

NATIONAL CARGO BUREAU, INC.

GRAIN STABILITY CALCULATION

S.S./M.V. <u>PANTODON</u>		YEAR BUILT <u>1983</u> AT <u>JAPAN</u>	
COUNTRY OF REGISTRY <u>GREECE</u>	NET TONNAGE <u>16555</u>	OFFICIAL NO. <u>10155</u>	
AGENT <u>BARUHL</u>			

GRAIN LOADING BOOKLET APPROVED BY AP 9

DRAWING NO. SS-10-98 DATE OF APPROVAL JULY 2ND 1998

APPLICABLE REGULATIONS CODE OF REGULATIONS 1974

ADDENDUM FOR UNTRIMMED ENDS APPROVED BY _____

DRAWING NO. _____ DATE OF APPROVAL _____

LOADING PORT TANZANIA

BUNKERING PORTS AP 9

DISCHARGE PORT TANZANIA

STEAMING DISTANCE _____ MILES PER DAY 330 TIME 28

DAILY CONSUMPTION: FUEL _____ DIESEL 15 WATER 100

	DISPLACEMENT	DEADWEIGHT	DRAFT	FREEBOARD
*WINTER	<u>74136</u>	<u>67150</u>	<u>13.23</u>	<u>5.905</u>
SUMMER	<u>75300</u>	<u>68</u>	<u>13.23</u>	<u>5.983</u>

*TROPICAL _____

FRESH WATER ALLOWANCE _____ TPI/TPC (AT SUMMER DRAFT) _____

* (If Applicable)

THIS IS TO CERTIFY THAT:

1. THIS CALCULATION IS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE VESSEL'S GRAIN LOADING BOOKLET AND THE APPLICABLE GRAIN REGULATIONS;
2. THE STABILITY OF THE VESSEL WILL BE MAINTAINED THROUGHOUT THE VOYAGE IN ACCORDANCE WITH THIS CALCULATION.

CALCULATION PREPARED BY: (TO BE COMPLETED IF FORM PREPARED BY OTHER THAN SHIP'S PERSONNEL)	
NAME (PRINT) _____	
COMPANY _____	
SIGNATURE _____	DATE _____

_____ MASTER

EXAMINED: _____
N.C.B. SURVEYOR

DATE: _____

NOTE: ORIGINAL STABILITY CALCULATION AND GRAIN ARRANGEMENT PLAN TO BE SUBMITTED TO THE N.C.B. SURVEYOR. ALL TONNAGES USED IN THESE CALCULATIONS SHALL BE SHOWN IN THE SAME UNITS AS USED IN THE GRAIN LOADING BOOKLET.

PART II

FUEL AND WATER CALCULATION

INTERMEDIATE SECTION IS REQUIRED TO BE COMPLETED IF ARRIVAL SECTION SHOWS BALLAST WHICH IS NOT LISTED IN DEPARTURE SECTION. INTERMEDIATE CONDITION IS BEFORE BALLASTING SO IT INCLUDES THE EFFECT OF FREE SURFACE BUT NOT EFFECT OF WEIGHT OF THE BALLAST WHICH IS TO BE TAKEN ABOARD.

TANK	TYPE LIQUID	DEPARTURE:				INTERMEDIATE:				ARRIVAL:			
		WEIGHT	V.C.G.	MOMENT	F.S. MOM.	WEIGHT	V.C.G.	MOMENT	F.S. MOM.	WEIGHT	V.C.G.	MOMENT	F.S. MOM.
W 10	FO	-	-			300	0.89	267	4751	-	-		
W 20	FO	150	0.89	150	420	300	0.89	997	420	30	0.89	267	420
D 10	FO	150	0.89	1346	210	-	-			-	-		
D 20	FO	150	0.89	1346	210	-	-			-	-		
D 30	FO	150	0.89	1346	210	-	-			-	-		
D 40	FO	150	0.89	1346	210	-	-			-	-		
D 50	FO	150	0.89	1346	210	-	-			-	-		
D 60	FO	150	0.89	1346	210	-	-			-	-		
D 70	FO	150	0.89	1346	210	-	-			-	-		
D 80	FO	150	0.89	1346	210	-	-			-	-		
D 90	FO	150	0.89	1346	210	-	-			-	-		
D 100	FO	150	0.89	1346	210	-	-			-	-		
D 110	FO	150	0.89	1346	210	-	-			-	-		
D 120	FO	150	0.89	1346	210	-	-			-	-		
D 130	FO	150	0.89	1346	210	-	-			-	-		
D 140	FO	150	0.89	1346	210	-	-			-	-		
D 150	FO	150	0.89	1346	210	-	-			-	-		
		TOTALS LIQUIDS				TOTALS LIQUIDS				TOTALS LIQUIDS			
		SHIP AND CARGO				SHIP AND CARGO				SHIP AND CARGO			
		GRAND TOTALS				GRAND TOTALS				GRAND TOTALS			
		DISPLACEMENT				DISPLACEMENT				DISPLACEMENT			

TOTALS LIQUIDS 296 5552 2075 770 2421 6328 240 1879 157

SHIP AND CARGO 601 60813 601 60813 601 60813

GRAND TOTALS 697 66365 697 66365 697 66365

DISPLACEMENT 697 66365 697 66365 697 66365

DEPARTURE KG 150 INTERMEDIATE KG 150 ARRIVAL KG 150

(1) FREE SURFACE CORR. (+) _____ (1) FREE SURFACE CORR. (+) _____ (1) FREE SURFACE CORR. (+) _____

(2) VERT. S.M. CORR. (+) _____ (2) VERT. S.M. CORR. (+) _____ (2) VERT. S.M. CORR. (+) _____

KG_v _____ KG_v _____ KG_v _____

DEPARTURE KM 13.10 INTERMEDIATE KM 13.10 ARRIVAL KM _____

DEPARTURE KG_v _____ INTERMEDIATE KG_v _____ ARRIVAL KG_v _____

DEPARTURE GM 8.78 INTERMEDIATE GM _____ ARRIVAL GM _____

REQUIRED MINIMUM GM _____ REQUIRED MINIMUM GM _____ REQUIRED MINIMUM GM 3.0

NOTES

(1) FREE SURFACE CORR. = $\frac{\text{SUM OF FREE SURFACE INERTIA MOMENTS}}{\text{DISPLACEMENT}}$ (THIS CORRECTION MUST BE APPLIED TO ALL SHIPS.)

(2) VERT. S.M. CORR. = $\frac{\text{SUM OF VERTICAL SHIFTING MOMENTS FOR CARGO}}{\text{DISPLACEMENT}}$ (THIS CORRECTION APPLIES ONLY WHEN VERTICAL SHIFTING MOMENTS ARE PROVIDED IN THE SHIP'S GRAIN LOADING MANUAL.)

STABILITY SUMMARY

PART III

COMPT. NO.	STOWAGE (1)	GRAIN DEPTH OR ULLAGE	VOLUMETRIC HEELING MOMENT	S.F. OR DENSITY (2)	GRAIN HEELING MOMENT	VERTICAL SHIFTING MOMENT SEE NOTE 2 PART II	
		FT/M	FT ⁴ /M ⁴		L.T.-FT. M.T.-M.	FT ⁴ /M ⁴	L.T.-FT. M.T.-M.
1	DL		3300	1.366	2855		
2	FULL		3080	1.366	2056		
3	W/C		11870	3.0	8711		
4	FULL		2000	1.366	1056		
5	FULL		3000	1.366	1815		
TOTALS			21000		18023		

- (1) UNDER STOWAGE INDICATE "F" FOR FILLED COMPARTMENTS, "F-UT" FOR FILLED COMPARTMENTS UNTRIMMED, "PF" FOR PARTLY FILLED COMPARTMENTS, "SEC" FOR SECURED OR OVERSTOWED COMPARTMENTS.
- (2) THE STOWAGE FACTOR USED IN PART III SHALL NOT EXCEED THE VOLUME PER UNIT WEIGHT (TEST WEIGHT) OF THE GRAIN. IF STOWAGE FACTOR IS SAME IN ALL COMPARTMENTS, DIVIDE TOTAL VOLUMETRIC HEELING MOMENT BY STOWAGE FACTOR OR MULTIPLY BY DENSITY TO OBTAIN GRAIN HEELING MOMENT. IF STOWAGE FACTOR VARIES, OBTAIN GRAIN HEELING MOMENT FOR EACH COMPARTMENT.

REGULATION 4, CHAPTER VI, SOLAS 1974 or
REGULATION 4, IMCO RESOLUTION A.264(VIII), SOLAS 1960 or
REGULATION 4, IMCO RESOLUTION A.184(VI), SOLAS 1960

A. FOR VESSELS APPROVED UNDER

	DEPARTURE	INTERMEDIATE	ARRIVAL
DISPLACEMENT	6487	6487	6487
KG _v	10.57	10.57	10.57
TOTAL GRAIN HEELING MOMENT	18023	18023	18023
MAXIMUM ALLOWABLE HEELING MOMENT	38411	38496	38415
*ANGLE OF HEEL (12° MAX.)			
*RESIDUAL AREA .075 METER-RADIANS, 14.1 FT° OR 4.3M° MIN.			
*GM (0.3M OR 1 FT. MIN.)			

*TO BE COMPLETED IF VESSEL'S GRAIN LOADING BOOKLET DOES NOT INCLUDE A TABLE OF ALLOWABLE HEELING MOMENTS. IN SUCH CASE, STATICAL STABILITY DIAGRAMS DEMONSTRATING THIS INFORMATION SHALL BE ATTACHED HERETO.

SECTION V(B), PART B, CHAPTER VI, SOLAS 1974 or
SECTION V(B), PART B, IMCO RESOLUTION A.264(VIII)
REGULATION 12, CHAPTER VI, SOLAS 1960

B. FOR SPECIALLY SUITABLE SHIPS APPROVED UNDER

$$\text{ANGLE OF HEEL} = \frac{\text{GRAIN HEELING MOMENT} \times 57.3}{\text{DISPLACEMENT} \times \text{GM}}$$

	DEPARTURE	INTERMEDIATE	ARRIVAL
TOTAL GRAIN HEELING MOMENT			
DISPLACEMENT			
GM (CORRECTED OF LIQUID FREE SURFACE)			
ANGLE OF HEEL (5° MAX.)			