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:	664	Voyage No	285
From	ST. JOHN	To	SAVANNAH	Via	—
Date of Departure	22 SEP 2013	E.T.A.	26 SEP 2013	Passage Speed	13,00
Laden	YES	In Ballast	NO	Cargo/Quantity	F.O. 232.200 BBLS

Sailing Mean Draft :	10,90	Fore :	10,90	Aft :	10,90	Density:	1.012
Arrival Mean Draft :	11,01	Fore :	11,01	Aft :	11,01	Density:	1.000

Passage Route	Creat Circle :	NO	Rhumb Line :	YES
Passage Distance	Great Circle :	Ø	Rhumb Line :	1282

	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: WK 37/13 - 17 SEP 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
BAZOTIS KONSTANTINOS	Chief Officer	04:00-08:00/16:00-20:00	ACORIL GLOSE	04:00-08:00/16:00-20:00
SIAKAVARAS KONSTANTINOS	2nd Officer	08:00-12:00/20:00-24:00	BATAC EARVIN JAY	08:00-12:00/20:00-24:00
NIKOLOF IORDANIS	2nd Officer	12:00-16:00/24:00-04:00	DUMANTAY JOEL	12:00-16:00/24:00-04:00

CHARTS used: 4013, 4750, 4749, 4746, 2670, 2865, 2801, 2807, 2710

NAUTICAL PUBLICATIONS to be used:

TIDE TABLES VOL.	NP 202 (VOL 2)	LIST OF LIGHTS VOL.	NP 81, NP 82
RADIO SIGNALS	281(2), 282, 283(2), 284, 285, 286(5)	PILOT BOOKS	NP 59, NP 68, NP 69
ROUTEING CHARTS:	5124(9)	ROUTEING GUIDES:	SHIPS' ROUTEING
TIDAL STREAM ATLAS:	—		

Prepared by	SIAKAVARAS K. 2/O	Checked by	BAZOTIS K. C/O
Signature		Signature	
		Checked by	NIKOLOF I. 2/O
		Signature	
		Approved by Master	TSEKOS 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 knts	BW (I or II or III)	UKC in mtrs	STATUS (NORMAL(N)/ST'BY(	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	
1.	LAT LON	45°11'N 066° 04'W																	
2.	LAT LON	45°03'N 066° 09,5'W	206°	8,9	11,7	II	18,5	S	ON	N-NE 0,5	4-5 N-NW	15m	R	G	✓	✓	✓	✓	HEAVY TRAFFIC
3.	LAT LON	44° 32,5'N 066° 21'W	195°	32	13,0	I	>25	N	OFF	N-NE 0,5	4-5 N-NW	15m	R	G	✓	✓	✓	✓	HEAVY TRAFFIC
4.	LAT LON	44° 16'N 066°54'W	235°	29	13,0	I	>25	N	OFF	N-NE 0,5	4-5 N-NW	30m	R	G	✓	✓	✓		HEAVY TRAFFIC
5.	LAT LON	43°00'N 067° 10'W	189°	77	13,0	I	>25	N	OFF	N-NE 0,5	4-5 N-NW	30m	G	A		✓	✓		
6.	LAT LON	41°58'N 065°46'W	135°	88	13,0	I	>25	N	OFF	NE 0,5	4-5 N	1HR	G	A		✓			
7.	LAT LON	39°40'N 065°40'W	178°	138	13,0	I	>25	N	OFF	NE 0,5	5-6 N	1HR	G	A		✓			
8.	LAT LON	34° 10'N 071°50'W	222°	444	13,0	I	>25	N	OFF	NE 0,5	5-6 N	1HR	G	A		✓			
9.	LAT LON	31°56,4'N 080°40'W	258°	466	13,0	I-II	1,18	N-S	OFF→ ON	N 0,5	4-5 N	1HR	G	A		✓	✓		FISHING BOATS
	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.

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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	
	LAT																		
	LON																		
	LAT																		
	LON																		
	LAT																		
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- ***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.

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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.	AT BERTH	FUNDY TRAFFIC	PRIOR TO DEPARTURE	VHF CH 12
2.	ENTERING SECTOR "1"	FUNDY TRAFFIC	ENTERING SECTOR "1"	VHF CH 14
3.	DAILY NOON PSN	AMVER	AMVER SP, DR, FR	INMC
4.	33°04'N/075°58'W	SAVANAH PILOTS	PILOT REQUEST	VHF CH 14

ANCHORAGE and ABORT POINT INFORMATION

	PORT OF DEPARTURE	INTERMEDIATE PORT	PORT OF DESTINATION
SBE / Full away position	LAT 45°11'N LONG 066°04'W	LAT LONG	LAT 32°00'N LONG 080°25'W
Pilot boarding / dropping position	LAT 45°11'N LONG 066°04'W	LAT LONG N/A	LAT 31°56,4'N LONG 080°40'W
Foreseen Tanker Anchorage	LAT LONG N/A	LAT LONG	LAT 31°50'N LONG 080°20'W
Abort point	N/A	LAT LONG	LAT 031°56'N LONG 080°44'W

SHELTERED WATERS/SAFE ANCHORAGES DURING SEA PASSAGE

Lat: 45° 09'N	Lat: 31° 50'N	Lat:
Long: 066° 07'W	Long: 080° 20'W	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 ST. JOHN (22 SEP) / SAVANNAH (26-27-28 SEP)

DATE: 22 SEP 2013		DATE: 26 SEP 2013		DATE: 27 SEP 2013		DATE: 28 SEP 2013	
TIME	HIGH/LOW	TIME	HIGH/LOW	TIME	HIGH/LOW	TIME	HIGH/LOW
01:09	8,00	00:35	1,98	01:27	1,95	02:19	1,95
07:21	0,70	06:34	0,43	07:28	0,49	08:26	0,49
13:28	8,10	12:56	2,16	13:48	2,13	14:40	2,16
19:45	0,70	19:14	0,58	20:10	0,61	21:07	0,58

TIDAL CURRENTS PRE-CALCULATION

DATE: 22 SEP 2013		DATE: 26 SEP 2013		DATE: 27 SEP 2013		DATE: 28 SEP 2013		DATE:	
AREA: BAY OF FUNDY		AREA: SAVANNAH		AREA: SAVANNAH		AREA: SAVANNAH		AREA:	
TIME	Dir/Speed	TIME	Dir/Speed	TIME	Dir/Speed	TIME	Dir/Speed	TIME	Dir/Speed
01:21	212° / 3,0	01:41-04:42	110° / 1,5	02:33-05:36	110° / 1,5	03:26-06:54	110° / 1,4		
07:17-10:21	032° / 3,4	07:45-10:20	286° / 1,8	08:40-11:16	286° / 1,8	09:36-12:12	286° / 1,7		
13:35-16:46	212° / 3,2	14:09-17:08	110° / 1,5	15:00-18:06	110° / 1,5	15:50-19:16	110° / 1,5		
19:47-22:43	032° / 3,1	20:26-22:50	286° / 1,4	21:20-23:46	286° / 1,4	22:11-00:40	286° / 1,5		

		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	$\frac{V^2 \text{ (vessel speed)}}{100}$

2013 MAXIMUM SAILING DRAFTS BASIS CHART DATUM OF 15.4 FEET / 4.6 M

DATE		HIGH TIDE TIME	TIDE LEVEL IN FEET	MAXIMUM SAILING DRAFT IN FEET	MAXIMUM SAILING DRAFT IN METERS
September	1	0950	22.3	34.3	10.45
September	1	2210	23.3	35.2	10.72
September	2	1040	23	34.9	10.64
September	2	2255	24	35.8	10.92
September	3	1120	23.6	35.5	10.81
September	3	2340	24.6	36.4	11.08
September	4	1200	24.3	36.1	11.00
September			0	14.0	4.27
September	5	0015	25.3	37.0	11.28
September	5	1230	24.9	36.6	11.17
September	6	0050	25.6	37.3	11.36
September	6	1305	25.6	37.3	11.36
September	7	0125	25.9	37.5	11.44
September	7	1340	25.9	37.5	11.44
September	8	0200	25.9	37.5	11.44
September	8	1420	26.2	37.8	11.53
September	9	0240	25.6	37.3	11.36
September	9	1500	26.2	37.8	11.53
September	10	0325	25.3	37.0	11.28
September	10	1545	25.9	37.5	11.44
September	11	0410	24.9	36.6	11.17
September	11	1635	25.6	37.3	11.36
September	12	0505	24.3	36.1	11.00
September	12	1735	25.3	37.0	11.28
September	13	0605	23.6	35.5	10.81
September	13	1835	24.9	36.6	11.17
September	14	0715	23.6	35.5	10.81
September	14	1945	24.9	36.6	11.17
September	15	0825	24	35.8	10.92
September	15	2055	25.3	37.0	11.28
September	16	0930	24.6	36.4	11.08
September	16	2155	25.9	37.5	11.44
September	17	1030	25.6	37.3	11.36
September	17	2255	26.6	38.2	11.64
September	18	1120	26.2	37.8	11.53
September	18	2345	26.9	38.5	11.72
September	19	1210	26.9	38.5	11.72
September			0	14.0	4.27
September	20	0035	26.9	38.5	11.72
September	20	1300	27.2	38.7	11.80
September	21	0125	26.6	38.2	11.64
September	21	1345	26.9	38.5	11.72
September	22	0210	26.2	37.8	11.53
September	22	1430	26.6	38.2	11.64
September	23	0255	25.3	37.0	11.28
September	23	1515	25.9	37.5	11.44
September	24	0340	24.6	36.4	11.08
September	24	1600	24.9	36.6	11.17
September	25	0430	23.6	35.5	10.81
September	25	1650	24.3	36.1	11.00
September	26	0520	22.6	34.5	10.53
September	26	1745	23.3	35.2	10.72

DATE		HIGH TIDE TIME	TIDE LEVEL IN FEET	MAXIMUM SAILING DRAFT IN FEET	MAXIMUM SAILING DRAFT IN METERS
September	**27**	0620	22	34.0	10.36
September	**27**	1840	22.6	34.5	10.53
September	**28**	0715	21.7	33.7	10.28
September	**28**	1940	22.3	34.3	.10.45
September	**29**	0815	21.7	33.7	10.28
September	**29**	2040	22.3	34.3	10.45
September	**30**	0910	22	34.0	10.36
September	**30**	2130	23	34.9	10.64

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

Plotted on the chart (√)	4750	Plotted on the chart (√)	4750	Plotted on the chart (√)	4750
E/R ST'BY LAT:	45°16,36'N	BW II OR III LAT:	45°16,36'N	ECHOSOUNDER ON LAT:	45°16,36'N
LONG:	066°02,4'W	LONG:	066°02,4'W	LONG:	066°02,4'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°16,36'N	FROM ST. JOHN BERTH TO ST. JOHN P/S															
	LON	066°02,4'W																
2.	LAT	45°16,25'N	176°	0,1	5,0		33,87	Y	212° 3,2	5m	V	R			✓			PROCEED ONLY IN TIDE WINDOW
	LON	066°02,4'W																
3.	LAT	45°15,38'N	192°	1,0	5,0		33,87	Y	212° 3,2	5m	V	R			✓			PROCEED ONLY IN TIDE WINDOW
	LON	066°02,9'W																
4.	LAT	45°14,7'N	184°	0,7	5,0		33,87	Y	212° 3,2	5m	V	R	✓		✓	✓		PROCEED ONLY IN TIDE WINDOW
	LON	066°02,85'W																
5.	LAT	45°14'N	154°	0,6	5,0		33,87	Y	212° 3,2	5m	R	V	✓		✓	✓		PROCEED ONLY IN TIDE WINDOW
	LON	066°02,6'W																
6.	LAT	45°11'N	197°	3,3	9,2		33,87	Y	212° 3,2	5m	R	V	✓		✓	✓		PROCEED ONLY IN TIDE WINDOW
	LON	066°04'W																
	LAT																	
	LON																	
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- ***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.

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Plotted on the chart (√):	2801	Plotted on the chart (√):	2801	Plotted on the chart (√):	2865
E/R ST'BY LAT:	32°00'N	BW II OR III LAT:	32°00'N	ECHOSOUNDER ON LAT:	32°25'N
LONG:	080°25'W	LONG:	080°25'W	LONG:	078°40'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	31°56,4'N																
	LON	080°40'W					SAVANNAH PILOT TO BERTH											
2.	LAT	31°58'N	302°	3,0	5,0	0,57	33,76	N	212° 3,2	5m	V	R			✓			
	LON	080°43'W																
3.	LAT	31°58,38'N	290°	1,1	5,0	2,43	33,76	Y	212° 3,2	5m	✓	R			✓			
	LON	080°44,2'W																
4.	LAT	31°59,7'N	298°	2,8	5,0	4,41	33,76	Y	212° 3,2	5m	✓	R			✓			
	LON	080°47,7'W																
5.	LAT	32°01,92'N	323°	2,8	5,0	3,65	33,76	Y	212° 3,2	5m	✓	R	✓		✓			
	LON	080°49,1'W																
6.	LAT	32°02,3'N	288°	1,3	5,0	4,26	33,76	Y	212° 3,2	5m	✓	R	✓		✓			
	LON	080°50,55'W																
7.	LAT	32°02,1'N	265°	2,5	5,0	3,95	33,76	Y	212° 3,2	5m	✓	R	✓		✓			
	LON	080°53,45'W																
8.	LAT	32°02,35'N	279°	1,7	5,0	3,34	33,76	Y	212° 3,2	5m	✓	R	✓		✓			
	LON	080°55,4'W																
9.	LAT	32°04,05'N	319°	2,2	5,0	3,95	33,76	Y	212° 3,2	5m	✓	R	✓		✓			
	LON	080°57,12'W																
10.	LAT	32°04,3'N	302°	0,5	5,0	3,95	33,76	Y	212° 3,2	5m	✓	R	✓		✓			
	LON	080°57,6'W																
11.	LAT	32°04,65'N	282°	0,7	5,0	4,41	33,76	Y	212° 3,2	5m	✓	R	✓		✓			
	LON	080°58,45'W																
12.	LAT	32°04,72'N	296°	0,6	5,0	4,41	33,76	Y	212° 3,2	5m	✓	R	✓		✓			
	LON	080°59,1'W																
13.	LAT	32°05,1'N	336°	1,1	5,0	2,73	33,76	Y	212° 3,2	5m	✓	R	✓		✓			
	LON	080°59,62'W																
14.	LAT	32°06,1'N	307°	0,7	5,0	4,87	33,76	Y	212° 3,2	5m	✓	R	✓		✓			
	LON	081°00,25'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.

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

Plotted on the chart (√)	2801	Plotted on the chart (√)	2801	Plotted on the chart (√)	2865
E/R ST'BY LAT:	32°00'N	BW II OR III LAT:	32°00'N	ECHOSOUNDER ON LAT:	32°25'N
LONG:	080°25'W	LONG:	080°25'W	LONG:	078°40'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
14.	LAT	32°06,1'N	SAVANNAH PILOT TO BERTH															
	LON	081°00,25'W																
15.	LAT	32°06'N	259°	0,5	5,0	4,87	33,76	Y	212° 3,2	5m	V	R	✓		✓			
	LON	081°00,85'W																
16.	LAT	32°05,3'N	294°	0,8	5,0	4,87	33,76	Y	212° 3,2	5m	V	R	✓		✓			
	LON	081°01,4'W																
17.	LAT	32°04,8'N	246°	1,2	5,0	4,56	33,76	Y	212° 3,2	5m	V	R	✓		✓			
	LON	081°02,7'W																
18.	LAT	32°04,85'N	274°	0,8	5,0	3,04	33,76	Y	212° 3,2	5m	V	R	✓		✓			
	LON	081°03,65'W																
19.	LAT	32°04,75'N	263°	0,8	5,0	3,04	33,76	Y	212° 3,2	5m	V	R	✓		✓			
	LON	081°04,55'W																
20.	LAT	32°05'N	266°	0,9	5,0	3,65	33,76	Y	212° 3,2	5m	V	R			✓			
	LON	081°05,38'W																
21.	LAT	32°05,9'N	316°	1,3	5,0	4,26	33,76	Y	212° 3,2	5m	V	R	✓		✓			
	LON	081°06,6'W																
	LAT																	
	LON																	
	LAT																	
	LON																	
	LAT																	
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	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.

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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	
FAST. SOUN BERTH TO P/S	GROUNDING	4	3	11 - 15	BWII, P.O.B., ECHO SOUNDER ON	DOUBLE CHECK WITH PILOT TIDE CALCULATIONS, TEST ECHO SOUNDER	6 - 10
TRANSITING SAVANNAH RIVER	COLLISSION	3	4	11 - 15	BWII, P.O.B. 2 RADARS ON	3 RADARS ON, ADDITIONAL LOOKOUTS	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	
Nil	1	Unlikely	1	21-25	Intolerable	

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NO GO AREA CALCULATION	AT SEA	IN PORT	
Ship's max draft	11,01	10,90	mtrs
Safety margin (10%)	1,1	1,09	mtrs
MAXIMUM DRAUGHT*	12,11	11,99	
Increase of draught due to rolling/*****	0,56	N/A	**mtrs**
Increase of draught due to pitching/*****	1,57	N/A	**mtrs**
INCREASED MAXIMUM DRAUGHT*	13,68	11,99	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.**

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UNDERKEEL CLEARANCE CALCULATIONS FOR SHALLOWEST POINTS OF THE PASSAGE

	LAT							
	LONG							
	or AREA	ST. JOHN	SAVANAH					
1	Lowest Tide for Date Range or	0,70	0,43					
	Highest Tide for Date Range(whichever is applicable)	8,10	1,98					
2	Assumed Datum Depth (Chart Data)	4,70	11,58					
3	Depth Water Available **(1 + 2)**	12,80	13,56					
4	Vessel's Maximum Draft Saltwater	—	—					
5	Adjusted Draft for Salinity	10,90	11,01					
6	**Increase draft due to Rolling and Pitching**	N/A	N/A					
7	**Underkeel Clearance Excluding Squat (3-6)**	1,90	2,55					
8	Underkeel Clearance Required	1,09	1,10					
9	Maximum Allowed Squat (7 –8)	0,81	1,45					
10	Correspondent Speed for Allowed Squat	7,0 Knts	10,0 Kts					

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

DATE:	22 SEP	**FROM:**	10:21	**TO:**	13:35	**HEIGHT**	8,10	**DATE:**	27 SEP	**FROM:**	11:16	**TO:**	15:00	**HEIGHT**	2,13
DATE:	26 SEP	**FROM:**	10:20	**TO:**	14:09	**HEIGHT**	1,98	**DATE:**		**FROM:**		**TO:**		**HEIGHT**	
DATE:	27 SEP	**FROM:**	22:50	**TO:**	02:33	**HEIGHT**	2,16	**DATE:**		**FROM:**		**TO:**		**HEIGHT**	

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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

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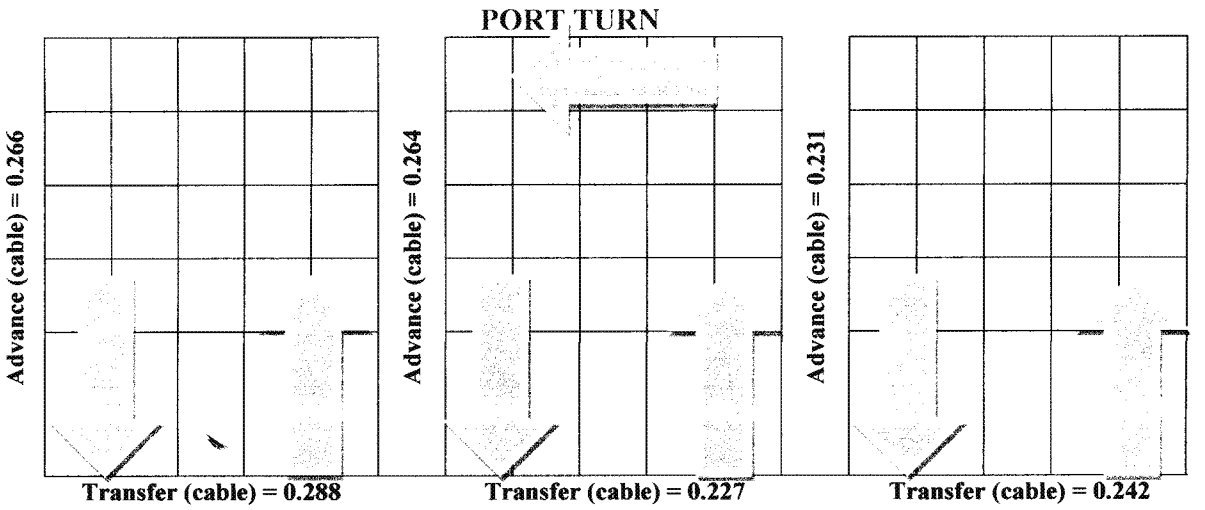
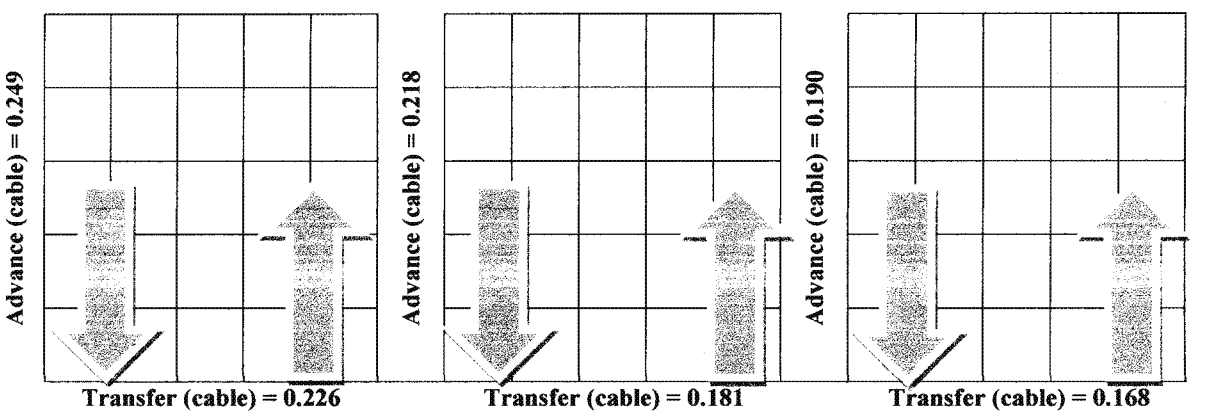
TURNING CIRCLE

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