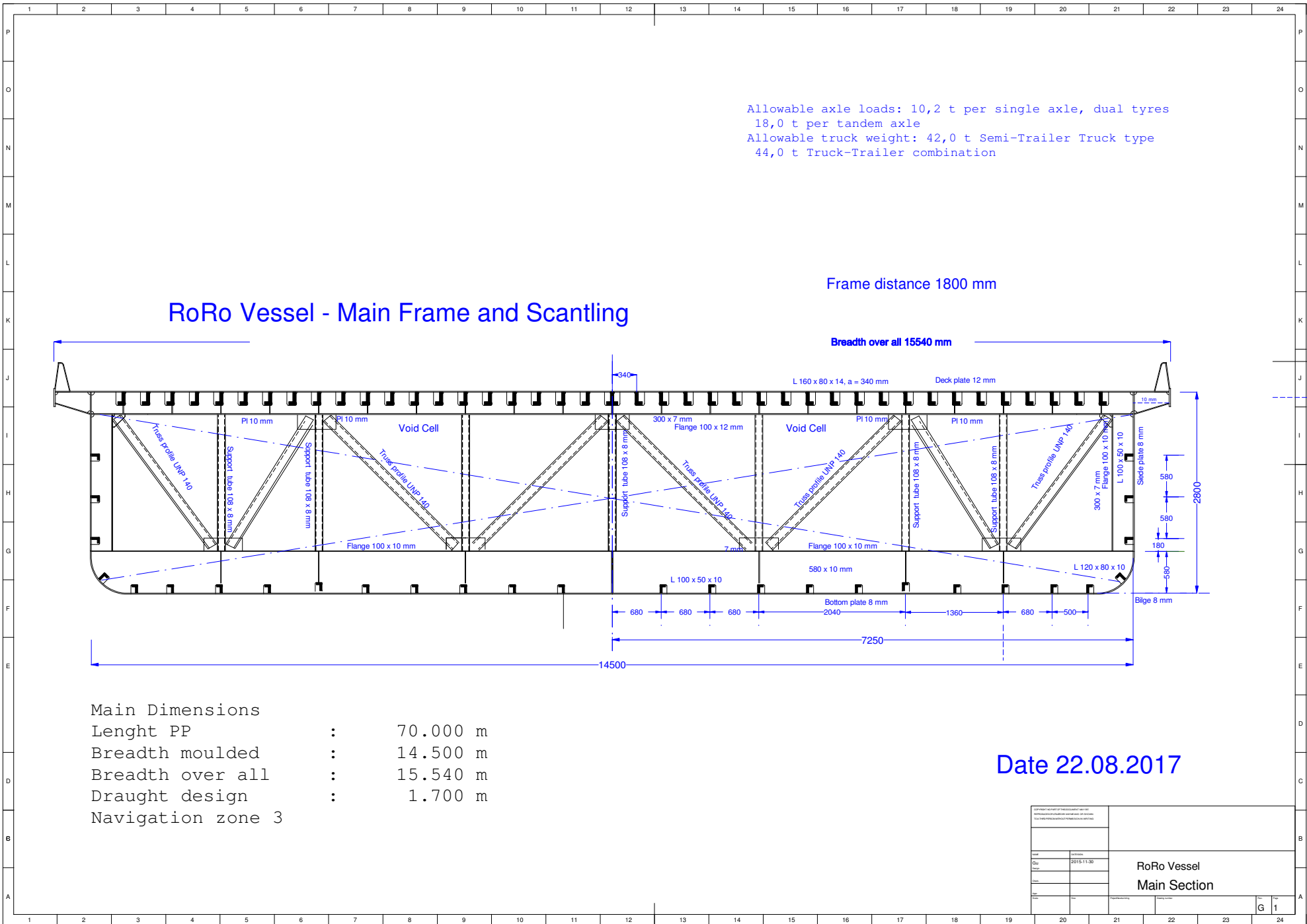
Main Dimensions
 Length PP : 70.000 m
 Length o A : 86.000 m
 Breadth moulded : 14.500 m
 Breadth over all : 15.540 m
 Draught design : 1.700 m

	
LINESPLAN M2066/RORO RoRo Trucks	
1/1	M2066



Main Dimensions
 Length PP : 70.000 m
 Length o A : 86.000 m
 Breadth moulded : 14.500 m
 Breadth over all : 15.540 m
 Draught design : 1.700 m
 Navigation zone 3
 Capacity 18 Trucks

General Arrangement Plan RORO NW1	
Date: 2017-07-06 Drawn: [blank] Appr: [blank]	2017-07-06 1



Allowable axle loads: 10,2 t per single axle, dual tyres
 18,0 t per tandem axle
 Allowable truck weight: 42,0 t Semi-Trailer Truck type
 44,0 t Truck-Trailer combination

RoRo Vessel - Main Frame and Scantling

Frame distance 1800 mm

Breadth over all 15540 mm

Main Dimensions

Lenght PP	:	70.000 m
Breadth moulded	:	14.500 m
Breadth over all	:	15.540 m
Draught design	:	1.700 m
Navigation zone 3		

Date 22.08.2017

<small>Copyright reserved by the vessel owner. Reproduction without the consent of the vessel owner is prohibited.</small>		RoRo Vessel Main Section	
Date: 20151130 Drawn by:	Scale:		

M2066/RORO

RORO VESSEL PROJECT INFO

L x B = 70.00 x 14.5 m

Project M2066/RORO, 2017-08-23

LOADING CASES

NAME	TEXT	DISP t	T m	TR m
1-LIGHTSHIP		733.00	0.898	-0.816
2-FULL_LOAD		1453.00	1.703	-0.003
3-PART_LOAD		1093.00	1.312	0.017

M2066/RORO

LOADING CONDITION 1-LIGHTSHIP

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

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

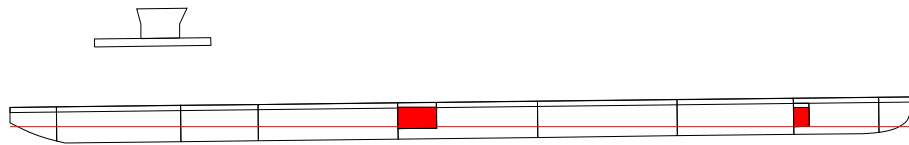
Diesel Oil, RHO=0.860							

DOF	DO fore	3.5	3.00	61.20	0.00	1.34	0.00
DOA	DO aft	23.1	20.00	31.50	0.00	1.62	23.30

Total of DO		26.5	23.00	35.37	0.00	1.59	23.30
Deadweight			23.0	35.37	0.00	1.59	23.3
Lightweight			710.0	31.27	0.00	1.64	
Displacement (rho=1.000)			733.0	31.40	0.00	1.63	23.3

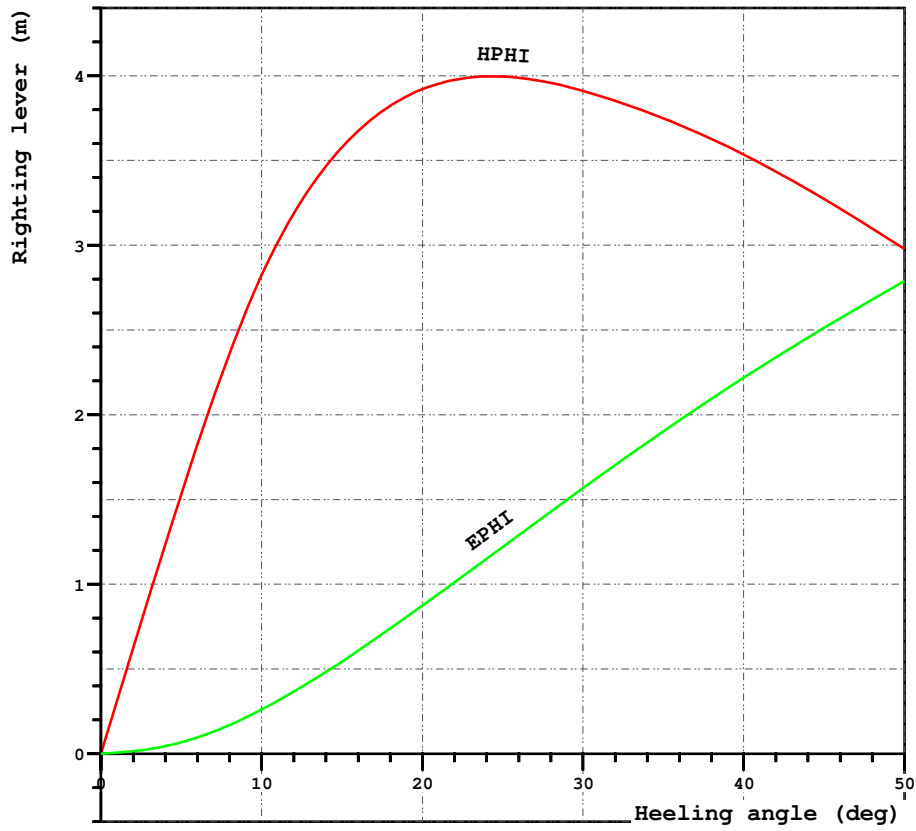
FLOATING POSITION

Draught moulded	0.898	m	KM	19.33	m
Trim	-0.816	m	KG	1.63	m
Heel, PS=+	0.0	deg			
TA	1.306	m	GM0	17.70	m
TF	0.490	m	GMCORR	-0.03	m
Trimming moment	-3182	tonm	GM	17.66	m



Height of the wheelhouse top above waterline: 9.2 m

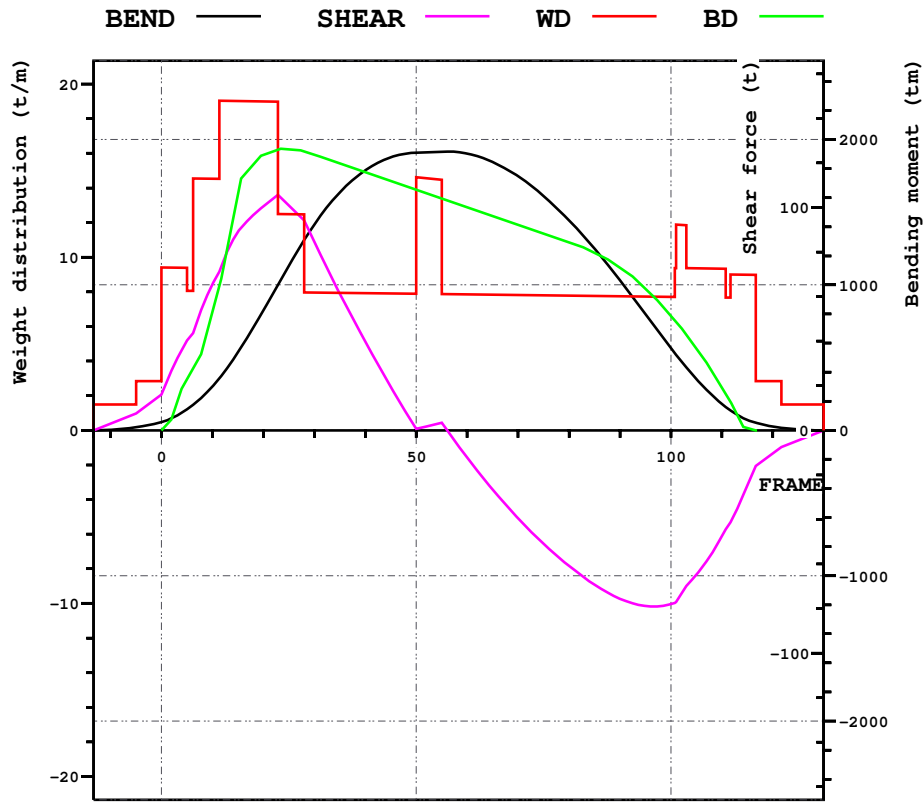
Loading case1 1-LIGHTSHIP,



LOADING CONDITION 1-LIGHTSHIP

HEEL deg	MS m	HPFI m	EPFI mrad	FSMOM tm	DGZ m
0.0	0.000	0.00	0.000	0.0	0.000
5.0	-0.005	1.53	0.068	2.0	0.003
10.0	-0.242	2.83	0.261	4.1	0.006
15.0	-0.993	3.58	0.544	6.2	0.009
20.0	-2.120	3.92	0.874	8.5	0.012
30.0	-4.921	3.91	1.566	12.0	0.016
40.0	-7.822	3.54	2.219	12.8	0.018
50.0	-10.562	2.98	2.789	12.5	0.017

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	57	16	9.41	0.00
6.000	10.00	302	66	14.54	6.85
12.000	20.00	823	101	19.00	15.91
18.000	30.00	1417	84	7.96	15.91
24.000	40.00	1789	40	7.92	14.90
30.000	50.00	1909	1	14.63	13.89
36.000	60.00	1903	-12	7.85	12.87
42.000	70.00	1747	-40	7.81	11.86
48.000	80.00	1444	-61	7.78	10.84
54.000	90.00	1033	-76	7.74	9.39
60.000	100.00	566	-78	7.70	6.61
66.000	110.00	182	-48	9.33	2.47

M2066/RORO

LOADING CONDITION 2-FULL_LOAD

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

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

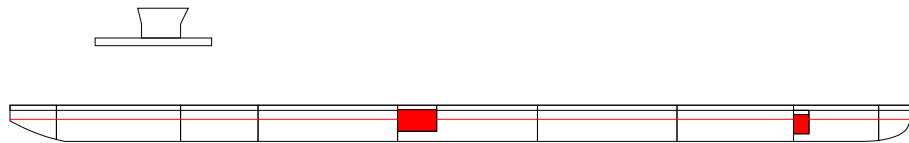
Diesel Oil, RHO=0.860							

DOF	DO fore	3.5	3.00	61.20	0.00	1.34	0.00
DOA	DO aft	23.1	20.00	31.50	0.00	1.62	23.30

Total of DO		26.5	23.00	35.37	0.00	1.59	23.30
Deadweight			743.0	38.69	0.00	4.89	23.3
Lightweight			710.0	31.27	0.00	1.64	
Displacement (rho=1.000)			1453.0	35.07	0.00	3.30	23.3

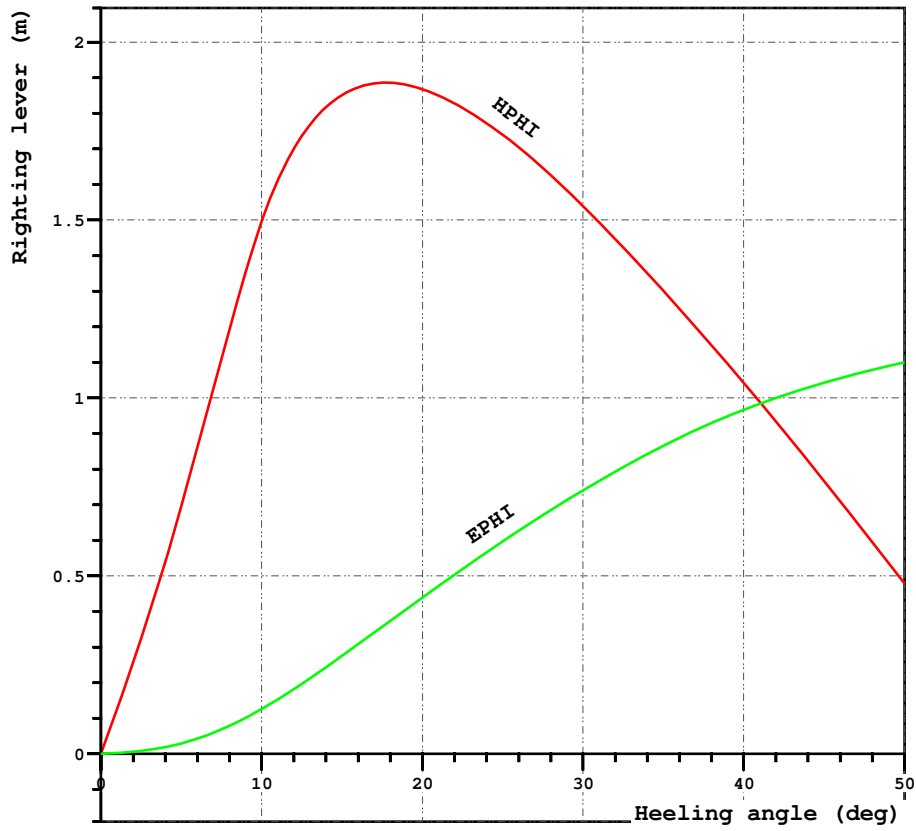
FLOATING POSITION

Draught moulded	1.703	m	KM	11.37	m
Trim	-0.003	m	KG	3.30	m
Heel, PS=+	0.0	deg			
TA	1.705	m	GM0	8.07	m
TF	1.701	m	GMCORR	-0.02	m
Trimming moment	-16	tonm	GM	8.05	m



Height of the wheelhouse top above waterline: 8.65 m

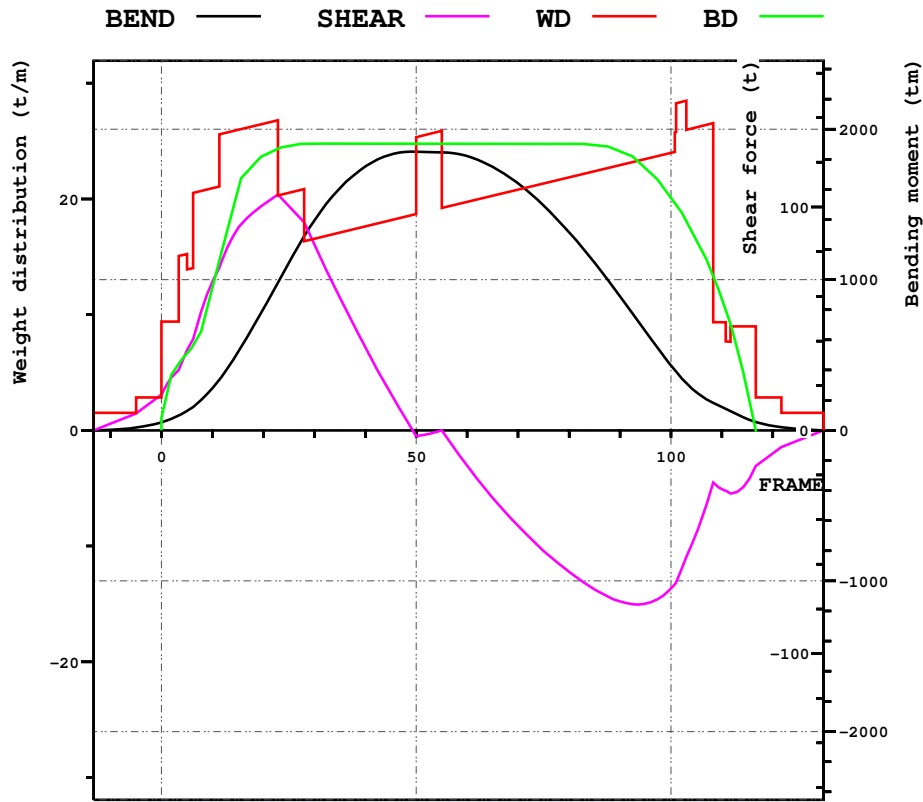
Loading case1 2-FULL_LOAD,



LOADING CONDITION 2-FULL_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	-0.006	0.70	0.029	2.0	0.001
10.0	0.097	1.50	0.126	4.1	0.003
15.0	-0.233	1.85	0.275	6.2	0.004
20.0	-0.887	1.87	0.439	8.5	0.006
30.0	-2.488	1.54	0.740	12.0	0.008
40.0	-4.136	1.04	0.967	12.8	0.009
50.0	-5.695	0.48	1.100	12.5	0.009

Loading case1 2-FULL_LOAD,



LOADING CONDITION 2-FULL_LOAD

X m	FR #	BEND tm	SHEAR t	WD t/m	BD t/m
0.000	0.00	53	16	9.41	1.06
6.000	10.00	281	67	20.93	12.37
12.000	20.00	806	101	26.49	23.74
18.000	30.00	1394	83	16.55	24.77
24.000	40.00	1751	37	17.61	24.77
30.000	50.00	1850	-3	25.34	24.76
36.000	60.00	1820	-16	19.74	24.76
42.000	70.00	1639	-43	20.80	24.75
48.000	80.00	1316	-63	21.86	24.75
54.000	90.00	890	-77	22.92	24.11
60.000	100.00	431	-71	23.98	20.08
66.000	110.00	156	-26	9.33	11.37

M2066/RORO

LOADING CONDITION 3-PART_LOAD

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

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

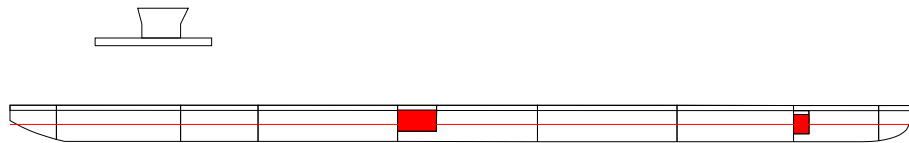
Diesel Oil, RHO=0.860							

DOF	DO fore	3.5	3.00	61.20	0.00	1.34	0.00
DOA	DO aft	23.1	20.00	31.50	0.00	1.62	23.30

Total of DO		26.5	23.00	35.37	0.00	1.59	23.30
Deadweight			383.0	43.29	0.00	4.80	23.3
Lightweight			710.0	31.27	0.00	1.64	
Displacement (rho=1.000)			1093.0	35.49	0.00	2.74	23.3

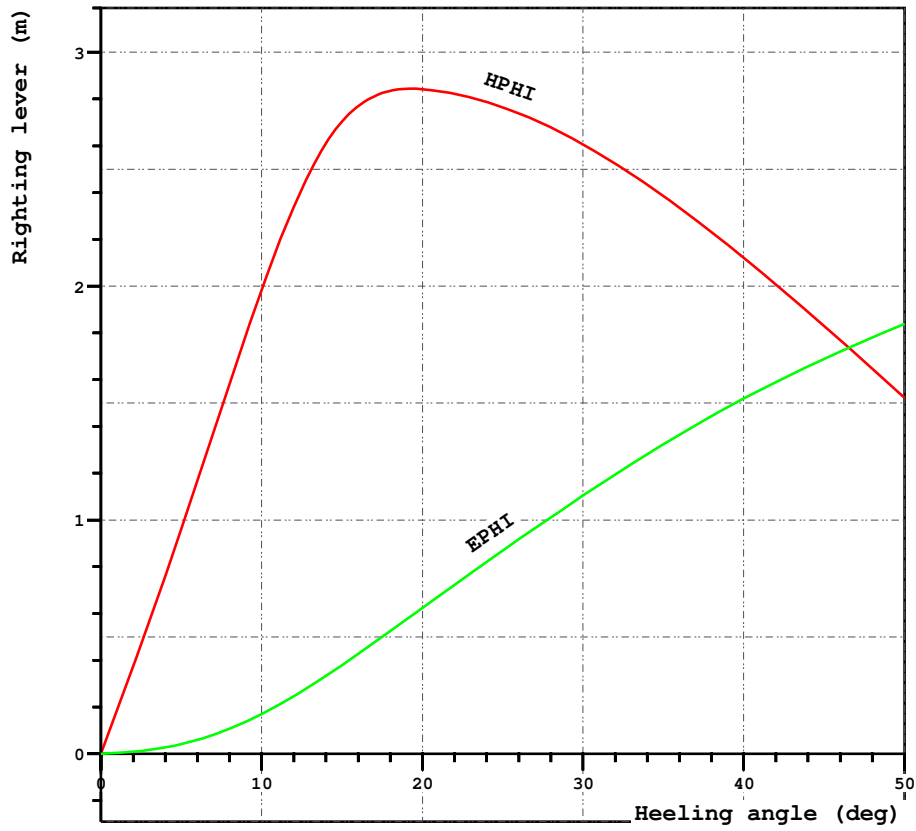
FLOATING POSITION

Draught moulded	1.312 m	KM	13.79 m
Trim	0.017 m	KG	2.74 m
Heel, PS=+	0.0 deg		
TA	1.304 m	GM0	11.05 m
TF	1.320 m	GMCORR	-0.02 m
Trimming moment	71 tonm	GM	11.03 m



Height of the wheelhouse top above waterline: 9.04 m

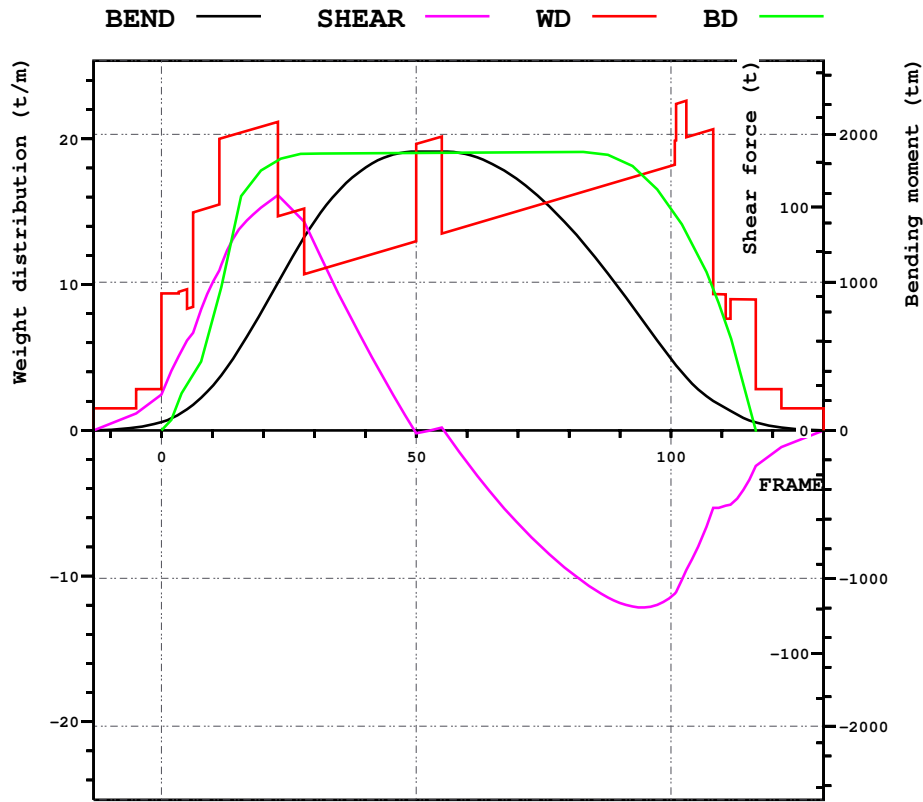
Loading case1 3-PART_LOAD,



LOADING CONDITION 3-PART_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	0.000	0.96	0.041	2.0	0.002
10.0	0.071	1.99	0.170	4.1	0.004
15.0	-0.148	2.71	0.379	6.2	0.006
20.0	-0.928	2.84	0.624	8.5	0.008
30.0	-2.907	2.61	1.104	12.0	0.011
40.0	-4.967	2.12	1.519	12.8	0.012
50.0	-6.929	1.52	1.838	12.5	0.011

Loading case1 3-PART_LOAD,



LOADING CONDITION 3-PART_LOAD

X m	FR #	BEND tm	SHEAR t	WD t/m	BD t/m
0.000	0.00	55	16	9.41	0.00
6.000	10.00	300	66	15.36	7.60
12.000	20.00	822	101	20.89	17.94
18.000	30.00	1411	84	10.92	18.99
24.000	40.00	1774	38	11.95	19.02
30.000	50.00	1883	-1	19.64	19.04
36.000	60.00	1863	-15	14.01	19.06
42.000	70.00	1691	-42	15.04	19.08
48.000	80.00	1375	-63	16.07	19.10
54.000	90.00	950	-77	17.10	18.53
60.000	100.00	483	-75	18.13	15.20
66.000	110.00	164	-34	9.33	8.14