Statens Havarikommisjon for Transport

Vedlegg A: Stabilitetsberegninger

Kondisjon 1: Forlistilstand
Kondisjon 2: Forlistilstand med vann i trunk og på dekk
Kondisjon 3: Forlistilstand med vann i trunk og på dekk, 50 % vann i lasterom
Kondisjon 4: Forlistilstand uten vann i trunk og på dekk, 50 % vann i lasterom
Kondisjon 5: Forlistilstand uten vann i trunk og på dekk, 75 % vann i lasterom
Kondisjon 6: Forlistilstand uten vann i trunk og på dekk, 100 % vann i lasterom

Loading Condition no. : 19

Forlistilstand

FLOATING CONDITION DATA

Mean Draught (moulded)	:	2.362 m
Trim over Lpp (aft +)	:	-0.860 m
List (starboard +) ...	:	-0.800 °
Draught, AP (moulded)	:	1.932 m
Draught, LCF (moulded)	:	2.282 m
Draught, FP (moulded)	:	2.792 m

WEIGHT SUMMARY

Diesel Oil	:	6.2 MT
Miscellaneous Bulk Loads	:	27.9 MT
Miscellaneous Mass Loads	:	2.0 MT
Linestamper akter	:	1.6 MT
Total DEADWEIGHT	:	37.7 MT

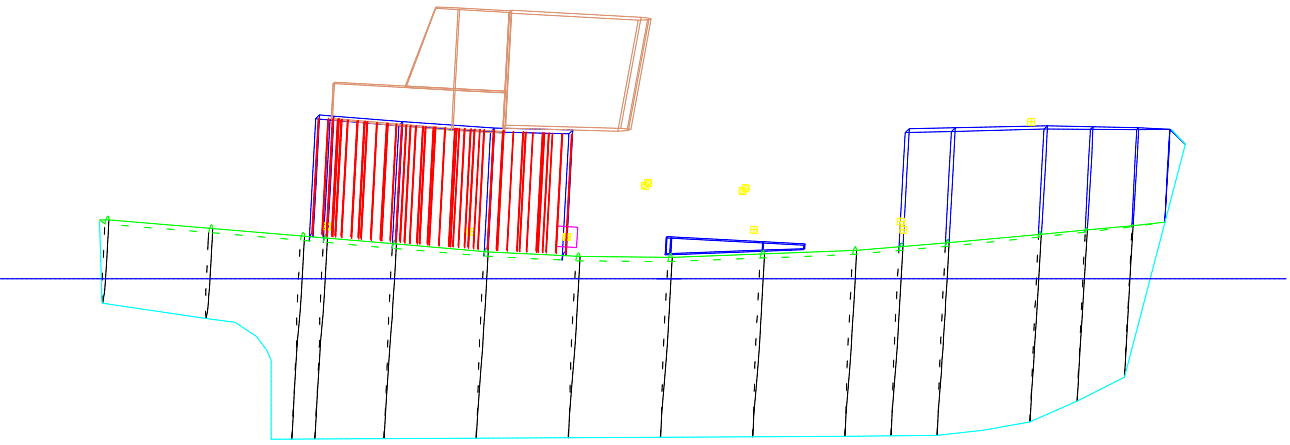
Min. vertical distance to Flood Openings:

- other openings	:	0.729 m

Displacement	:	118.045 MT
LCB (rel. AP)	:	7.585 m
VCB (rel. BL)	:	1.474 m
LCF (rel. AP)	:	6.518 m
TPC - Immersion	:	0.847 MT/cm
Trim Moment	:	1.264 MT*m/cm

STABILITY DATA/CONTROL

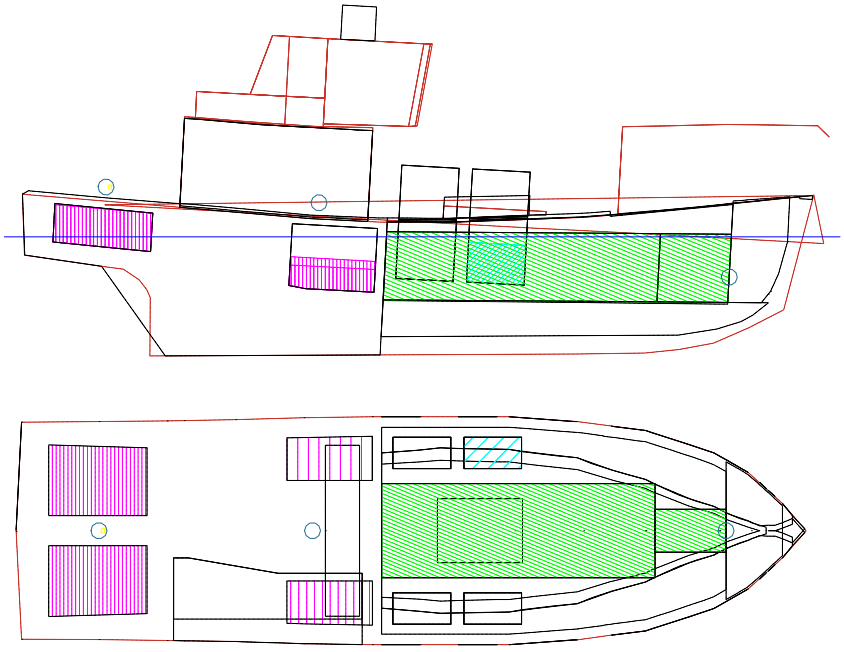
KG (incl. FSC)	:	2.121 m
Free Surface Correction:		0.009 m
GM (GZ derived)	:	0.779 m
KGmax, intact, calc. .	:	2.294 m
Stability Margin .....:		0.174 m
Stability Conclusion .	:	OK



Water Density = 1.025 t/m3

Please note !
-Floating data are based on iterations incorporating calculation of exact list (heel giving zero righting lever).
-GM is calculated based on metacentric height (KMT) for upright vessel (zero heel)

Loading Condition no. : 19
Condition Id. text : Forlistilstand



○ - UNIT LOADS

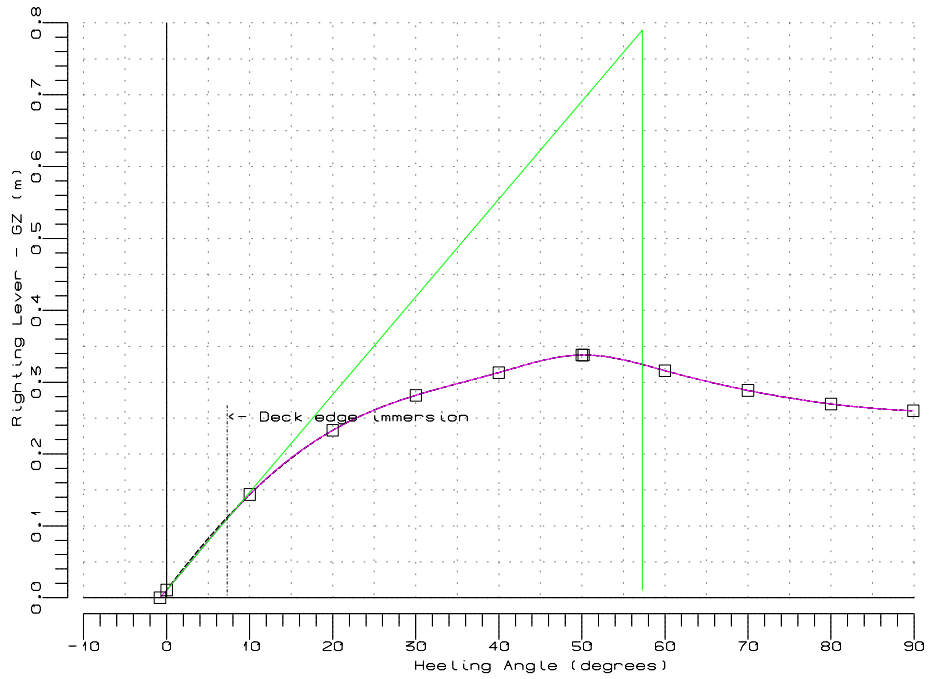
Water Ballast | Cargo | Diesel Oil | Fresh Water | Miscellaneous

WEIGHT LOADS

Part no.	Id.text	Weight (MT)	Load (%)	Density (MT/m3)	Distribution Aft (m)	Distribution Fore (m)	LCG (m)	TCG (m)	VCG (m)	FSCT Moment (MT*m)
1	Mannskap & stores	1.000			4.50	5.50	5.000	0.000	3.000	
2	D.O. hekktank SB	2.249	97.3	0.8500	-1.17	1.12	-0.016	1.026	2.171	0.42
3	D.O. hekktank BB	2.249	97.3	0.8500	-1.17	1.12	-0.016	-1.026	2.171	0.42
4	D.O. maskinrom SB	0.978	48.4	0.8500	4.40	6.40	5.441	1.570	1.520	0.13
5	D.O. maskinrom BB	0.723	35.8	0.8500	4.40	6.40	5.448	-1.542	1.429	0.12
6	Fangst i forre trunk BB	0.922	35.1	1.0250	8.55	9.89	9.220	-1.820	1.796	
7	Fangst/egenv. containere	27.000		1.0000	6.62	14.68	10.245	0.000	1.778	
8	Ferskvann	1.000					14.680	0.000	1.778	
9	Linestamper akter									
-	Linestamper akter	1.560					0.000	0.000	3.100	
	DEAD WEIGHT	37.680					8.333	-0.033	1.899	1.07
	LIGHT WEIGHT, Lettskip	80.365					7.184	0.000	2.211	
	TOTAL WEIGHT	118.045					7.551	-0.011	2.111	1.07

Loading Condition no. : 19
Condition Id. text : Forlistilstand

INTACT STABILITY DATA (GZ-curve, Areas, Particulars & Criteria Control)



Angle (degr.)	GZ (m)	Area (m*rad)
-0.800	0.000	0.0000
0.000	0.011	0.0001
10.000	0.144	0.0138
20.000	0.233	0.0474
30.000	0.282	0.0928
40.000	0.313	0.1448
50.000	0.338	0.2020
50.208	0.338	0.2033
60.000	0.316	0.2596
70.000	0.289	0.3122
80.000	0.270	0.3608
89.900	0.260	0.4065

Deck immersion : 7.305 °
Maximum GZ at : 50.208 °
Equilibrium at : -0.800 °
Area, 0 - 30 : 0.0927 m*rad
Area, 0 - 40 : 0.1447 m*rad
Area,30 - 40 : 0.0520 m*rad
Area, 0 - maxGZ: 0.2032 m*rad
GM : 0.779 m

Heel to starboard side
Applied VCG : 2.121 m
TCG : -0.011 m

Table of intact stability criteria

TYPE : NMD Fishing Vessel > 15m

Code	Id. text		Req.	Actual value	Concl-usion	KGmax (m)
m·rad						99.990
GZAng	Angle at which max. GZ occur, ð		: 25.00 °	50.200	OK	2.426
GZMi1	GZ at angle greater or equal to 30.0°		: 0.20 m	0.338	OK	2.294
GMMin	Minimum GM		: 0.35 m	0.779	OK	2.550
GZAr1	Area, GZ curve (0.0-30.0)°	*)	: 0.055 m·rad	0.093	OK	2.364
GZAr1	Area, GZ curve (0.0-40.0)°	*)	: 0.090 m·rad	0.145	OK	2.326
GZAr1	Area, GZ curve (30.0-40.0)°	*)	: 0.030 m·rad	0.052	OK	2.325
GZMi2	GZ in heel range (40.0-65.0)° must be greater than		: 0.10 m	0.301	OK	2.338
GZPos	Positive GZ-curve up to		: 80.00 °	89.900	OK	2.393

ß : flooding angle
µ : intersection between righting arm and heeling arm
ð : angle for maximum GZ
GZarea : area of righting lever
RLarea : area between righting lever and heeling lever
*) : area will also be limited by angles for equilibrium and 2nd intercept

Resulting KGmax ..... (m): 2.294
KG (incl. correction) ..... (m): 2.121
Intact stability margin ..... (m): 0.174

PLEASE NOTE !
The calculations of KGmax is based on upright vessel (TCG=TCB). If the actual calculations are based on TCG <> TCB, the stability conclusion may not correspond with the presented stability margin. The conclusion will anyway be correct as it reflects the actual loading condition.

The calculations of KGmax includes the use of flood openings of type "local flooding". This may cause one or more steps in the KY and GZ curves.
Calculations of KGmax for the "GZMi2", "GZPos" and "GZAng" criteria are not influenced by "local flooding" effects.

-The calculation of GM is made by finding the tangency line of the GZ-curve for upright vessel (zero heel).

Flood Opening Results

Loading Condition no. : 19 ,Forlistilstand

No.	Identification text	Type	OvFl Syst	X (m)	Y (m)	Z (m)	Flooding Angle (degr)	Above Sea (m)
1	Dør Bakk SB	Weathertight		12.0	1.9	3.40	21.80	0.85
2	Dør Bakk PS	Weathertight		12.0	-1.9	3.60	**	0.99
3	Forkant egnerhus	Local flood.		6.2	1.7	2.96	22.50	0.72
4	Akterkan egnerhus	Local flood.		2.0	1.4	2.93	34.53	0.91
5	Forkant hydraulikrom	Weathertight		6.2	2.4	2.96	16.48	0.73
6	Trunk Akter SB	Local flood.		7.5	1.9	3.98	40.51	1.67
7	Trunk Akter PS	Local flood.		7.5	-1.9	3.98	**	1.62
8	Trunk Forut SB	Local flood.		9.2	1.9	3.98	38.20	1.58
9	Trunk Forut PS	Local flood.		9.2	-1.9	3.98	**	1.52
10	Dør til innredning	Weathertight		4.5	1.0	2.98	39.61	0.82
11	Lasteluke	Weathertight		9.4	0.8	3.28	45.47	0.85
12	Luke til stores	Weathertight		14.1	1.6	5.40	58.83	2.73

Above Sea is vertical distance from opening to sea at equilibrium.
**) Flooding angle is outside of specified heel range.

Freeboard to Deck

Loading Condition no. : 19 ,Forlistilstand

No.	X (m)	Y (m)	Z (m)	Freeboard Starboard (m)	Freeboard Port (m)
1	-1.940	0.000	2.849	1.020	1.020
2	-1.810	2.539	2.825	1.024	0.953
3	0.000	2.552	2.772	0.874	0.803
4	1.600	2.569	2.724	0.741	0.669
5	2.000	2.575	2.711	0.706	0.635
6	3.200	2.596	2.672	0.604	0.531
7	4.800	2.645	2.621	0.467	0.393
8	6.400	2.670	2.625	0.386	0.311
9	8.000	2.670	2.698	0.373	0.298
10	9.600	2.670	2.845	0.433	0.359
11	11.200	2.552	2.993	0.494	0.422
12	12.000	2.446	3.102	0.558	0.490
13	12.800	2.347	3.213	0.625	0.560
14	14.400	1.820	3.455	0.774	0.723
15	15.200	1.361	3.580	0.849	0.811
16	16.000	0.640	3.705	0.920	0.903
17	16.559	0.000	3.807	0.983	0.983

Freeboard is vertical distance from deck point to sea at equilibrium.

Loading Condition no. : 24

Forlistilstand med vann i trunk og vann på dekk)

FLOATING CONDITION DATA

Mean Draught (moulded)	:	2.469 m
Trim over Lpp (aft +)	:	-1.118 m
List (starboard +) ...	:	6.540 °
Draught, AP (moulded)	:	1.910 m
Draught, LCF (moulded)	:	2.371 m
Draught, FP (moulded)	:	3.028 m

Min. vertical distance to Flood Openings:

- other openings	:	0.327 m

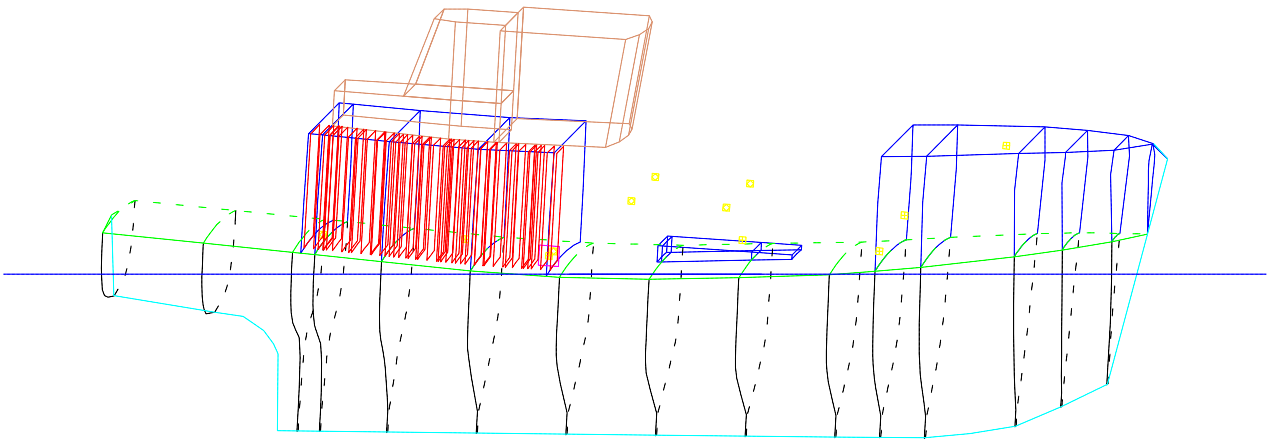
Displacement	:	126.720 MT
LCB (rel. AP)	:	7.754 m
VCB (rel. BL)	:	1.529 m
LCF (rel. AP)	:	6.586 m
TPC - Immersion	:	0.831 MT/cm
Trim Moment	:	1.278 MT*m/cm

STABILITY DATA/CONTROL

KG (incl. FSC)	:	2.178 m
Free Surface Correction:		0.008 m
GM (GZ derived)	:	0.720 m
KGmax, intact, calc. .	:	2.289 m
Stability Margin .....:		0.111 m
Stability Conclusion .	:	OK

WEIGHT SUMMARY

Diesel Oil	:	6.2 MT
Miscellaneous Bulk Loads	:	30.6 MT
Miscellaneous Mass Loads	:	8.0 MT
Linestamper akter	:	1.6 MT
Total DEADWEIGHT	:	46.4 MT

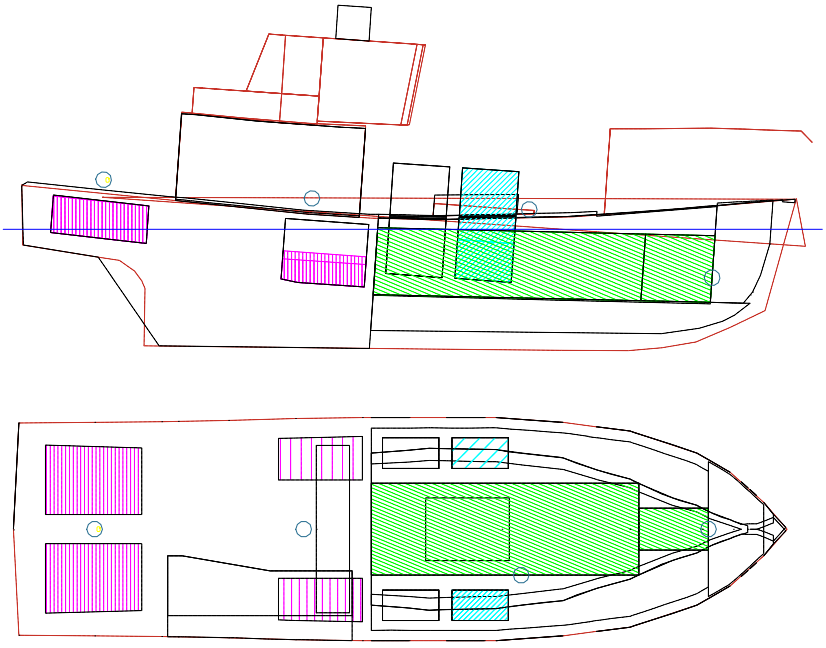


Water Density = 1.025 t/m3

Please note !
-Floating data are based on iterations incorporating calculation of exact list (heel giving zero righting lever).
-GM is calculated based on metacentric height (KMT) for upright vessel (zero heel)

Kondisjon 2: Forlistilstand med vann i trunk og på dekk

Loading Condition no. : 24
Condition Id. text : Forlistilstand med vann i trunk og vann på dekk)



○ - UNIT LOADS

Water Ballast | Cargo | Diesel Oil | Fresh Water | Miscellaneous

WEIGHT LOADS

Part no.	Id.text	Weight (MT)	Load (%)	Density (MT/m3)	Distribution Aft (m)	Distribution Fore (m)	LCG (m)	TCG (m)	VCG (m)	FSCT Moment (MT*m)
1	Mannskap & stores	1.000			4.50	5.50	5.000	0.000	3.000	
2	D.O. hekktank SB	2.249	97.3	0.8500	-1.17	1.12	-0.016	1.026	2.171	0.42
3	D.O. hekktank BB	2.249	97.3	0.8500	-1.17	1.12	-0.016	-1.026	2.171	0.42
4	D.O. maskinrom SB	0.978	48.4	0.8500	4.40	6.40	5.441	1.570	1.520	0.13
5	D.O. maskinrom BB	0.723	35.8	0.8500	4.40	6.40	5.448	-1.542	1.429	0.12
6	Fangst i forre trunk BB	0.922	35.1	1.0250	8.55	9.89	9.220	-1.820	1.796	
7	Fangst/egenv. containere	27.000		1.0000	6.62	14.68	10.245	0.000	1.778	
8	Ferskvann	1.000					14.680	0.000	1.778	
9	Linestamper akter									
-	Linestamper akter	1.560					0.000	0.000	3.100	
10	Fangst i forre trunk SB	2.675		1.0250	8.55	9.89	9.220	1.820	2.655	
11	Vann på dekk som punktl.	6.000					10.200	1.100	3.100	
	DEAD WEIGHT	46.355					8.626	0.220	2.098	1.07

.... to be continued on next page

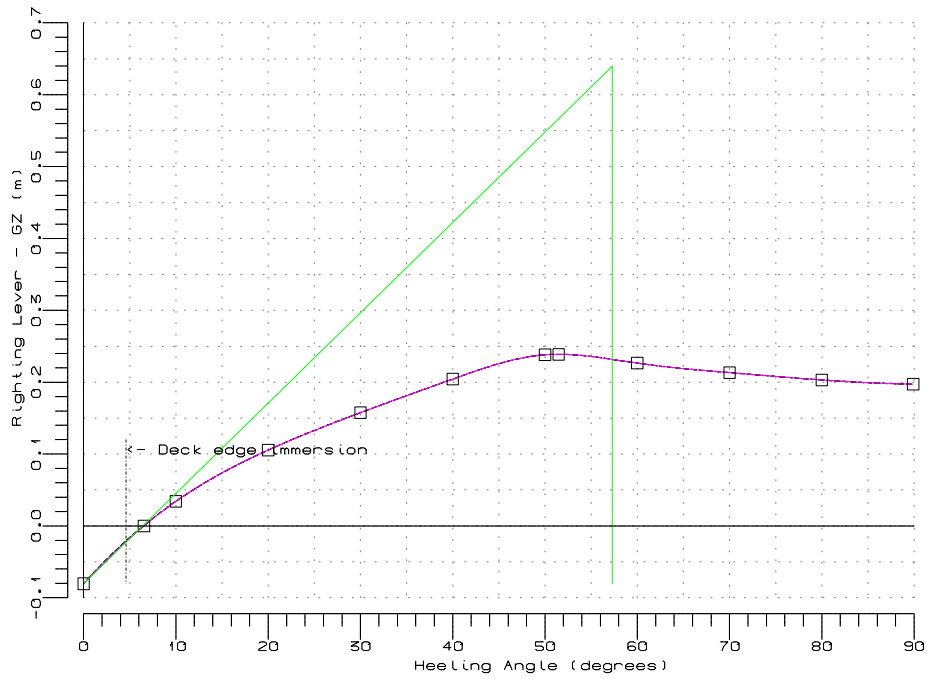
Kondisjon 2: Forlistilstand med vann i trunk og på dekk

Part no.	Id.text	Weight (MT)	Load (%)	Density (MT/m3)	Distribution Aft (m)	Distribution Fore (m)	LCG (m)	TCG (m)	VCG (m)	FSCT Moment (MT*m)
	LIGHT WEIGHT, Lettskip	80.365					7.184	0.000	2.211	
	TOTAL WEIGHT	126.720					7.711	0.081	2.170	1.07

Kondisjon 2: Forlistilstand med vann i trunk og på dekk

Loading Condition no. : 24
Condition Id. text : Forlistilstand med vann i trunk og vann på dekk)

INTACT STABILITY DATA (GZ-curve, Areas, Particulars & Criteria Control)



Angle (degr.)	GZ (m)	Area (m*rad)
0.000	-0.081	-0.0044
6.540	0.000	0.0000
10.000	0.034	0.0011
20.000	0.105	0.0137
30.000	0.158	0.0368
40.000	0.204	0.0684
50.000	0.238	0.1076
51.483	0.239	0.1137
60.000	0.226	0.1485
70.000	0.213	0.1868
80.000	0.203	0.2231
89.900	0.197	0.2576

Deck immersion : 4.609 °
Maximum GZ at : 51.483 °
Equilibrium at : 6.540 °
Area, 0 - 30 : 0.0412 m*rad
Area, 0 - 40 : 0.0728 m*rad
Area,30 - 40 : 0.0316 m*rad
Area, 0 - maxGZ: 0.1181 m*rad
GM : 0.720 m

Heel to starboard side
Applied VCG : 2.178 m
TCG : 0.081 m

Table of intact stability criteria

TYPE : NMD Fishing Vessel > 15m

Code	Id. text		Req.	Actual value	Concl-usion	KGmax (m)
m·rad						99.990
GZAng	Angle at which max. GZ occur, ð		: 25.00 °	51.450	OK	2.466
GZMi1	GZ at angle greater or equal to 30.0°		: 0.20 m	0.239	OK	2.298
GMMin	Minimum GM		: 0.35 m	0.720	OK	2.549
GZAr1	Area, GZ curve (0.0-30.0)°	*)	: 0.055 m·rad	0.037	NOT OK	2.311
GZAr1	Area, GZ curve (0.0-40.0)°	*)	: 0.090 m·rad	0.068	NOT OK	2.289
GZAr1	Area, GZ curve (30.0-40.0)°	*)	: 0.030 m·rad	0.032	OK	2.309
GZMi2	GZ in heel range (40.0-65.0)° must be greater than		: 0.10 m	0.204	OK	2.347
GZPos	Positive GZ-curve up to		: 80.00 °	----	NOT OK	2.399

ß : flooding angle
µ : intersection between righting arm and heeling arm
ð : angle for maximum GZ
GZarea : area of righting lever
RLarea : area between righting lever and heeling lever
*) : area will also be limited by angles for equilibrium and 2nd intercept

Resulting KGmax ..... (m): 2.289
KG (incl. correction) ..... (m): 2.178
Intact stability margin ..... (m): 0.111

PLEASE NOTE !
The calculations of KGmax is based on upright vessel (TCG=TCB). If the actual calculations are based on TCG <> TCB, the stability conclusion may not correspond with the presented stability margin. The conclusion will anyway be correct as it reflects the actual loading condition.

The calculations of KGmax includes the use of flood openings of type "local flooding". This may cause one or more steps in the KY and GZ curves.
Calculations of KGmax for the "GZMi2", "GZPos" and "GZAng" criteria are not influenced by "local flooding" effects.

-The calculation of GM is made by finding the tangency line of the GZ-curve for upright vessel (zero heel).

Flood Opening Results

Loading Condition no. : 24 ,Forlistilstand med vann i trunk og vann på dekk)

No.	Identification text	Type	OvFl Syst	X (m)	Y (m)	Z (m)	Flooding Angle (degr)	Above Sea (m)
1	Dør Bakk SB	Weathertight		12.0	1.9	3.40	16.80	0.41
2	Dør Bakk PS	Weathertight		12.0	-1.9	3.60	**	1.04
3	Forkant egnerhus	Local flood.		6.2	1.7	2.96	19.14	0.41
4	Akterkan egnerhus	Local flood.		2.0	1.4	2.93	32.58	0.70
5	Forkant hydraulikrom	Weathertight		6.2	2.4	2.96	14.06	0.33
6	Trunk Akter SB	Local flood.		7.5	1.9	3.98	37.38	1.30
7	Trunk Akter PS	Local flood.		7.5	-1.9	3.98	**	1.73
8	Trunk Forut SB	Local flood.		9.2	1.9	3.98	34.53	1.18
9	Trunk Forut PS	Local flood.		9.2	-1.9	3.98	**	1.61
10	Dør til innredning	Weathertight		4.5	1.0	2.98	35.47	0.62
11	Lasteluke	Weathertight		9.4	0.8	3.28	36.87	0.60
12	Luke til stores	Weathertight		14.1	1.6	5.40	54.65	2.28

Above Sea is vertical distance from opening to sea at equilibrium.
**) Flooding angle is outside of specified heel range.

Freeboard to Deck

Loading Condition no. : 24 ,Forlistilstand med vann i trunk og vann på dek

No.	X (m)	Y (m)	Z (m)	Freeboard Starboard (m)	Freeboard Port (m)
1	-1.940	0.000	2.849	1.053	1.053
2	-1.810	2.539	2.825	0.732	1.309
3	0.000	2.552	2.772	0.551	1.131
4	1.600	2.569	2.724	0.391	0.974
5	2.000	2.575	2.711	0.349	0.934
6	3.200	2.596	2.672	0.225	0.815
7	4.800	2.645	2.621	0.057	0.658
8	6.400	2.670	2.625	-0.054	0.553
9	8.000	2.670	2.698	-0.093	0.514
10	9.600	2.670	2.845	-0.059	0.548
11	11.200	2.552	2.993	-0.010	0.570
12	12.000	2.446	3.102	0.054	0.610
13	12.800	2.347	3.213	0.120	0.653
14	14.400	1.820	3.455	0.308	0.722
15	15.200	1.361	3.580	0.428	0.737
16	16.000	0.640	3.705	0.578	0.723
17	16.559	0.000	3.807	0.713	0.713

Freeboard is vertical distance from deck point to sea at equilibrium.

Loading Condition no. : 27

Vann i lasterom (50%), trunk og på dekk

FLOATING CONDITION DATA

Mean Draught (moulded)	:	2.671 m
Trim over Lpp (aft +)	:	-1.711 m
List (starboard +) ...	:	17.614 °
Draught, AP (moulded)	:	1.815 m
Draught, LCF (moulded)	:	2.532 m
Draught, FP (moulded)	:	3.527 m

WEIGHT SUMMARY

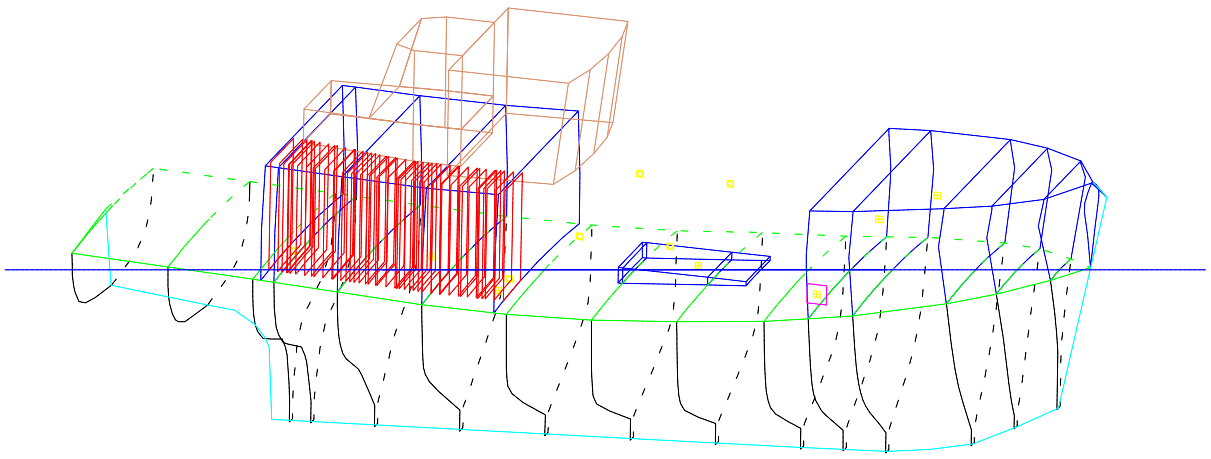
Cargo	:	16.3 MT
Diesel Oil	:	6.2 MT
Miscellaneous Bulk Loads	:	30.6 MT
Miscellaneous Mass Loads	:	8.0 MT
Linestamper akter	:	1.6 MT
Total DEADWEIGHT	:	62.7 MT

Min. vertical distance to Flood Openings:
- other openings ..... : -0.440 m

Displacement	:	143.025 MT
LCB (rel. AP)	:	8.037 m
VCB (rel. BL)	:	1.567 m
LCF (rel. AP)	:	6.701 m
TPC - Immersion	:	0.688 MT/cm
Trim Moment	:	1.242 MT*m/cm

STABILITY DATA/CONTROL

KG (incl. FSC)	:	2.388 m
Free Surface Correction:		0.262 m
GM (GZ derived)	:	0.376 m
KGmax, intact, calc. .	:	m
Stability Margin .....:		m
Stability Conclusion .	:	NOT OK !!

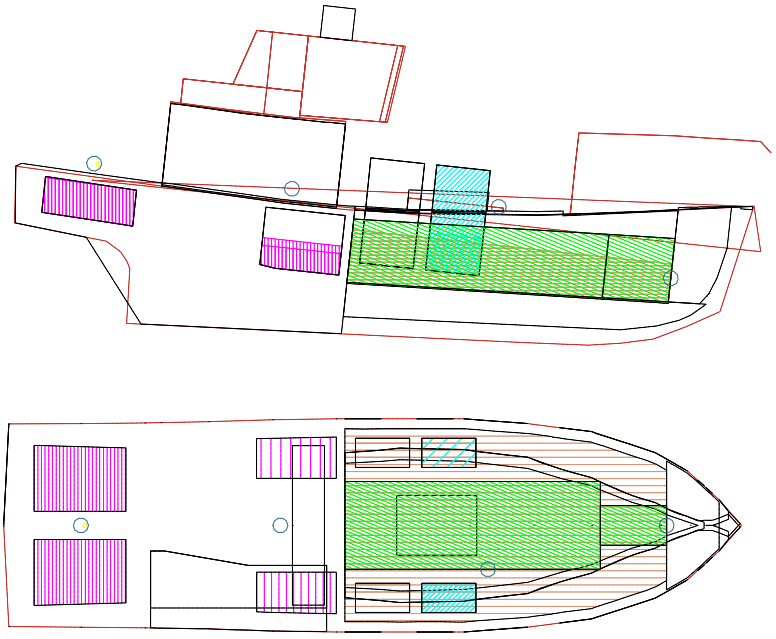


Water Density = 1.025 t/m3

Please note !
-Floating data are based on iterations incorporating calculation of exact list (heel giving zero righting lever).
-GM is calculated based on metacentric height (KMT) for upright vessel (zero heel)

Kondisjon 3: Forlistilstand med vann i trunk og på dekk, 50 % vann i lasterom

Loading Condition no. : 27
Condition Id. text : Vann i lasterom (50%), trunk og på dekk



○ - UNIT LOADS

Water Ballast | Cargo | Diesel Oil | Fresh Water | Miscellaneous

WEIGHT LOADS

Part no.	Id.text	Weight (MT)	Load (%)	Density (MT/m3)	Distribution Aft (m)	Distribution Fore (m)	LCG (m)	TCG (m)	VCG (m)	FSCT Moment (MT*m)
1	Mannskap & stores	1.000			4.50	5.50	5.000	0.000	3.000	
2	D.O. hekktank SB	2.249	97.3	0.8500	-1.17	1.12	-0.016	1.026	2.171	0.42
3	D.O. hekktank BB	2.249	97.3	0.8500	-1.17	1.12	-0.016	-1.026	2.171	0.42
4	D.O. maskinrom SB	0.978	48.4	0.8500	4.40	6.40	5.441	1.570	1.520	0.13
5	D.O. maskinrom BB	0.723	35.8	0.8500	4.40	6.40	5.448	-1.542	1.429	0.12
6	Fangst i forre trunk BB	0.922	35.1	1.0250	8.55	9.89	9.220	-1.820	1.796	
7	Fangst/egenv. containere	27.000		1.0000	6.62	14.68	10.245	0.000	1.778	
8	Ferskvann	1.000					14.680	0.000	1.778	
9	Linestamper akter									
-	Linestamper akter	1.560					0.000	0.000	3.100	
10	Fangst i forre trunk SB	2.675		1.0250	8.55	9.89	9.220	1.820	2.655	
11	Vann på dekk som punktl.	6.000					10.200	1.100	3.100	
12	Vann i lasterom	16.304	50.0	1.0000	6.62	14.68	10.157	0.000	1.784	36.43
	DEAD WEIGHT	62.660					9.024	0.163	2.016	37.51

.... to be continued on next page

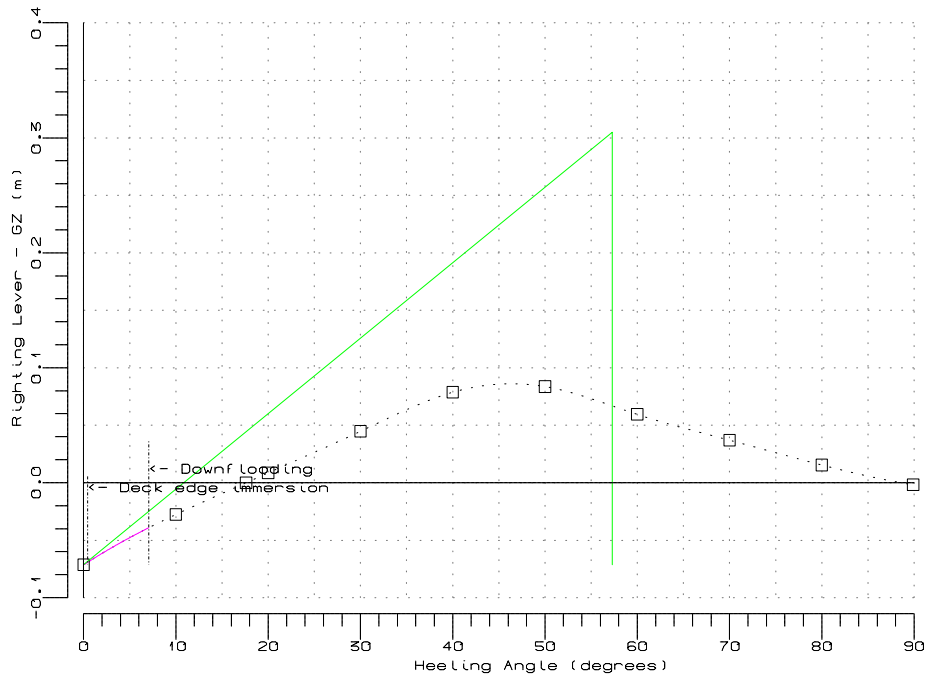
Kondisjon 3: Forlistilstand med vann i trunk og på dekk, 50 % vann i lasterom

Part no.	Id.text	Weight (MT)	Load (%)	Density (MT/m3)	Distribution Aft (m)	Distribution Fore (m)	LCG (m)	TCG (m)	VCG (m)	FSCT Moment (MT*m)
	LIGHT WEIGHT, Lettskip	80.365					7.184	0.000	2.211	
	TOTAL WEIGHT	143.025					7.990	0.071	2.126	37.51

Kondisjon 3: Forlistilstand med vann i trunk og på dekk, 50 % vann i lasterom

Loading Condition no. : 27
Condition Id. text : Vann i lasterom (50%), trunk og på dekk

INTACT STABILITY DATA (GZ-curve, Areas, Particulars & Criteria Control)



Angle (degr.)	GZ (m)	Area (m*rad)
0.000	-0.071	-0.0102
10.000	-0.028	-0.0018
17.614	0.000	0.0000
20.000	0.009	0.0002
30.000	0.045	0.0048
40.000	0.079	0.0158
50.000	0.084	0.0305
60.000	0.059	0.0432
70.000	0.037	0.0515
80.000	0.015	0.0561
89.900	-0.002	0.0572

Downflooding : 7.070 °
Deck immersion : 0.430 °
Equilibrium at : 17.614 °
Area, 0 - 30 : 0.0151 m*rad
Area, 0 - 40 : 0.0260 m*rad
Area,30 - 40 : 0.0110 m*rad
GM : 0.376 m

Heel to starboard side
Applied VCG : 2.388 m
TCG : 0.071 m

Table of intact stability criteria

TYPE : NMD Fishing Vessel > 15m

Code	Id. text		Req.	Actual value	Concl-usion	KGmax (m)
m·rad						99.990
GZAng	Angle at which max. GZ occur, ð		: 25.00 °	7.070	NOT OK	-25.454
GZMi1	GZ at angle greater or equal to 30.0°		: 0.20 m	----	NOT OK	-99.990
GMMin	Minimum GM		: 0.35 m	0.376	OK	2.414
GZAr1	Area, GZ curve (0.0-30.0)°	*)	: 0.055 m·rad	0.005	NOT OK	2.203
GZAr1	Area, GZ curve (0.0-40.0)°	*)	: 0.090 m·rad	0.016	NOT OK	2.223
GZAr1	Area, GZ curve (30.0-40.0)°	*)	: 0.030 m·rad	0.011	NOT OK	2.300
GZMi2	GZ in heel range (40.0-65.0)° must be greater than		: 0.10 m	0.048	NOT OK	2.363
GZPos	Positive GZ-curve up to		: 80.00 °	----	NOT OK	2.416

ß : flooding angle
µ : intersection between righting arm and heeling arm
ð : angle for maximum GZ
GZarea : area of righting lever
RLarea : area between righting lever and heeling lever
*) : area will also be limited by angles for equilibrium and 2nd intercept

Resulting KGmax ..... (m):
KG (incl. correction) ..... (m): 2.388
Intact stability margin ..... (m):

PLEASE NOTE !
The calculations of KGmax is based on upright vessel (TCG=TCB). If the actual calculations are based on TCG <> TCB, the stability conclusion may not correspond with the presented stability margin. The conclusion will anyway be correct as it reflects the actual loading condition.

Please note !
-The calculation of GM is made by finding the tangency line of the GZ-curve for upright vessel (zero heel).

Flood Opening Results

Loading Condition no. : 27 ,Vann i lasterom (50%), trunk og på dekk

No.	Identification text	Type	OvFl Syst	X (m)	Y (m)	Z (m)	Flooding Angle (degr)	Above Sea (m)
1	Dør Bakk SB	Weathertight		12.0	1.9	3.40	7.07	-0.44
2	Dør Bakk PS	Weathertight		12.0	-1.9	3.60	**	0.91
3	Forkant egnerhus	Local flood.		6.2	1.7	2.96	12.70	-0.17
4	Akterkan egnerhus	Local flood.		2.0	1.4	2.93	29.14	0.34
5	Forkant hydraulikrom	Weathertight		6.2	2.4	2.96	9.38	-0.37
6	Trunk Akter SB	Local flood.		7.5	1.9	3.98	31.64	0.60
7	Trunk Akter PS	Local flood.		7.5	-1.9	3.98	**	1.73
8	Trunk Forut SB	Local flood.		9.2	1.9	3.98	27.54	0.42
9	Trunk Forut PS	Local flood.		9.2	-1.9	3.98	**	1.55
10	Dør til innredning	Weathertight		4.5	1.0	2.98	28.12	0.24
11	Lasteluke	Weathertight		9.4	0.8	3.28	21.41	0.08
12	Luke til stores	Weathertight		14.1	1.6	5.40	46.13	1.34

Above Sea is vertical distance from opening to sea at equilibrium.
**) Flooding angle is outside of specified heel range.

Freeboard to Deck

Loading Condition no. : 27 ,Vann i lasterom (50%), trunk og på dekk

No.	X (m)	Y (m)	Z (m)	Freeboard Starboard (m)	Freeboard Port (m)
1	-1.940	0.000	2.849	1.101	1.101
2	-1.810	2.539	2.825	0.301	1.829
3	0.000	2.552	2.772	0.054	1.589
4	1.600	2.569	2.724	-0.167	1.379
5	2.000	2.575	2.711	-0.223	1.326
6	3.200	2.596	2.672	-0.394	1.168
7	4.800	2.645	2.621	-0.628	0.964
8	6.400	2.670	2.625	-0.801	0.805
9	8.000	2.670	2.698	-0.902	0.705
10	9.600	2.670	2.845	-0.934	0.673
11	11.200	2.552	2.993	-0.928	0.608
12	12.000	2.446	3.102	-0.878	0.594
13	12.800	2.347	3.213	-0.827	0.585
14	14.400	1.820	3.455	-0.609	0.486
15	15.200	1.361	3.580	-0.438	0.381
16	16.000	0.640	3.705	-0.188	0.197
17	16.559	0.000	3.807	0.042	0.042

Freeboard is vertical distance from deck point to sea at equilibrium.

Loading Condition no. : 17

Synketilstand 1 (50% vannfylling av lasterom)

FLOATING CONDITION DATA

Mean Draught (moulded)	:	2.601 m
Trim over Lpp (aft +)	:	-1.362 m
List (starboard +) ...	:	-1.006 °
Draught, AP (moulded)	:	1.920 m
Draught, LCF (moulded)	:	2.486 m
Draught, FP (moulded)	:	3.283 m

WEIGHT SUMMARY

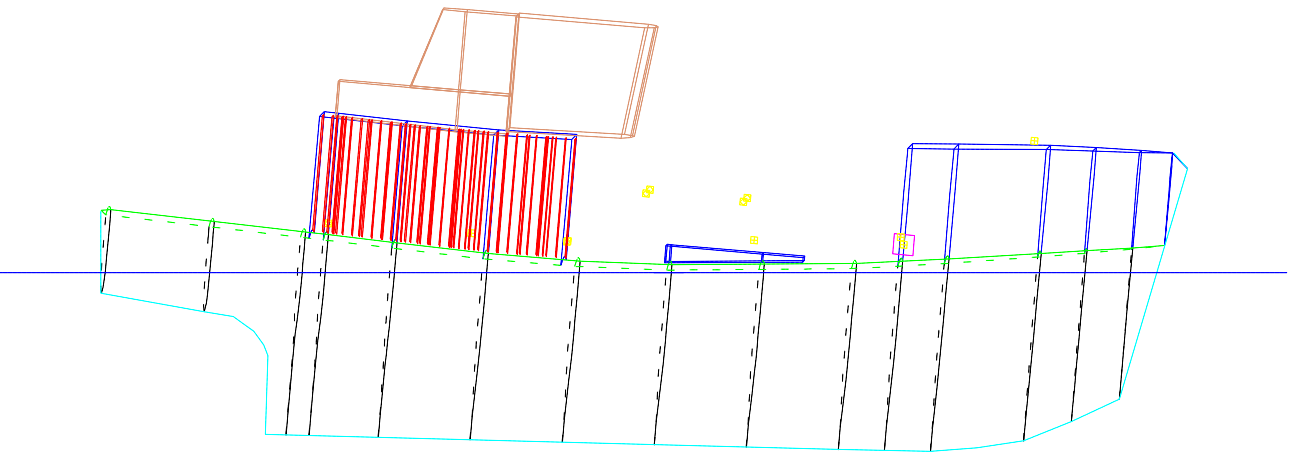
Cargo	:	16.7 MT
Diesel Oil	:	6.2 MT
Miscellaneous Bulk Loads	:	27.9 MT
Miscellaneous Mass Loads	:	2.0 MT
Linestamper akter	:	1.6 MT
Total DEADWEIGHT	:	54.4 MT

Min. vertical distance to Flood Openings:

- other openings	:	0.490 m
Displacement	:	134.756 MT
LCB (rel. AP)	:	7.912 m
VCB (rel. BL)	:	1.618 m
LCF (rel. AP)	:	6.643 m
TPC - Immersion	:	0.858 MT/cm
Trim Moment	:	1.319 MT*m/cm

STABILITY DATA/CONTROL

KG (incl. FSC)	:	2.358 m
Free Surface Correction:		0.287 m
GM (GZ derived)	:	0.549 m
KGmax, intact, calc. .	:	2.255 m
Stability Margin .....:		-0.103 m
Stability Conclusion .	:	NOT OK !!

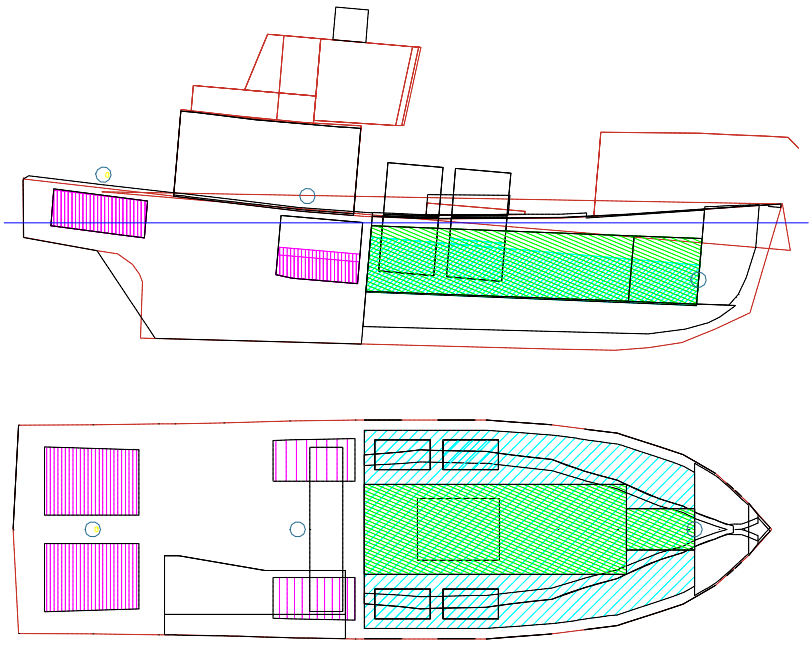


Water Density = 1.025 t/m3

Please note !
-Floating data are based on iterations incorporating calculation of exact list (heel giving zero righting lever).
-GM is calculated based on metacentric height (KMT) for upright vessel (zero heel)

Kondisjon 4: Forlistilstand uten vann i trunk og på dekk, 50 % vann i lasterom

Loading Condition no. : 17
Condition Id. text : Synketilstand 1 (50% vannfylling av lasterom)



○ - UNIT LOADS

Water Ballast | Cargo | Diesel Oil | Fresh Water | Miscellaneous

WEIGHT LOADS

Part no.	Id.text	Weight (MT)	Load (%)	Density (MT/m3)	Distribution Aft (m)	Distribution Fore (m)	LCG (m)	TCG (m)	VCG (m)	FSCT Moment (MT*m)
1	Mannskap & stores	1.000					5.000	0.000	3.000	
2	D.O. hekktank SB	2.249	97.3	0.8500	-1.17	1.12	-0.016	1.026	2.171	0.42
3	D.O. hekktank BB	2.249	97.3	0.8500	-1.17	1.12	-0.016	-1.026	2.171	0.42
4	D.O. maskinrom SB	0.978	48.4	0.8500	4.40	6.40	5.441	1.570	1.520	0.13
5	D.O. maskinrom BB	0.723	35.8	0.8500	4.40	6.40	5.448	-1.542	1.429	0.12
6	Fangst i forre trunk BB	0.921	35.1	1.0250	8.55	9.89	9.220	-1.820	1.795	
7	Fangst/egenv. containere	27.000		1.0000	6.62	14.68	10.245	0.000	1.778	
8	Ferskvann	1.000		1.0000	14.68	16.00	14.680	0.000	1.778	0.30
9	Linestamper akter									
-	Linestamper akter	1.560					0.000	0.000	3.100	
10	Vann i lasterom	16.712	50.0	1.0250	6.62	14.68	10.157	0.000	1.784	37.35
	DEAD WEIGHT	54.391					8.893	-0.023	1.864	38.72

.... to be continued on next page

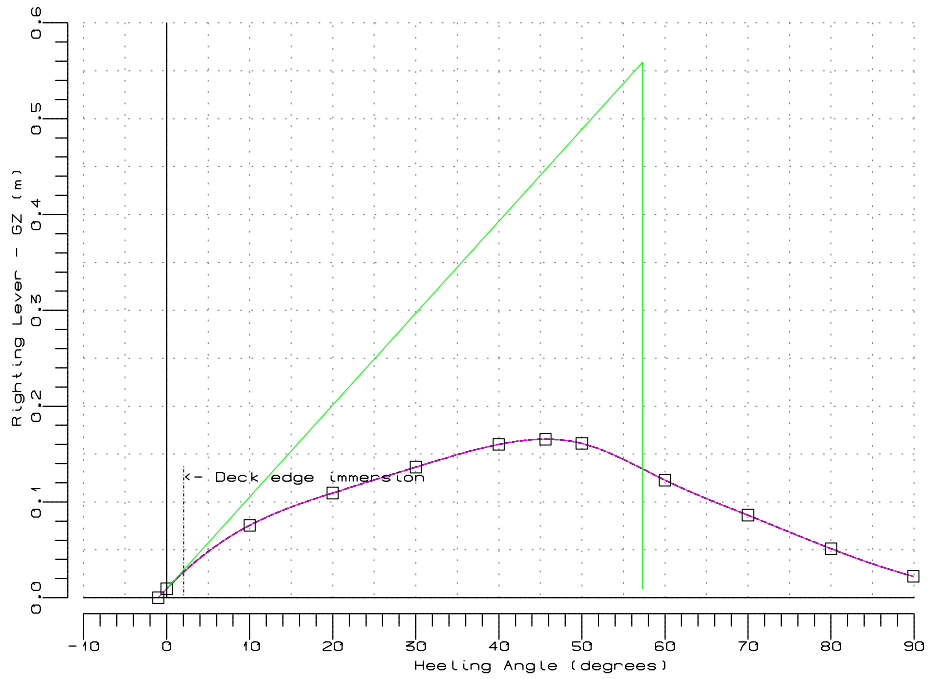
Kondisjon 4: Forlistilstand uten vann i trunk og på dekk, 50 % vann i lasterom

Part no.	Id.text	Weight (MT)	Load (%)	Density (MT/m3)	Distribution Aft (m)	Distribution Fore (m)	LCG (m)	TCG (m)	VCG (m)	FSCT Moment (MT*m)
	LIGHT WEIGHT, Lettskip	80.365					7.184	0.000	2.211	
	TOTAL WEIGHT	134.756					7.874	-0.009	2.071	38.72

Kondisjon 4: Forlistilstand uten vann i trunk og på dekk, 50 % vann i lasterom

Loading Condition no. : 17
Condition Id. text : Synketilstand 1 (50% vannfylling av lasterom)

INTACT STABILITY DATA (GZ-curve, Areas, Particulars & Criteria Control)



Angle (degr.)	GZ (m)	Area (m*rad)
-1.006	0.000	0.0000
0.000	0.009	0.0001
10.000	0.076	0.0081
20.000	0.109	0.0245
30.000	0.136	0.0460
40.000	0.160	0.0720
45.620	0.166	0.0880
50.000	0.161	0.1006
60.000	0.123	0.1256
70.000	0.086	0.1437
80.000	0.051	0.1557
89.900	0.022	0.1619

Deck immersion : 2.031 °
Maximum GZ at : 45.620 °
Equilibrium at : -1.006 °
Area, 0 - 30 : 0.0459 m*rad
Area, 0 - 40 : 0.0719 m*rad
Area,30 - 40 : 0.0260 m*rad
Area, 0 - maxGZ: 0.0879 m*rad
GM : 0.549 m

Heel to starboard side
Applied VCG : 2.358 m
TCG : -0.009 m

Table of intact stability criteria

TYPE : NMD Fishing Vessel > 15m

Code	Id. text		Req.	Actual value	Concl-usion	KGmax (m)
m·rad						99.990
GZAng	Angle at which max. GZ occur, ð		: 25.00 °	45.650	OK	2.535
GZMi1	GZ at angle greater or equal to 30.0°		: 0.20 m	0.165	NOT OK	2.302
GMMin	Minimum GM		: 0.35 m	0.549	OK	2.558
GZAr1	Area, GZ curve (0.0-30.0)°	*)	: 0.055 m·rad	0.046	NOT OK	2.256
GZAr1	Area, GZ curve (0.0-40.0)°	*)	: 0.090 m·rad	0.072	NOT OK	2.255
GZAr1	Area, GZ curve (30.0-40.0)°	*)	: 0.030 m·rad	0.026	NOT OK	2.305
GZMi2	GZ in heel range (40.0-65.0)° must be greater than		: 0.10 m	0.104	OK	2.358
GZPos	Positive GZ-curve up to		: 80.00 °	89.900	OK	2.408

ß : flooding angle
µ : intersection between righting arm and heeling arm
ð : angle for maximum GZ
GZarea : area of righting lever
RLarea : area between righting lever and heeling lever
*) : area will also be limited by angles for equilibrium and 2nd intercept

Resulting KGmax ..... (m): 2.255
KG (incl. correction) ..... (m): 2.358
Intact stability margin ..... (m): -0.103

PLEASE NOTE !
The calculations of KGmax is based on upright vessel (TCG=TCB). If the actual calculations are based on TCG <> TCB, the stability conclusion may not correspond with the presented stability margin. The conclusion will anyway be correct as it reflects the actual loading condition.

The calculations of KGmax includes the use of flood openings of type "local flooding". This may cause one or more steps in the KY and GZ curves.
Calculations of KGmax for the "GZMi2", "GZPos" and "GZAng" criteria are not influenced by "local flooding" effects.

-The calculation of GM is made by finding the tangency line of the GZ-curve for upright vessel (zero heel).

Kondisjon 4: Forlistilstand uten vann i trunk og på dekk, 50 % vann i lasterom

Flood Opening Results

Loading Condition no. : 17 ,Synketilstand 1 (50% vannfylling av lasterom)

No.	Identification text	Type	OvFl Syst	X (m)	Y (m)	Z (m)	Flooding Angle (degr)	Above Sea (m)
1	Dør Bakk SB	Weathertight		12.0	1.9	3.40	11.91	0.49
2	Dør Bakk PS	Weathertight		12.0	-1.9	3.60	**	0.62
3	Forkant egnerhus	Local flood.		6.2	1.7	2.96	15.98	0.54
4	Akterkan egnerhus	Local flood.		2.0	1.4	2.93	31.09	0.86
5	Forkant hydraulikrom	Weathertight		6.2	2.4	2.96	11.80	0.55
6	Trunk Akter SB	Local flood.		7.5	1.9	3.98	34.57	1.45
7	Trunk Akter PS	Local flood.		7.5	-1.9	3.98	**	1.38
8	Trunk Forut SB	Local flood.		9.2	1.9	3.98	31.05	1.30
9	Trunk Forut PS	Local flood.		9.2	-1.9	3.98	**	1.24
10	Dør til innredning	Weathertight		4.5	1.0	2.98	32.03	0.69
11	Lasteluke	Weathertight		9.4	0.8	3.28	29.14	0.57
12	Luke til stores	Weathertight		14.1	1.6	5.40	50.23	2.30

Above Sea is vertical distance from opening to sea at equilibrium.
**) Flooding angle is outside of specified heel range.

Freeboard to Deck

Loading Condition no. : 17 ,Synketilstand 1 (50% vannfylling av lasterom)

No.	X (m)	Y (m)	Z (m)	Freeboard Starboard (m)	Freeboard Port (m)
1	-1.940	0.000	2.849	1.090	1.090
2	-1.810	2.539	2.825	1.099	1.010
3	0.000	2.552	2.772	0.893	0.803
4	1.600	2.569	2.724	0.710	0.620
5	2.000	2.575	2.711	0.663	0.573
6	3.200	2.596	2.672	0.523	0.432
7	4.800	2.645	2.621	0.337	0.244
8	6.400	2.670	2.625	0.205	0.112
9	8.000	2.670	2.698	0.143	0.049
10	9.600	2.670	2.845	0.153	0.059
11	11.200	2.552	2.993	0.163	0.073
12	12.000	2.446	3.102	0.201	0.116
13	12.800	2.347	3.213	0.243	0.161
14	14.400	1.820	3.455	0.339	0.275
15	15.200	1.361	3.580	0.387	0.340
16	16.000	0.640	3.705	0.431	0.409
17	16.559	0.000	3.807	0.474	0.474

Freeboard is vertical distance from deck point to sea at equilibrium.

Kondisjon 4: Forlistilstand uten vann i trunk og på dekk, 50 % vann i lasterom

Loading Condition no. : 20

Synketilstand 2 (75% vannfylling av lasterom)

FLOATING CONDITION DATA

Mean Draught (moulded)	:	2.723 m
Trim over Lpp (aft +)	:	-1.628 m
List (starboard +) ...	:	-1.402 °
Draught, AP (moulded)	:	1.909 m
Draught, LCF (moulded)	:	2.506 m
Draught, FP (moulded)	:	3.537 m

WEIGHT SUMMARY

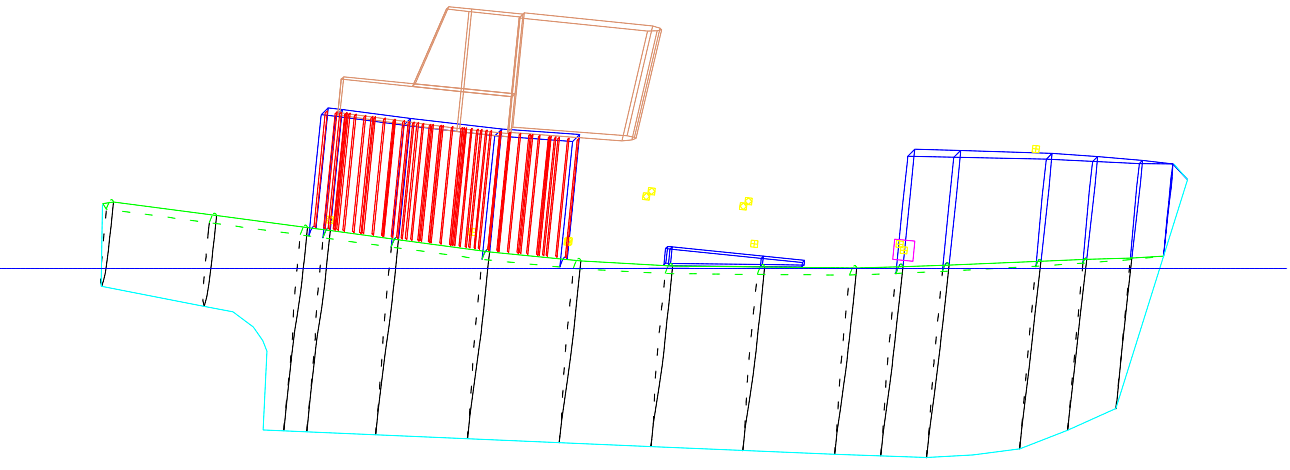
Cargo	:	25.1 MT
Diesel Oil	:	6.2 MT
Miscellaneous Bulk Loads	:	27.9 MT
Miscellaneous Mass Loads	:	2.0 MT
Linestamper akter	:	1.6 MT
Total DEADWEIGHT	:	62.8 MT

Min. vertical distance to Flood Openings:

- other openings	:	0.314 m
Displacement	:	143.146 MT
LCB (rel. AP)	:	8.064 m
VCB (rel. BL)	:	1.693 m
LCF (rel. AP)	:	5.863 m
TPC - Immersion	:	0.676 MT/cm
Trim Moment	:	1.257 MT*m/cm

STABILITY DATA/CONTROL

KG (incl. FSC)	:	2.351 m
Free Surface Correction:		0.246 m
GM (GZ derived)	:	0.366 m
KGmax, intact, calc. .	:	2.202 m
Stability Margin .....:		-0.149 m
Stability Conclusion .	:	NOT OK !!

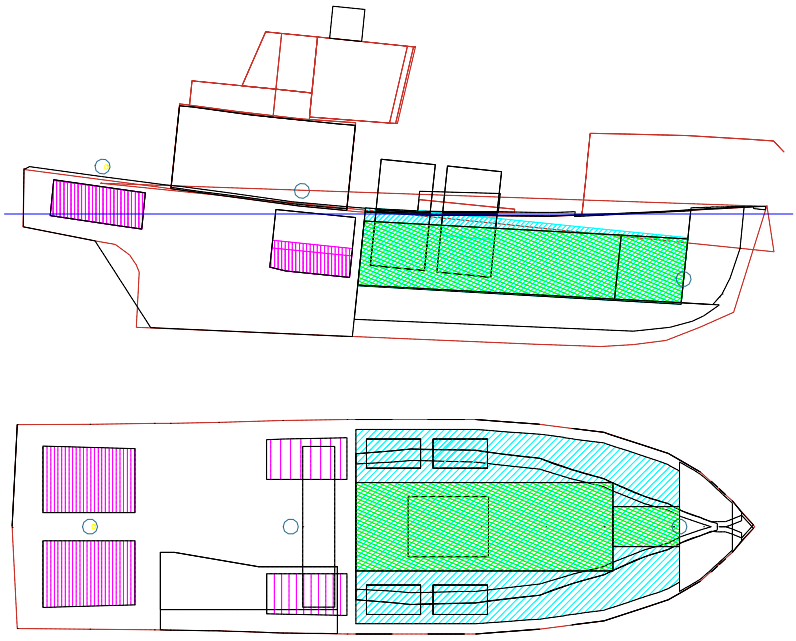


Water Density = 1.025 t/m3

Please note !
-Floating data are based on iterations incorporating calculation of exact list (heel giving zero righting lever).
-GM is calculated based on metacentric height (KMT) for upright vessel (zero heel)

Kondisjon 5: Forlistilstand uten vann i trunk og på dekk, 75 % vann i lasterom

Loading Condition no. : 20
Condition Id. text : Synketilstand 2 (75% vannfylling av lasterom)



- UNIT LOADS

Water Ballast | Cargo | Diesel Oil | Fresh Water | Miscellaneous

WEIGHT LOADS

Part no.	Id.text	Weight (MT)	Load (%)	Density (MT/m3)	Distribution Aft (m)	Distribution Fore (m)	LCG (m)	TCG (m)	VCG (m)	FSCT Moment (MT*m)
1	Mannskap & stores	1.000					5.000	0.000	3.000	
2	D.O. hekktank SB	2.265	98.0	0.8500	-1.17	1.12	-0.020	1.027	2.174	0.36
3	D.O. hekktank BB	2.265	98.0	0.8500	-1.17	1.12	-0.020	-1.027	2.174	0.36
4	D.O. maskinrom SB	0.978	48.4	0.8500	4.40	6.40	5.441	1.570	1.520	0.13
5	D.O. maskinrom BB	0.723	35.8	0.8500	4.40	6.40	5.448	-1.542	1.429	0.12
6	Fangst i forre trunk BB	0.922	35.1	1.0250	8.55	9.89	9.220	-1.820	1.796	
7	Fangst/egenv. containere	27.000		1.0000	6.62	14.68	10.245	0.000	1.778	
8	Ferskvann	1.000					14.680	0.000	1.778	
9	Linestamper akter									
-	Linestamper akter	1.560					0.000	0.000	3.100	
10	Vann i lasterom	25.068	75.0	1.0250	6.62	14.68	10.255	0.000	2.071	34.29
	DEAD WEIGHT	62.781					9.096	-0.020	1.968	35.26

.... to be continued on next page

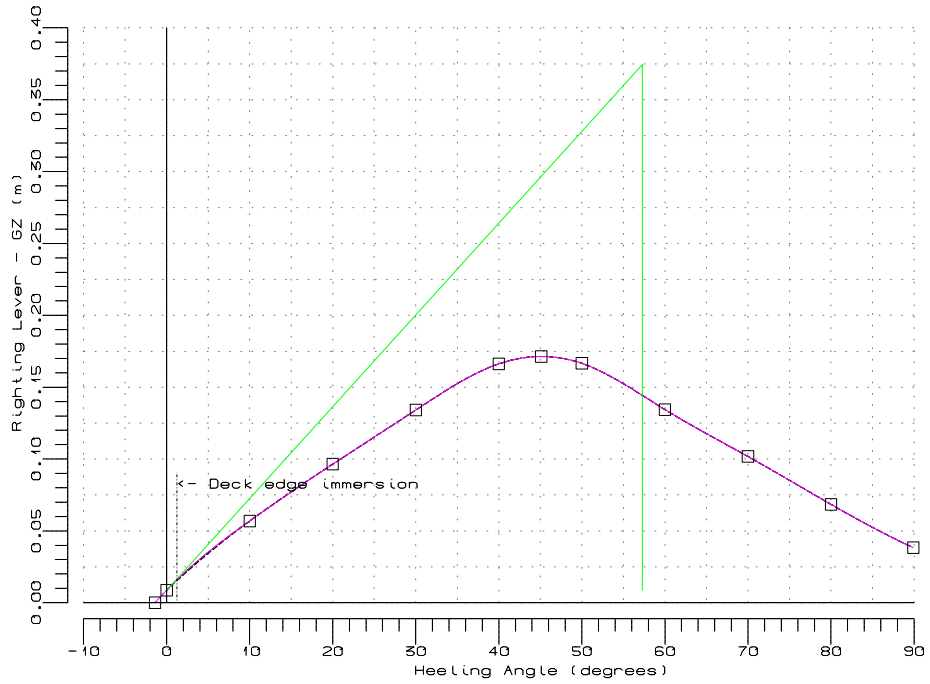
Kondisjon 5: Forlistilstand uten vann i trunk og på dekk, 75 % vann i lasterom

Part no.	Id.text	Weight (MT)	Load (%)	Density (MT/m3)	Distribution Aft (m)	Distribution Fore (m)	LCG (m)	TCG (m)	VCG (m)	FSCT Moment (MT*m)
	LIGHT WEIGHT, Lettskip	80.365					7.184	0.000	2.211	
	TOTAL WEIGHT	143.146					8.022	-0.009	2.104	35.26

Kondisjon 5: Forlistilstand uten vann i trunk og på dekk, 75 % vann i lasterom

Loading Condition no. : 20
Condition Id. text : Synketilstand 2 (75% vannfylling av lasterom)

INTACT STABILITY DATA (GZ-curve, Areas, Particulars & Criteria Control)



Angle (degr.)	GZ (m)	Area (m*rad)
-1.402	0.000	0.0000
0.000	0.009	0.0001
10.000	0.057	0.0061
20.000	0.096	0.0195
30.000	0.134	0.0397
40.000	0.166	0.0661
45.101	0.171	0.0812
50.000	0.167	0.0958
60.000	0.134	0.1223
70.000	0.102	0.1428
80.000	0.068	0.1577
89.900	0.038	0.1668

Deck immersion : 1.250 °
Maximum GZ at : 45.101 °
Equilibrium at : -1.402 °
Area, 0 - 30 : 0.0396 m*rad
Area, 0 - 40 : 0.0660 m*rad
Area,30 - 40 : 0.0265 m*rad
Area, 0 - maxGZ: 0.0811 m*rad
GM : 0.366 m

Heel to starboard side
Applied VCG : 2.351 m
TCG : -0.009 m

Table of intact stability criteria

TYPE : NMD Fishing Vessel > 15m

Code	Id. text		Req.	Actual value	Concl-usion	KGmax (m)
m·rad						99.990
GZAng	Angle at which max. GZ occur, ð		: 25.00 °	45.150	OK	2.593
GZMi1	GZ at angle greater or equal to 30.0°		: 0.20 m	0.171	NOT OK	2.303
GMMin	Minimum GM		: 0.35 m	0.366	OK	2.366
GZAr1	Area, GZ curve (0.0-30.0)°	*)	: 0.055 m·rad	0.039	NOT OK	2.202
GZAr1	Area, GZ curve (0.0-40.0)°	*)	: 0.090 m·rad	0.066	NOT OK	2.224
GZAr1	Area, GZ curve (30.0-40.0)°	*)	: 0.030 m·rad	0.026	NOT OK	2.303
GZMi2	GZ in heel range (40.0-65.0)° must be greater than		: 0.10 m	0.118	OK	2.366
GZPos	Positive GZ-curve up to		: 80.00 °	89.900	OK	2.419

ß : flooding angle
µ : intersection between righting arm and heeling arm
ð : angle for maximum GZ
GZarea : area of righting lever
RLarea : area between righting lever and heeling lever
*) : area will also be limited by angles for equilibrium and 2nd intercept

Resulting KGmax ..... (m): 2.202
KG (incl. correction) ..... (m): 2.351
Intact stability margin ..... (m): -0.149

PLEASE NOTE !
The calculations of KGmax is based on upright vessel (TCG=TCB). If the actual calculations are based on TCG <> TCB, the stability conclusion may not correspond with the presented stability margin. The conclusion will anyway be correct as it reflects the actual loading condition.

The calculations of KGmax includes the use of flood openings of type "local flooding". This may cause one or more steps in the KY and GZ curves.
Calculations of KGmax for the "GZMi2", "GZPos" and "GZAng" criteria are not influenced by "local flooding" effects.

-The calculation of GM is made by finding the tangency line of the GZ-curve for upright vessel (zero heel).

Kondisjon 5: Forlistilstand uten vann i trunk og på dekk, 75 % vann i lasterom

Flood Opening Results

Loading Condition no. : 20 ,Synketilstand 2 (75% vannfylling av lasterom)

No.	Identification text	Type	OvFl Syst	X (m)	Y (m)	Z (m)	Flooding Angle (degr)	Above Sea (m)
1	Dør Bakk SB	Weathertight		12.0	1.9	3.40	6.68	0.31
2	Dør Bakk PS	Weathertight		12.0	-1.9	3.60	**	0.42
3	Forkant egnerhus	Local flood.		6.2	1.7	2.96	12.66	0.46
4	Akterkan egnerhus	Local flood.		2.0	1.4	2.93	29.53	0.85
5	Forkant hydraulikrom	Weathertight		6.2	2.4	2.96	9.38	0.48
6	Trunk Akter SB	Local flood.		7.5	1.9	3.98	31.60	1.34
7	Trunk Akter PS	Local flood.		7.5	-1.9	3.98	**	1.25
8	Trunk Forut SB	Local flood.		9.2	1.9	3.98	27.38	1.17
9	Trunk Forut PS	Local flood.		9.2	-1.9	3.98	**	1.08
10	Dør til innredning	Weathertight		4.5	1.0	2.98	28.44	0.63
11	Lasteluke	Weathertight		9.4	0.8	3.28	20.94	0.43
12	Luke til stores	Weathertight		14.1	1.6	5.40	45.62	2.08

Above Sea is vertical distance from opening to sea at equilibrium.
**) Flooding angle is outside of specified heel range.

Freeboard to Deck

Loading Condition no. : 20 ,Synketilstand 2 (75% vannfylling av lasterom)

No.	X (m)	Y (m)	Z (m)	Freeboard Starboard (m)	Freeboard Port (m)
1	-1.940	0.000	2.849	1.130	1.130
2	-1.810	2.539	2.825	1.155	1.032
3	0.000	2.552	2.772	0.919	0.795
4	1.600	2.569	2.724	0.710	0.585
5	2.000	2.575	2.711	0.657	0.532
6	3.200	2.596	2.672	0.498	0.371
7	4.800	2.645	2.621	0.286	0.157
8	6.400	2.670	2.625	0.128	-0.002
9	8.000	2.670	2.698	0.039	-0.091
10	9.600	2.670	2.845	0.023	-0.107
11	11.200	2.552	2.993	0.006	-0.119
12	12.000	2.446	3.102	0.030	-0.089
13	12.800	2.347	3.213	0.058	-0.056
14	14.400	1.820	3.455	0.124	0.035
15	15.200	1.361	3.580	0.156	0.089
16	16.000	0.640	3.705	0.181	0.150
17	16.559	0.000	3.807	0.211	0.211

Freeboard is vertical distance from deck point to sea at equilibrium.

Loading Condition no. : 21

Synketilstand 3 (100% vannfylling av lasterom)

FLOATING CONDITION DATA

Mean Draught (moulded)	:	2.912 m
Trim over Lpp (aft +)	:	-2.096 m
List (starboard +) ...	:	-1.682 °
Draught, AP (moulded)	:	1.864 m
Draught, LCF (moulded)	:	2.616 m
Draught, FP (moulded)	:	3.960 m

WEIGHT SUMMARY

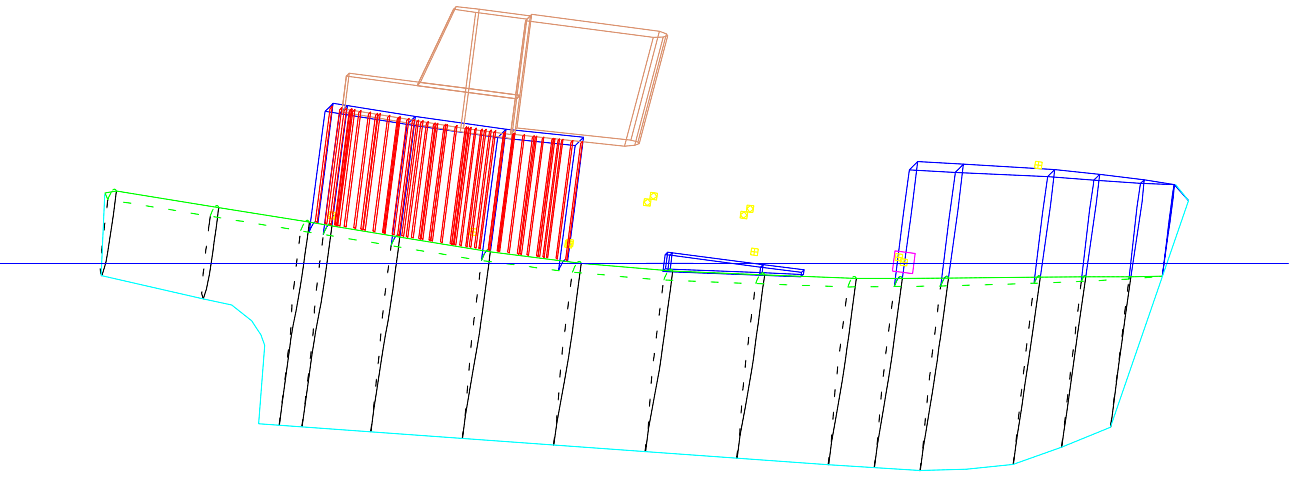
Cargo	:	33.4 MT
Diesel Oil	:	6.2 MT
Miscellaneous Bulk Loads	:	27.9 MT
Miscellaneous Mass Loads	:	2.0 MT
Linestamper akter	:	1.6 MT
Total DEADWEIGHT	:	71.1 MT

Min. vertical distance to Flood Openings:

- other openings	:	0.019 m
Displacement	:	151.469 MT
LCB (rel. AP)	:	8.281 m
VCB (rel. BL)	:	1.780 m
LCF (rel. AP)	:	5.738 m
TPC - Immersion	:	0.608 MT/cm
Trim Moment	:	1.293 MT*m/cm

STABILITY DATA/CONTROL

KG (incl. FSC)	:	2.163 m
Free Surface Correction:		0.007 m
GM (GZ derived)	:	0.292 m
KGmax, intact, calc. .	:	2.105 m
Stability Margin .....:		-0.058 m
Stability Conclusion .	:	NOT OK !!

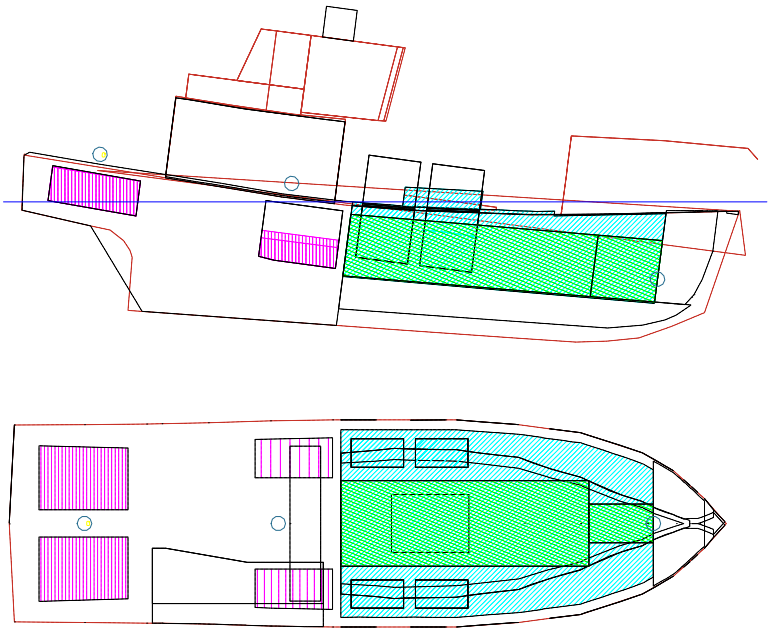


Water Density = 1.025 t/m3

Please note !
-Floating data are based on iterations incorporating calculation of exact list (heel giving zero righting lever).
-GM is calculated based on metacentric height (KMT) for upright vessel (zero heel)

Kondisjon 6: Forlistilstand uten vann i trunk og på dekk, 100 % vann i lasterom

Loading Condition no. : 21
Condition Id. text : Synketilstand 3 (100% vannfylling av lasterom)



- UNIT LOADS

Water Ballast | Cargo | Diesel Oil | Fresh Water | Miscellaneous

WEIGHT LOADS

Part no.	Id.text	Weight (MT)	Load (%)	Density (MT/m3)	Distribution Aft (m)	Distribution Fore (m)	LCG (m)	TCG (m)	VCG (m)	FSCT Moment (MT*m)
1	Mannskap & stores	1.000					5.000	0.000	3.000	
2	D.O. hekktank SB	2.249	97.3	0.8500	-1.17	1.12	-0.016	1.026	2.171	0.42
3	D.O. hekktank BB	2.249	97.3	0.8500	-1.17	1.12	-0.016	-1.026	2.171	0.42
4	D.O. maskinrom SB	0.978	48.4	0.8500	4.40	6.40	5.441	1.570	1.520	0.13
5	D.O. maskinrom BB	0.723	35.8	0.8500	4.40	6.40	5.448	-1.542	1.429	0.12
6	Fangst i forre trunk BB	0.922	35.1	1.0250	8.55	9.89	9.220	-1.820	1.796	
7	Fangst/egenv. containere	27.000		1.0000	6.62	14.68	10.245	0.000	1.778	
8	Ferskvann	1.000					14.680	0.000	1.778	
9	Linestamper akter									
-	Linestamper akter	1.560					0.000	0.000	3.100	
10	Vann i lasterom	33.424	100.0	1.0250	6.62	14.68	10.639	0.000	2.311	
	DEAD WEIGHT	71.104					9.417	-0.018	2.093	1.07

.... to be continued on next page

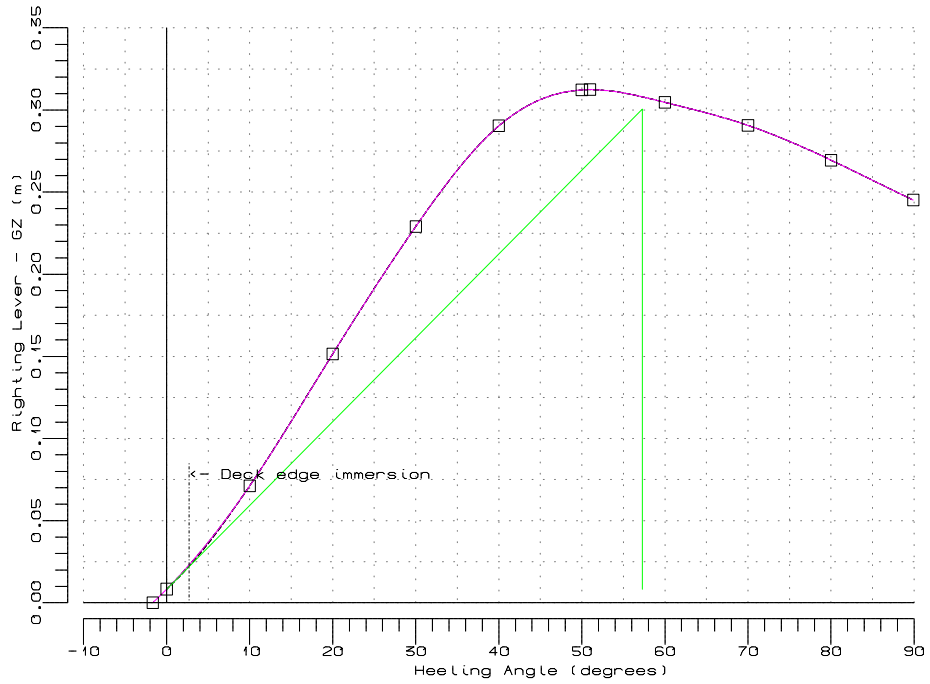
Kondisjon 6: Forlistilstand uten vann i trunk og på dekk, 100 % vann i lasterom

Part no.	Id.text	Weight (MT)	Load (%)	Density (MT/m3)	Distribution Aft (m)	Distribution Fore (m)	LCG (m)	TCG (m)	VCG (m)	FSCT Moment (MT*m)
	LIGHT WEIGHT, Lettskip	80.365					7.184	0.000	2.211	
	TOTAL WEIGHT	151.469					8.232	-0.008	2.155	1.07

Kondisjon 6: Forlistilstand uten vann i trunk og på dekk, 100 % vann i lasterom

Loading Condition no. : 21
Condition Id. text : Synketilstand 3 (100% vannfylling av lasterom)

INTACT STABILITY DATA (GZ-curve, Areas, Particulars & Criteria Control)



Angle (degr.)	GZ (m)	Area (m*rad)
-1.682	0.000	0.0000
0.000	0.008	0.0001
10.000	0.071	0.0067
20.000	0.152	0.0260
30.000	0.229	0.0594
40.000	0.290	0.1051
50.000	0.312	0.1583
50.987	0.312	0.1637
60.000	0.305	0.2124
70.000	0.291	0.2644
80.000	0.269	0.3134
89.900	0.245	0.3578

Deck immersion : 2.695 °
Maximum GZ at : 50.987 °
Equilibrium at : -1.682 °
Area, 0 - 30 : 0.0593 m*rad
Area, 0 - 40 : 0.1050 m*rad
Area,30 - 40 : 0.0458 m*rad
Area, 0 - maxGZ: 0.1636 m*rad
GM : 0.292 m

Heel to starboard side
Applied VCG : 2.163 m
TCG : -0.008 m

Table of intact stability criteria

TYPE : NMD Fishing Vessel > 15m

Code	Id. text		Req.	Actual value	Concl-usion	KGmax (m)
m·rad						99.990
GZAng	Angle at which max. GZ occur, ð		: 25.00 °	51.000	OK	2.609
GZMi1	GZ at angle greater or equal to 30.0°		: 0.20 m	0.312	OK	2.306
GMMin	Minimum GM		: 0.35 m	0.292	NOT OK	2.105
GZAr1	Area, GZ curve (0.0-30.0)°	*)	: 0.055 m·rad	0.059	OK	2.163
GZAr1	Area, GZ curve (0.0-40.0)°	*)	: 0.090 m·rad	0.105	OK	2.204
GZAr1	Area, GZ curve (30.0-40.0)°	*)	: 0.030 m·rad	0.046	OK	2.308
GZMi2	GZ in heel range (40.0-65.0)° must be greater than		: 0.10 m	0.290	OK	2.377
GZPos	Positive GZ-curve up to		: 80.00 °	89.900	OK	2.435

ß : flooding angle
µ : intersection between righting arm and heeling arm
ð : angle for maximum GZ
GZarea : area of righting lever
RLarea : area between righting lever and heeling lever
*) : area will also be limited by angles for equilibrium and 2nd intercept

Resulting KGmax ..... (m): 2.105
KG (incl. correction) ..... (m): 2.163
Intact stability margin ..... (m): -0.058

PLEASE NOTE !
The calculations of KGmax is based on upright vessel (TCG=TCB). If the actual calculations are based on TCG <> TCB, the stability conclusion may not correspond with the presented stability margin. The conclusion will anyway be correct as it reflects the actual loading condition.

The calculations of KGmax includes the use of flood openings of type "local flooding". This may cause one or more steps in the KY and GZ curves.
Calculations of KGmax for the "GZMi2", "GZPos" and "GZAng" criteria are not influenced by "local flooding" effects.

-The calculation of GM is made by finding the tangency line of the GZ-curve for upright vessel (zero heel).

Flood Opening Results

Loading Condition no. : 21 ,Synketilstand 3 (100% vannfylling av lasterom)

No.	Identification text	Type	OvFl Syst	X (m)	Y (m)	Z (m)	Flooding Angle (degr)	Above Sea (m)
1	Dør Bakk SB	Weathertight		12.0	1.9	3.40	0.00	0.02
2	Dør Bakk PS	Weathertight		12.0	-1.9	3.60	**	0.10
3	Forkant egnerhus	Local flood.		6.2	1.7	2.96	9.14	0.33
4	Akterkan egnerhus	Local flood.		2.0	1.4	2.93	29.06	0.84
5	Forkant hydraulikrom	Weathertight		6.2	2.4	2.96	6.64	0.35
6	Trunk Akter SB	Local flood.		7.5	1.9	3.98	28.44	1.17
7	Trunk Akter PS	Local flood.		7.5	-1.9	3.98	**	1.06
8	Trunk Forut SB	Local flood.		9.2	1.9	3.98	23.16	0.95
9	Trunk Forut PS	Local flood.		9.2	-1.9	3.98	**	0.84
10	Dør til innredning	Weathertight		4.5	1.0	2.98	25.39	0.55
11	Lasteluke	Weathertight		9.4	0.8	3.28	11.17	0.20
12	Luke til stores	Weathertight		14.1	1.6	5.40	39.80	1.72

Above Sea is vertical distance from opening to sea at equilibrium.
**) Flooding angle is outside of specified heel range.

Freeboard to Deck

Loading Condition no. : 21 ,Synketilstand 3 (100% vannfylling av lasterom)

No.	X (m)	Y (m)	Z (m)	Freeboard Starboard (m)	Freeboard Port (m)
1	-1.940	0.000	2.849	1.227	1.227
2	-1.810	2.539	2.825	1.261	1.113
3	0.000	2.552	2.772	0.973	0.824
4	1.600	2.569	2.724	0.718	0.569
5	2.000	2.575	2.711	0.654	0.504
6	3.200	2.596	2.672	0.460	0.309
7	4.800	2.645	2.621	0.203	0.049
8	6.400	2.670	2.625	0.000	-0.156
9	8.000	2.670	2.698	-0.136	-0.291
10	9.600	2.670	2.845	-0.198	-0.354
11	11.200	2.552	2.993	-0.263	-0.411
12	12.000	2.446	3.102	-0.262	-0.404
13	12.800	2.347	3.213	-0.258	-0.394
14	14.400	1.820	3.455	-0.241	-0.347
15	15.200	1.361	3.580	-0.235	-0.314
16	16.000	0.640	3.705	-0.236	-0.273
17	16.559	0.000	3.807	-0.226	-0.226

Freeboard is vertical distance from deck point to sea at equilibrium.

Kondisjon 6: Forlistilstand uten vann i trunk og på dekk, 100 % vann i lasterom