FCM-NPP001 - PASSAGE PLAN (PAPER CHARTS)

PASSAGE PLAN (BERTH TO BERTH)

"The navigation officer shall always have in mind that the plan might need to be amended to meet the changing circumstances of the voyage." VOM-BTM014 Passage plan procedures, § 3.3.

M/T	SERIFOS	Passage Plan No:	667	Voyage No	286
From	MONTREAL	To	NEW YORK	Via	–
Date of Departure	13 OCT 2013	E.T.A.	18 OCT 2013	Passage Speed	13,0
Laden	YES	In Ballast	NO	Cargo/Quantity	F.O. 31855 m³

Sailing Mean Draft :	10,22	Fore :	10,22	Aft :	10,22	Density:	FW
Arrival Mean Draft :	10,15	Fore :	10,15	Aft :	10,15	Density:	BW

Passage Route	Creat Circle :	NO	Rhumb Line :	YES
Passage Distance	Great Circle :	–	Rhumb Line :	1510

	YES/ NO
Are Officers aware of actions to be taken in case of bad weather poor visibility, heavy swell, heavy traffic, excessive currents and tides or other emergency situations?	☑ ☐

(State - Date last no. received on board)

Latest Notices to Mariners received: UK 41/13 - RCVD 14 OCT 2013

	YES/ NO
Are Charts / List of Lights / Radio Signals for the intended voyage corrected?	☑ ☐
Are required Sailing Directions / Tide tables / Pilot books / Routeing and traffic separation schemes / Weather charts studied and considered?	☑ ☐
Have the "BRIDGE PROCEDURE GUIDE" Passage Plan Instructions been considered and have check lists Nos 3-6 and 7 been checked and considered?	☑ ☐

Officers		Duties	Helmsmen	Duties
BATOTIS KONSTANTINOS	Chief Officer	04:00-08:00/16:00-20:00	MABABA JEFRESON	04:00-08:00/16:00-20:00
SIAKAVARAS KONSTANTINOS	2nd Officer	08:00-12:00/20:00-24:00	ACORIL GLOJE	08:00-12:00/20:00-24:00
NIKOLOF IORDANIS	2nd Officer	12:00-16:00/24:00-04:00	BATAC EARVIN TAY	12:00-16:00/24:00-04:00

CHARTS used: 4792, 4791, 4790, 4789, 4788, 4787, 4786, 4785, 4784, 4783, 4782, 4777, 4774, 4766, 4764, 4762, 2649, 2620, 2492, 2860, 2855, 3204, 3459, 3456

NAUTICAL PUBLICATIONS to be used:

TIDE TABLES VOL.	NP 202 (2012)	LIST OF LIGHTS VOL.	NP 81, NP 82
RADIO SIGNALS	NP281(2), 282, 283(2), 284, 285, 286(2)	PILOT BOOKS	NP 65, NP 59, NP 68
ROUTEING CHARTS:	5124(10)	ROUTEING GUIDES:	SHIPS' ROUTEING
TIDAL STREAM ATLAS:	–		

Prepared by	SIAKAVARAS K. 2/O	Checked by	BATOTIS K. C/O
Signature		Signature	
		Checked by	NIKOLOF I. 2/O
		Signature	
		Approved by Master	TSEROS ANASTASIOS
		Signature	

SEQUENCE OF PASSAGE PLANNING PROCESS

Activity	Done (√)
Charts collection Small scale charts for planning the sea passage. Large scale charts for navigate the vessel. *Only last edition charts are in use.*	✓
Charts ordering Unavailable charts are ordered	✓
Charts correction Charts concerning the intended sea passage are corrected.	✓
T&P notices Temporary and preliminary notices applied on the charts.	✓
Radio navigational warning NTM navigational warnings applied on the charts. INM-C/NAVTEX navigational warnings applied on the charts.	✓
No-go areas No-go areas marked on the charts	✓
Safe distances Minimum safe distances defined and marked on the charts.	✓
Weather routeing Wx routeing publications advised.	✓
UKC UKC calculated and restrictions marked on the charts.	✓
AIR DRAFT Any air draft restrictions considered.	✓
Environmental sensitive areas C/P advised for any areas that shall be avoided.	✓
Load line zones Zone load line restrictions considered.	✓
IMO routeing info Check whether the routeing info and the traffic separation schemes of the intended voyage are approved by the IMO.	✓
Security restrictions Check file K2(A) for any restrictions concerning the area of sailing.	✓
Course plotting Courses are plotted and distances between the waypoints measured.	✓
Safety bearings (clearing bearings) and parallel indexing (clearing ranges) Clearing bearings and ranges are marked on the charts.	✓
Chart changes Chart changes are marked on the charts.	✓
Frequency and position fixing Frequency and position fixing methods are marked on the charts.	✓
Bridge status Bridge status at each part of the sea passage is marked on the charts	✓
Change of machinery status Points at which the machinery status is changed marked on the charts.	✓
Rest hours Bridge and machinery status during the entire passage is communicated to those concerned in order the schedule of the rest hours to be amended accordingly.	✓
Echo-sounder Points at which the echosounder switched on marked on the charts.	✓
Wheel over position Wheel over positions are calculated and marked on the charts.	✓
Land marks for radar check Define the landmarks to check the radar accuracy.	✓
Warning notices Advance warning notices for hazards marked on the charts.	✓
Reporting points Reporting points marked on the charts	✓
NAVAREAS / NAVTEX Navarea / NAVTEX limits marked on the charts	✓
Abort point Point to abort a port approach marked on the chart.	✓
Contingency anchorage and port of refuge Contingency anchorages and ports of refuge concerning the coastal and inland waters marked on the charts	✓

PILOT STATION TO PILOT STATION

WPT No		WPT	COURSE	DISTANCE in mls	SPEED in kts	BW (I or II or III)	UKC in mtrs	STATUS (NORMAL(N)/ST'BY(	ECHOSOUNDER (ON/OFF)	PREVAILING CURRENT	PREVAILING WEATHER	Position fixing: Freq*	Position fixing: Primary**	Position fixing: Secondary**	Marked on the chart (√): PI	Marked on the chart (√): W/O	Marked on the chart (√): NO GO AREA	Marked on the chart (√): SAFETY BEARINGS	OTHER HAZARDS TO NAVIGATION***
1.	LAT	48°18'N																	
	LON	069°23'W																	
2.	LAT	48°20'N	076°	8.3	13	II	>25M	S	off	NE 0.5	S 4-5	15M	R	G			✓		
	LON	069°11'W																	
3.	LAT	48°26.5'N	048°	9.8	13	II	>25M	S	off	NE 0.5	S 4-5	15M	R	G			✓		
	LON	069°00'W																	
4.	LAT	49°01'N	057°	63	13	I	>25M	N	off	NE 0.5	S 4-5	20M	R	G			✓		
	LON	067°40'W																	
5.	LAT	49°15'N	070°	42	13	I	>25M	N	off	NE 0.5	S 4-5	20M	R	G			✓		
	LON	066°40'W																	
6.	LAT	49°23.5'N	075°	34	13	I	>25M	N	off	NE 0.5	S 4-5	20M	R	G			✓		
	LON	065°50'W																	
7.	LAT	49°18.5'N	095°	61	13	I	>25M	N	off	SE 0.5	S 4.5	20M	R	G			✓		
	LON	064°17'W																	
8.	LAT	49°08'N	117°	23	13	I	>25M	N	off	SE 0.5	S 4-5	20M	R	G			✓		
	LON	063°45'W																	
9.	LAT	48°03'N	122°	124	13	I	>25M	N	off	SE 0.5	S 4-5	20M	R	G			✓		
	LON	061°05'W																	
10.	LAT	47°05'N	149°	68	13	I	>25M	N	off	SE 0.5	S 4-5	20M	G	A			✓		
	LON	060°14'W																	
11.	LAT	46°00'N	130°	102	13	I	>25M	N	off	SE 0.5	S 4-5	30M	G	A			✓		
	LON	058°20'W																	
12.	LAT	45°24'N	117°	79	13	I	>25M	N	off	SW 0.5	S 4-5	1HR	G	A		✓	✓		
	LON	056°40'W																	
13.	LAT	44°18'N	180°	66	13	I	>25M	N	off	SW 0.5	S 4-5	1HR	G	A		✓	✓		
	LON	056°40'W																	

- ***Open sea:** every 1hr // **Coastal navigation:** every 5-15mins
- ** **Fixing Legends:** **R**-Radar Fix // **G**-GPS Fix // **A**-Astronomical Fix // **V**-Visual Observations
- ***Other hazards:** Heavy traffic, fishing boats etc.

ED_002238_00003461-00003

WPT No	WPT		COURSE	DISTANCE in mls	SPEED in knts	BW (I or II or III)	UKC in mtrs	MACHINERY STATUS (NORMAL(N)/ST'BY(S)	ECHOSOUNDER (ON/OFF)	PREVAILING CURRENT	PREVAILING WEATHER	Position fixing			Marked on the chart (√)				OTHER HAZARDS TO NAVIGATION***
												Freq*	Primary**	Secondary**	PI	W/O	NO GO AREA	SAFETY BEARINGS	
13.	LAT	44°18N																	
	LON	056°40'W																	
14.	LAT	40°40'N	240°	429	13	I	>25	N	off	SW 0.5	S 4-5	1HR	R	A		✓	✓		
	LON	065°00'W																	
15.	LAT	40°30'N	268°	366	13	I	>25	N	off	SW 0.5	S 4-5	1HR	R	A			✓		
	LON	073°00'W																	
16.	LAT	40°27.5'N	265°	31	13	II	8.87	S	on	SW 0.5	S 4-5	20M	R	A			✓		
	LON	073°41'W																	
17.	LAT	40°26.5'N	255°	4	13	II	17.28	S	on.	SW 0.5	S 4-5	20M	R	A			✓		
	LON	073°46'W																	
	LAT																		
	LON																		
	LAT																		
	LON																		
	LAT																		
	LON																		
	LAT																		
	LON																		
	LAT																		
	LON																		
	LAT																		
	LON																		
	LAT																		
	LON																		

- ***Open sea:** every 1hr // **Coastal navigation:** every 5-15mins
- ** **Fixing Legends:** **R**-Radar Fix // **G**-GPS Fix // **A**-Astronomical Fix // **V**-Visual Observations
- ***Other hazards:** Heavy traffic, fishing boats etc.

ED_002238_00003461-00004

REPORTING POINTS (to Pilot Stations, VTS, Coast Guards)

No	LAT/LONG	STATION (REPORTING CENTER)	NAME OF REPORT	V.H.F. Ch. or TLX/email/fax
1.	BEFORE DEPARTURE	ESCUMINS TRAFFIC	DEPARTURE REPORT	VHF CH 09
2.	REPORTING POINT 3B	ESCUMINS TRAFFIC	ENTERING SECTOR 1	VHF CH 14
3.	DAILY NOON	AMVER	AMVER SP, PR, FQ	INMC
4.	24 HRS B4 ARRIVAL	SANDY HOOK PILOTS	PILOT REQUEST 24HR	email
5.	40°30'N 073°00'W	SANDY HOOK PILOTS	PILOT REQUEST	VHF CH 73
6.	40°26,5'N 073°46'W	NEW YORK TRAFFIC	ENTERING N. YORK VTS	VHF CH 14

ANCHORAGE and ABORT POINT INFORMATION

	PORT OF DEPARTURE	INTERMEDIATE PORT	PORT OF DESTINATION
SBE / Full away position	LAT 48°18'N LONG 069°23'W	LAT LONG	LAT 40°30'N LONG 073°00'W
Pilot boarding / dropping position	LAT 48°18'N LONG 069°23'W	LAT LONG N/A	LAT 40°26,5'N LONG 073°46'W
Foreseen Tanker Anchorage	LAT LONG N/A	LAT LONG	LAT 40°28,5'N LONG 073°52,2'W
Abort point	N/A	LAT LONG	LAT 40°26,5'N LONG 073°46'W

SHELTERED WATERS/SAFE ANCHORAGES DURING SEA PASSAGE

Lat:	**Lat:**	**Lat:**
Long:	**Long:**	**Long:**

***** AND/OR *****

Name of the port/Bay/Gulf:
Name of the port/Bay/Gulf:
Name of the port/Bay/Gulf:

IMO ROUTEING INFO	*
PART A	☑
PART C III	☐
PART D II	☑
PART E	☑
PART F	☑
PART G	☑

(*) TICK AS APPLICABLE

IMO ROUTEING INFO	*
PART B – I	☐
PART B – II	☐
PART B – III	☐
PART B – IV	☐
PART B – V	☐
PART B – VI	☐

IMO ROUTEING INFO	*
PART B - VII	☐
PART B - VIII	☐
PART B - IX	☑
PART B - X	☐

TIDAL PREDICTIONS FOR THE PORT / AREA OF QUEBEC / NEW JERSEY / BAYONNE

DATE : 13 OCT 2013		DATE: 18 OCT 2013		DATE: 18 OCT 2013		DATE: 19 OCT 2013	
TIME	HIGH/LOW	TIME	HIGH/LOW	TIME	HIGH/LOW	TIME	HIGH/LOW
00:12	4,70m	00:38	-0,12m	01:19	-0,12 m.	02:04	-0,09 m.
08:12	0,40m.	06:48	1,80m.	07:17	1,92 m.	07:58	1,92 m.
13:06	4,00m.	13:14	-0,09m.	13:54	-0,09 m.	14:41	-0,09 m
20:27	0,50m.	19:09	1,65m.	19:39	1,77m.	20:22	1,74 m.

TIDAL CURRENTS PRE-CALCULATION

DATE: 18 OCT 2013		DATE: 19 OCT 2013		DATE:		DATE:		DATE:	
AREA: N. YORK		AREA: N. YORK		AREA:		AREA:		AREA:	
TIME	Dir/Speed	TIME	Dir/Speed	TIME	Dir/Speed	TIME	Dir/Speed	TIME	Dir/Speed
03:01-06:09	050°/3,9	23:36-00:32	230°/4,8						
09:09-12:11	230°/5,0	03:45-06:52	050°/3,9						
15:28-18:35	050°/3,9	09:53-12:52	230°/5,0						
21:36-00:32	230°/4,8	16:12-19:17	050°/3,9						

			SQUAT MAX(M) (confined waters)	= 2 x CB x	$\frac{V^2 \text{ (vessel speed)}}{100}$
VESSEL SQUAT	CB =	$\frac{\text{Vol. of Displacement}}{L \times B \times D}$	SQUAT MAX(M) (open waters)	= CB x	$\frac{V^2 \text{ (vessel speed)}}{100}$

PILOTAGE PASSAGE (P/S to berth or berth to P/S)

Plotted on the chart (√)	4792	Plotted on the chart (√)	4792	Plotted on the chart (√)	4792
E/R ST'BY LAT:	45 38 N	BW II OR III LAT:	45 38 N	ECHOSOUNDER ON LAT:	45 38 N
LONG:	073 29.2 W	LONG:	073 29.2 W	LONG:	073 29.2 W

WPT No	WPT		COURSE	DISTANCE	SPEED	UKC	AIR DRAFT	HEIGHT OF THE TIDE CONSIDERED (Y/N)	TIDAL CURRENT	Position fixing Freq*	Primary**	Secondary**	PI	W/O	NO GO AREA	SAFETY BEARINGS	CONTINGENCY ANCHORAGE	OTHER HAZARDS TO NAVIGATION*** / BRIDGE NAMES / CABLES/ OVERHEAD CLEARENCE
													Marked on the chart (√)					
1	LAT	45 38 N																
	LON	073 29.2 W																
2	LAT	45 39.1 N	024	1.2	10	1.08	34.55	N	N/A	5 m	V	R			✓			
	LON	073 28.5 W																
3	LAT	45 39.85 N	033	0.9	10	1.08	34.55	N	N/A	5 m	V	R			✓			
	LON	073 27.8 W																
4	LAT	45 40.7 N	022	0.9	10	1.08	34.55	N	N/A	5 m	V	R			✓			
	LON	073 27.3 W																
5	LAT	45 41.3 N	007	0.6	10	1.08	34.55	N	N/A	5 m	V	R			✓			
	LON	073 27.2 W																
6	LAT	45 41.7 N	019	0.4	10	1.08	34.55	N	N/A	5 m	V	R			✓			
	LON	073 27 W																
7	LAT	45 42.4 N	031	0.8	10	1.08	34.55	N	N/A	5 m	V	R			✓			
	LON	073 26.4 W																
8	LAT	45 43.1 N	022	0.8	10	1.08	34.55	N	N/A	5 m	V	R			✓			
	LON	073 26 W																
9	LAT	45 46.6 N	037	4.4	10	1.08	34.55	N	N/A	5 m	V	R			✓			
	LON	073 22.2 W																
10	LAT	45 47.3 N	055	1.2	10	1.08	34.55	N	N/A	5 m	V	R			✓			
	LON	073 20.8 W																
11	LAT	45 50.8 N	041	4.6	10	1.08	34.55	N	N/A	5 m	V	R			✓			
	LON	073 16.5 W																
12	LAT	45 51.6 N	024	0.9	10	1.08	34.55	N	N/A	5 m	V	R			✓			
	LON	073 16 W																
13	LAT	45 53.4 N	032	2.1	10	1.08	34.55	N	N/A	5 m	V	R			✓			
	LON	073 14.4 W																
14	LAT	45 54.1 N	048	1.0	10	1.08	34.55	N	N/A	5 m	V	R			✓			
	LON	073 13.3 W																

- ***During pilotage:** every 5-15mins. NOTICE: Cross checking every 4th position fix
- ** **Fixing Legends:** **R**-Radar Fix // **G**-GPS Fix // **V**-Visual Observations
- ***Other hazards:** Crossing ferries, fishing boats, etc.

ED_002238_00003461-00007

PILOTAGE PASSAGE (P/S to berth or berth to P/S)

Plotted on the chart (√)	4792	Plotted on the chart (√)	4792	Plotted on the chart (√)	4792
E/R ST'BY LAT:	45 38 N	BW II OR III LAT:	45 38 N	ECHOSOUNDER ON LAT:	45 38 N
LONG:	073 29.2 W	LONG:	073 29.2 W	LONG:	073 29.2 W

WPT No	WPT		COURSE	DISTANCE	SPEED	UKC	AIR DRAFT	HEIGHT OF THE TIDE CONSIDERED (Y/N)	TIDAL CURRENT	Position fixing Freq*	Primary**	Secondary**	Marked on the chart (√) PI	W/O	NO GO AREA	SAFETY BEARINGS	CONTINGENCY ANCHORAGE	OTHER HAZARDS TO NAVIGATION*** / BRIDGE NAMES / CABLES/ OVERHEAD CLEARENCE
1	LAT	45 38 N																
	LON	073 29.2 W																
2	LAT	45 39.1 N	024	1.2	10	1.08	34.55	N	N/A	5 m	V	R			✓			
	LON	073 28.5 W																
3	LAT	45 39.85 N	033	0.9	10	1.08	34.55	N	N/A	5 m	V	R			✓			
	LON	073 27.8 W																
4	LAT	45 40.7 N	022	0.9	10	1.08	34.55	N	N/A	5 m	V	R			✓			
	LON	073 27.3 W																
5	LAT	45 41.3 N	007	0.6	10	1.08	34.55	N	N/A	5 m	V	R			✓			
	LON	073 27.2 W																
6	LAT	45 41.7 N	019	0.4	10	1.08	34.55	N	N/A	5 m	V	R			✓			
	LON	073 27 W																
7	LAT	45 42.4 N	031	0.8	10	1.08	34.55	N	N/A	5 m	V	R			✓			
	LON	073 26.4 W																
8	LAT	45 43.1 N	022	0.8	10	1.08	34.55	N	N/A	5 m	V	R			✓			
	LON	073 26 W																
9	LAT	45 46.6 N	037	4.4	10	1.08	34.55	N	N/A	5 m	V	R			✓			
	LON	073 22.2 W																
10	LAT	45 47.3 N	055	1.2	10	1.08	34.55	N	N/A	5 m	V	R			✓			
	LON	073 20.8 W																
11	LAT	45 50.8 N	041	4.6	10	1.08	34.55	N	N/A	5 m	V	R			✓			
	LON	073 16.5 W																
12	LAT	45 51.6 N	024	0.9	10	1.08	34.55	N	N/A	5 m	V	R			✓			
	LON	073 16 W																
13	LAT	45 53.4 N	032	2.1	10	1.08	34.55	N	N/A	5 m	V	R			✓			
	LON	073 14.4 W																
14	LAT	45 54.1 N	048	1.0	10	1.08	34.55	N	N/A	5 m	V	R			✓			
	LON	073 13.3 W																

- ***During pilotage:** every 5-15mins. NOTICE: Cross checking every 4th position fix
- ** **Fixing Legends:** **R**-Radar Fix // **G**-GPS Fix // **V**-Visual Observations
- ***Other hazards:** Crossing ferries, fishing boats, etc.

ED_002238_00003461-00008

Plotted on the chart (√):		Plotted on the chart (√):		Plotted on the chart (√):	
E/R ST'BY LAT:		BW II OR III LAT:		ECHOSOUNDER ON LAT:	
LONG:		LONG:		LONG:	

WPT No	WPT		COURSE	DISTANCE	SPEED	UKC	AIR DRAFT	HEIGHT OF THE TIDE CONSIDERED (Y/N)	TIDAL CURRENT	Position fixing			Marked on the chart (√)					OTHER HAZARDS TO NAVIGATION*** / BRIDGE NAMES / CABLES/ OVERHEAD CLEARENCE
										Freq*	Primary**	Secondary**	PI	W/O	NO GO AREA	SAFETY BEARINGS	CONTINGENCY ANCHORAGE	
14	LAT	45 54.1 N																
	LON	073 13.3 W																
15	LAT	45 54.7 N	025	0.7	10	1.08	34.55	N	N/A	5 m	V	R			✓			
	LON	073 12.9 W																
16	LAT	45 57 N	004	2.3	10	1.08	34.55	N	N/A	5 m	V	R			✓			
	LON	073 12.7 W																
17	LAT	45 59 N	029	2.3	10	1.08	34.55	N	N/A	5 m	V	R			✓			
	LON	073 11.1 W																
18	LAT	46 02.4 N	015	3.5	10	1.08	34.55	N	N/A	5 m	V	R			✓			
	LON	073 09.8 W																
19	LAT	46 02.9 N	051	0.8	10	1.08	34.55	N	N/A	5 m	V	R			✓			
	LON	073 08.9 W																
20	LAT	46 03.6 N	073	2.4	10	1.08	34.55	N	N/A	5 m	V	R			✓			
	LON	073 05.6 W																
21	LAT	46 03.8 N	082	1.5	10	1.08	34.55	N	N/A	5 m	V	R			✓			
	LON	073 03.35 W																
22	LAT	46 04 N	074	0.7	10	1.08	34.55	N	N/A	5 m	V	R			✓			
	LON	073 02.5 W																
23	LAT	46 06 N	051	3.2	10	1.08	34.55	N	N/A	5 m	V	R			✓			
	LON	072 58.9 W																
24	LAT	46 07.1 N	039	1.4	10	1.08	34.55	N	N/A	5 m	V	R			✓			
	LON	072 57.6 W																
25	LAT	46 08.9 N	013	1.8	10	1.08	34.55	N	N/A	5 m	V	R			✓			
	LON	072 57 W																
26	LAT	46 09.9 N	029	1.1	10	1.08	34.55	N	N/A	5 m	V	R			✓			
	LON	072 56.2 W																
27	LAT	46 11.4 N	046	2.1	10	1.08	34.55	N	N/A	5 m	V	R			✓			
	LON	072 54 W																

- ***During pilotage:** every 5-15mins. NOTICE: Cross checking every 4th position fix
- ** **Fixing Legends:** **R**-Radar Fix // **G**-GPS Fix // **V**-Visual Observations
- ***Other hazards:** Crossing ferries, fishing boats, etc

ED_002238_00003461-00009

Plotted on the chart (√):		Plotted on the chart (√):		Plotted on the chart (√):	
E/R ST'BY LAT:		BW II OR III LAT:		ECHOSOUNDER ON LAT:	
LONG:		LONG:		LONG:	

WPT No	WPT		COURSE	DISTANCE	SPEED	UKC	AIR DRAFT	HEIGHT OF THE TIDE CONSIDERED (Y/N)	TIDAL CURRENT	Position fixing			Marked on the chart (√)					OTHER HAZARDS TO NAVIGATION*** / BRIDGE NAMES / CABLES/ OVERHEAD CLEARENCE
										Freq*	Primary**	Secondary**	PI	W/O	NO GO AREA	SAFETY BEARINGS	CONTINGENCY ANCHORAGE	
27	LAT	46 11.4 N																
	LON	072 54 W																
28	LAT	46 12.7 N	070	3.7	10	1.08	34.55	N	N/A	5 m	V	R			✓			
	LON	072 49 W																
29	LAT	46 15.7 N	056	5.4	10	1.08	34.55	N	N/A	5 m	V	R			✓			
	LON	072 42.6 W																
30	LAT	46 15.9 N	075	0.8	10	1.08	34.55	N	N/A	5 m	V	R			✓			
	LON	072 41.5 W																
31	LAT	46 15.7 N	097	1.6	10	1.08	34.55	N	N/A	5 m	V	R			✓			
	LON	072 39.2 W																
32	LAT	46 16.05 N	067	0.9	10	1.08	34.55	N	N/A	5 m	V	R			✓			
	LON	072 38 W																
33	LAT	46 17.6 N	053	2.6	10	2.98	34.55	N	N/A	5 m	V	R			✓			
	LON	072 35 W																
34	LAT	46 19.8 N	040	2.9	10	3.48	34.55	N	N/A	5 m	V	R			✓			
	LON	072 32.3 W																
35	LAT	46 20.6 N	046	1.2	10	1.08	34.55	N	N/A	5 m	V	R			✓			
	LON	072 31.1 W																
36	LAT	46 22.1 N	036	1.9	10	1.08	34.55	N	036/2	5 m	V	R			✓			
	LON	072 29.5 W																
37	LAT	46 22.4 N	062	0.6	10	1.08	34.55	N	062/2	5 m	V	R			✓			
	LON	072 28.7 W																
38	LAT	46 23 N	073	2.0	10	1.08	34.55	N	073/2	5 m	V	R			✓			
	LON	072 25.9 W																
39	LAT	46 25.05 N	050	3.2	10	1.08	34.55	N	050/2	5 m	V	R			✓			
	LON	072 22.4 W																
40	LAT	46 25.7 N	044	0.9	10	1.08	34.55	N	044/2	5 m	V	R			✓			
	LON	072 21.5 W																

- ***During pilotage:** every 5-15mins. NOTICE: Cross checking every 4th position fix
- ** **Fixing Legends:** **R**-Radar Fix // **G**-GPS Fix // **V**-Visual Observations
- ***Other hazards:** Crossing ferries, fishing boats, etc

ED_002238_00003461-00010

Plotted on the chart (√):		Plotted on the chart (√):		Plotted on the chart (√):	
E/R ST'BY LAT:		BW II OR III LAT:		ECHOSOUNDER ON LAT:	
LONG:		LONG:		LONG:	

WPT No	WPT		COURSE	DISTANCE	SPEED	UKC	AIR DRAFT	HEIGHT OF THE TIDE CONSIDERED (Y/N)	TIDAL CURRENT	Position fixing Freq*	Primary**	Secondary**	Marked on the chart (√) PI	W/O	NO GO AREA	SAFETY BEARINGS	CONTINGENCY ANCHORAGE	OTHER HAZARDS TO NAVIGATION*** / BRIDGE NAMES / CABLES/ OVERHEAD CLEARENCE
40	LAT	46 25.7 N																
	LON	072 21.5 W																
41	LAT	46 26.15 N	057	0.8	10	1.08	34.55	N	057/2	5 m	V	R			√			
	LON	072 20.5 W																
42	LAT	46 26.4 N	084	2.4	10	1.08	34.55	N	084/2	5 m	V	R			√			
	LON	072 17 W																
43	LAT	46 26.8 N	064	0.9	10	1.08	34.55	N	064/2	5 m	V	R			√			
	LON	072 15.8 W																
44	LAT	46 28.3 N	029	1.7	10	1.08	34.55	N	029/2	5 m	V	R			√			
	LON	072 14.6 W																
45	LAT	46 30 N	018	1.8	10	0.78	34.55	N	018/2	5 m	V	R			√			
	LON	072 13.8 W																
46	LAT	46 31 N	023	1.1	10	0.78	34.55	N	023/2	5 m	V	R			√			
	LON	072 13.2 W																
47	LAT	46 32 N	060	2.0	10	0.78	34.55	N	060/2	5 m	V	R			√			
	LON	072 10.7 W																
48	LAT	46 33.6 N	046	2.3	10	0.78	34.55	N	046/2	5 m	V	R			√			
	LON	072 08.3 W																
49	LAT	46 33.95 N	071	1.1	10	0.78	34.55	N	071/2	5 m	V	R			√			
	LON	072 06.8 W																
50	LAT	46 33.9 N	092	1.4	10	0.48	34.55	N	092/2	5 m	V	R			√			
	LON	072 04.8 W																
51	LAT	46 34 N	083	0.8	10	0.48	34.55	N	083/2	5 m	V	R			√			
	LON	072 03.6 W																
52	LAT	46 35.34 N	058	2.6	10	0.48	34.55	N	058/2	5 m	V	R			√			
	LON	072 00.47 W																
53	LAT	46 36.4 N	046	1.4	10	1.38	34.55	N	046/2	5 m	V	R			√			
	LON	071 58.9 W																

- ***During pilotage:** every 5-15mins. NOTICE Cross checking every 4th position fix
- ** **Fixing Legends:** **R**-Radar Fix // **G**-GPS Fix // **V**-Visual Observations
- ***Other hazards:** Crossing ferries, fishing boats, etc

ED_002238_00003461-00011

Plotted on the chart (√):		Plotted on the chart (√):		Plotted on the chart (√):	
E/R ST'BY LAT:		BW II OR III LAT:		ECHOSOUNDER ON LAT:	
LONG:		LONG:		LONG:	

WPT No	WPT		COURSE	DISTANCE	SPEED	UKC	AIR DRAFT	HEIGHT OF THE TIDE CONSIDERED (Y/N)	TIDAL CURRENT	Position fixing			Marked on the chart (√)					OTHER HAZARDS TO NAVIGATION*** / BRIDGE NAMES / CABLES/ OVERHEAD CLEARENCE
										Freq*	Primary**	Secondary**	PI	W/O	NO GO AREA	SAFETY BEARINGS	CONTINGENCY ANCHORAGE	
53	LAT	46 36.4 N																
	LON	071 58.9 W																
54	LAT	46 38.1 N	055	3.0	10	0.48	34.55	N	055/2	5 m	V	R			✓			
	LON	071 55.4 W																
55	LAT	46 39.5 N	040	1.8	10	0.48	34.55	N	040/2	5 m	V	R			✓			
	LON	071 53.7W																
56	LAT	46 40.5 N	029	1.1	10	0.48	34.55	N	029/2	5 m	V	R			✓			
	LON	071 52.9 W																
57	LAT	46 40.8 N	077	1.3	10	0.48	34.55	N	077/2	5 m	V	R			✓			
	LON	071 51 W																
58	LAT	46 38.4 N	117	5.4	10	0.48	34.55	N	117/2	5 m	V	R			✓			
	LON	071 44 W																
59	LAT	46 38.4 N	090	1.4	10	2.58	34.55	N	090/2	5 m	V	R			✓			
	LON	071 41.9 W																
60	LAT	46 39.1 N	071	2.1	10	1.98	34.55	N	071/2	5 m	V	R			✓			
	LON	071 39 W																
61	LAT	46 41.1 N	063	4.5	10	0.48	34.55	N	063/2	5 m	V	R			✓			
	LON	071 33.2 W																
62	LAT	46 42 N	049	1.4	10	0.48	34.55	N	049/2	5 m	V	R			✓			
	LON	071 31.7 W																
63	LAT	46 43.2 N	078	5.7	10	0.88	34.55	N	078/2	5 m	V	R			✓			
	LON	071 23.6 W																
64	LAT	46 44.2 N	068	2.7	10	16.98	34.55	N	068/2	5 m	V	R			✓			
	LON	071 20 W																
65	LAT	46 45 N	074	2.9	10	12.58	34.55	N	074/2	5 m	V	R			✓			
	LON	071 16 W																
66	LAT	46 47.5 N	046	3.6	10	14.08	34.55	N	046/2	5 m	V	R			✓			
	LON	071 12.3 W																

- ***During pilotage:** every 5-15mins. NOTICE Cross checking every 4th position fix
- ** **Fixing Legends:** **R**-Radar Fix // **G**-GPS Fix // **V**-Visual Observations
- ***Other hazards:** Crossing ferries, fishing boats, etc

ED_002238_00003461-00012

Plotted on the chart (√):						Plotted on the chart (√):								Plotted on the chart (√):				
E/R ST'BY LAT:						BW II OR III LAT:								ECHOSOUNDER ON LAT:				
LONG:						LONG:								LONG:				
WPT No	WPT		COURSE	DISTANCE	SPEED	UKC	AIR DRAFT	HEIGHT OF THE TIDE CONSIDERED (Y/N)	TIDAL CURRENT	Position fixing Freq*	Primary**	Secondary**	Marked on the chart (√) PI	W/O	NO GO AREA	SAFETY BEARINGS	CONTINGENCY ANCHORAGE	OTHER HAZARDS TO NAVIGATION*** / BRIDGE NAMES / CABLES/ OVERHEAD CLEARENCE
66	LAT	46 47.5 N																
	LON	071 12.3 W																
67	LAT	46 49.6N	020	2.2	10	22.78	34.55	N	020/2	5 m	V	R			✓			
	LON	071 11.2 W																
68	LAT	46 50.5 N	051	1.4	10	12.28	34.55	N	051/2	5 m	V	R			✓			
	LON	071 09.6 W																
69	LAT	46 50.3 N	093	3.6	10	10.38	34.55	N	093/2	5 m	V	R			✓			
	LON	071 04.3 W																
70	LAT	46 51.5 N	072	4.0	10	11.48	34.55	N	072/2	5 m	V	R			✓			
	LON	070 58.8 W																
71	LAT	46 54.3 N	053	4.7	10	2.28	34.55	N	053/2	5 m	V	R			✓			
	LON	070 53.3 W																
72	LAT	47 03.8 N	034	11.4	10	2.28	34.55	N	034/2	5 m	V	R			✓			
	LON	070 44.1 W																
73	LAT	47 06.7 N	023	3.1	10	2.28	34.55	N	023/2	5 m	V	R			✓			
	LON	070 42.3 W																
74	LAT	47 09.5 N	034	3.4	10	5.58	34.55	N	034/2	5 m	V	R			✓			
	LON	070 39.5 W																
75	LAT	47 12.2 N	042	3.6	10	10.48	34.55	N	042/2	5 m	V	R			✓			
	LON	070 36 W																
76	LAT	47 16 N	033	4.5	10	11.58	34.55	N	033/2	5 m	V	R			✓			
	LON	070 32.4 W																
77	LAT	47 25 N	024	9.9	10	6.88	34.55	N	024/2	5 m	V	R			✓			
	LON	070 26.4 W																
78	LAT	47 29.5 N	068	12	10	13.08	34.55	N	068/2	5 m	V	R			✓			
	LON	070 10 W																
79	LAT	47 36.5 N	028	7.9	10	>25m	34.55	N	028/2	5 m	V	R			✓			
	LON	070 04.5 W																

- ***During pilotage:** every 5-15mins. NOTICE Cross checking every 4th position fix
- ** **Fixing Legends:** **R**-Radar Fix // **G**-GPS Fix // **V**-Visual Observations
- ***Other hazards:** Crossing ferries, fishing boats, etc

ED_002238_00003461-00013

Plotted on the chart (√):		Plotted on the chart (√):		Plotted on the chart (√):	
E/R ST'BY LAT:		BW II OR III LAT:		ECHOSOUNDER ON LAT:	
LONG:		LONG:		LONG:	

WPT No	WPT		COURSE	DISTANCE	SPEED	UKC	AIR DRAFT	HEIGHT OF THE TIDE CONSIDERED (Y/N)	TIDAL CURRENT	Position fixing			Marked on the chart (√)					OTHER HAZARDS TO NAVIGATION*** / BRIDGE NAMES / CABLES/ OVERHEAD CLEARENCE
										Freq*	Primary**	Secondary**	PI	W/O	NO GO AREA	SAFETY BEARINGS	CONTINGENCY ANCHORAGE	
79	LAT	47 36.5 N																
	LON	070 04.5 W																
80	LAT	47 43.2 N	046	9.7	10	>25m	34.55	N	046/2	5 m	R	G			✓			
	LON	069 54.2 W																
81	LAT	48 01 N	028	20	10	>25m	34.55	N	028/2	5 m	R	G			✓			
	LON	069 40 W																
82	LAT	48 18 N	034	21	10	>25m	34.55	N	034/2	5 m	R	G			✓			
	LON	069 23 W																
	LAT																	
	LON																	
	LAT																	
	LON																	
	LAT																	
	LON																	
	LAT																	
	LON																	
	LAT																	
	LON																	
	LAT																	
	LON																	
	LAT																	
	LON																	
	LAT																	
	LON																	
	LAT																	
	LON																	

- ***During pilotage:** every 5-15mins. NOTICE: Cross checking every 4th position fix
- ** **Fixing Legends:** **R**-Radar Fix // **G**-GPS Fix // **V**-Visual Observations
- ***Other hazards: Crossing ferries, fishing boats, etc

ED_002238_00003461-00014

PILOTAGE PASSAGE (P/S to berth or berth to P/S)

Plotted on the chart (√)	2860	Plotted on the chart (√)	2860	Plotted on the chart (√)	2860
E/R ST'BY LAT:	40°30'N	BW II OR III LAT:	40°30'N	ECHOSOUNDER ON LAT:	40°29,4'N
LONG:	073°00'W	LONG:	073°00'W	LONG:	073°09,5'W

WPT No		WPT	COURSE	DISTANCE	SPEED	UKC	AIR DRAFT	HEIGHT OF THE TIDE CONSIDERED (Y/N)	TIDAL CURRENT	Position fixing Freq*	Primary**	Secondary**	Marked on the chart (√) PI	W/O	NO GO AREA	SAFETY BEARINGS	CONTINGENCY ANCHORAGE	OTHER HAZARDS TO NAVIGATION*** / BRIDGE NAMES / CABLES/ OVERHEAD CLEARENCE
1.	LAT	40°26,5'N						NEW YORK PILOT										
	LON	073°46'W																
2.	LAT	40°27'N	274°	3,1	9,2	19,11	34,62	N	050° 3,9	Sa	R	G	✓		✓			
	LON	073°50'W																
3.	LAT	40°28,5'N	312°	2,3	9,2	11,79	34,62	N	050° 3,9	Sa	R	G			✓			
	LON	073°52,2'W																
4.	LAT	40°31,5'N	295°	7,1	9,2	2,01	34,67	N	050° 3,9	Sa	R	G			✓			
	LON	074°02,6'W																
5.	LAT	40°32,3'N	323°	0,9	9,2	2,01	34,62	N	050° 3,9	Sa	R	G	✓		✓			
	LON	074°01,4'W																
6.	LAT	40°36,3'N	348°	4,1	9,2	2,01	34,62	N	050° 3,9	Sa	R	G	✓		✓			THE NARROWS BRIDGE
	LON	074°02,5'W																
7.	LAT	40°38,4'N	342°	2,3	9,2	3,57	34,67	N	050° 3,9	Sa	R	G	✓		✓			
	LON	074°03,4'W																
8.	LAT	40°38,83'N	313°	0,6	9,2	4,78	34,67	N	050° 3,9	Sa	R	G	✓		✓			
	LON	074°03,93'W																
9.	LAT	40°39,1'N	298°	0,8	9,2	4,60	34,62	N	050° 3,9	Sa	R	G	✓		✓			
	LON	074°04,93'W																
	LAT																	
	LON																	
	LAT																	
	LON																	
	LAT																	
	LON																	
	LAT																	
	LON																	
	LAT																	
	LON																	

- ***During pilotage:** every 5-15mins. NOTICE: Cross checking every 4th position fix
- ** **Fixing Legends:** R-Radar Fix // G-GPS Fix // V-Visual Observations
- ***Other hazards:** Crossing ferries, fishing boats, etc.

ED_002238_00003461-00015

Plotted on the chart (√):		**Plotted on the chart (√):**		**Plotted on the chart (√):**	
E/R ST'BY LAT:		BW II OR III LAT:		ECHOSOUNDER ON LAT:	
LONG:		LONG:		LONG:	

WPT No	WPT		COURSE	DISTANCE	SPEED	UKC	AIR DRAFT	HEIGHT OF THE TIDE CONSIDERED (Y/N)	TIDAL CURRENT	Position fixing Freq*	Primary**	Secondary**	Marked on the chart (√) PI	W/O	NO GO AREA	SAFETY BEARINGS	CONTINGENCY ANCHORAGE	OTHER HAZARDS TO NAVIGATION*** / BRIDGE NAMES / CABLES/ OVERHEAD CLEARENCE
	LAT																	
	LON																	
	LAT																	
	LON																	
	LAT																	
	LON																	
	LAT																	
	LON																	
	LAT																	
	LON																	
	LAT																	
	LON																	
	LAT																	
	LON																	
	LAT																	
	LON																	
	LAT																	
	LON																	
	LAT																	
	LON																	
	LAT																	
	LON																	
	LAT																	
	LON																	

- ***During pilotage:** every 5-15mins. NOTICE: Cross checking every 4th position fix
- ** **Fixing Legends:** **R**-Radar Fix // **G**-GPS Fix // **V**-Visual Observations
- ***Other hazards:** Crossing ferries, fishing boats, etc.

ED_002238_00003461-00016

HAZARDS ASSESSMENT

LEG OF THE PASSAGE	*Leg's Hazards*	*RISK DETERMINATION WITHOUT CONTROLS*			**RISK MITIGATION MEASURES**		**Residual Risk Region**
		Likelihood of Harm	**Severity of Harm**	**Risk Region**	**Existing Controls**	**Additional Controls**	
MONTREAL PILOT	COLLISION GROUNDING	3	4	11-15	BWII, ECHO SOUNDER ON	PERSON ST'BY AT ANCHORS ADDITIONAL LOOKOUT, 3 RADARS ON	6-10
NEW YORK PILOT	COLLISION GROUNDING	3	4	11-15	BWII ECHO SOUNDER ON	PERSON ST'BY AT ANCHORS ADDITIONAL LOOKOUT, 3 RADARS ON	6-10

SEVERITY OF HAZARD		**LIKELIHOOD OF HARM**		**LEVEL**	**RATINGS**	**ACTION**
Very high	5	Very Likely	5	**1-5**	Trivial	No further action required
High	4	Likely	4	**6-10**	**Tolerable**	Monitoring required to ensure that the controls are maintained
Moderate	3	Quite possible	3	**11-15**		Efforts to reduce risks are required with attention to allocation of resources and amount of time required for reducing risk
Slight	2	Possible	2	**16-20**	Substantial	[redacted]
Nil	1	Unlikely	1	**21-25**	Intolerable	[redacted]

ED_002238_00003461-00017

NO GO AREA CALCULATION	AT SEA	IN PORT	
Ship's max draft	10,15	10,15	mtrs
Safety margin (10%)	1,02	1,02	mtrs
MAXIMUM DRAUGHT*	11,17	11,17	
Increase of draught due to rolling/*****	N/A	N/A	**mtrs**
Increase of draught due to pitching/*****	N/A	N/A	**mtrs**
INCREASED MAXIMUM DRAUGHT*	11,17	11,17	mtrs

*All areas near-by the course showing charted depths of less that the **MAXIMUM DRAFT should be considered as NO-GO Areas**

****Only the bigger of the two values is added**

*****Should the area of sailing is affected by sea conditions the Navigation Officer should include the increase of draft due to rolling and pitching.**

ED_002238_00003461-00018

UNDERKEEL CLEARANCE CALCULATIONS FOR SHALLOWEST POINTS OF THE PASSAGE

	LAT							
	LONG							
	or AREA	MONTREAL BERTH	NEW YORK					
1	Lowest Tide for Date Range or	N/A	-0,12					
	Highest Tide for Date Range(whichever is applicable)	N/A	1,77					
2	Assumed Datum Depth (Chart Data)	10,70 m.	12,16					
3	Depth Water Available **(1 + 2)**	10,70 m.	12,04					
4	Vessel's Maximum Draft Saltwater	10,22 m.	—					
5	Adjusted Draft for Salinity	—	12,04					
6	**Increase draft due to Rolling and Pitching**	N/A	N/A					
7	**Underkeel Clearance Excluding Squat (3-6)**	0,48	1,89					
8	Underkeel Clearance Required	0,48	1,02					
9	Maximum Allowed Squat (7 –8)	N/A	0,87					
10	Correspondent Speed for Allowed Squat	MINIMUM	7,0 Knts					

If the required UKC is accomplished with specific tidal height only, report the time frames of the safe passage:

DATE:		**FROM:**		**TO:**		**HEIGHT**		**DATE:**		**FROM:**		**TO:**		**HEIGHT**	
DATE:		**FROM:**		**TO:**		**HEIGHT**		**DATE:**		**FROM:**		**TO:**		**HEIGHT**	
DATE:		**FROM:**		**TO:**		**HEIGHT**		**DATE:**		**FROM:**		**TO:**		**HEIGHT**	

ED_002238_00003461-00019

SQUAT CALCULATION (CONFINED WATERS)

DRAFT (Meters)	SPEED (KNOTS)														
	2,0	3,0	4,0	5,0	6,0	7,0	8,0	9,0	10,0	11,0	12,0	13,0	14,0	15,0	16,0
6,00 M	0.06	0.13	0.23	0.36	0.51	0.70	0.91	1.16	1.43	1.73	2.06	2.42	2.80	3.22	3.66
6,50 M	0.06	0.13	0.23	0.36	0.52	0.70	0.92	1.16	1.44	1.74	2.07	2.43	2.82	3.23	3.68
7,00 M	0.06	0.13	0.23	0.36	0.52	0.71	0.92	1.17	1.45	1.75	2.08	2.44	2.83	3.25	3.70
7,50 M	0.06	0.13	0.23	0.36	0.52	0.71	0.93	1.18	1.45	1.76	2.09	2.46	2.85	3.27	3.72
8,00 M	0.06	0.13	0.23	0.37	0.53	0.72	0.93	1.18	1.46	1.77	2.10	2.47	2.86	3.28	3.74
8,50 M	0.06	0.13	0.23	0.37	0.53	0.72	0.94	1.19	1.47	1.78	2.11	2.48	2.88	3.30	3.76
9,00 M	0.06	0.13	0.24	0.37	0.53	0.72	0.94	1.19	1.47	1.78	2.12	2.49	2.89	3.32	3.77
9,50 M	0.06	0.13	0.24	0.37	0.54	0.73	0.95	1.20	1.48	1.79	2.13	2.50	2.90	3.33	3.79
10,00 M	0.06	0.13	0.24	0.37	0.54	0.73	0.95	1.21	1.49	1.80	2.14	2.52	2.92	3.35	3.81
10,50 M	0.06	0.13	0.24	0.37	0.54	0.73	0.96	1.21	1.50	1.81	2.16	2.53	2.93	3.37	3.83
11,00 M	0.06	0.14	0.24	0.38	0.54	0.74	0.96	1.22	1.50	1.82	2.17	2.54	2.95	3.39	3.85
11,50 M	0.06	0.14	0.24	0.38	0.54	0.74	0.97	1.23	1.51	1.83	2.18	2.56	2.96	3.40	3.87
12,00 M	0.06	0.14	0.24	0.38	0.55	0.74	0.97	1.23	1.52	1.84	2.19	2.57	2.98	3.42	3.89
12,50 M	0.06	0.14	0.24	0.38	0.55	0.75	0.98	1.24	1.53	1.85	2.20	2.58	2.99	3.44	3.91
13,00 M	0.06	0.14	0.25	0.38	0.55	0.75	0.98	1.24	1.53	1.86	2.21	2.59	3.01	3.45	3.93
13,50 M	0.06	0.14	0.25	0.39	0.56	0.76	0.99	1.25	1.54	1.87	2.22	2.61	3.02	3.47	3.95

SQUAT CALCULATION (OPEN WATERS)

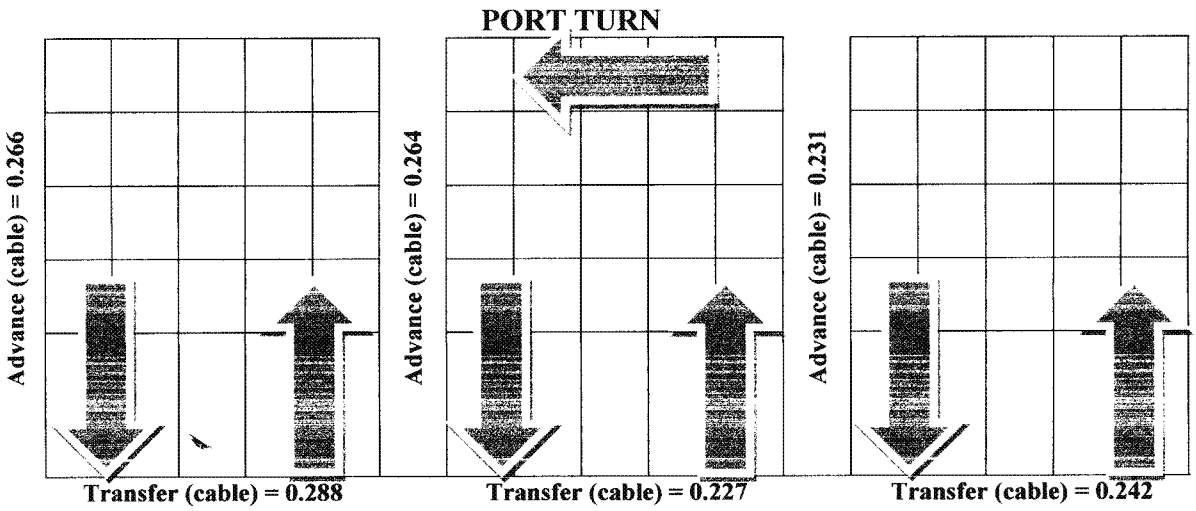
DRAFT (Meters)	SPEED (KNOTS)														
	2,0	3,0	4,0	5,0	6,0	7,0	8,0	9,0	10,0	11,0	12,0	13,0	14,0	15,0	16,0
6,00 M	0.03	0.06	0.11	0.18	0.26	0.35	0.46	0.58	0.71	0.86	1.03	1.21	1.40	1.61	1.83
6,50 M	0.03	0.06	0.11	0.18	0.26	0.35	0.46	0.58	0.72	0.87	1.03	1.21	1.41	1.62	1.84
7,00 M	0.03	0.07	0.12	0.18	0.26	0.35	0.46	0.59	0.72	0.87	1.04	1.22	1.42	1.63	1.85
7,50 M	0.03	0.07	0.12	0.18	0.26	0.36	0.46	0.59	0.73	0.88	1.05	1.23	1.42	1.63	1.86
8,00 M	0.03	0.07	0.12	0.18	0.26	0.36	0.47	0.59	0.73	0.88	1.05	1.23	1.43	1.64	1.87
8,50 M	0.03	0.07	0.12	0.18	0.26	0.36	0.47	0.59	0.73	0.89	1.06	1.24	1.44	1.65	1.88
9,00 M	0.03	0.07	0.12	0.18	0.27	0.36	0.47	0.60	0.74	0.89	1.06	1.25	1.44	1.66	1.89
9,50 M	0.03	0.07	0.12	0.19	0.27	0.36	0.47	0.60	0.74	0.90	1.07	1.25	1.45	1.67	1.90
10,00 M	0.03	0.07	0.12	0.19	0.27	0.36	0.48	0.60	0.74	0.90	1.07	1.26	1.46	1.68	1.91
10,50 M	0.03	0.07	0.12	0.19	0.27	0.37	0.48	0.61	0.75	0.91	1.08	1.27	1.47	1.68	1.92
11,00 M	0.03	0.07	0.12	0.19	0.27	0.37	0.48	0.61	0.75	0.91	1.08	1.27	1.47	1.69	1.93
11,50 M	0.03	0.07	0.12	0.19	0.27	0.37	0.48	0.61	0.76	0.92	1.09	1.28	1.48	1.70	1.94
12,00 M	0.03	0.07	0.12	0.19	0.27	0.37	0.49	0.62	0.76	0.92	1.09	1.28	1.49	1.71	1.95
12,50 M	0.03	0.07	0.12	0.19	0.27	0.37	0.49	0.62	0.76	0.92	1.10	1.29	1.50	1.72	1.96
13,00 M	0.03	0.07	0.12	0.19	0.28	0.38	0.49	0.62	0.77	0.93	1.11	1.30	1.50	1.73	1.96
13,50 M	0.03	0.07	0.12	0.19	0.28	0.38	0.49	0.62	0.77	0.93	1.11	1.30	1.51	1.73	1.97

ED_002238_00003461-00020

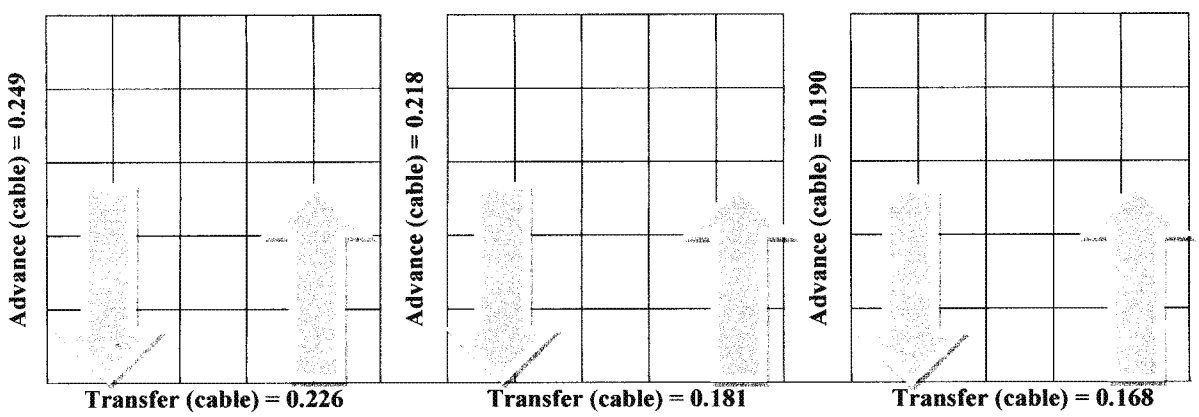
TURNING CIRCLE

BALLAST CONDITION			LOADED CONDITION			SHALLOW WATER, FULLY LOADED		
Initial speed	12.60	knts	Initial speed	11.40	knts	Initial speed	9.2	knts
Advance		Cables	Advance		Cables	Advance		Cables
Tactical diameter		Cables	Tactical diameter		Cables	Tactical diameter		Cables

PORT TURN



STRB TURN



ROLLING & PITCHING TABLES

FORMULA FOR INCREASE IN DRAFT DUE TO ROLL(LIST)

The formula for calculating the increase in draft for "X" degrees of list (roll) is:

Draft Increase = Vessel Beam ÷ 2 x Sine of List Angle

Example: Vessel Beam : 32.20 mtrs - Increase in Draft Due to 2° List = Draft Increase: 0.56 mtrs

INCREASE IN DRAFT DUE TO ROLL					
BEAM (m)	DEGREE OF LIST				
	2°	4°	6°	8°	10°
25	0.44	0.87	1.09	1.74	2.17
28	0.49	0.98	1.22	1.95	2.43
32	0.56	1.12	1.39	2.23	2.78
36	0.62	1.22	1.52	2.38	2.92
42	0.72	1.43	1.77	2.78	3.43

FORMULA FOR INCREASE IN DRAFT DUE TO PITCH

The formula for calculating the increase in draft for "X" degrees of pitch is:

Draft Increase = Vessel Length ÷ 2 x Sine of Pitch Angle ***
***(Formula assumes tipping center is at midpoint. That means, that the clinometers is placed in the middle of the vessel)

Example: Vessel : 230 mtrs - Increase in Draft Due to 1° Pitch = Draft Increase: 2 mtrs

INCREASE IN DRAFT DUE TO PITCH			
LBP (m)	DEGREE OF PITCH***		
	1°	2°	3°
160	1.40	2.79	4.19
180	1.57	3.14	4.71
200	1.75	3.49	5.23
220	1.92	3.84	5.79
250	2.18	4.36	6.29