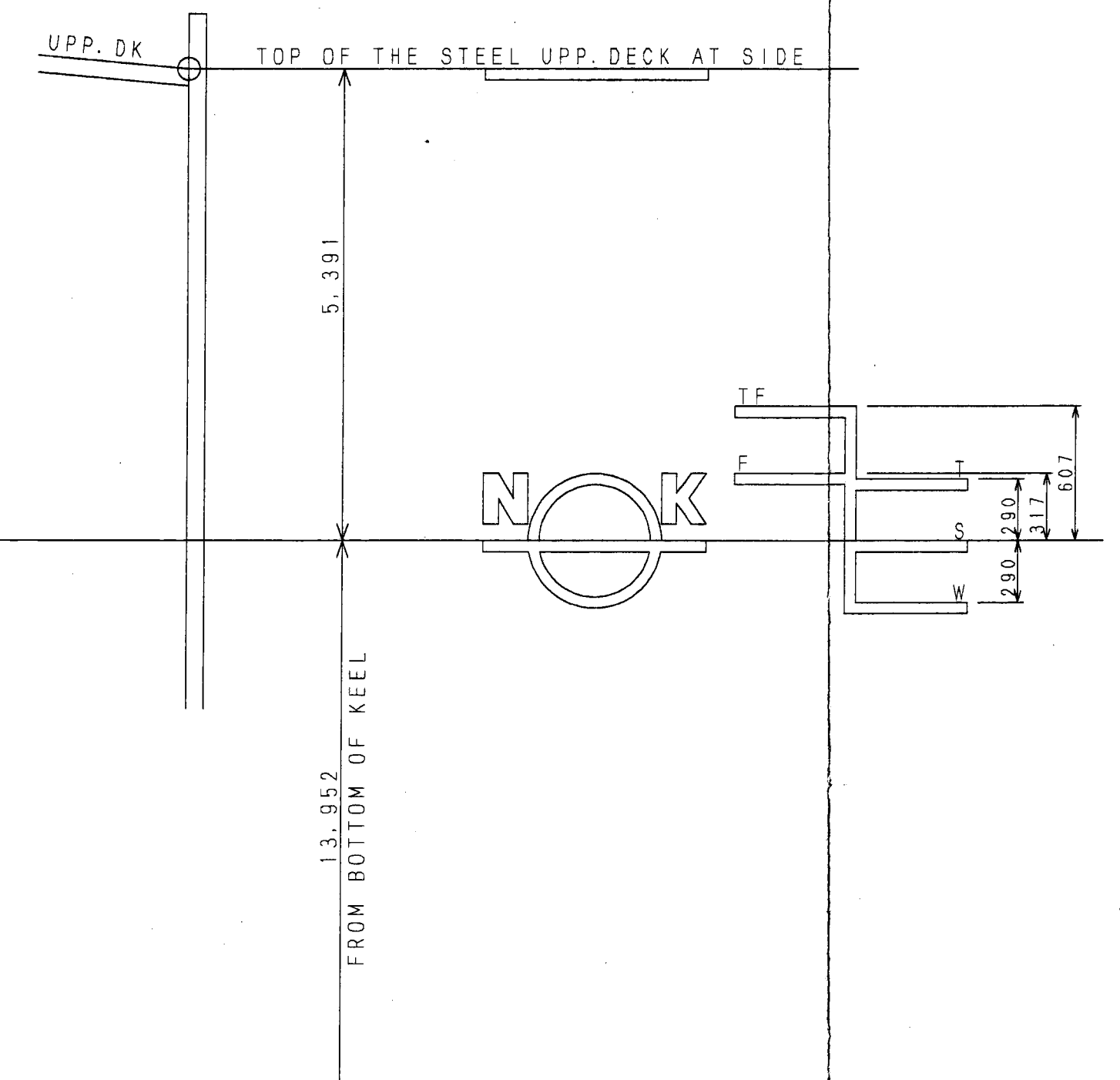
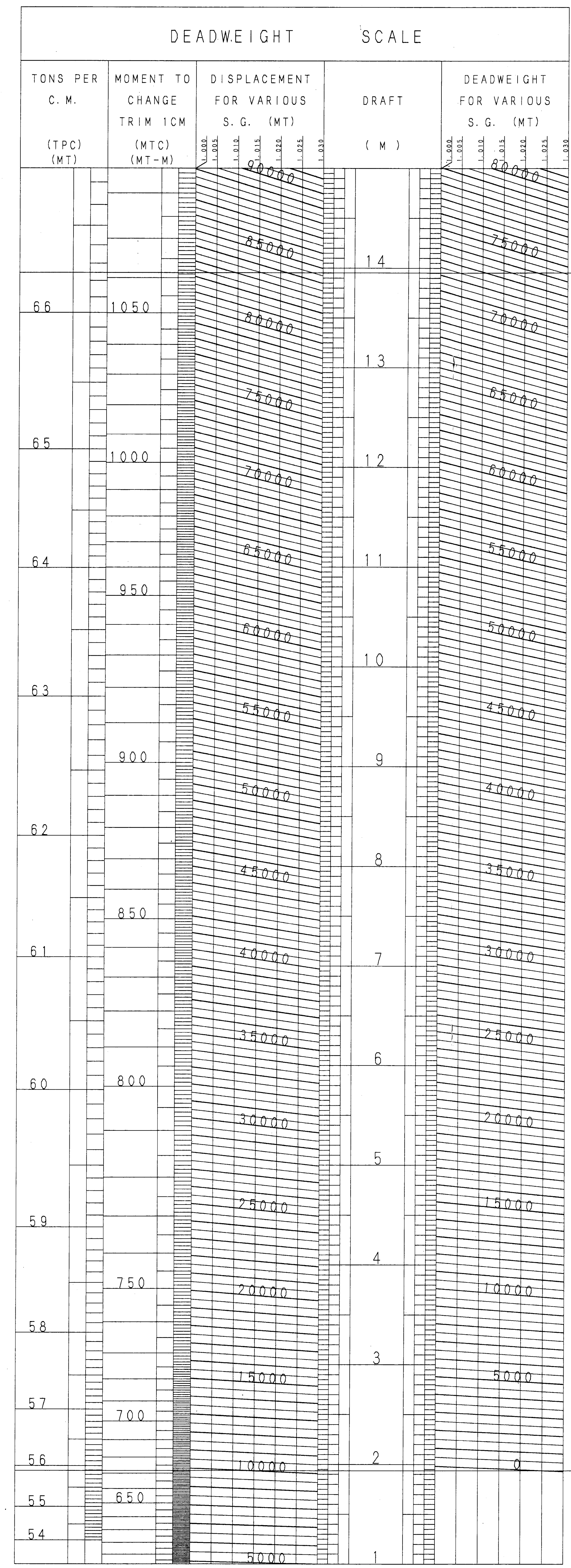
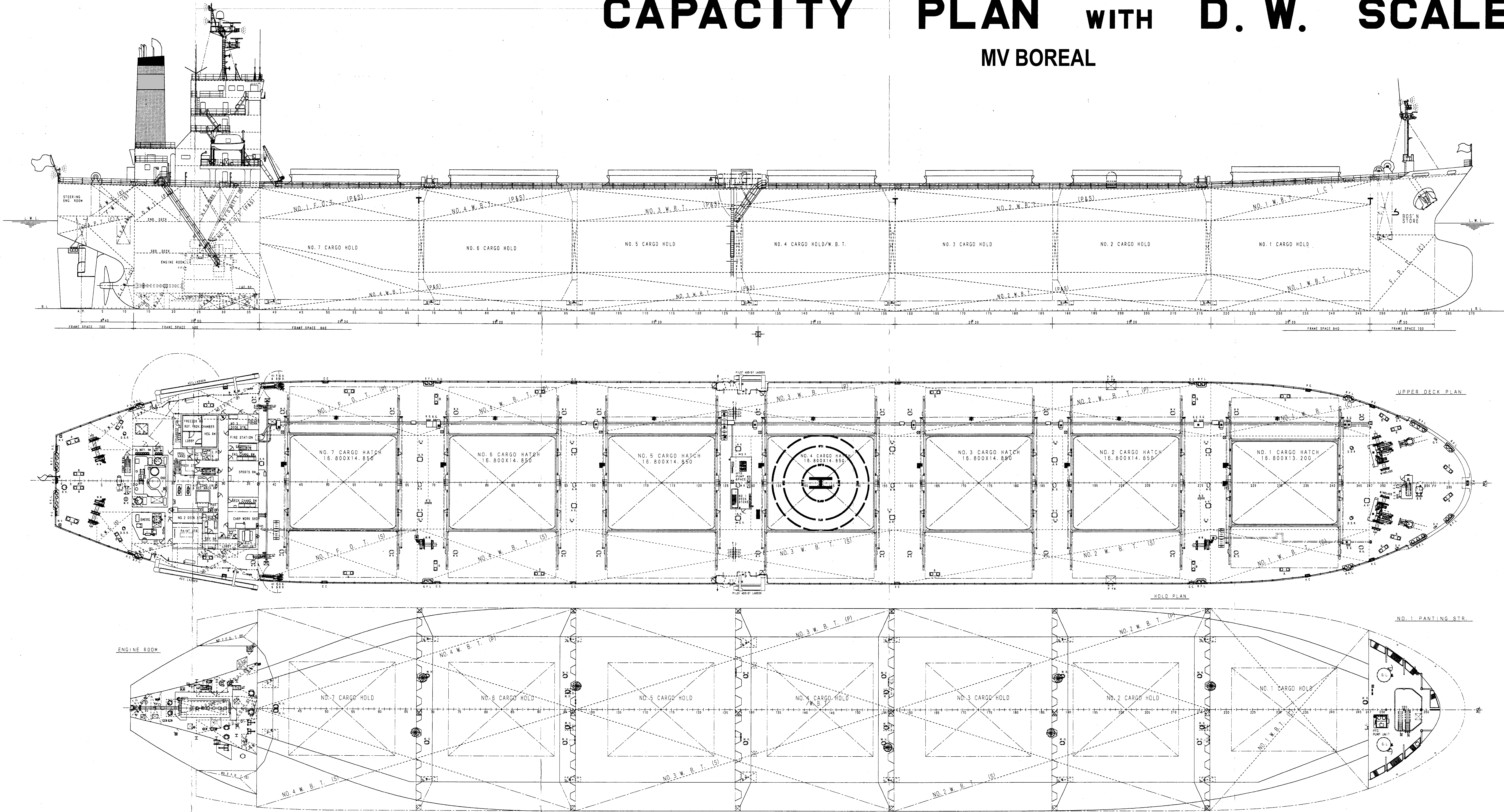


CAPACITY PLAN WITH D. W. SCALE

MV BOREAL



	FREE-BOARD (EXT.)	DRAFT		DISPL.		DEADWEIGHT		WATER DENSITY
		M	FT	MT	LT	MT	LT	
TROPICAL FRESH WATER LINE	TF	4.784	15.691	86173	76050	74859	1.000	
FRESH WATER LINE	F	5.074	16.637	84291	74178	73006	1.000	
TROPICAL WATER LINE	T	5.101	16.742	85219	76108	74904	1.025	
SUMMER WATER LINE	S	5.391	17.700	84294	74181	73009	1.025	
WINTER WATER LINE	W	5.681	18.658	82375	72261	71121	1.025	

LENGTH (O.A.)	224' 00" (ABT. 331' - 9 3/4")
LENGTH (P.P.)	215' 00" (ABT. 705' - 4 1/2")
BREADTH (MID.)	32' 00" (ABT. 105' - 3 3/4")
DEPTH (MID.)	18' 00" (ABT. 59' - 3 3/4")
DESIGNED LOAD DRAFT (EXT.)	12' 3/8" (ABT. 40' - 3 3/4")
ASSIGNED SUMMER LOAD DRAFT (EXT.)	13' 00" (ABT. 45' - 9 1/4")
GROSS TONNAGE	28,538 T
NET TONNAGE	14,932 T
DEADWEIGHT AT ASSIGNED SUMMER LOAD DRAFT	44,181 MT (73,005 LT)
MAIN ENGINE	1 B&W 7550MC (M/R+6)
M.D.	11,800 PS (8.878)
N.C.G.	10,820 PS (7.811)
W.M.	115 rpm
W.M.	115 rpm
SERVICE SPEED (AT N.C.G. WITH 15% SEA HANG)	14.5 KNOTS
AT DESIGNED LOAD DRAFT	14.5 KNOTS

ITEM	POSITION	CAPACITY		CENT. OF GRAVITY	
		M ³	FT ³	L.C.G.	V.C.G.
		M	M	M	M
NO. 1 CARGO HOLD	217 - 247	11840.8	418158	-83.84	10.82
NO. 2 CARGO HOLD	187 - 217	12237.0	431938	-59.49	10.40
NO. 3 CARGO HOLD	157 - 187	13270.1	468634	-34.27	10.34
NO. 4 CARGO HOLD	127 - 157	12058.6	428685	-9.10	10.38
NO. 5 CARGO HOLD	97 - 127	13264.0	468418	16.07	10.34
NO. 6 CARGO HOLD	67 - 97	12237.3	432160	41.29	10.40
NO. 7 CARGO HOLD	37 - 67	11696.9	420139	65.73	10.68
CARGO HOLD TOTAL		86799.7	3065332		
NO. 1 CARGO HATCH	221 - 241	305.6	10928	-83.86	21.31
NO. 2 CARGO HATCH	191 - 211	355.6	12593	-59.56	20.73
NO. 3 CARGO HATCH	163 - 183	356.6	12593	-35.14	20.73
NO. 4 CARGO HATCH	133 - 153	356.6	12593	-9.94	20.73
NO. 5 CARGO HATCH	103 - 123	356.6	12593	15.26	20.73
NO. 6 CARGO HATCH	73 - 93	356.6	12593	40.48	20.73
NO. 7 CARGO HATCH	43 - 63	356.6	12593	65.68	20.73
CARGO HATCH TOTAL		2446.2	86386		
NO. 1 C. HOLD & HATCH	217 - 247	12147.4	428895	-83.84	11.08
NO. 2 C. HOLD & HATCH	187 - 217	12587.6	444531	-59.47	10.68
NO. 3 C. HOLD & HATCH	157 - 187	13626.7	481227	-34.29	10.61
NO. 4 C. HOLD & HATCH	127 - 157	12416.2	438478	-9.12	10.68
NO. 5 C. HOLD & HATCH	97 - 127	13620.6	481011	16.05	10.61
NO. 6 C. HOLD & HATCH	67 - 97	12583.9	444754	41.27	10.68
NO. 7 C. HOLD & HATCH	37 - 67	12253.5	432732	65.73	11.15
CARGO HOLD & HATCH TOTAL		89245.9	3151718		

ITEM	POSITION	CAPACITY		WEIGHT		CENT. OF GRAVITY		I (MAX)
		M ³	FT ³	S.W. SOFT 1.025	F.W. SOFT 1.000	L.C.G.	V.C.G.	
		M	M	MT	MT	M	M	
FORE PEAK T. (I.C.)	247 - FORE	1699.6	60028	1742.3		-102.52	6.54	284.7
NO. 1 W. B. T. (I.C.)	217 - 247	2339.4	82581	2356.9		-83.59	9.56	3076.0
NO. 2 W. B. T. (I.C.)	187 - 217	2974.4	105059	3049.3		-46.79	8.23	16556
NO. 3 W. B. T. (I.C.)	157 - 187	2964.4	105747	3059.3		3.46	6.18	17152
NO. 4 W. B. T. (I.C.)	127 - 157	2127.4	75147	2181.1		49.01	6.56	11730
AFT PEAK T. (I.C.)	AFT - 12	647.5	22866	663.7		103.77	12.60	5211
W. B. SUB TOTAL		20680.1	737381	21402.9				
NO. 4 C.W.B.T.	127 - 157	12416.2	438478	12726.6		-9.12	10.68	85083
W. B. GRAND TOTAL		93295.3	1175859	34128.9				
FRESH WATER T. (I.P.)	2 - 12	198.5	6939			102.35	17.28	113
FRESH WATER T. (I.S.)	4 - 12	164.2	5769			154.2	101.75	99
DRINK WATER T. (I.P.S.)	12 - 21	114.2	4033			114.2	95.06	16.84
FRESH WATER TOTAL		586.9	20804			586.9		
ODD. F.W.T. (I.C.)	7 - 12	19.4	685			19.4	100.19	3.00

ITEM	POSITION	CAPACITY			WEIGHT			CENT. OF GRAVITY		I (MAX)
		TOON FULL	90% FULL	F.O. 90	D.O. 90	L.O. 90	L.C.G.	V.C.G.		
		M ³	M ³	MT	MT	MT	M	M		
NO. 1 F. O. T. (I.P.S.)	37 - 67	608.1	593.8	20617	560.4		66.43	17.79	1342	
NO. 2 F. O. T. (I.P.)	25 - 37	484.5	465.1	16425	446.5		83.47	14.42	120	
NO. 2 F. O. T. (I.S.)	25 - 37	414.3	397.7	14045	381.8		83.13	13.89	107	
FUEL OIL TOTAL		2115.0	2030.4	71704	1948.1					
DIESEL OIL T. (I.P.)	29 - 37	43.7	42.0	1483			82.01	1.52	36	
DIESEL OIL T. (I.S.)	29 - 37	54.7	52.5	1854			82.22	1.53	37	
DIESEL OIL TOTAL		98.4	94.5	3337			85.1			
L.O. SUMP T. (I.C.)	19 - 31	23.8	22.8	805			20.5	89.24	1.49	
F.O. OVERFLOW T. (I.C.)	33 - 36	21.6	20.7	731			81.13	1.27	9	
H.F.O. SERV. T. (I.S.)	25 - 26	15.9		25.8			87.10	16.99	2	
H.F.O. SETT. T. (I.S.)	29 - 33	16.2		25.2			83.90	16.99	2	
BILGE OIL T. (I.C.)	16 - 18	15.4					95.08	1.43	15	
CLEAN BILGE T. (I.P.)	25 - 29	13.0					86.99	1.61	5	
BILGE T. (I.C.)	12 - 16	16.2					97.33	1.30	12	

LW	10113	MT
LCG	6.95	M
VCG	11.51	M
	3.84	MIAT (LCF)

FINISHED PLAN

MANUKA SHIPBUILDING CO., LTD.
INITIAL DESIGN DEPARTMENT
HULL PERFORMANCE DESIGN SEC.

APPROVED: [Signature] EXT. 12/01
CHECKED: [Signature] EXT. 12/01
DESIGNED: [Signature] EXT. 12/01
DRAWN: [Signature] EXT. 12/01

DATE DRAWN: MAR. 25, 2002 SCALE: 1:1000 SHEET NO.: 0-7-B