

Assignment 4

For the Ship D in A given load condition corresponding to the following condition:

Lpp.....87,3 m

Δ5870 tons

LCG..... 43,2 m

Further details given in appendix 1

4.1 Calculate the draft fore and aft.

In order to trim the vessel, 130 ton of ballast water is filled to the fore peak tank located at a LCG of 85,66 m.

4.2 Calculate the new draft fore and aft.

4.3 Calculate the Trim of the Vessel

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At departure the ship has a displacement of 6000 tons and has two full fuel oil tanks side by side, located in the double bottom. (one tank SB and one tank PS)

The metacentric height corrected for free surface effect, has been found to: $GM_c = 4,50$ m

Each tank has the following measurements 18 m long, 8 m wide, and 2,2 m deep.

The density of the fuel oil: 947 kg/m^3

Somewhere on the voyage, half of the fuel has been used, equally from both tanks.

4.4 Calculate the reduction of the GM_t and the new GM_c , from the two 50% filled tanks.

4.5 Explain the influence of dividing the fuel tanks in two, with a mid-mount center bulkhead (slingerskot), instead of just having one big tank in the full with of the Vessel.

Appendix 1

Skibet D		TABEL OVER HYDROSTATISKE DATA					
DRAFT	DISP	DISP	LCB	LCF	KMT	MCT	TPM
M	FW	SW	FROM AP	FROM AP	AB.BL	SW	SW
	T	T	M	M	M	T·M/M	T/M
2.000	1785.5	1830.1	44.821	45.605	9.720	4511.1	1012.3
2.100	1890.4	1937.6	44.821	45.476	9.541	4635.3	1022.5
2.200	1995.2	2045.1	44.821	45.347	9.362	4759.4	1032.7
2.300	2100.1	2152.6	44.821	45.217	9.183	4883.6	1042.8
2.400	2205.0	2260.1	44.821	45.088	9.005	5007.7	1053.0
2.500	2309.8	2367.6	44.821	44.959	8.826	5131.9	1063.2
2.600	2414.7	2475.1	44.821	44.834	8.648	5253.6	1073.2
2.700	2520.0	2583.0	44.821	44.748	8.475	5356.1	1081.8
2.800	2625.8	2691.4	44.821	44.734	8.313	5421.7	1087.9
2.900	2732.1	2800.4	44.822	44.775	8.162	5458.8	1091.9
3.000	2838.8	2909.8	44.824	44.829	8.023	5487.5	1095.3
3.100	2945.9	3019.6	44.827	44.832	7.897	5537.8	1100.1
3.200	3053.6	3129.9	44.829	44.728	7.788	5635.2	1108.0
3.300	3162.1	3241.1	44.827	44.576	7.693	5753.1	1117.2
3.400	3271.7	3353.5	44.818	44.463	7.608	5851.6	1125.2
3.500	3382.1	3466.7	44.804	44.393	7.530	5928.9	1131.8
3.600	3493.1	3580.5	44.789	44.345	7.455	5994.7	1137.6
3.700	3604.5	3694.6	44.776	44.329	7.385	6043.6	1142.4
3.800	3716.3	3809.2	44.764	44.346	7.322	6073.5	1146.0
3.900	3828.7	3924.4	44.749	44.296	7.267	6137.3	1151.5
4.000	3942.2	4040.7	44.730	44.075	7.223	6289.4	1162.0
4.100	4056.6	4158.0	44.706	43.801	7.185	6468.2	1174.0
4.200	4171.8	4276.1	44.679	43.651	7.150	6582.1	1182.3
4.300	4287.5	4394.7	44.652	43.619	7.118	6631.3	1187.0
4.400	4403.8	4513.9	44.623	43.632	7.090	6652.6	1190.4
4.500	4520.6	4633.6	44.596	43.596	7.064	6698.7	1195.1
4.600	4637.8	4753.7	44.569	43.434	7.043	6814.9	1203.4
4.700	4755.7	4874.6	44.540	43.209	7.025	6964.9	1213.4
4.800	4874.8	4996.6	44.506	43.025	7.013	7089.8	1222.2
4.900	4994.6	5119.5	44.468	42.908	7.004	7174.8	1228.9
5.000	5115.0	5242.9	44.430	42.839	6.998	7228.3	1234.0
5.100	5236.0	5366.9	44.392	42.744	6.993	7294.8	1239.6
5.200	5357.7	5491.6	44.352	42.548	6.991	7418.0	1248.1
5.300	5480.2	5617.2	44.309	42.318	6.992	7557.1	1257.3
5.400	5603.4	5743.5	44.263	42.158	6.995	7650.8	1264.3
5.500	5727.3	5870.4	44.217	42.051	7.001	7707.9	1269.6
5.600	5851.6	5997.8	44.170	41.941	7.008	7761.7	1274.7
5.700	5976.4	6125.9	44.122	41.794	7.017	7836.5	1280.8
5.800	6102.1	6254.7	44.071	41.589	7.028	7944.4	1288.5
5.900	6228.6	6384.3	44.018	41.362	7.042	8046.0	1296.0
6.000	6355.6	6514.5	43.963	41.164	7.056	8093.1	1301.1
6.100	6483.0	6645.1	43.906	40.997	7.069	8105.5	1304.3
6.200	6610.6	6775.9	43.849	40.852	7.077	8124.1	1307.2
6.300	6738.5	6907.0	43.790	40.748	7.083	8167.3	1310.7
6.400	6866.9	7038.6	43.733	40.705	7.091	8241.8	1315.3
6.500	6995.7	7170.6	43.677	40.698	7.100	8331.1	1320.5
6.600	7125.0	7303.1	43.623	40.688	7.110	8413.6	1325.3
6.700	7254.8	7436.1	43.570	40.677	7.120	8488.2	1329.7
6.800	7385.0	7569.7	43.519	40.674	7.131	8560.2	1333.9
6.900	7515.6	7703.5	43.469	40.677	7.142	8631.7	1338.0
7.000	7646.2	7837.3	43.420	40.681	7.154	8703.1	1342.0