



SEAMASTER Software Suite

The core of the SEAMASTER software suite is a longitudinal strength, intact stability and cargo loading program. It is used as the basis for over 250 loading instruments installed onboard all types of vessels trading worldwide. Seamaster programs have been approved for ships classed with LR, DnV, BV, ABS, NKK and GL and is usually used as a basis on which additional programs can be seamlessly added. Additional modules enable us to use the program in damage response and container lashing analysis. The software is written by experienced Naval Architects and benefits from TMC's on-site surveying and consultancy expertise.

SEAMASTER

The principal features and operations of SEAMASTER program include the access of previous loading conditions, the entry of dwt (with the trim, stability and strength summary continuously updated and shown), display and printout of detailed stability and strength results, comparison between the calculated condition and that required (or observed from a draft survey), and the saving of each load condition as a file or for future reference.

WATER BALLAST Total: 9394.7								
	Fra Aft	me Fd	LCG	TCG	VCG	FSM t . m	% of Full	Weight tonnes
No1 Deep WB Tk	111	119	254.04	0.03	3.90	2216	65%	1220.6
No2P DB WB Tk	101	111	227.30	-6.79	5.01	0	100%	1135.7
No2S DB WB Tk	101	111	227.30	6.79	5.01	0	100%	1135.7
No3P DB WB Tk	91	101	199.41	-7.03	2.20	0	100%	877.7

REFERENCE

Voyage No: 1225R
 Condition: Departure
 Date/Time: 08/07/2012
 Remarks: ...

TRIM & STABILITY

[Trimmed Hydrostatics]
 Displacement 123,923.8 t
 Fwd Mark Draft 14.519 m (min 5.502)
 Aft Mark Draft 16.871 m (min 8.638)
 Midship Draft 15.605 m (Su 14.500)
 LCF Draft 15.751 m
 Trim 2.456 m
 Propeller 147% Immersion
 KMT 19.127 m
 VCG 15.568 m
 GM (solid) 3.559 m
 FS Correction 1.412 m (calibrated)
 GM (fluid) 2.147 m
 Static Heel 0.5° (to starboard)
 LCG 131.412 m
 MCT 1 cm 2019.8 t-m
 Air Draft 44.34 m
 Hull Flexure 0.036 hog
 (drafts not corrected for hull deflection)
 Visibility: 404m Ahead of Bow

SIGN CONVENTION
 Longitudinal distance fwd +ve from AP
 Transverse distance to starboard +ve from CL
 Vertical distance up +ve from BL
 Trim stern down +ve, Heel to starboard +ve

STABILITY CRITERIA

Intact Stability Criteria IMO A.749
 Area [0.5 - 30.0°] 0.308 m rad (min 0.055)
 Area [0.5 - 40.0°] 0.524 m rad (min 0.09)
 Area [30.0 - 40.0°] 0.216 m rad (min 0.03)
 Max. GZ [$\geq 30.0^\circ$] 1.26 m (min 0.2)
 Max. GZ 1.26 m
 Occurs at 36° (min 25.0)
 Initial GM 2.147 m (min 0.15)

Weather Criterion IMO A.749
 Angle of Deck Edge Immersion 23.3°
 Heel under Action of Steady Wind 2.1° (max 16.0)
 Roll to Windward due to Wave Action 18.1°
 Angle of Downflooding 42.3°
 Area Ratio "b/a" 4.24 (min 1.0) to 42.3°

Show: Area GM Angle of Deck Immersion Autoscale to:
 Areas a and b Angle of Downflooding GZ GM

HULL STRENGTH

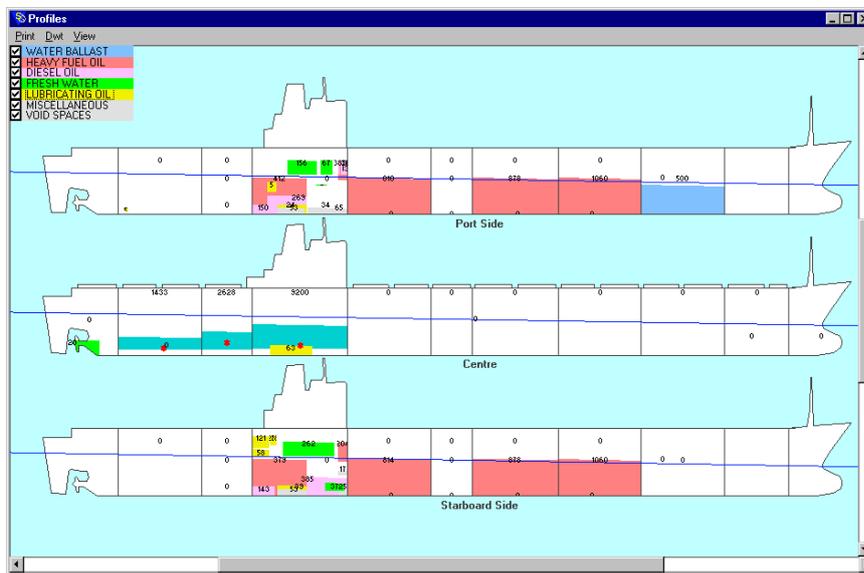
Frame	SF%	BM%	Tq%
14	3	8	6
19	8	11	6
24	9	13	10
28	6	11	11
32	-64	0	29
37	-24	-86	-34
42	31	-52	-37
47	81	4	-37
52	129	20	-52
57	112	36	-38
62	61	49	-19
67	15	61	0
72	-42	68	36
77	-53	69	13
82	-64	72	1
87	-70	69	-5
92	-58	55	-3
97	-19	20	-3





SEAFLOOD

The SEAFLOOD additional module allows any compartment in the vessel to be flooded (including those which would normally be dry, for example the engine room, cargo spaces etc.). Each space may be free flooded, or a hole of a specific size and position may be entered and the effect on the vessel over a period of time can be seen. In addition to this, the program allows the progressive flooding of adjacent compartments through pipe ducts and other non-watertight areas, so that the effects on the vessel's strength and stability can be analysed.



Flooding Simulation

Display

Initialise Step 1 min Run to 25 11 mins Elapsed

Mins	Disp tonnes	Max Draft	Trim	GM	Max SF%	Max BM%	Max Tq%	Forepeak	No 1 WBT(C)	No 2 DE WBT(S)	Remarks
0	38401	8.98	-3.53	5.56	103	111	-33	593.9 F	0.0 L	886.0 R	Collision at time 1025 hr
1	38449	9.03	-3.59	5.56	103	112	-33	597.4 F	45.0 L	886.0 R	
2	38498	9.07	-3.66	5.56	103	112	-33	600.9 F	90.2 L	886.0 R	
3	38552	9.11	-3.74	5.57	103	112	-33	604.7 F	140.2 L	886.0 R	

WATER BALLAST Total: 16627.3

Table Edit View Print Help

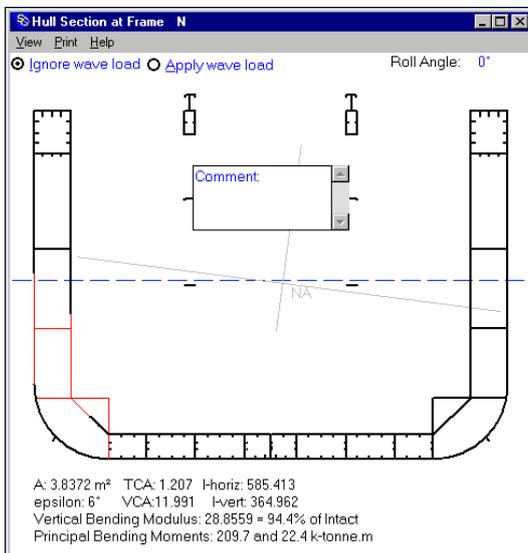
<input type="checkbox"/> Tank Gauges	% of Full	Weight tonnes	Status I F L R	Vol Perm.	FSM Perm.	Connect to Compartment	Hole (cm ²)	Ext Ht Hole	Int. Ht Hole	Pump (t/min)	O / P (t / m ²)
Forepeak	72%	805.1	Flooding	1.00	1.00	Outside: Port	Large	0.0	0.0	0	0.00
No 1 WBT(C)	98%	903.0	Leaking	1.00	1.00	Forepeak	1500	5.0	5.0	0	0.00
No 2 DB WBT(P)	100%	889.1	Intact	1.00	1.00	Aft Peak(S)	0	0.0	0.0	-10	0.00
No 2 DB WBT(S)	100%	886.0	Repaired	1.00	1.00	No 5 WBT(P)	0	0.0	0.0	0	0.00
No 2 WB 1(P)	87%	1525.1	Intact	1.00	1.00	No 5 WBT(S)	0	0.0	0.0	0	0.00
						No 6 DB WBT					
						No 6 DR WBT					





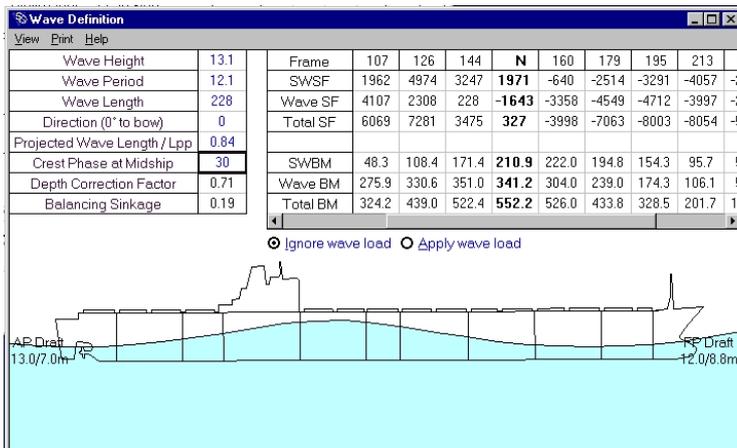
SEADAM

The SEADAM additional module allows rapid assessment of the residual longitudinal strength of a vessel following explosion aboard, grounding, collision or some such other accident which leaves the vessel structurally damaged. The software permits the analysis of longitudinal strength of the vessel after the total or partial failure of girders, frames, plating etc. SEADAM allows for the recalculation of bending moments and shear forces, allowing for the effect of grounding. There is a facility to use soundings taken around the vessel to calculate the reaction force taking into account the rise and fall of the tide. The effects of wave loading on the vessel may also be seen, dependant on the height, period, direction and phase of the waves.



Type	dY1	dZ1	Y1	Z1	dY2	dZ2	Y2	Z2	t (mm)	Area	C of A	Loss-P	Loss-S	y/I - P
1	Plate	0.00	0.00	0.900	0.90	0.00	24.0	216						-0.00432
2	Plate	0.90	0.00	2.980	3.88	0.00	18.0	536						-0.00947
3	Plate	3.88	0.00	2.480	6.36	0.00	18.0	446						-0.01375
4	Plate	6.36	0.00	2.250	8.61	0.00	18.0	405						-0.01763
5	Plate	8.61	0.00	2.390	11.00	0.00	18.0	430						-0.02175
6														
7	Bilge	11.00	0.00	5.103	5.103	16.10	5.10	18.0	1442					-0.02982
8														
9	Plate	16.11	5.10	1.917	16.11	7.02	17.5	335		90%				-0.02983
10	Plate	16.11	7.02	2.980	16.11	10.00	17.5	521		100				-0.02955
11	Plate	16.11	10.00	2.730	16.11	12.73	17.5	477		90%	100			-0.02912
12	Plate	16.11	12.73	2.980	16.11	15.71	17.5	521						-0.02872
13	Plate	16.11	15.71	2.980	16.11	18.69	17.5	521						-0.02829
14	Plate	16.11	18.69	2.480	16.11	21.17	20.0	496						-0.02786
15	Plate	16.11	21.17	2.730	16.11	23.90	31.0	846						-0.02750
16														
17	Plate	0.00	1.70	2.730	2.73	1.70	15.0	409						-0.00724
18	Plate	2.73	1.70											
19	Plate	5.71	1.70											
20	Plate	8.69	1.70											
21														
22	Plate	13.61	4.16											
23	Plate	13.61	7.03											
24	Plate	13.61	10.00											
25	Plate	13.61	12.73											
6														
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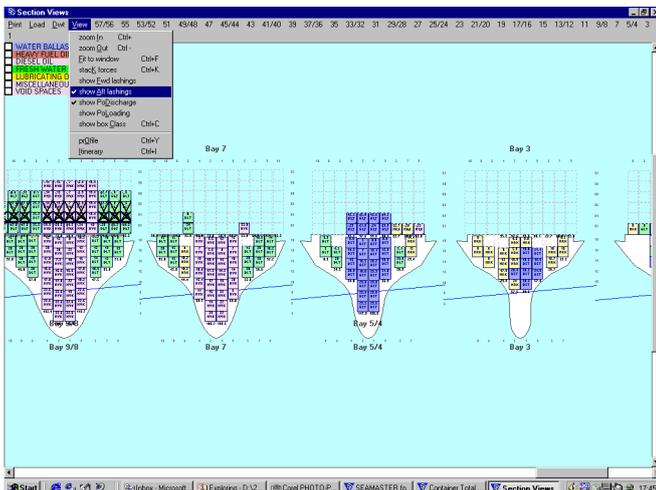
Area	C of A	Loss-P	Loss-S	y/I - P	y/I - S	z/I - P	z/I - S	Stress-P	Stress-S	Tag / Comment
1	216			-0.00432	-0.00277	-0.03326	-0.03306	-69	-69	*
2	536			-0.00947	0.00393	-0.03295	0.03295	-72	-67	*
3	446			-0.01375	0.00821	-0.03452	0.03216	-74	-65	*
4	405			-0.01763	0.01209	-0.03504	0.03159	-75	-63	*
5	430			-0.02175	0.01622	-0.03559	0.03108	-77	-61	*
6										
7	1442			-0.02982	0.02576	-0.03599	-0.03053	-79	-58	*
8										
9	335	90%		-0.02983	0.02604	-0.02277	-0.01536	-52	-27	*
10	521	100		-0.02955	0.02547	-0.01751	-0.01010	-41	-16	*
11	477	90%	100	-0.02912	0.02687	-0.00694	0.00555	-24	-16	*
12	521			-0.02872	0.02730	0.00632	0.01373	8	33	*
13	521			-0.02829	0.02773	0.01450	0.02190	25	50	*
14	496			-0.02786	0.02809	0.02130	0.02871	39	64	*
15	846			-0.02750	0.02848	0.02879	0.03619	55	80	*
16										
17	409			-0.00724	-0.00252	-0.02302	-0.02839	-61	-59	*
18	447			-0.01238	0.00733	-0.02971	-0.02777	-63	-56	*





COMLASH

The COMLASH is a standalone module, which can be used in isolation or as an additional module to the main SEAMASTER program. With the COMLASH, the forces generated in any stack of containers can be calculated to see if the safe working loads of the lashing gear or of the container frame itself have been exceeded. The calculations can be carried out to all the major Classification Society rules, and investigations can be undertaken to see how various factors such as the weather conditions, the vessel's GM/draught etc. would affect the forces generated.



Stack & Lashing Forces Based on GL 1998 Rules

Level of Lashings

- Remove lashings
- 1st tier lashings only
- 2nd tier lashings
- 3rd tier lashings
- maximum available lashings
- Minimum permissible lashings
- No change to current lashings

Stack Selection

all Bays all Stacks

Bay No: 1 Stack No: 1

display detailed Forces

3rd tier lashing means to base of 4th tier plus lower tiers. Lashings are only used if previously defined in data table.

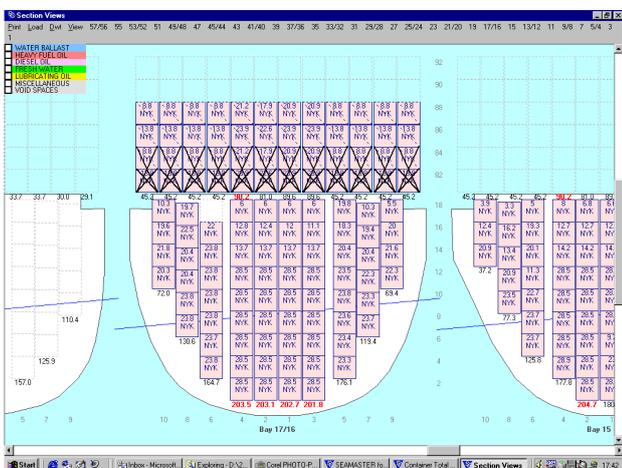
Maximum roll angle **30.0°** Wind speed **78 knots "Hurricane"**

Wind forces are only applied to containers exposed for the next leg of the voyage, allowing for any shielding from adjacent stacks

Wind forces are also applied to containers which might later become exposed before reaching their destination, due to earlier unloading of adjacent stacks

0.5 m GM and 11.9m draft assumed in stack force calculation

Lashing Rules for: LRS GL BV ABS DnV



Results

(SPL) (15) (15) (10) (15) (15) (67.5/63.8) (-15.0/-20.0)

Report for Deck Bay 53 on the basis of GL 1998 Rules (with 30.0° roll and Gt < 0.93)

Row 5 Deck Bay 53

Tier	Hc (dc)	Hc (c)	Wind (c)	C1	Door	Fwd < LASHINGS > Act	
						scope	type
84	8.5	13.4	1.5	Gen	Act	2.26	St 24
82	8.5	18.0	3.1	Gen	Act	2.26	St 24

Tier	Rolling: Backing Force			Corner Shear		Compression Forces			Lash Tension	
	Fwd	Aft	Side	Fwd	Aft	Fwd	Act	Fwd	Act	
84	2.4	2.4	0.0	1.1	-0.5	9.6	13.0	1.1	1.1	
82	5.6	2.6	0.0	5.0	3.4	21.3	21.3	-0.1	3.3	

Pitching:

Tier	Hc (dc)	Hc (c)	Wind (c)	C1	Door	Fwd < LASHINGS > Act	
						scope	type
84	0.0	0.0	0.5	0.6	0.6	3.6	3.6
82	0.0	0.0	1.7	1.3	1.3	9.0	9.0

(SPL) (15) (15) (10) (15) (15) (67.5/63.8) (-15.0/-20.0)

Report for Deck Bay 56 on the basis of GL 1998 Rules (with 30.0° roll and Gt < 0.93)

Row 2 Deck Bay 56

Tier	Hc (dc)	Hc (c)	Wind (c)	C1	Door	Fwd < LASHINGS > Act	
						scope	type
80	8.5	23.6	6.1	Gen	Act	12.7	12.7

Tier	Rolling: Backing Force			Corner Shear		Compression Forces			Lash Tension	
	Fwd	Aft	Side	Fwd	Aft	Fwd	Act	Fwd	Act	
82	5.1	5.1	0.0	5.6	5.6	12.7	12.7	0.9	0.9	

Pitching:

Tier	Hc (dc)	Hc (c)	Wind (c)	C1	Door	Fwd < LASHINGS > Act	
						scope	type
80	0.0	0.0	0.9	1.0	1.0	6.1	6.1

(SPL) (15) (15) (10) (15) (15) (67.5/63.8) (-15.0/-20.0)





UNITED KINGDOM SINGAPORE CHINA AUSTRALASIA USA

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Bay Row	Base Tier Scope Fwd (m)	Base Tier Diam Fwd (mm)	Base Tier Type Fwd (S W C N)	Base Tier Anchor Ht Fwd (m)	Base Tier Scope Aft (m)	Base Tier Diam Aft (mm)	Base Tier Type Aft (S W C N)	Base Tier Anchor Ht Aft (m)	2nd Tier Scope Fwd (m)	2nd Tier Diam Fwd (mm)
01 01	2.26	24	Steel Rod	0.00	2.26	24	Steel Rod	0.00	2.26	24
01 02	2.26	24	Steel Rod	0.00	2.26	24	Steel Rod	0.00	2.26	24
01 03	2.26	24	Steel Rod	0.00	2.26	24	Steel Rod	0.00	2.26	24
01 04	2.26	24	Steel Rod	0.00	2.26	24	Steel Rod	0.00	2.26	24
01 05	2.26	24	Steel Rod	0.00	2.26	24	Steel Rod	0.00	2.26	24
01 06	2.26	24	Steel Rod	0.00	2.26	24	Steel Rod	0.00	2.26	24
01 07	2.26	24	Steel Rod	0.00	2.26	24	Steel Rod	0.00	2.26	24
01 08	2.26	24	Steel Rod	0.00	2.26	24	Steel Rod	0.00	2.26	24
03 01	2.26	24	Steel Rod	0.00	2.26	24	Steel Rod	0.00	2.26	24
03 02	2.26	24	Steel Rod	0.00	2.26	24	Steel Rod	0.00	2.26	24

Prefix	ID No.	Bay	Row	Tier	Comments	Wt (t)	Status	Load Port	Disch Port	Type/Class	Lgh (t)	Height (t)	Temp etc	Reflow	Final Dest	Owner
661		23	10	10	GEN	12.0	Stowed	SPM	4BLT	Gen	20	0.50				
662		23	10	12	GEN	10.5	Stowed	SPM	4BLT	Gen	20	0.50				
663		21	10	14	GEN	8.4	Stowed	SPM	4BLT	Gen	20	0.50				
664		23	10	16	GEN	6.0	Stowed	SPM	4BLT	Gen	20	0.50				
665		23	10	18	GEN	7.5	Stowed	SPM	4BLT	Gen	20	0.50				
666		24	1	04	GEN	20.9	Stowed	LEH	4BST	Gen	40	0.50				
667		24	1	02	GEN	23.8	Stowed	LEH	4BST	Gen	40	0.50				
668		24	2	02	GEN	23.8	Stowed	LEH	4BST	Gen	40	0.50				
669		24	2	04	GEN	20.9	Stowed	LEH	4BST	Gen	40	0.50				
670		24	3	04	GEN	20.9	Stowed	LEH	4BST	Gen	40	0.50				
671		24	3	02	GEN	23.8	Stowed	LEH	4BST	Gen	40	0.50				
672		24	4	02	GEN	23.8	Stowed	LEH	4BST	Gen	40	0.50				
673		24	4	04	GEN	20.9	Stowed	LEH	4BST	Gen	40	0.50				
674		24	5	02	GEN	22.9	Stowed	LEH	4BLT	Gen	40	0.50				
675		24	5	04	GEN	14.9	Stowed	LEH	4BLT	Gen	40	0.50				

