

BRETON INDUSTRIAL and MARINE LIMITED

STABILITY BOOKLET

HULL NO. 23

ILE SAINT OURS







# Breton Industrial and Marine Limited

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## STABILITY BOOKLET

HULL NO. 23

ILE SAINT OURS

Prepared by: S. Chevalier - Naval Architect  
April 30, 1986



SUBJECT TO THE ACCURACY  
OF THE BASIC DATA BEING  
THE RESPONSIBILITY OF THE  
OWNER, HIS NAVAL  
ARCHITECT OR THE SHIP-  
BUILDER.

SOUS RÉSERVE QU'IL  
INCOMBE AU PROPRIÉ-  
TAIRE, À SON ARCHITECTE  
NAVAL OU AU CON-  
STRUCTEUR DE NAVIRES  
DE S'ASSURER QUE LES  
DONNÉES DE BASES SONT  
PRÉCISES.

Transport Canada  
Transports Canada

### APPROVED - APPROUVÉ

ON THE AUTHORITY OF THE CANADA SHIPPING ACT AND REGULATIONS MADE THEREUNDER, EN VERTU DE LA LOI SUR LA MARINE MARCHANDE DU CANADA ET DES RÈGLEMENTS CONNEXES,

ON BEHALF OF THE BOARD OF STEAMSHIP INSPECTION, DE- PARTMENT OF TRANSPORT, POUR LE COMPTE DU BUREAU D'INSPECTION DES NAVIRES À VAPEUR, MINISTÈRE DES TRANSPORTS.

JUN 18 1986

DATE

SUBJECT TO THE  
ANGLE OF DOWN-  
FLOODING BEING IN  
EXCESS OF 40°

SOUS RÉSERVE QUE  
L'ANGLE CRITIQUE  
DE CHAVIREMENT  
SOIT SUPÉRIEUR À  
40°

### STABILITY INFORMATION

Compliance with the stability criteria does not ensure immunity against capsizing regardless of the circumstances or absolve the master from his responsibilities. Masters should therefore exercise prudence and good seamanship having regard to the season of the year, weather forecasts and the navigational zone and should take the appropriate action as to speed and course warranted by the prevailing circumstances.

Before a voyage commences, care should be taken to ensure that the cargo and sizeable pieces of equipment have been properly stowed or lashed, so as to minimize the possibility of both longitudinal and lateral shifting while at sea due to rolling and pitching accelerations.

## INDEX

	<u>Page</u>
General Particulars .....	1
Condition No. 1 - LIGHTSHIP .....	2
Condition No. 2 - LIGHTSHIP OPERATING .....	3
Condition No. 3 - LIGHTSHIP ARRIVAL .....	5
Condition No. 4 - LOAD DEPARTURE .....	7
Condition No. 5 - LOAD ARRIVAL .....	9
Tank Capacities and Centers .....	11
Free Surface of Tank .....	11
Hydrostatic Curve	
Cross Stability Curve	

GENERAL PARTICULARS

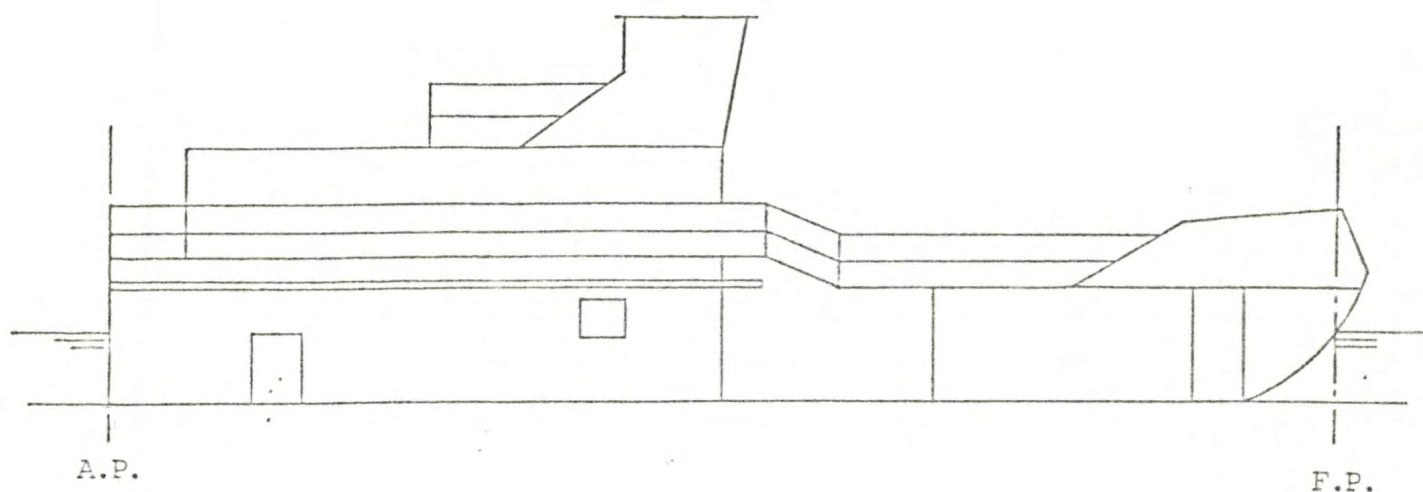
SHIP'S NAME: *Le Saint Ours*

HULL NO.: *23*

LENGTH OVERALL:	23 M
LENGTH BETWEEN PERPENDICULARS	22.5 M
BREADTH (MOULDED)	6.0 M
DEPTH (MOULDED)	2.25 M
DESIGN DRAFT	1.35 M
DISPLACEMENT:	115 T (S.W.)

*TPC: 1.18*

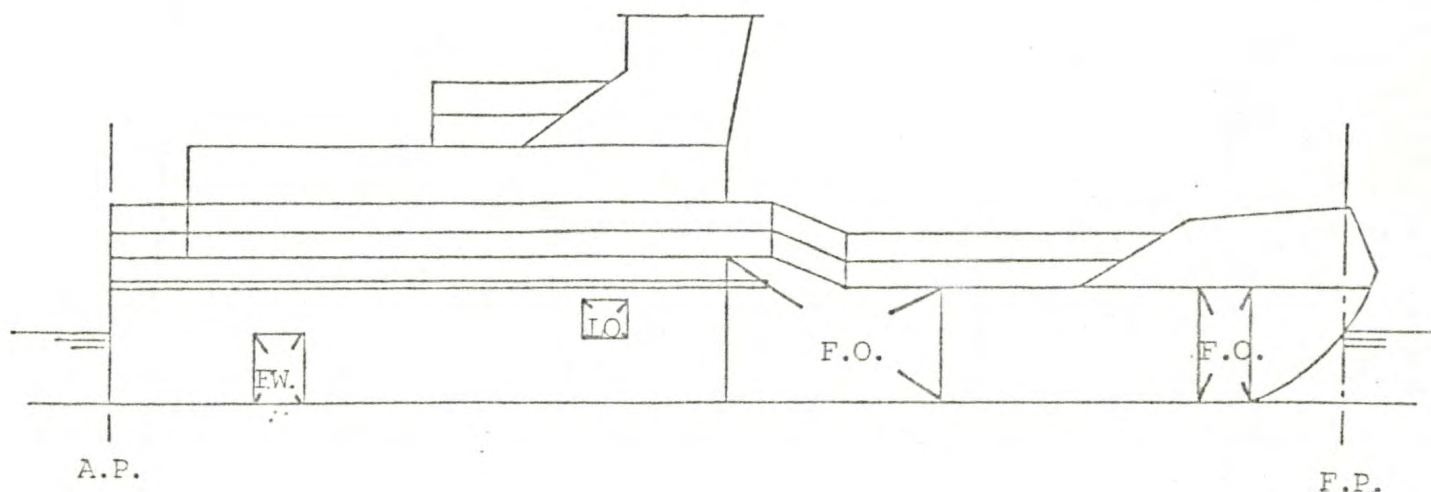




CONDITION: LIGHTSHIP (NON OPERATING)							
ITEM	%	WT.	V.C.G.	V. MT.	L.C.G.	L. MT.	F.S.
Lightship	-	97.82	2.21	215.87	-1.64	-160.24	-
TOTAL		97.82	2.21	215.87	-1.64	-160.24	

MCT: 1.53 T.m - cm KMT: 3.85 metre L.C.G.: -1.64 metre  
 L.C.F.: -1.14 metre KG: 2.21 metre L.C.B.: -0.12 metre  
 MEAN DRAFT: 1.20 metre GMT: 1.64 metre LEVER: 1.52 metre  
 FS: 0.00 metre TRIM: 0.97 metre  
 GMT CORRECTED: 1.64 metre

TRIM FORWARD: 0.53 m DRAFT FORWARD: 0.67 m  
 TRIM AFT: 0.44 m DRAFT AFT: 1.64 m



CONDITION: LIGHTSHIP (OPERATING)							
ITEM	%	WT.	V.C.G.	V. MT.	L.C.G.	L. MT.	F.S.
Lightship	-	97.82	2.21	215.87	-1.64	-160.24	-
Fuel Oil	95	20.25	1.39	28.15	2.75	55.69	6.24
Fresh Water	100	1.46	1.82	2.66	-3.0	-11.68	0.00
Lub Oil	100	0.23	2.00	0.46	-1.80	-0.41	0.00
Crew & Effects	-	0.45	3.80	1.71	-7.50	-3.38	-
Stores	100	0.50	3.25	1.63	-4.00	-2.00	-
Tide MPT 7nd Extar 45° MIN 46°		3.7	9.3	34.4	2	7.4	
		3.7	5.2	19.2	5.7	21.09	
TOTAL		120.71	2.08	250.48	-1.01	-122.02	6.24

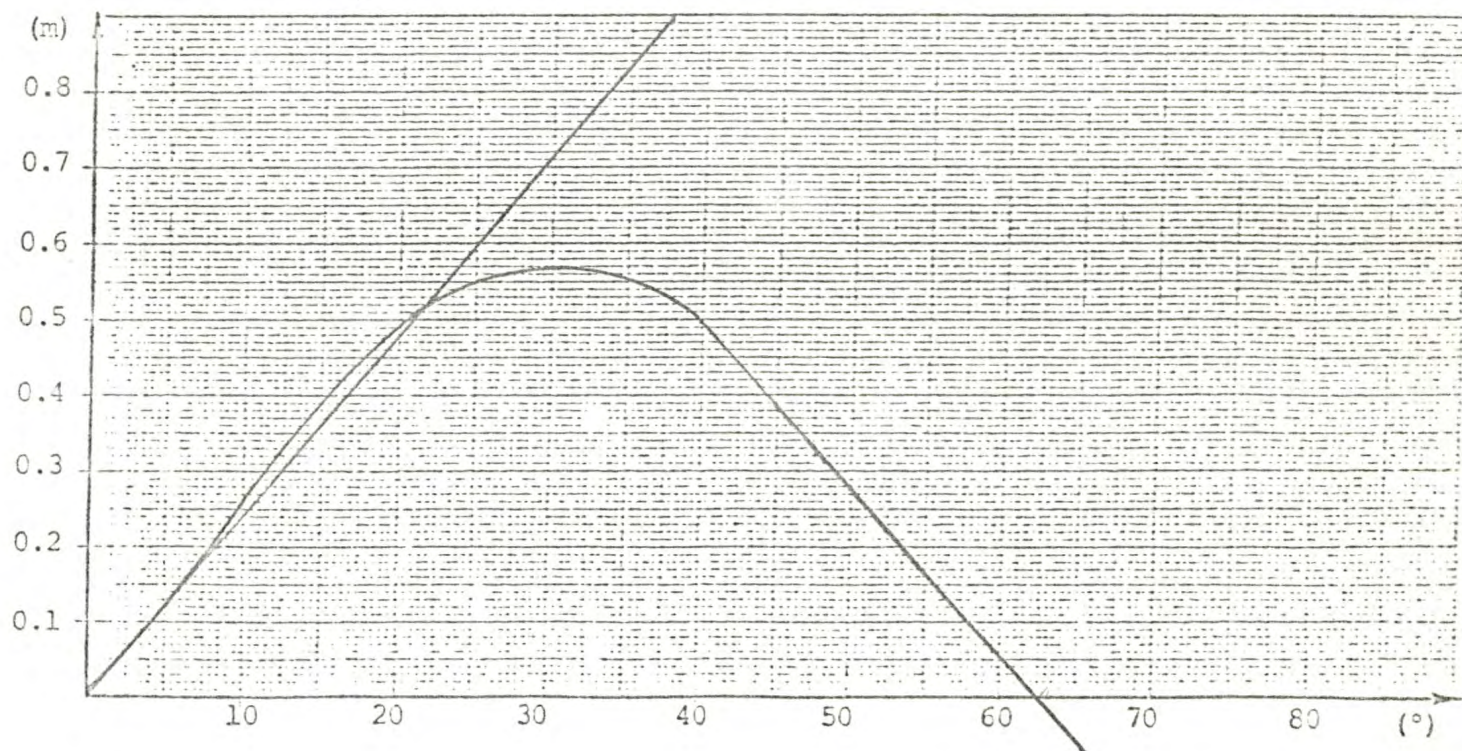
MISC: 1.76 T.M - cm KMT: 3.45 metre L.C.G.: -1.01 metre  
 L.C.F.: -1.18 metre KG: 2.08 metre L.C.B.: -0.37 metre  
 MEAN DRAFT: 1.41 metre GMT: 1.37 metre LEVER: 0.64 metre  
 FS: 0.05 metre TRIM: 0.44 metre  
 GMT CORRECTED: 1.32 metre by the stern

TRIM FORWARD: 0.24 m DRAFT FORWARD: 1.17 m  
 TRIM AFT: 0.20 m DRAFT AFT: 1.61 m



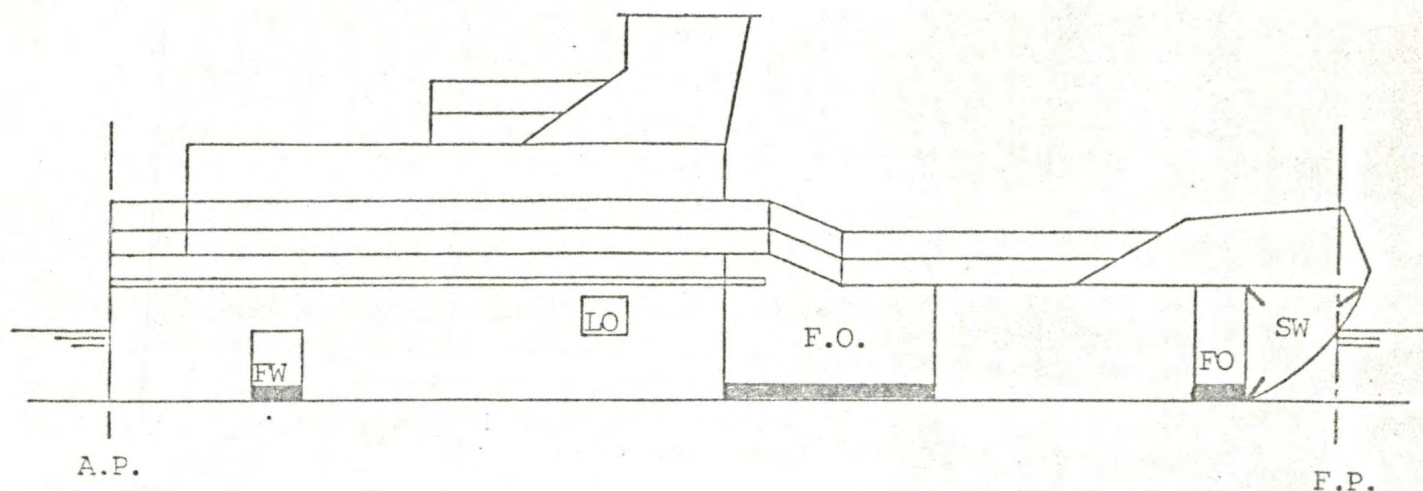
DISPLACEMENT: 120.71 tonnes  
 K.M.T.: 3.45 metres  
 K.G.: 2.08 metres  
 G.M.T.: 1.37 metres  
 F.S.: 0.05 metres  
 G.M.T. CORRECTED: 1.32 metres  
 K.G. CORRECTED: 2.13 metres

KEEL ANGLE	5	10	15	20	25	30	35	40	50	60	70
K.N.		0.64		1.22		1.64		1.87	1.91	1.93	1.82
K.G. X SIN $\theta$		0.37		0.73		1.07		1.37	1.63	1.84	2.00
GZ (CORRECTED)	0.12	0.27	0.39	0.49	0.54	0.57	0.55	0.50	0.28	0.09	-0.18
SIMPSON MULT.	4	2	4	2	4	2	4	1			
FACTOR	0.48	0.54	1.56	0.98	2.16	1.14	2.20	0.50	9.56		
SIMPSON MULT.						1	4	1			
FACTOR						0.57	2.20	0.50	3.27		



AREA UNDER THE CURVE		C.C.G. STANDARD
FROM 0° TO 30°	0.183	0.055
FROM 30° TO 40°	0.095	0.030
FROM 0° TO 40°	0.278	0.090





CONDITION: LIGHTSHIP (ARRIVAL)							
ITEM	%	WT.	V.C.G.	V. MT.	L.C.G.	L. MT.	F.S.
Lightship	-	97.82	2.21	215.87	-1.64	-160.24	-
Fuel Oil	10	2.13	0.4	0.85	2.75	5.86	1.11
Fresh Water	10	0.15	0.90	0.14	-8.00	-1.20	0.46
Lub Oil	100	0.23	2.00	0.46	-1.80	-0.41	0.00
Crew & Effects	-	0.45	3.80	1.71	-7.50	-3.38	-
Stores	10	0.05	3.25	0.16	-4.00	-0.20	-
Ballast Water	100	8.79	1.76	15.47	10.02	88.08	0.00
TOTAL		109.62	2.14	234.66	-0.65	-71.49	1.57

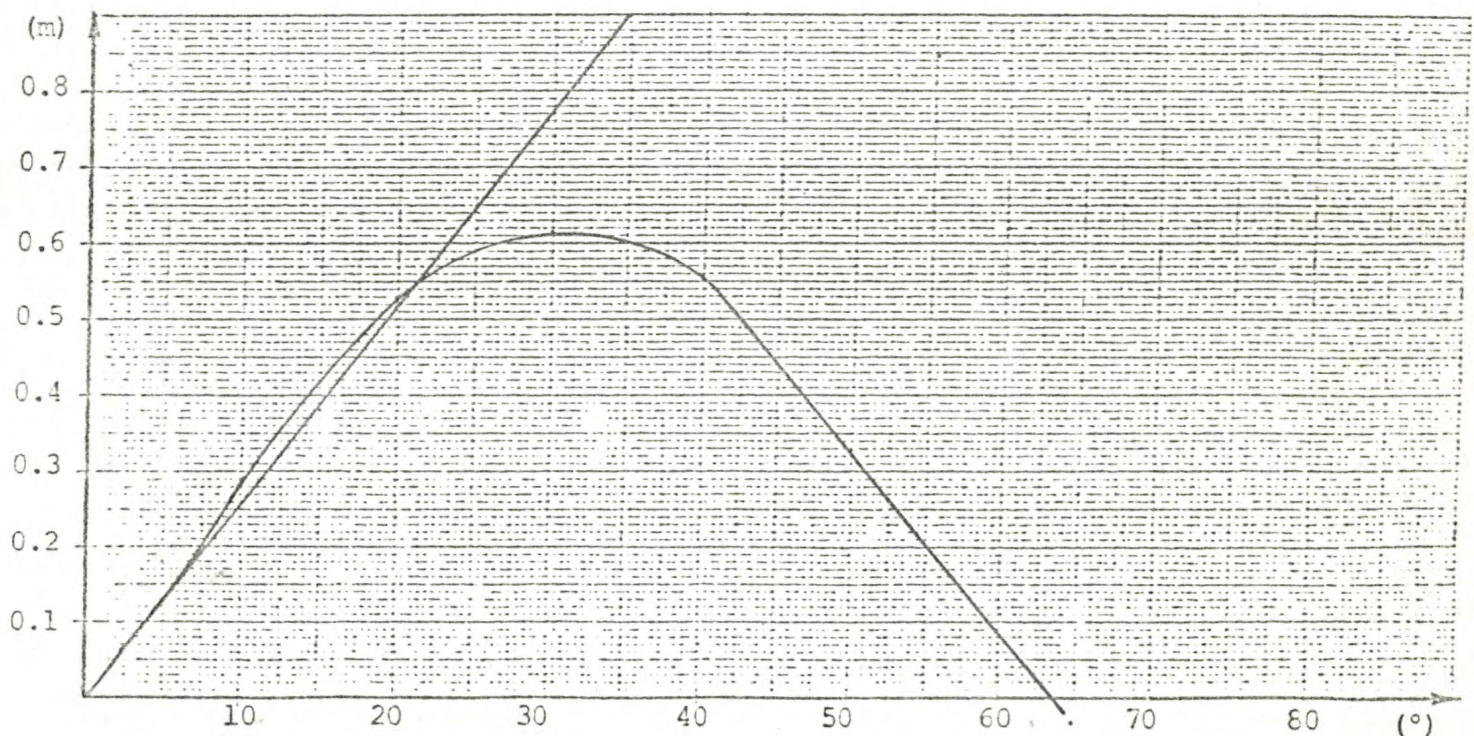
MICT: 1.69 T.m - cm      KMT: 3.60 metre      L.C.G.: -0.65 metre  
 L.C.F.: -1.20 metre      KG: 2.14 metre      L.C.B.: -0.26 metre  
 MEAN DRAFT: 1.31 metre      GWT: 1.46 metre      LEVER: 0.39 metre  
    FS: 0.01 metre      TRIM: 0.25 metre  
    GMT CORRECTED: 1.45metre      by the stern

TRIM FORWARD: 0.14 m      DRAFT FORWARD: 1.17 m  
 TRIM AFT: 0.11 m      DRAFT AFT: 1.42 m



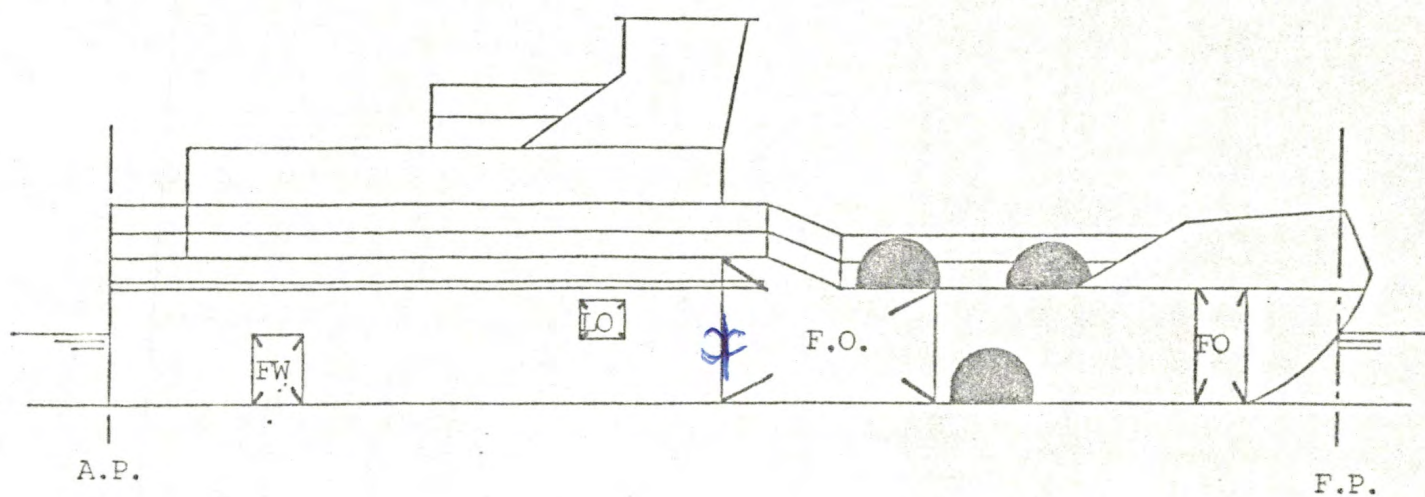
DISPLACEMENT: 109.62 tonnes  
 K.M.T.: 3.60 metres  
 K.G.: 2.14 metres  
 G.M.T.: 1.46 metres  
 F.S.: 0.01 metres  
 G.M.T. CORRECTED: 1.45 metres  
 K.G. CORRECTED: 2.15 metres

KEEL ANGLE	5	10	15	20	25	30	35	40	50	60	70
K.N.		0.66		1.27		1.69		1.94	1.99	1.98	1.86
K.G. X SIN $\theta$		0.37		0.74		1.08		1.38	1.65	1.86	2.02
GZ (CORRECTED)	0.13	0.29	0.41	0.53	0.59	0.61	0.60	0.56	0.34	0.12	-0.16
SIMPSON MULT.	4	2	4	2	4	2	4	1	/ / / / /		
FACTOR	0.52	0.58	1.64	1.06	2.36	1.22	2.40	0.56			
SIMPSON MULT.						1	4	1	/ / / / /		
FACTOR						0.61	2.4	0.56			



AREA UNDER THE CURVE		C.C.G. STANDARD
FROM 0° TO 30°	0.197	0.055
FROM 30° TO 40°	0.104	0.030
FROM 0° TO 40°	0.301	0.090





CONDITION: LOAD DEPARTURE							
ITEM	%	WT.	V.C.G.	V. MT.	L.C.G.	L. MT.	F.S.
Lightship	-	97.82	2.21	215.87	-1.64	-160.24	-
Fuel Oil	95	20.25	1.39	28.15	2.75	55.69	6.24
Fresh Water	100	1.46	1.82	2.66	-8.0	-11.68	0.00
Lub Oil	100	0.23	2.00	0.46	-1.80	-0.41	0.00
Crew & Effects	-	0.45	3.80	1.71	-7.50	-3.38	-
Store	100	0.50	3.25	1.63	-4.00	-2.00	-
Deck Cargo	-	15.00	3.25	48.75	4.50	67.50	-
Hold Cargo	-	5.00	1.13	5.65	4.50	22.50	-
TOTAL		140.71	2.17	304.88	-0.23	-32.02	6.24

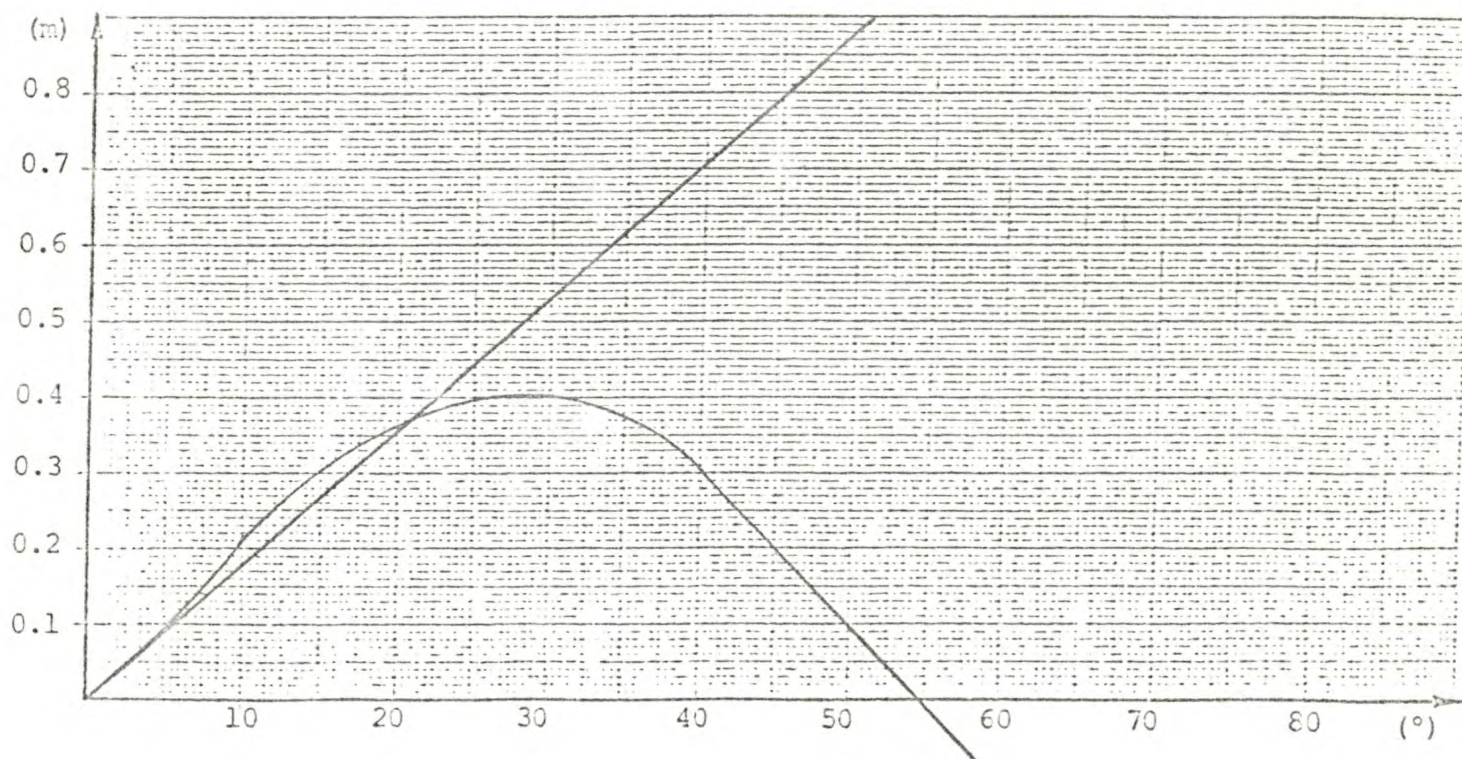
MCT:	1.82 T.m - cm	KMT:	3.20 metre	L.C.G.:	-0.23 metre
L.C.F.:	-1.12 metre	KG:	2.17 metre	L.C.B.:	-0.49 metre
MEAN DRAFT:	1.58 metre	GMT:	1.03 metre	LEVER:	0.26 metre
		FS:	0.04 metre	TRIM:	0.20 metre
		GMT CORRECTED:	0.99 metre		by the bow

TRIM FORWARD:	0.11 m	DRAFT FORWARD:	1.69 m
TRIM AFT:	0.09 m	DRAFT AFT:	1.49 m



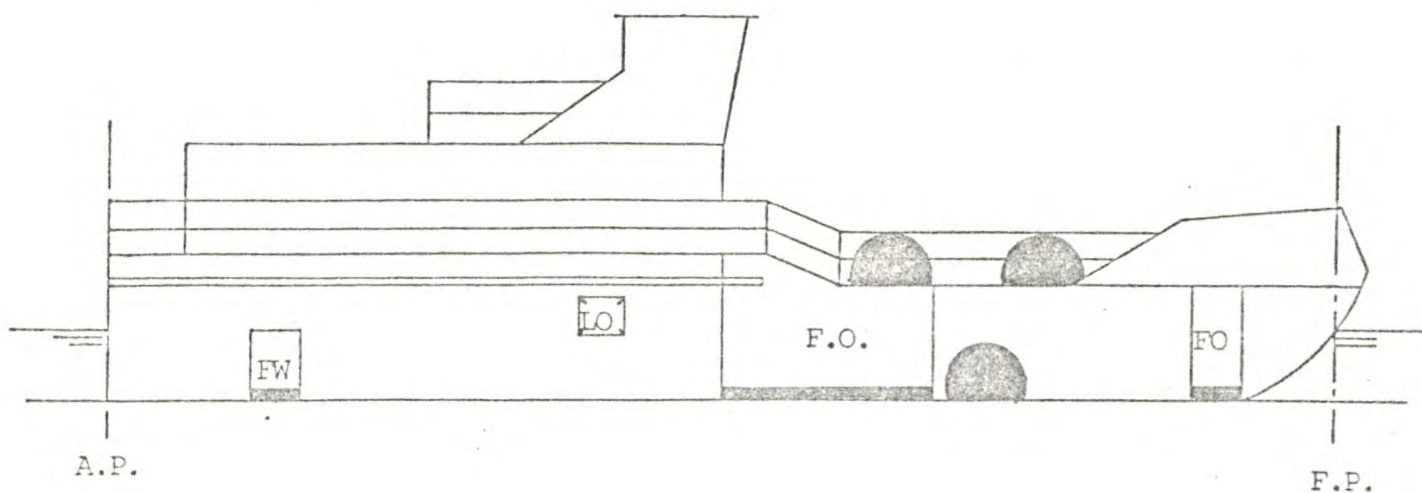
DISPLACEMENT: 140.71 tonnes  
 K.M.T.: 3.20 metres  
 K.G.: 2.17 metres  
 G.M.T.: 1.03 metres  
 F.S.: 0.04 metres  
 G.M.T. CORRECTED: 0.99 metres  
 K.G. CORRECTED: 2.21 metres

KEEL ANGLE	5	10	15	20	25	30	35	40	50	60	70
K.N.		0.60		1.12		1.52		1.73	1.79	1.81	1.75
K.G. X SIN $\theta$		0.38		0.76		1.11		1.42	1.69	1.91	2.08
GZ (CORRECTED)	0.10	0.22	0.29	0.36	0.39	0.41	0.37	0.31	0.10	-0.10	-0.33
SIMPSON MULT.	4	2	4	2	4	2	4	1	/ / / / /		
FACTOR	0.40	0.44	1.16	0.72	1.56	0.82	1.48	0.31			
SIMPSON MULT.						1	4	1	/ / / / /		
FACTOR						0.41	1.48	0.31			



AREA UNDER THE CURVE		C.C.G. STANDARD
FROM 0° TO 30°	0.136	0.055
FROM 30° TO 40°	0.064	0.030
FROM 0° TO 40°	0.200	0.090





CONDITION: LOAD ARRIVAL							
ITEM	%	WT.	V.C.G.	V. MT.	L.C.G.	L. MT.	F.S.
Lightship	-	97.82	2.21	215.87	-1.64	-160.24	-
Fuel Oil	10	2.13	0.4	0.85	2.75	5.86	1.11
Fresh Water	10	0.15	0.90	0.14	-8.00	-1.20	0.46
Lub Oil	100	0.23	2.00	0.46	-1.80	-0.41	0.00
Crew & Effects	-	0.45	3.80	1.71	-7.5	-3.38	-
Stores	10	0.05	3.25	0.16	-4.00	-0.20	-
Deck Cargo	-	15.00	3.25	48.75	4.50	67.50	-
Hold Cargo	-	5.00	1.13	5.65	4.50	22.50	-
TOTAL		120.83	2.26	273.59	-0.58	-69.57	1.57

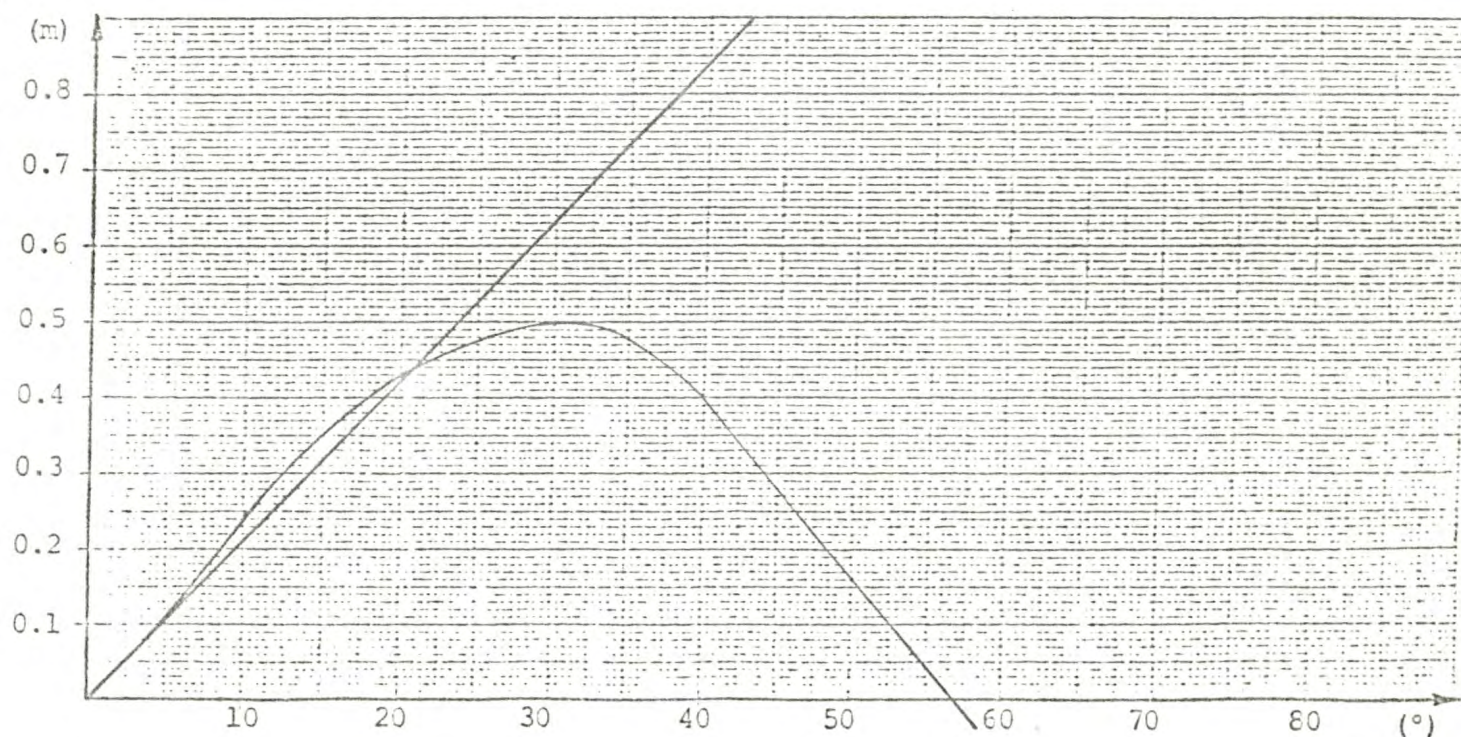
MDT: 1.76 T.m - cm      KMT: 3.45 metre      L.C.G.: -0.58metre  
 L.C.F.: -1.17 metre      KG: 2.26 metre      L.C.B.: -0.38 metre  
 MEAN DRAFT: 1.41metre      GMT: 1.19 metre      LEVER: 0.20metre  
    FS: 0.01 metre      TRIM: 0.14metre  
    GMT CORRECTED: 1.18 metre      by the stern

TRIM FORWARD: 0.08 m      DRAFT FORWARD: 1.33 m  
 TRIM AFT: 0.06 m      DRAFT AFT: 1.47 m



DISPLACEMENT: 120.83 tonnes  
 K.M.T.: 3.45 metres  
 K.G.: 2.26 metres  
 G.M.T.: 1.19 metres  
 F.S.: 0.01 metres  
 G.M.T. CORRECTED: 1.18 metres  
 K.G. CORRECTED: 2.27 metres

KEEL ANGLE	5	10	15	20	25	30	35	40	50	60	70
K.N.		0.64		1.22		1.64		1.87	1.91	1.93	1.82
K.G. X SIN $\theta$		0.39		0.78		1.14		1.46	1.74	1.97	2.13
GZ (CORRECTED)	0.11	0.25	0.35	0.44	0.47	0.50	0.47	0.41	0.17	-0.04	-0.31
SIMPSON MULT.	4	2	4	2	4	2	4	1	/ / / / /		
FACTOR	0.44	0.50	1.40	0.88	1.88	1.00	1.88	0.41			
SIMPSON MULT.						1	4	1	/ / / / /		
FACTOR						0.50	1.88	0.41			



AREA UNDER THE CURVE		C.C.G. STANDARD
FROM 0° TO 30°	0.163	0.055
FROM 30° TO 40°	0.081	0.030
FROM 0° TO 40°	0.244	0.090



TANK CAPACITIES AND CENTERS (100% FULL)

TANK	FRAME	VOLUME (M <sup>3</sup> )	METRIC TONNES	VCG (M)	LOG (M)
Salt Water Ballast	41 Fwd.	8,788	9,008	1,762	10,020
Fuel Oil	39-41	6,455	5,616	1,455	8,483
Fuel Oil (P)	20-28	9,026	7,853	1,361	0,667
Fuel Oil (S)	20-28	9,026	7,853	1,361	0,667
Fresh Water	6-8	1,461	1,461	1,8	-8.00

FREE SURFACE OF TANKS

TANK	LENGTH (M)	BEAM (M)	MOM <sub>4</sub> (M)	F.S. = . Mom M - Tonne
Fwd. F.O. Tank	1	4.36	6.91	5.7
Aft F.O. Tank (2 off)	4	1	0.33	0.272
F. W. Tank	0.8	1.9	0.457	0.457

Water:  $\epsilon = 1$

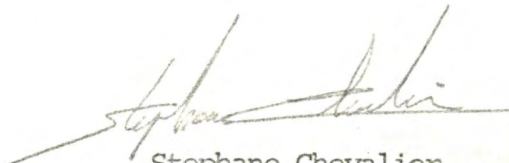
Fuel:  $\epsilon = 0.825$

NOTE:

The lightship has been determined by the inclining experiment of hull no. 21 - Partridge Island, sistership to hull no. 23 Ile Saint Ours.

The inclining experiment was conducted on September 25, 1985 in Port Hawkesbury, N.S.

A displacement check has been conducted on April 28, 1986 confirming the light ship.



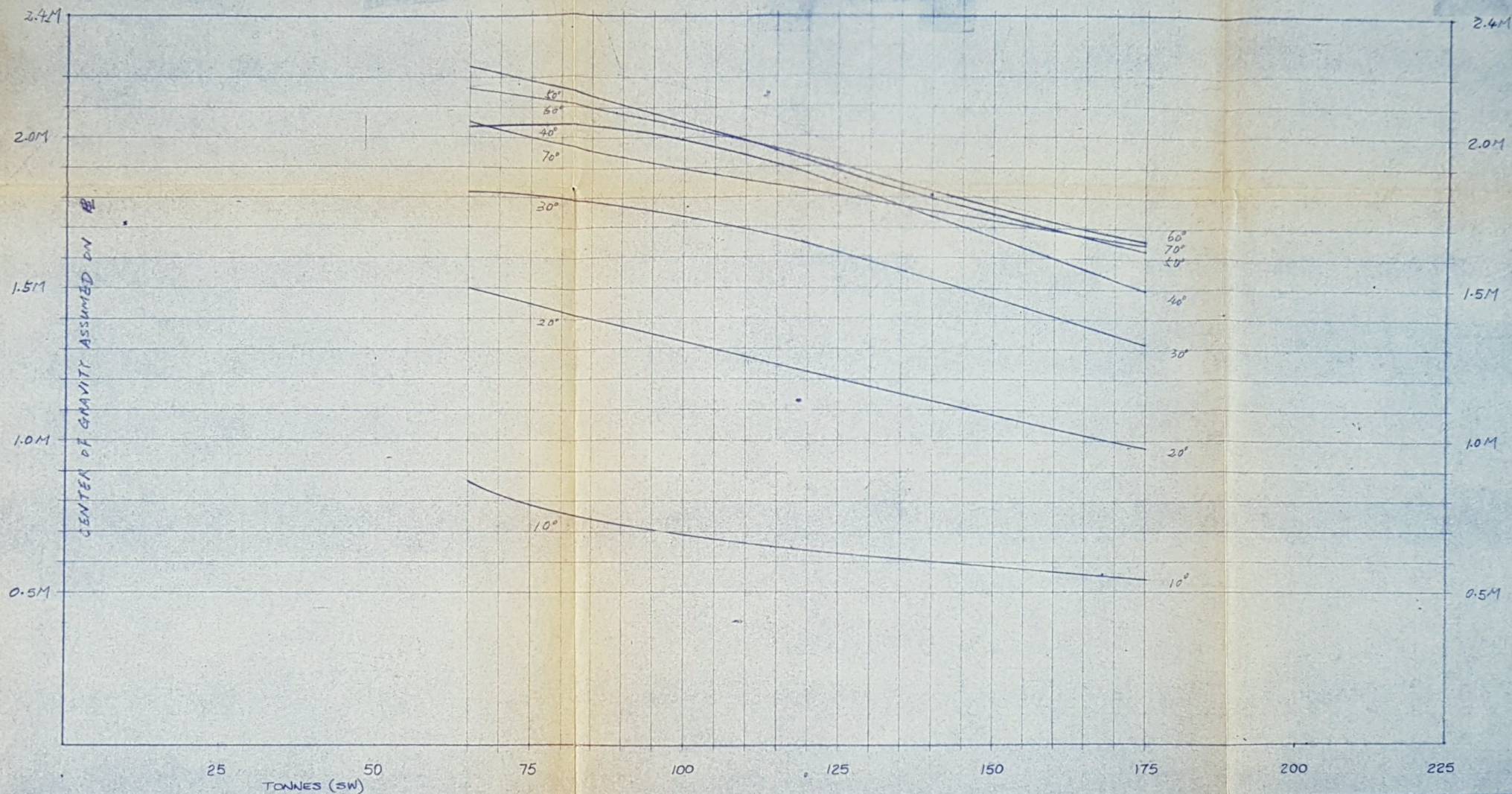
Stephane Chevalier  
Naval Architect

/jlm









**BRETON INDUSTRIAL & MARINE LTD.**

PORT HAWKESBURY

NOVA SCOTIA

C C G TYPE 800 NAV AIDS VESSEL

CROSS STABILITY CURVE

SCALE	As NOTED	APP.
DWN. BY	S YANG	DATE
DWG. NO.	42-83-1011	Aug 3. 84'