YRKESHÖGSKOLAN
NOVIA

Aspects of voyage planning on a small tonnage Finnish flag general cargo vessel

Kristo Kööp

Degree Thesis

Bachelor of Maritime Management

Degree Programme in Maritime Management, Captain

Turku 2023

DEGREE THESIS

Author: Kristo Kööp

Degree Programme and place of study: Maritime Management, Novia

Specialisation: Bachelor of Maritime Management

Supervisor(s): Peter Björkroth, Ritva Lindell, Tony Karlsson

Title: Aspects of voyage planning on a small tonnage Finnish flag general cargo vessel

---

Date: 15.05.2023 Number of pages: 31 Appendices: 0

Abstract

The aim was to create a portfolio, that describes the steps taken into consideration on a small tonnage Finnish flag vessel when creating a voyage plan, and to create study guide for young officers on voyage planning. The author is a 2nd officer on a general cargo vessel under a Finnish flag, who is responsible for making voyage plans. The author must take into consideration the policies, international conventions and procedures in place when creating a passage plan for an upcoming voyage and follow the Company Specific quality guidelines.
This paper consists of an example voyage plan that was created for a real-life trip from Halmstad, Sweden to Wismar, Germany.
The author describes his steps when creating a voyage plan and what he has to take into consideration. The author discusses the advantages and disadvantages of having a standardized voyage planning guide.
This study can be used as a guide to students or ship personnel when creating a voyage plan.

Language: English

Key Words: voyage planning, bridge officer, safety of navigation

Table of Contents

1 Introduction

How we navigate our vessel safely and environmentally friendly is based on different policies, international conventions and ISO standards issued to the company. For the simplicity of this paper, I will be concentrating on the Voyage Plan Guidance from the Safety Management System (SMS) of the vessel.

2 Navigation

2.1.1 Introduction

When planning a passage on our vessel, we follow the guidelines from the Voyage Plan Guidance from the SMS. One of the big factors taken into consideration with the passage plan is the safety of the vessel, human lives, and the cargo.

2.1.2 Instruments used on this vessel

On our ship, we have 2 Transas 4000 ECDIS, 2 Furuno FAR radars, Anschutz gyro compass, Kelvin Hughes magnetic compass, Anschutz Pilotstar D autopilot, Furuno FE-700 echo sounder, Furuno GP-150 GPS, Navigator MK-10 GPS, Furuno MF HF DSC-6 terminal/receiver, Sailor 6222 VHF DSC, Furuno FM-8500 VHF and Sailor 6018 GMDSS Inmarsat C terminal.

3 Bridge team

3.1.1 Bridge manning

At sea, our bridge is manned by 1 licensed bridge officer and 1 lookout. The rotations are set out as following: 0000-0400 2nd officer and ordinary seaman (OS), 0400-0800 chief officer and OS, 0800-1200 master and ordinary seaman, 1200-1600 2nd officer and able seaman (AB), 1600-2000 chief officer and AB, 2000-0000 master and AB.

3.1.2 Bridge team's responsibilities

Master – overall command of the vessel, has the watches 0800-1200, 2000-0000.

Chief officer – in charge of ship's maintenance, cargo plans, medicals, security threats, on-scene commander during firefighting, oil spills, boat crew during man overboard (MOB) situations. Has the watches 0400-0800, 1600-2000.

Second officer – in charge of voyage planning, chart, and publication updates, GMDSS equipment maintenance, safety officer, crew familiarization, training, lifesaving appliances and their maintenance, fire-fighting equipment maintenance and upkeep. Has the watches 0000-0400, 1200-1600.

The navigation at sea is done by all the officers, so it's important that the passage plan is done in such a way, that everyone involved can understand it and follow it.

4 Introduction to voyage planning

4.1 Introduction

When planning routes on our ship, the author uses guidelines and templates provided by the company in the SMS. The Voyage Plan Guidance describes in detail what has to be taken into consideration when preparing a passage plan from point A to point B. A proper voyage plan must ensure a safe passage, safety of the vessel, human lives, cargo and the environment.

Before departure, a prepared voyage plan is checked by the master. The voyage plan has to cover the entire passage from berth to berth. It also includes the consumptions of technical liquids, speed, distances in Emission Control Areas (ECA), fuels, how much bunker, lube oil, fresh water we have on board. We must ensure that the voyage is not outside the legal and insured trading limits.

In addition, the depth calculations must be completed before departure. These include the latest information of displacement and draughts which are given to the second officer by

the chief officer and different allowances, such as squat effect, freshwater allowance, heel effect allowance, wave response allowance, company policy allowance, and chart inaccuracy (CATZOC) calculations. These calculations take into consideration open waters and restricted channels of width of 108,8 meters or less.

The master approves the settings for Safety Depth, Safety Contour, Warning Sector and Cross Track Error (XTE) before the voyage. Different settings may be applied to different legs of the voyage, which are also indicated in the Voyage Plan Table, if applicable.

Once we have departed to our voyage, the voyage plan is followed. If it is necessary to make any changes during the voyage, i.e due to weather, emergency, change in orders, the plan will be modified and approved by the master. If it is necessary to make any changes to avoid danger or to follow the Convention on the International Regulations for Preventing Collisions at Sea (COLREG), then the Officer of the Watch (OOW) shall make the changes and return the ship to the planned route after the danger has passed.

4.2 Nautical Charts and Publications

As we don’t use paper charts, the latest updates and subscriptions to charts must be ordered and installed to the ECDIS (Electronic Chart Display and Information System). This is done through Datema Chartplanner system. We also use digital nautical publications, which must be updated before departure through the Datema Digital Bookshelf system.

The charts and publications are updated every week to have the latest versions available. When ordering charts, we take into consideration possible deviations due to weather, so that we are still able to navigate safely regardless of where we have to deviate.

4.3 Voyage Plan Table

In our vessel, we use printed Voyage Plan Table supplemented with digital waypoint list.

A Voyage Plan Table must include:

- Reporting points
- Changes in ECDIS settings (if applicable)
- Speed limits (if applicable)
- Any other restrictions
- Essential navigational details
- Narrow and shallow passages

4.4 Navigational Warnings

For manual updates, we use our INMARSAT system, which receives Enhanced Group Calling (EGC) messages with latest navigational and weather warnings. These messages are checked before and throughout the voyage.

4.5 Electronic Nautical Chart (ENC) accuracy

During the voyage planning process, we must assess the accuracy of ENC data. The zones of confidence (CATZOCs) provide the maximum errors per depth and position. This is one of the most important parts, as there are several parts of the sea which were mapped years ago and with different techniques used. Furthermore, when calculating the Minimum Safe Transit Depth (MSTD), safety contour and maximum transit speed, additional safety margins are applied for areas of low accuracy.

We also must take into consideration the time when the assigned CATZOC survey was carried out, and the effects of geological instability.

ZOC	Position Accuracy	Depth Accuracy		Seafloor Coverage	Typical Survey Characteristics	Symbol
A1	± 5 m	= 0.50 + 1%d		Full area search undertaken. All significant seafloor features detected and depths measured.	Controlled, systematic survey, high position and depth accuracy achieved using DGPS or a minimum three high quality lines of position (LOP) and a multibeam, channel or mechanical sweep system	
		Depth (m)	Accuracy (m)			
		10 30 100 1000	± 0.6 ± 0.8 ± 1.5 ± 10.5			
A2	± 20 m	= 1.00 + 2%d		Full area search undertaken. All significant seafloor features detected and depths measured.	Controlled, systematic survey achieving position and depth accuracy less than ZOC A1 and using a modern survey echosouder and a sonar or mechanical sweep system	
		Depth (m)	Accuracy (m)			
		10 30 100 1000	± 1.2 ± 1.6 ± 3.0 ± 21.0			
B	± 50 m	= 1.00 + 2%d		Full area search not achieved; uncharted features, hazardous to surface navigation are not expected but may exist	Controlled, systematic survey achieving similar depth but lesser position accuracies than ZOC A2, using a modern survey echosouder but no sonar or mechanical sweep system	
		Depth (m)	Accuracy (m)			
		10 30 100 1000	± 1.2 ± 1.6 ± 3.0 ± 21.0			
C	± 500 m	= 2.00 + 5%d		Full area search not achieved, depth anomalies may be expected.	Low accurancy survey or data collected on an opportunity basis such as soundings on passage	
		Depth (m)	Accuracy (m)			
		10 30 100 1000	± 2.5 ± 3.5 ± 7.0 ± 52.0			
D	Worse than ZOC C	Worse than ZOC C		Full area search not achieved, large depth anomalies may be expected.	Poor quality data or data that cannot be quality assessed due to lack of information	
U	Unassessed – The quality of the bathymetric data has yet to be assessed					

Figure 1. Zones of confidence, their accuracy, and symbols on ECDIS screen.

For example, if on ENC chart, CATZOC is a confidence zone A2 on planned route, it would mean that in that location of depths marked on this chart may be inaccurate by approximately 20 meters; or the possible error of the depth is 1 meter + 2% of the depth, e.g, if the mapped depth shows 10 meters, the error could be 1.2 meters (1 meter + 2% of 10 meters).

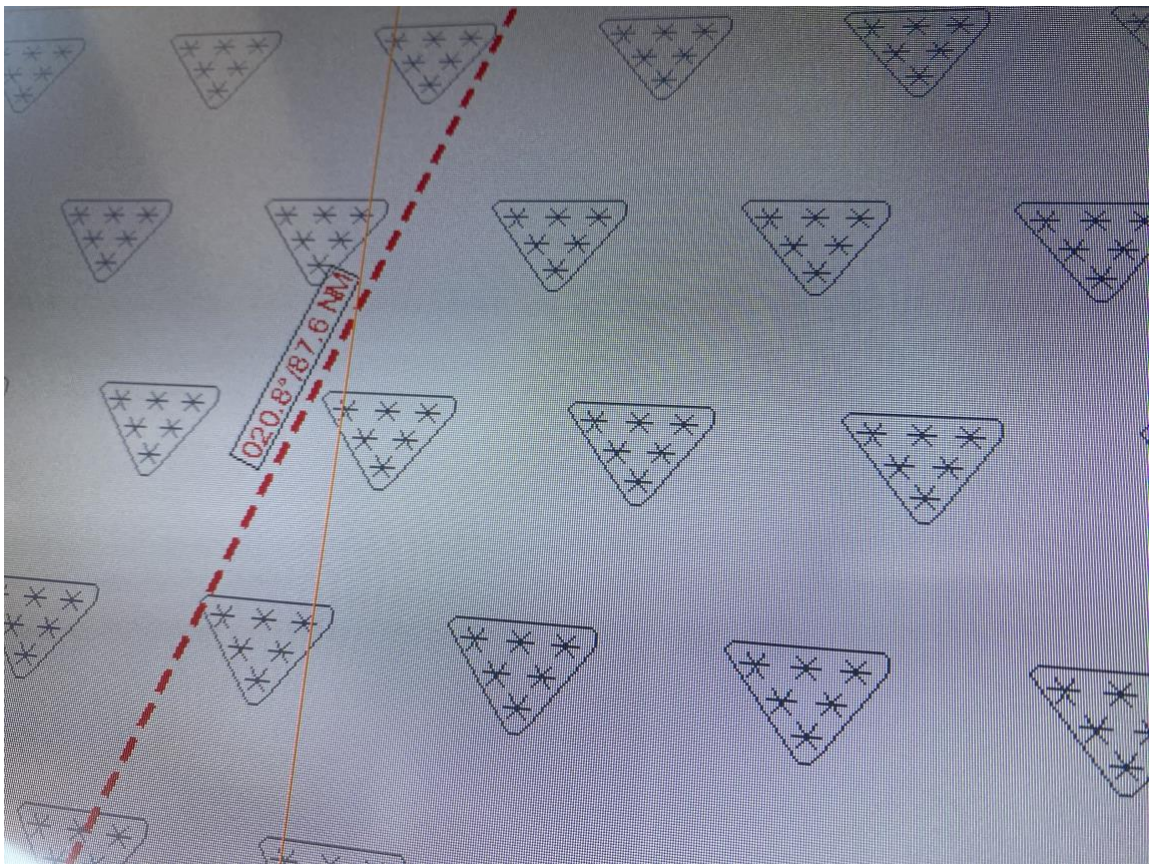
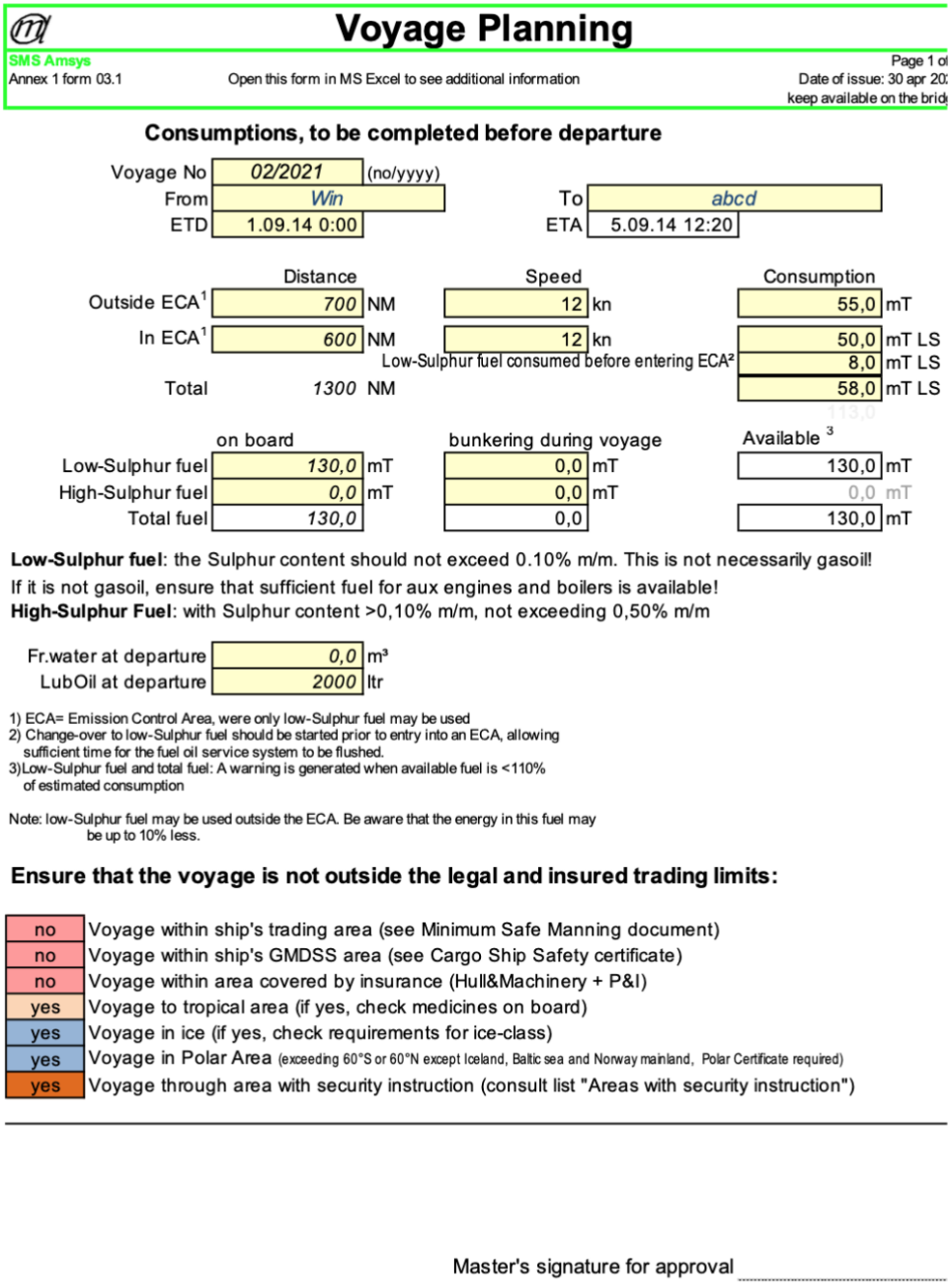


Figure 2. CATZOC on ECDIS screen.

4.6 Voyage Plan template

In our company, the following voyage plan template is used to streamline the voyage planning process and have it similar on every vessel in our company. This allows the bridge team to be manned on every vessel in the fleet and have them easily understand the planned voyage.

The following voyage planning template is from the Company's SMS.



Voyage Planning

SMS Amsys
Annex 1 form 03.1
Open this form in MS Excel to see additional information
Page 1 of
Date of issue: 30 apr 20
keep available on the brid

Consumptions, to be completed before departure

Voyage No	02/2021	(no/yyyy)			
From	Win		To	abcd	
ETD	1.09.14 0:00		ETA	5.09.14 12:20	

	Distance		Speed		Consumption	
Outside ECA[1]	700	NM	12	kn	55,0	mT
In ECA[1]	600	NM	12	kn	50,0	mT LS
			Low-Sulphur fuel consumed before entering ECA[2]		8,0	mT LS
Total	1300	NM			58,0	mT LS

	on board		bunkering during voyage		Available [3]	
Low-Sulphur fuel	130,0	mT	0,0	mT	130,0	mT
High-Sulphur fuel	0,0	mT	0,0	mT	0,0	mT
Total fuel	130,0		0,0		130,0	mT

Low-Sulphur fuel: the Sulphur content should not exceed 0.10% m/m. This is not necessarily gasoil!
If it is not gasoil, ensure that sufficient fuel for aux engines and boilers is available!
High-Sulphur Fuel: with Sulphur content >0,10% m/m, not exceeding 0,50% m/m

Fr.water at departure	0,0	m³
LubOil at departure	2000	ltr

1) ECA= Emission Control Area, were only low-Sulphur fuel may be used
2) Change-over to low-Sulphur fuel should be started prior to entry into an ECA, allowing sufficient time for the fuel oil service system to be flushed.
3) Low-Sulphur fuel and total fuel: A warning is generated when available fuel is <110% of estimated consumption

Note: low-Sulphur fuel may be used outside the ECA. Be aware that the energy in this fuel may be up to 10% less.

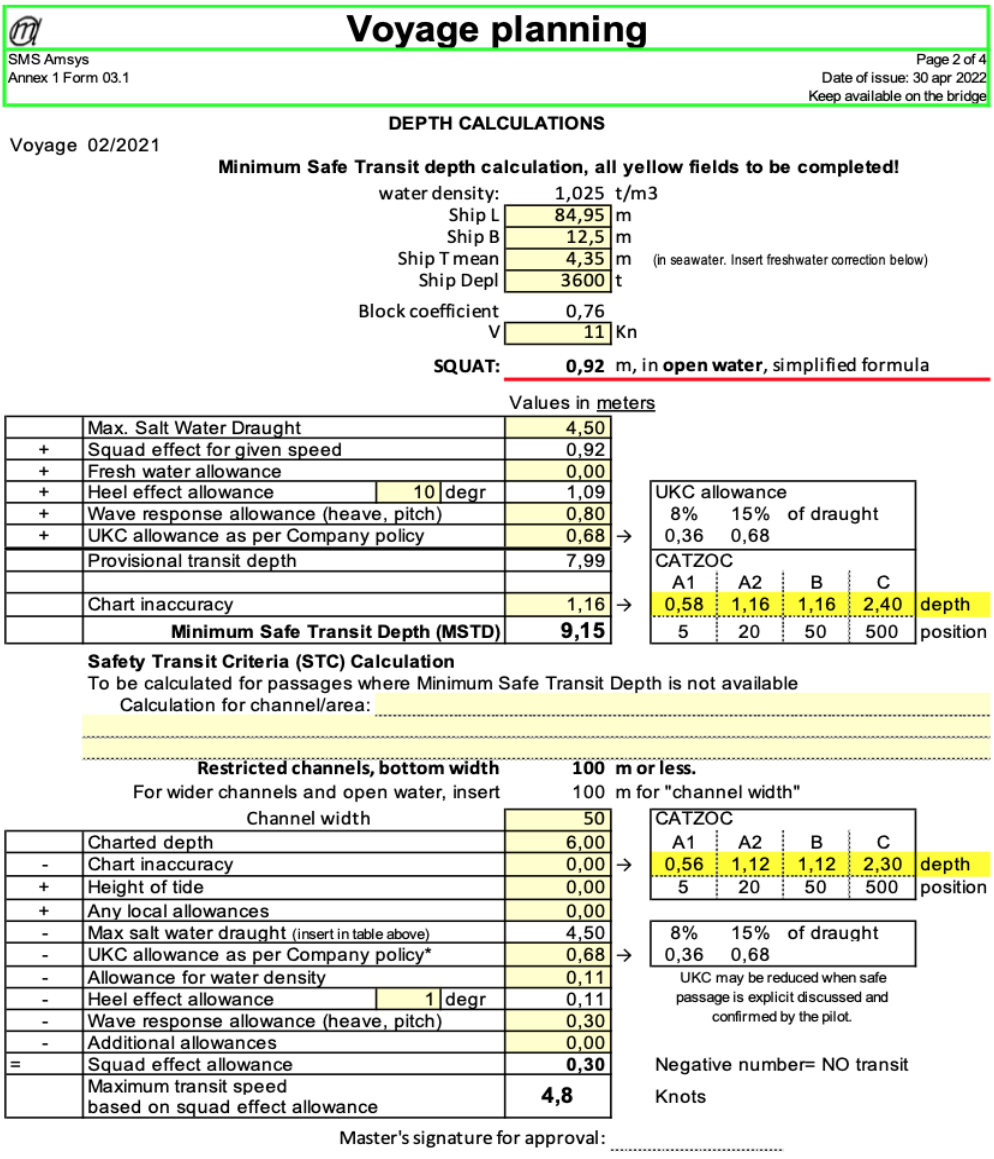
Ensure that the voyage is not outside the legal and insured trading limits:

no	Voyage within ship's trading area (see Minimum Safe Manning document)
no	Voyage within ship's GMDSS area (see Cargo Ship Safety certificate)
no	Voyage within area covered by insurance (Hull&Machinery + P&I)
yes	Voyage to tropical area (if yes, check medicines on board)
yes	Voyage in ice (if yes, check requirements for ice-class)
yes	Voyage in Polar Area (exceeding 60°S or 60°N except Iceland, Baltic sea and Norway mainland, Polar Certificate required)
yes	Voyage through area with security instruction (consult list "Areas with security instruction")

Master's signature for approval .....

Figure 3. Voyage plan template page 1.

The first page of voyage plan shows the most basic information. This includes voyage number in the current year, from which port to what port the voyage takes place, is it a ballasted (B) or a loaded (L) voyage, the date and estimated time of departure, the distance of the voyage, estimated speed of the vessel during the voyage, estimated fuel consumption, how much fuel is available, how much fresh water is available, how much lube oil is available, is there bunkering during the voyage, is the voyage taking place in ice, is it in a polar area, is there any areas of security instructions and so on.



Voyage planning

SMS Amsys
Annex 1 Form 03.1

Page 2 of 4
Date of issue: 30 apr 2022
Keep available on the bridge

DEPTH CALCULATIONS

Voyage 02/2021

Minimum Safe Transit depth calculation, all yellow fields to be completed!

water density:	1,025	t/m3
Ship L	84,95	m
Ship B	12,5	m
Ship T mean	4,35	m (in seawater. Insert freshwater correction below)
Ship Depl	3600	t
Block coefficient	0,76	
V	11	Kn

SQUAT: **0,92** m, in **open water**, simplified formula

Values in meters

	Max. Salt Water Draught		4,50
+	Squad effect for given speed		0,92
+	Fresh water allowance		0,00
+	Heel effect allowance	10 degr	1,09
+	Wave response allowance (heave, pitch)		0,80
+	UKC allowance as per Company policy		0,68 →
	Provisional transit depth		7,99
	Chart inaccuracy		1,16 →
	Minimum Safe Transit Depth (MSTD)		**9,15**

UKC allowance: 8% 0,36 | 15% 0,68 of draught

CATZOC	A1	A2	B	C	
	0,58	1,16	1,16	2,40	depth
	5	20	50	500	position

Safety Transit Criteria (STC) Calculation

To be calculated for passages where Minimum Safe Transit Depth is not available

Calculation for channel/area: .....

Restricted channels, bottom width **100** **m or less.**

For wider channels and open water, insert 100 m for "channel width"

	Channel width		50
	Charted depth		6,00
-	Chart inaccuracy		0,00 →
+	Height of tide		0,00
+	Any local allowances		0,00
-	Max salt water draught (insert in table above)		4,50
-	UKC allowance as per Company policy*		0,68 →
-	Allowance for water density		0,11
-	Heel effect allowance	1 degr	0,11
-	Wave response allowance (heave, pitch)		0,30
-	Additional allowances		0,00
=	Squad effect allowance		**0,30**
	Maximum transit speed based on squad effect allowance		**4,8**

CATZOC	A1	A2	B	C	
	0,56	1,12	1,12	2,30	depth
	5	20	50	500	position

8% 0,36 | 15% 0,68 of draught

UKC may be reduced when safe passage is explicit discussed and confirmed by the pilot.

Negative number= NO transit

Knots

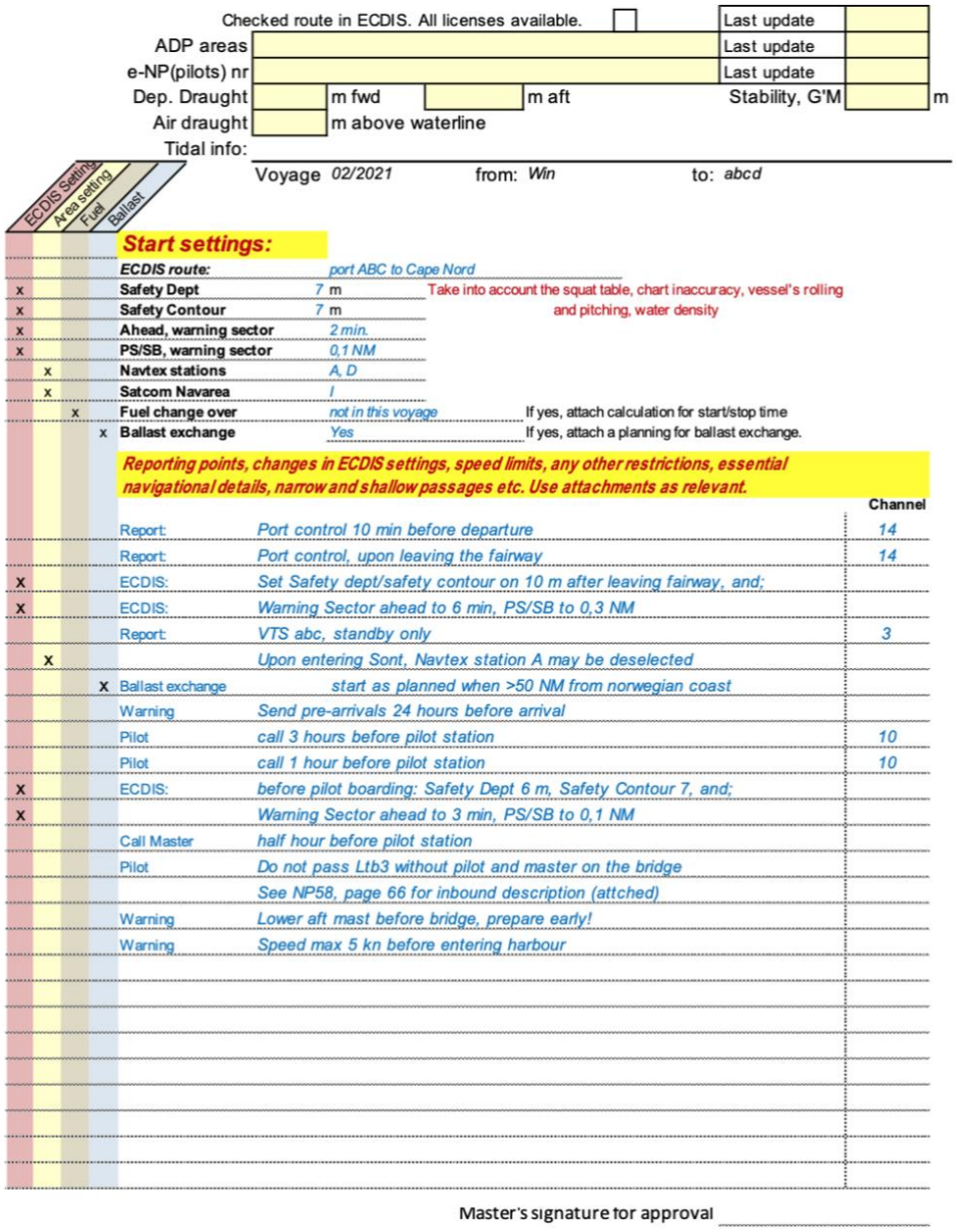
Master's signature for approval: .....

Figure 4. Voyage plan template page 2.

The second page of a voyage plan includes more detailed information about the voyage. In this page there are calculated two of the most important things about the voyage. These things are: Minimum Safe Transit Depth (MSTD) and Maximum transit speed based on squad effect allowance. MSTD shows our minimum allowed depth. This is calculated by taking into account different allowances and particulars. The allowances and particulars taking into account are: the ship's maximum saltwater draught, which is given to the 2nd officer by the chief officer, squad effect for given speed, which is calculated with simplified formula in the first part of this page, fresh water allowance, heel effect allowance, wave response allowance, which is draught increase due to heave and pitch movement of a vessel and comes from taking into account the weather forecast of the upcoming voyage, and under keel clearance (UKC) allowance, which comes from company's policy and takes into account the most inaccurate part of the chart used during the voyage.

On this page is also calculated Maximum transit speed based on squad effect allowance. This is done if the voyage goes through a narrow channel, on our vessel this is considered channel with a width of 108.8 meters or less. In this calculation, the following things are taken into consideration: the narrowest and shallowest part of the voyage, the chart's inaccuracy in that position, height of tide, any local allowances, maximum salt water draught of the vessel, UKC as per company policy, allowance for water density, heel effect allowance, wave response allowance, any additional allowances taken from pilot book, and with these allowances the maximum transit speed is calculated for the narrowest part of the voyage.

The MSTD and the maximum transit speed based on squad effect allowance have to always be positive numbers, otherwise transit is not allowed.



Checked route in ECDIS. All licenses available. ☐ Last update

ADP areas Last update

e-NP(pilots) nr Last update

Dep. Draught m fwd m aft Stability, G'M m

Air draught m above waterline

Tidal info:

Voyage 02/2021 from: Win to: abcd

ECDIS Setting	Area setting	Fuel	Ballast			
				Start settings:		
				ECDIS route:	port ABC to Cape Nord	
x				**Safety Dept**	7 m	Take into account the squat table, chart inaccuracy, vessel's rolling and pitching, water density
x				**Safety Contour**	7 m	
x				**Ahead, warning sector**	2 min.	
x				**PS/SB, warning sector**	0,1 NM	
	x			**Navtex stations**	A, D	
	x			**Satcom Navarea**	I	
		x		**Fuel change over**	not in this voyage	If yes, attach calculation for start/stop time
			x	**Ballast exchange**	Yes	If yes, attach a planning for ballast exchange.

Reporting points, changes in ECDIS settings, speed limits, any other restrictions, essential navigational details, narrow and shallow passages etc. Use attachments as relevant.

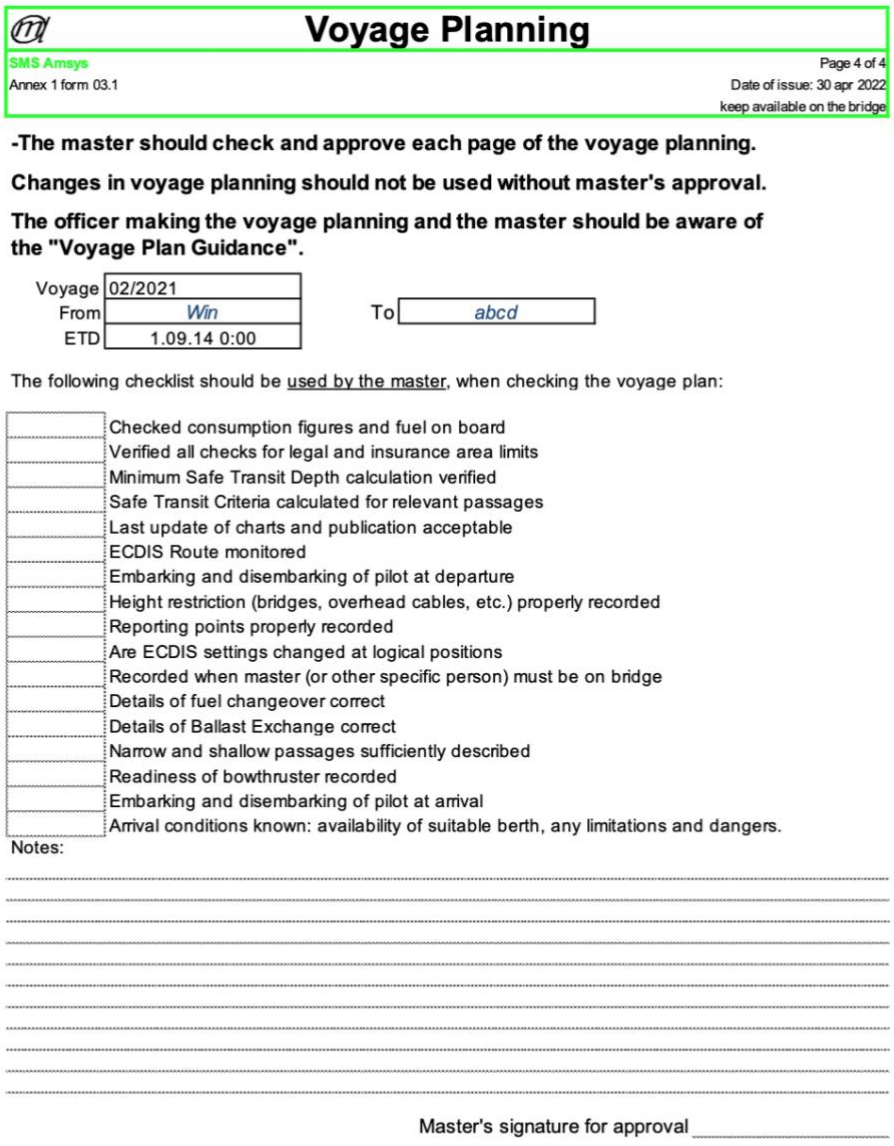
						Channel
				Report:	Port control 10 min before departure	14
				Report:	Port control, upon leaving the fairway	14
x				ECDIS:	Set Safety dept/safety contour on 10 m after leaving fairway, and;	
x				ECDIS:	Warning Sector ahead to 6 min, PS/SB to 0,3 NM	
				Report:	VTS abc, standby only	3
	x				Upon entering Sont, Navtex station A may be deselected	
			x	Ballast exchange	start as planned when >50 NM from norwegian coast	
				Warning	Send pre-arrivals 24 hours before arrival	
				Pilot	call 3 hours before pilot station	10
				Pilot	call 1 hour before pilot station	10
x				ECDIS:	before pilot boarding: Safety Dept 6 m, Safety Contour 7, and;	
x					Warning Sector ahead to 3 min, PS/SB to 0,1 NM	
				Call Master	half hour before pilot station	
				Pilot	Do not pass Ltb3 without pilot and master on the bridge	
					See NP58, page 66 for inbound description (attched)	
				Warning	Lower aft mast before bridge, prepare early!	
				Warning	Speed max 5 kn before entering harbour	

Master's signature for approval

Figure 5. Voyage plan template page 3.

The third page of the voyage plan template includes on the upper part of the page: the checklist for route available with latest updates to the charts used in ECDIS, the areas of Admiralty Digital Publications (ADP), the Admiralty Electronic Nautical Publication (e-NP) pilotage areas, the latest updates to these publications, departure draughts from forward and aft, the air draught, tidal information, and stability (metacentric height GM) information from chief officer.

The second part of this page includes ECDIS route name, ECDIS safety settings, Navtex station areas, Satcom Navareas, if there's any fuel change or ballasting during the voyage, and where it takes place, and information about upcoming reporting points, any information about fuel change, ballasting, any points where calling the master is necessary, pilotage, any warnings and call-aheads to ports with VHF channel numbers.



Voyage Planning

SMS Amsys — Page 4 of 4
Annex 1 form 03.1 — Date of issue: 30 apr 2022
keep available on the bridge

-The master should check and approve each page of the voyage planning.

Changes in voyage planning should not be used without master's approval.

The officer making the voyage planning and the master should be aware of the "Voyage Plan Guidance".

Voyage	02/2021		
From	*Win*	To	*abcd*
ETD	1.09.14 0:00		

The following checklist should be used by the master, when checking the voyage plan:

	Checked consumption figures and fuel on board
	Verified all checks for legal and insurance area limits
	Minimum Safe Transit Depth calculation verified
	Safe Transit Criteria calculated for relevant passages
	Last update of charts and publication acceptable
	ECDIS Route monitored
	Embarking and disembarking of pilot at departure
	Height restriction (bridges, overhead cables, etc.) properly recorded
	Reporting points properly recorded
	Are ECDIS settings changed at logical positions
	Recorded when master (or other specific person) must be on bridge
	Details of fuel changeover correct
	Details of Ballast Exchange correct
	Narrow and shallow passages sufficiently described
	Readiness of bowthruster recorded
	Embarking and disembarking of pilot at arrival
	Arrival conditions known: availability of suitable berth, any limitations and dangers.

Notes:

Master's signature for approval _____

Figure 6. Voyage plan template page 4.

The fourth page of the voyage plan template is a checklist for the master to go through before the voyage. This page includes: the voyage number, date, from which port to where, estimated time of departure, and things master should check from the voyage plan.

5 Voyage from Halmstad to Wismar

5.1 Introduction

In this chapter, the author describes his process of making an voyage plan for a voyage that took place in August of 2022.

The author got a notification of a upcoming voyage from Halmstad, Sweden to Wismar, Germany.

5.2 Initial voyage plan.

When a voyage is confirmed, the first thing the author does is to check the routes he has already saved on the ship's ECDIS. Some of the ports the ship visits frequently and the appropriate route could be already saved in the ECDIS. If the route is there, he checks the berths the vessel is assigned in the ports and check, if his routes are from and to the correct berths. Minor adjustments may be needed. If the route is not available, the author starts by making an initial route. In this initial route, his aim is to get a general overview of the route to check that he has appropriate charts available. If he has any charts missing, he uses the Datema Chartplanner system to order appropriate charts and installs them to the ship's ECDIS.

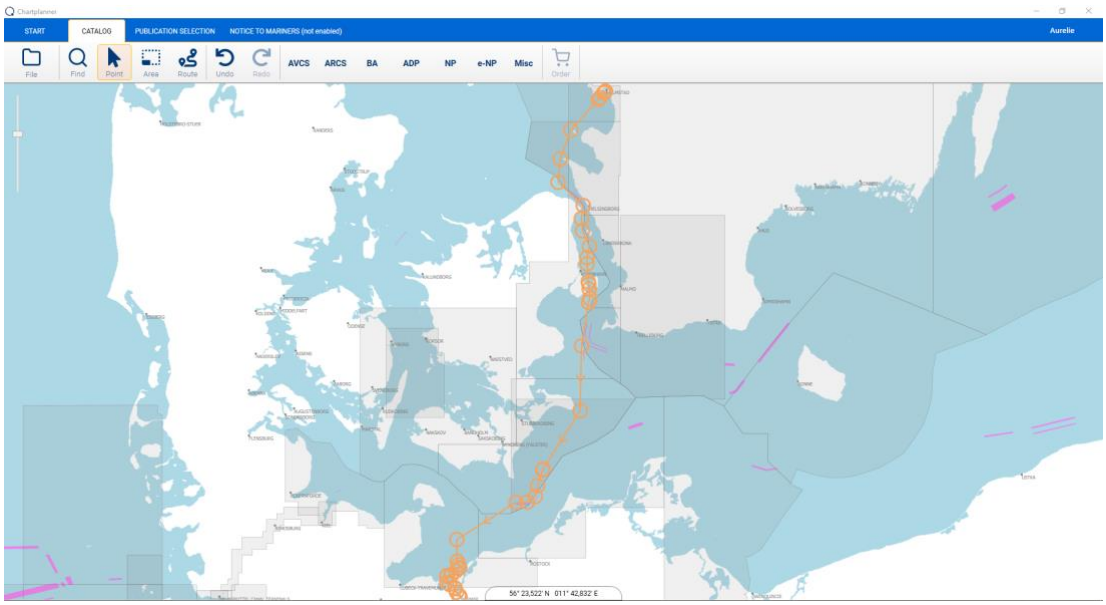


Figure 7. Checking the route for appropriate charts in the Datema Chartplanner system.

After making an initial route in the ECDIS, the author can export the route and import it to the Datema Chartplanner system, and check, if he has all the necessary charts for the voyage. If there are any charts missing, he can order them.

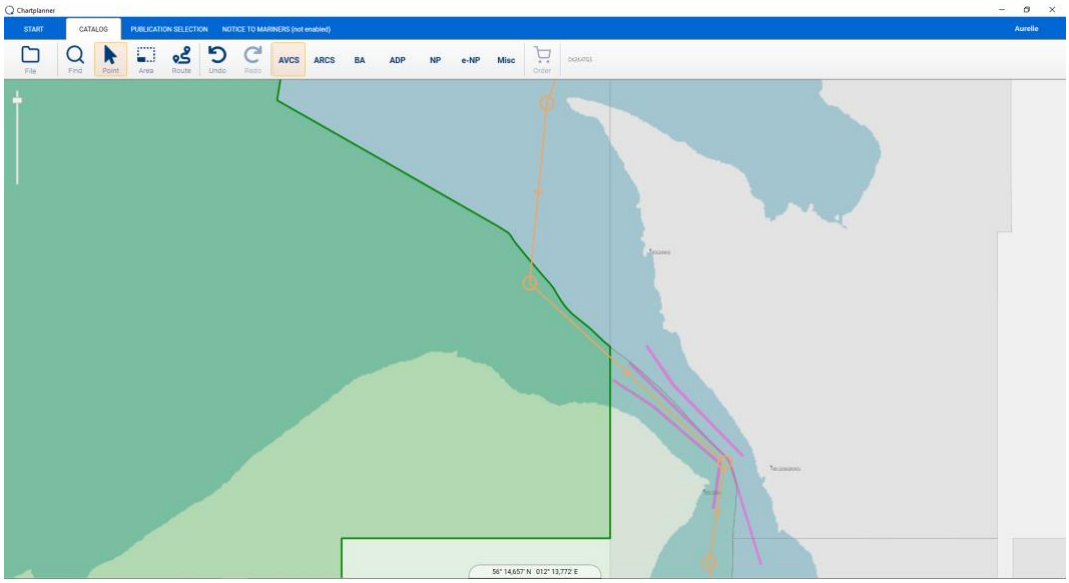


Figure 8. Missing chart on the route.

In figure 8, the route goes through a chart area that the author currently does not have. This can be seen as the missing chart is green. He purchases the missing chart and installs it in the ECDIS.

5.3 Detailed voyage plan

When the author has installed the missing charts to the ship's ECDIS, he starts producing a more detailed voyage plan. He starts by reading the port's pilotage requirements. The ''Admiralty Digital Radio Signals 6'' program is used for that. This program combines the most important information about the ports to an easy-to-read format.

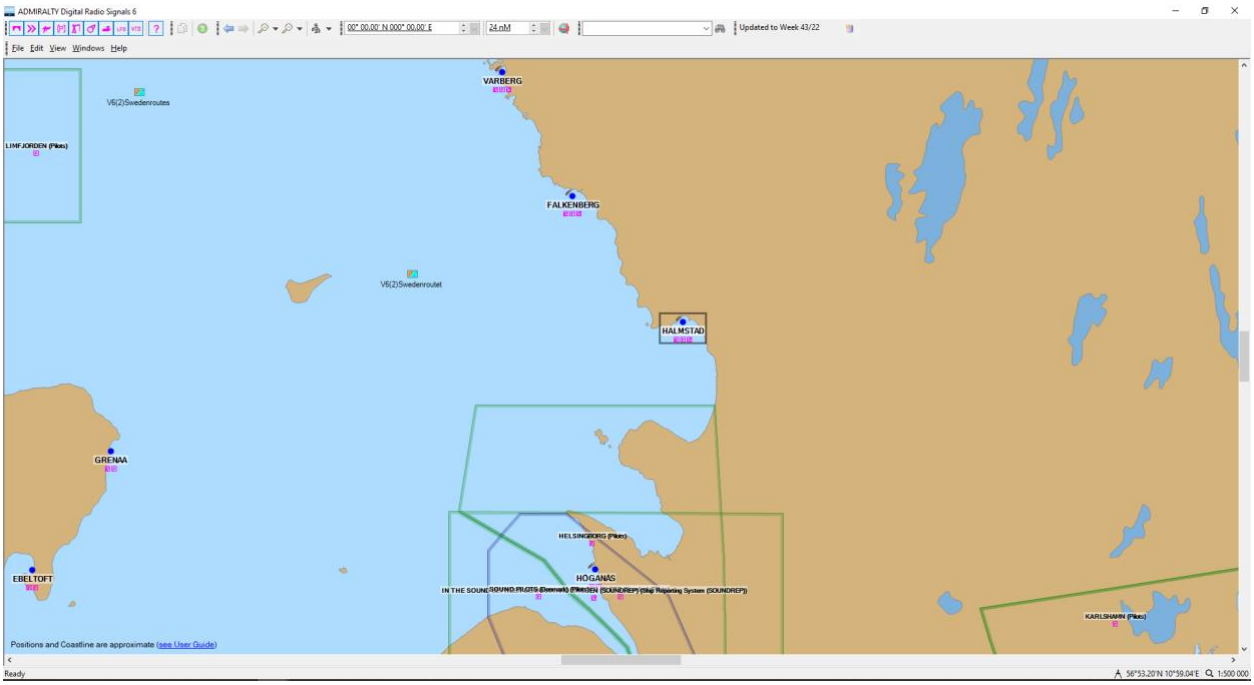


Figure 9. Admiralty Digital Radio Signals 6.

From this program, one can select ports and areas of interest and read the most important pilotage information about the area.

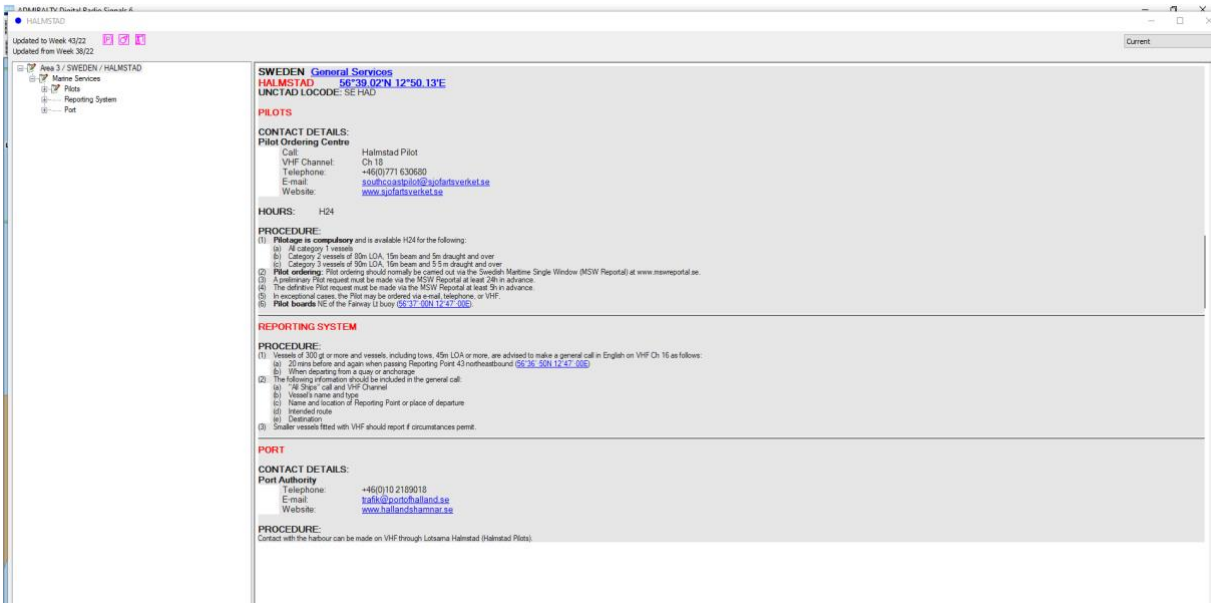


Figure 10. Admiralty Digital Radio Signals 6, information about Halmstad.

In this picture one can read the most important information about port of Halmstad. As our ship is a ''Category 3'' vessel in Sweden, meaning, we are a general cargo vessel of under 90 meters in length and under 16-meter beam, we do not require a pilot assistance when entering and leaving Halmstad. But for Wismar, as we are over 13 meters in beam, we require a pilot assistance.

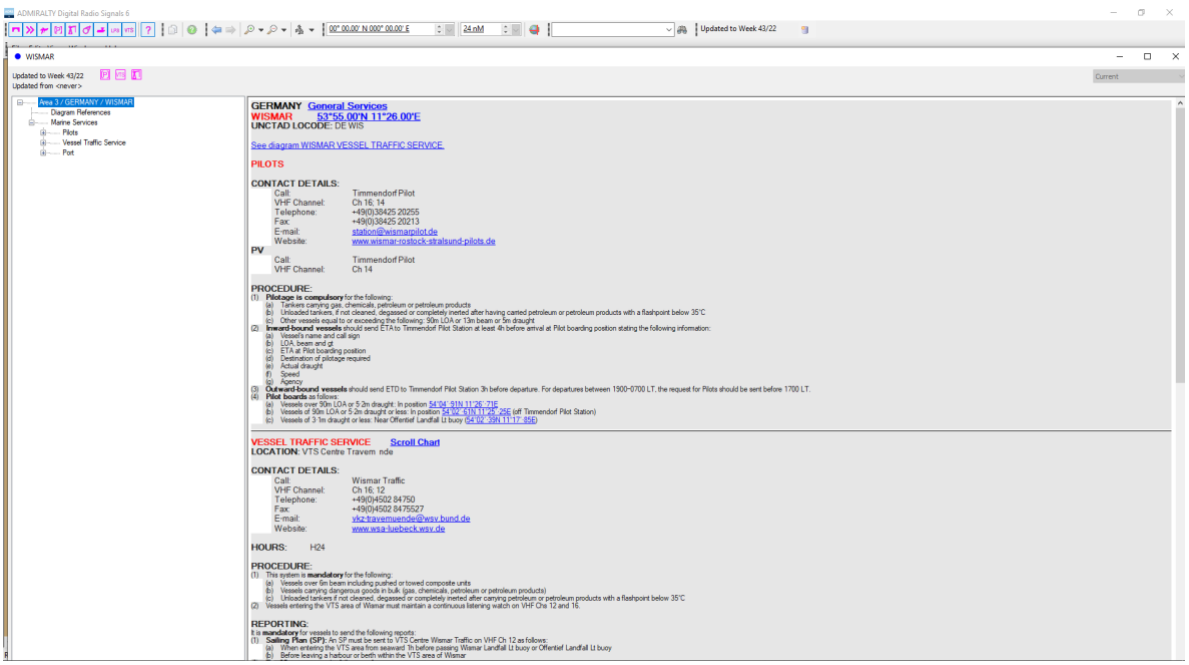


Figure 11. Admiralty Digital Radio Signals 6, information about Wismar.

The author then proceeds to write the information about pilotage and instructions of ordering them on a separate paper and gives it to the captain to make arrangements. After that, the author will start by going from one port to another, following the route on the ECDIS screen, adding waypoints, which include reporting points, pilot boarding points and other points of importance, to the route. When the author has marked a waypoint into the route, he will add it also to the voyage plan's Microsoft Excel file.

When the author has completed the waypoint section of the voyage plan, he will check the CATZOCs on the route. This is one of the most important parts, as we don't want our vessel to run aground, and having sufficient depth and calculating the minimum safe transit depth is of utmost importance. For this task, the author enables the CATZOCs in the ECDIS ENC. He goes over the route again, marking the narrowest and shallowest parts. In the Company's Voyage Plan guidance, confined waters are defined as waters, where the waterway has a width less than 8 times the vessels breadth, meaning for our vessel, it's 108,8 m or less in breadth. If our passage doesn't include a restricted channel, 108,8 is used in ''channel width'' cell instead. Furthermore, the Company Policy dictates, that the UKC margin must be at least 8% of the deepest draught in confined/shallow waters and 15% in open waters.

Then, the author checks in which Navtex station areas, ADP areas, e-NP areas, Satcom areas the passage takes place and enter the safety depth, safety contour, ahead waning sector, Port Side/Starboard Side warning sectors to the file. Before the voyage, all of these publications are updated.

If the vessel would have fuel change over or ballast exchange during the voyage, the calculation would be attached for the start/stop time and planning for ballast exchange. When the author has prepared all the necessary information to the Voyage Plan file, he has the master check the route and voyage plan the author produced. Then the author will get the stability calculation from the chief officer. From the stability calculation, the author inserts the ship's draughts, displacement, metacentric height (GM) and can calculate the air draught.

6 Pre-departure briefing

Before departure, the bridge team will have a briefing of the voyage ahead and the master double-checks the route and voyage plan and the stability calculation produced by the chief officer. The pre-departure briefing is an important part for the success of the upcoming voyage. With the pre-departure briefing we ensure that every member of the bridge team understands the plan for the upcoming voyage.

7 Departure

After the departure, the voyage plan is usually followed to the letter. If any deviations are necessary, the route changes must be approved by the master unless the changes are made to avoid danger, collision or are made to follow COLREG.

8 Overlook of the produced voyage

8.1.1 General overlook of the produced voyage

The voyage started in Halmstad, Sweden, went through the strait of Øresund, heading west to Kadetrenden Traffic Separation Scheme and to the Bay of Wismar.

8.1.2 Produced route in ECDIS

The following image is the final route plan on the ECDIS screen, which was monitored during the voyage from Halmstad, Sweden to Wismar, Germany.

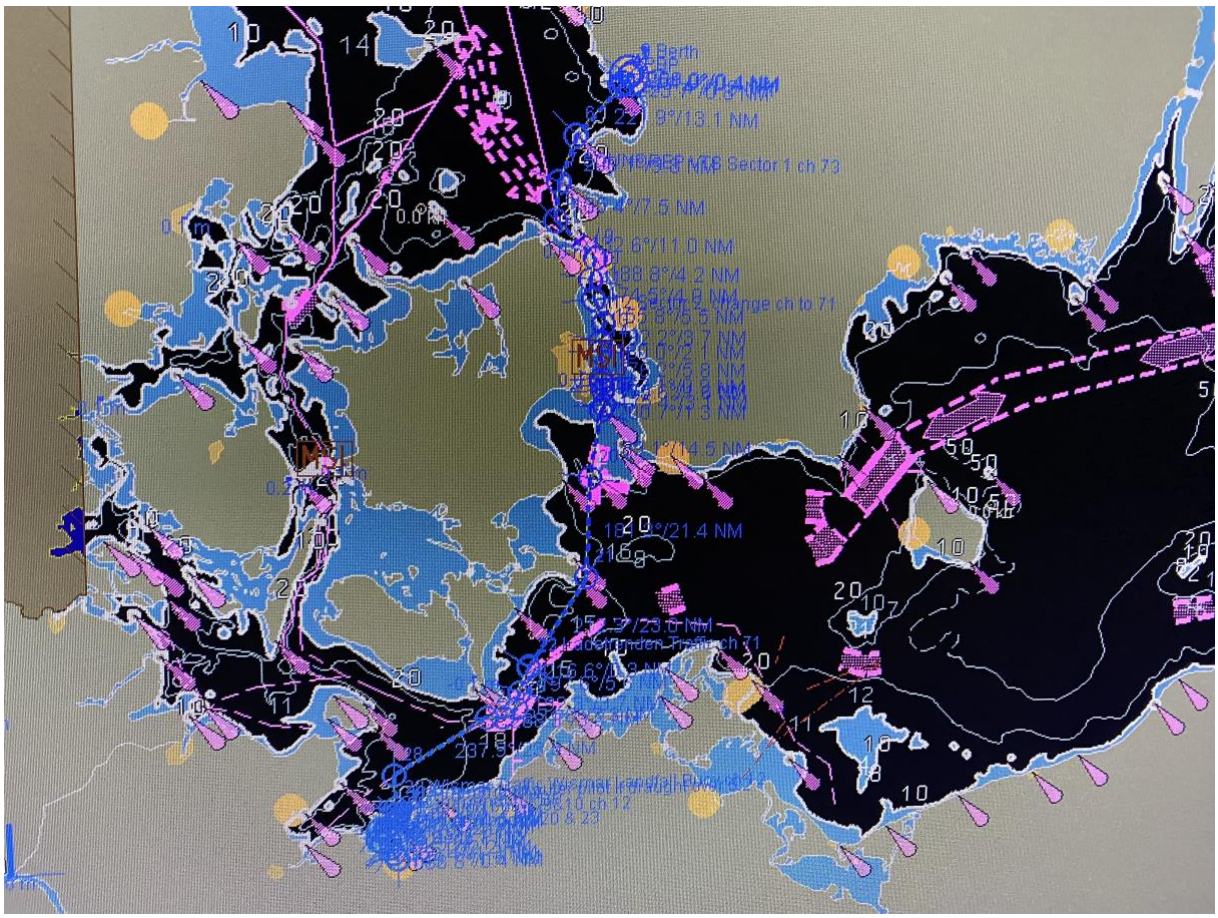
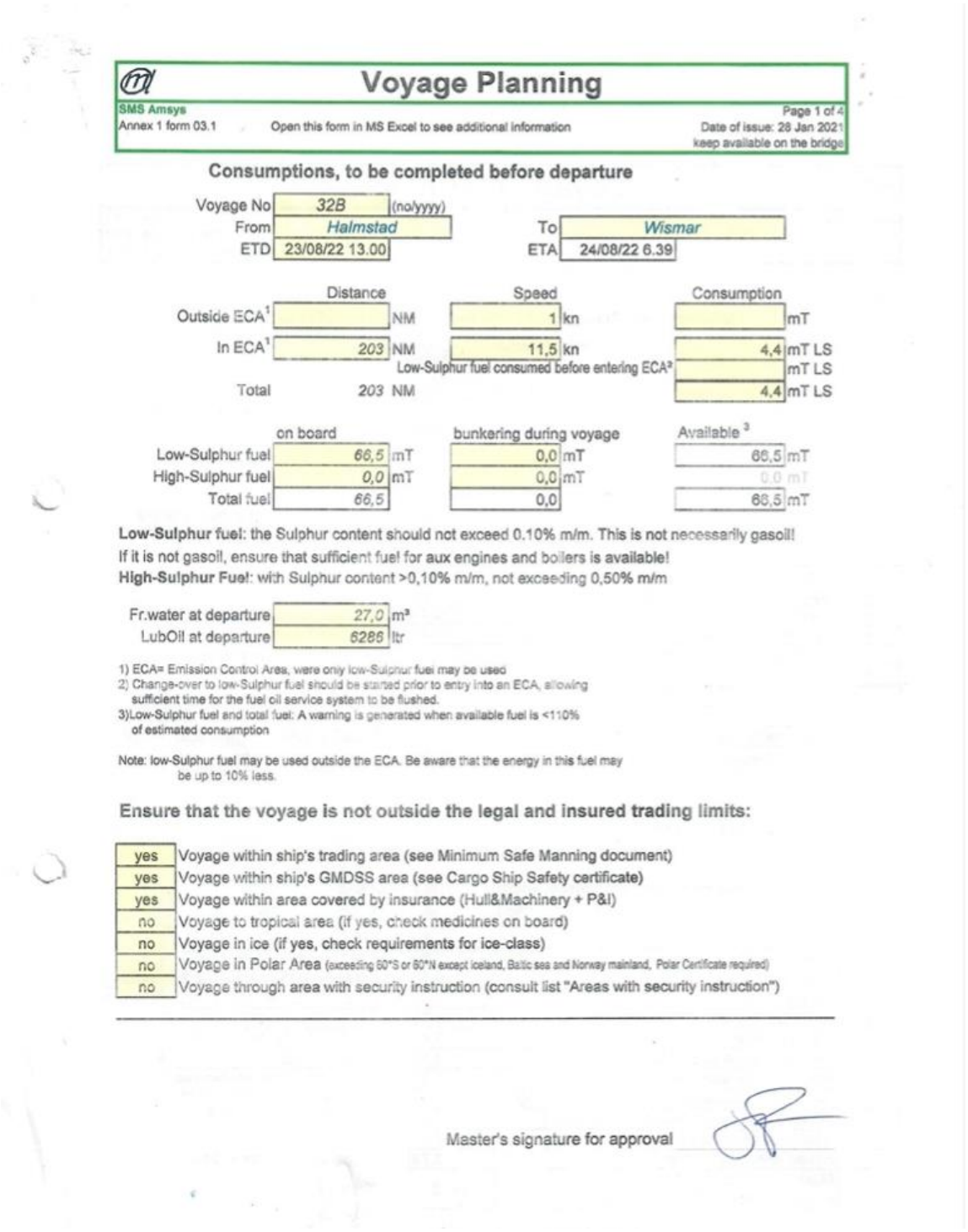


Figure 12. Produced route on ECDIS screen.

8.1.3 Produced voyage plan

The following images are the final voyage plan with the stability calculation, which was used during the monitoring of passage from Halmstad, Sweden to Wismar, Germany. This consists of a voyage plan file produced in Microsoft Excel with final stability calculations in conjunction with waypoints in the ECDIS.



Voyage Planning

SMS Amsys
Annex 1 form 03.1
Open this form in MS Excel to see additional information
Page 1 of 4
Date of issue: 28 Jan 2021
keep available on the bridge

Consumptions, to be completed before departure

Voyage No	32B	(no/yyyy)			
From	Halmstad		To	Wismar	
ETD	23/08/22 13.00		ETA	24/08/22 6.39	

	Distance		Speed		Consumption	
Outside ECA[1]		NM	1	kn		mT
In ECA[1]	203	NM	11,5	kn	4,4	mT LS
			Low-Sulphur fuel consumed before entering ECA[2]			mT LS
Total	203	NM			4,4	mT LS

	on board		bunkering during voyage		Available [3]	
Low-Sulphur fuel	66,5	mT	0,0	mT	66,5	mT
High-Sulphur fuel	0,0	mT	0,0	mT	0,0	mT
Total fuel	66,5		0,0		66,5	mT

Low-Sulphur fuel: the Sulphur content should not exceed 0.10% m/m. This is not necessarily gasoil!
If it is not gasoil, ensure that sufficient fuel for aux engines and boilers is available!
High-Sulphur Fuel: with Sulphur content >0,10% m/m, not exceeding 0,50% m/m

Fr.water at departure	27,0	m³
LubOil at departure	6286	ltr

1) ECA= Emission Control Area, were only low-Sulphur fuel may be used
2) Change-over to low-Sulphur fuel should be started prior to entry into an ECA, allowing sufficient time for the fuel oil service system to be flushed.
3) Low-Sulphur fuel and total fuel: A warning is generated when available fuel is <110% of estimated consumption

Note: low-Sulphur fuel may be used outside the ECA. Be aware that the energy in this fuel may be up to 10% less.

Ensure that the voyage is not outside the legal and insured trading limits:

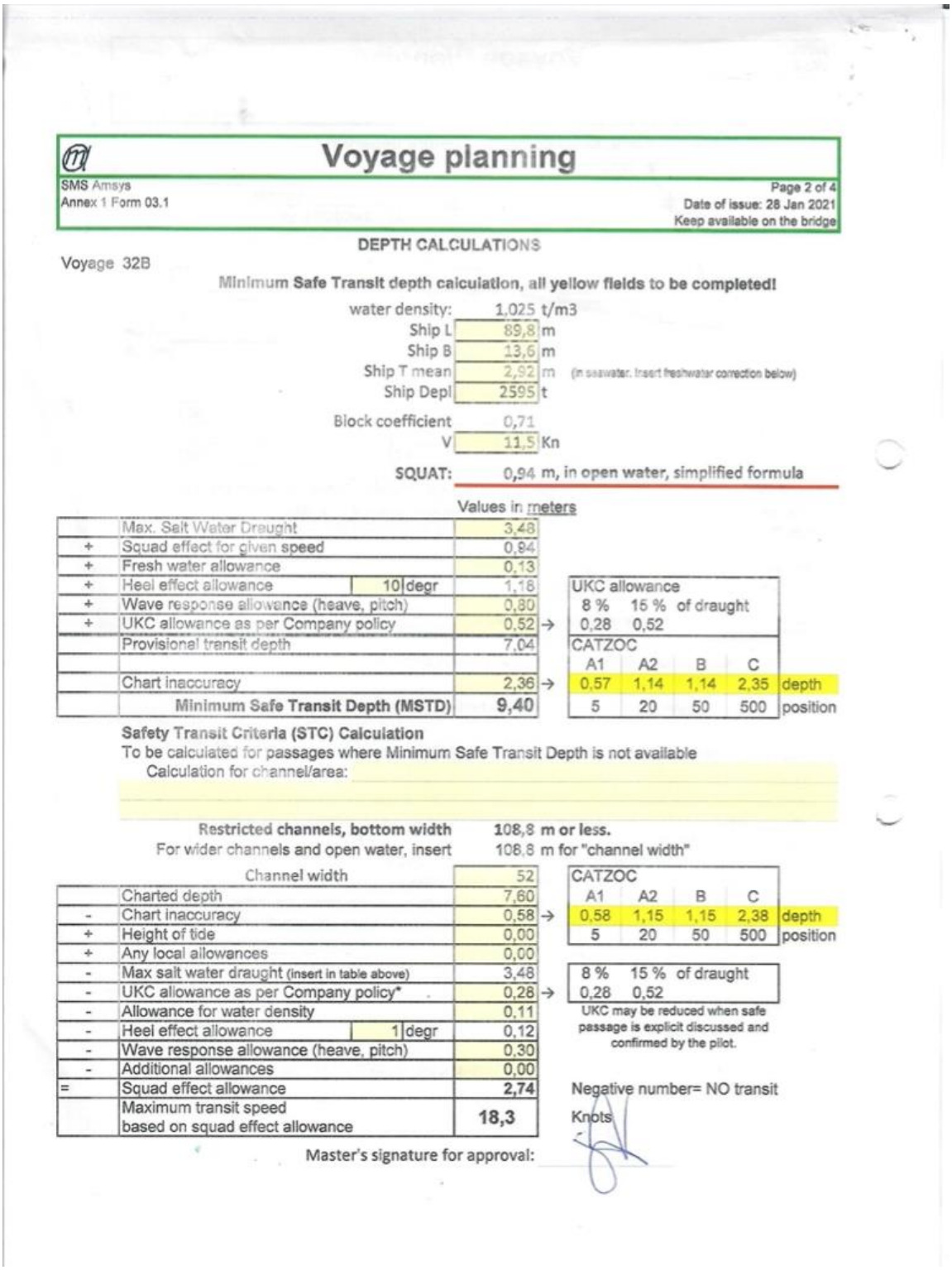
yes	Voyage within ship's trading area (see Minimum Safe Manning document)
yes	Voyage within ship's GMDSS area (see Cargo Ship Safety certificate)
yes	Voyage within area covered by insurance (Hull&Machinery + P&I)
no	Voyage to tropical area (if yes, check medicines on board)
no	Voyage in ice (if yes, check requirements for ice-class)
no	Voyage in Polar Area (exceeding 60°S or 60°N except Iceland, Baltic sea and Norway mainland, Polar Certificate required)
no	Voyage through area with security instruction (consult list "Areas with security instruction")

Master's signature for approval

Figure 13. Voyage plan file page 1.

This is the first page of the produced voyage plan. This includes the voyage number, which is 32B, meaning this was the 32nd ballasted voyage in that year, the ETD, which was 23. August 2022, the ship departed at 1300, the voyage was 203 nautical miles long, the

estimated speed for this voyage was 11.5 knots, and estimated fuel consumption was 4,4 metric tons. There was no bunkering during the voyage.



Voyage planning

SMS Amsys
Annex 1 Form 03.1

Page 2 of 4
Date of issue: 28 Jan 2021
Keep available on the bridge

DEPTH CALCULATIONS

Voyage 32B

Minimum Safe Transit depth calculation, all yellow fields to be completed!

water density:	1,025	t/m3
Ship L	89,8	m
Ship B	13,6	m
Ship T mean	2,92	m (in seawater. Insert freshwater correction below)
Ship Depl	2595	t
Block coefficient	0,71	
V	11,5	Kn

SQUAT: 0,94 m, in open water, simplified formula

Values in meters

	Max. Salt Water Draught		3,48
+	Squad effect for given speed		0,94
+	Fresh water allowance		0,13
+	Heel effect allowance	10 degr	1,16
+	Wave response allowance (heave, pitch)		0,80
+	UKC allowance as per Company policy		0,52 →
	Provisional transit depth		7,04
	Chart inaccuracy		2,36 →
	Minimum Safe Transit Depth (MSTD)		**9,40**

UKC allowance

8 %	15 %	of draught
0,28	0,52	

CATZOC

A1	A2	B	C	
0,57	1,14	1,14	2,35	depth
5	20	50	500	position

Safety Transit Criteria (STC) Calculation

To be calculated for passages where Minimum Safe Transit Depth is not available

Calculation for channel/area:

Restricted channels, bottom width 108,8 **m or less.**

For wider channels and open water, insert 108,8 m for "channel width"

	Channel width		52
	Charted depth		7,60
-	Chart inaccuracy		0,58 →
+	Height of tide		0,00
+	Any local allowances		0,00
-	Max salt water draught (insert in table above)		3,48
-	UKC allowance as per Company policy*		0,28 →
-	Allowance for water density		0,11
-	Heel effect allowance	1 degr	0,12
-	Wave response allowance (heave, pitch)		0,30
-	Additional allowances		0,00
=	Squad effect allowance		**2,74**
	Maximum transit speed based on squad effect allowance		**18,3**

CATZOC

A1	A2	B	C	
0,58	1,15	1,15	2,38	depth
5	20	50	500	position

8 %	15 %	of draught
0,28	0,52	

UKC may be reduced when safe passage is explicit discussed and confirmed by the pilot.

Negative number= NO transit

Knots

Master's signature for approval:

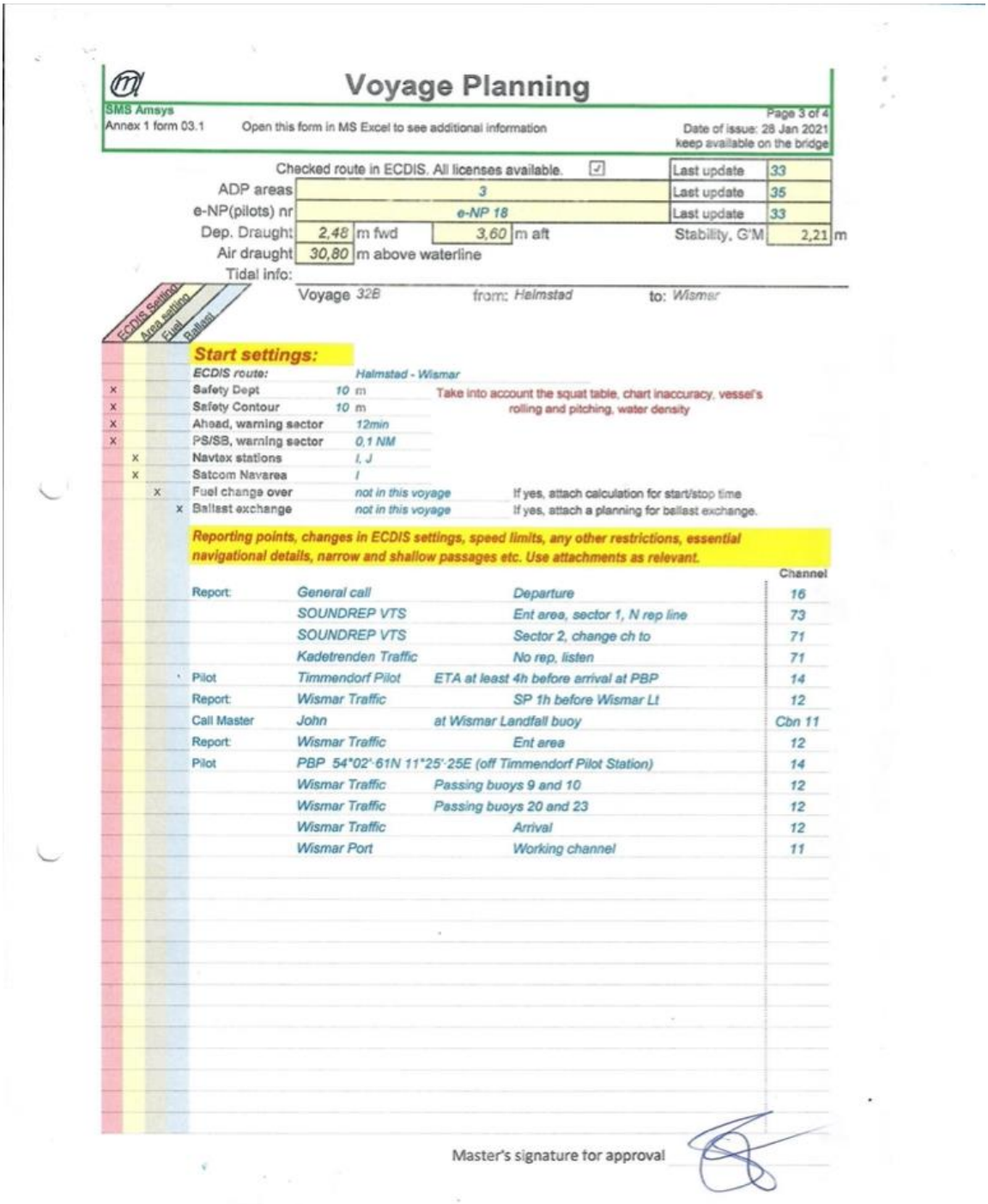
Figure 14. Voyage plan file page 2.

This is the second page of the produced voyage plan.

The ship's mean seawater draught was 2,92 meters, the displacement was 2595 tons, the block coefficient came out to be 0,71. The maximum salt water draught was 3,48 meters, squad effect came out to be 0,94, fresh water allowance 0,13, heel effect allowance 1,18, wave response allowance 0,8, the chart's inaccuracy in the most inaccurate position was C, so the UKC allowance came out to be 0,52. All of these allowances gave us the minimum safe transit depth of 9,40 meters.

For the maximum transit speed based on squad effect allowance, the narrowest part of the voyage was 52 meters with a depth of a 7,6 meters and chart inaccuracy of CATZOC A1, which gave us an allowance of 0,58. There was no tide or any local allowances to add.

The UKC came out to be 0,28, as it's 8% of the maximum sea water draught. The allowance taken off from water density was 0,11, the heel effect allowance was 0,12, the wave response was 0,3 and there were no additional allowances taken off. This gave us a squad effect allowance of 2,74 which gave us maximum transit speed of 18,3 knots.



Voyage Planning

SMS Amsys
Annex 1 form 03.1 — Open this form in MS Excel to see additional information — Page 3 of 4 — Date of issue: 28 Jan 2021 — keep available on the bridge

Checked route in ECDIS. All licenses available. ☑		Last update	33
ADP areas	3	Last update	35
e-NP(pilots) nr	e-NP 18	Last update	33
Dep. Draught:	2,48 m fwd	3,60 m aft	Stability, G'M 2,21 m
Air draught	30,80 m above waterline		
Tidal info:			

Voyage 32B — from: Halmstad — to: Wismar

ECDIS Setting / Area setting / Fuel / Ballast

Start settings:

	ECDIS route:	Halmstad - Wismar	
x	Safety Dept	10 m	Take into account the squat table, chart inaccuracy, vessel's rolling and pitching, water density
x	Safety Contour	10 m	
x	Ahead, warning sector	12min	
x	PS/SB, warning sector	0,1 NM	
x	Navtex stations	I, J	
x	Satcom Navarea	I	
x	Fuel change over	not in this voyage	If yes, attach calculation for start/stop time
x	Ballast exchange	not in this voyage	If yes, attach a planning for ballast exchange.

Reporting points, changes in ECDIS settings, speed limits, any other restrictions, essential navigational details, narrow and shallow passages etc. Use attachments as relevant.

			Channel
Report:	General call	Departure	16
	SOUNDREP VTS	Ent area, sector 1, N rep line	73
	SOUNDREP VTS	Sector 2, change ch to	71
	Kadetrenden Traffic	No rep, listen	71
Pilot	Timmendorf Pilot	ETA at least 4h before arrival at PBP	14
Report:	Wismar Traffic	SP 1h before Wismar Lt	12
Call Master	John	at Wismar Landfall buoy	Cbn 11
Report:	Wismar Traffic	Ent area	12
Pilot	PBP 54°02'.61N 11°25'.25E (off Timmendorf Pilot Station)		14
	Wismar Traffic	Passing buoys 9 and 10	12
	Wismar Traffic	Passing buoys 20 and 23	12
	Wismar Traffic	Arrival	12
	Wismar Port	Working channel	11

Master's signature for approval

Figure 15. Voyage plan file page 3.

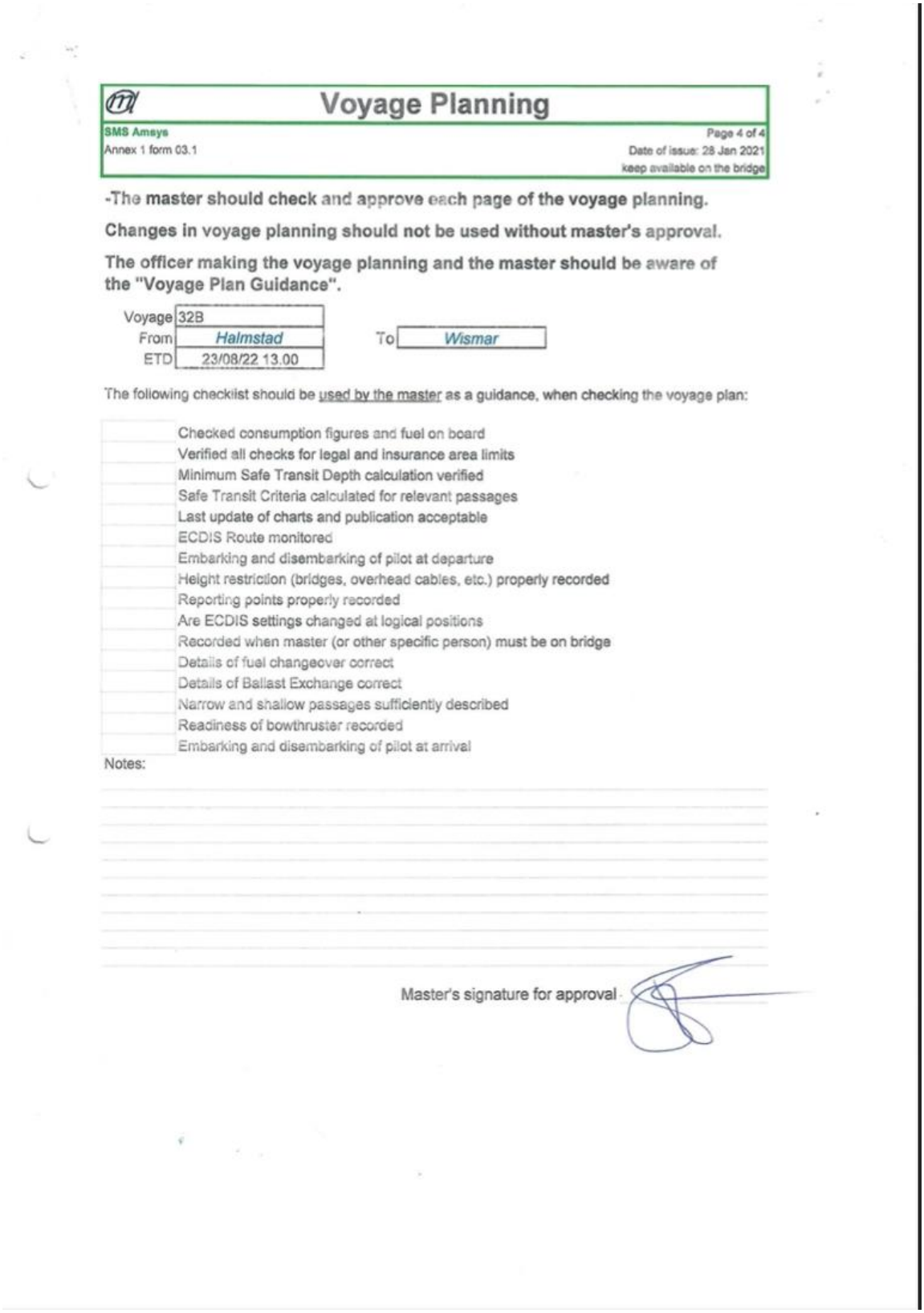
This is the third page of the produced voyage plan. We can see, that all of the ECDIS chart licenses are available and updated to week 33, the ADP area was 3, updated on week 33, the pilotage area was e-NP 18, updated on week 35, departure draught in the forward was 2,48 meters, aft at 3,60 meters. The GM was 2,21 meters, air draught 30,80 meters.

The route in ECDIS was called Halmstad – Wismar. Safety settings in the ECDIS were made as per company policy: safety depth at 10 meters, safety contour at 10 meters, ahead warning sector at 12 minutes, port side/starboard side warning sectors at 0,1 nautical miles.

The voyage goes through Navtex station areas I and J, Satcom area I.

There was no fuel change over or any ballast exchange during the voyage.

On this page there are also marked all the reporting points, pilot confirmation points, master calling points, and destination port control's VHF channel.



Voyage Planning

SMS Amsys
Annex 1 form 03.1

Page 4 of 4
Date of issue: 28 Jan 2021
keep available on the bridge

-The master should check and approve each page of the voyage planning.

Changes in voyage planning should not be used without master's approval.

The officer making the voyage planning and the master should be aware of the "Voyage Plan Guidance".

Voyage	32B		
From	*Halmstad*	To	*Wismar*
ETD	23/08/22 13.00		

The following checklist should be used by the master as a guidance, when checking the voyage plan:

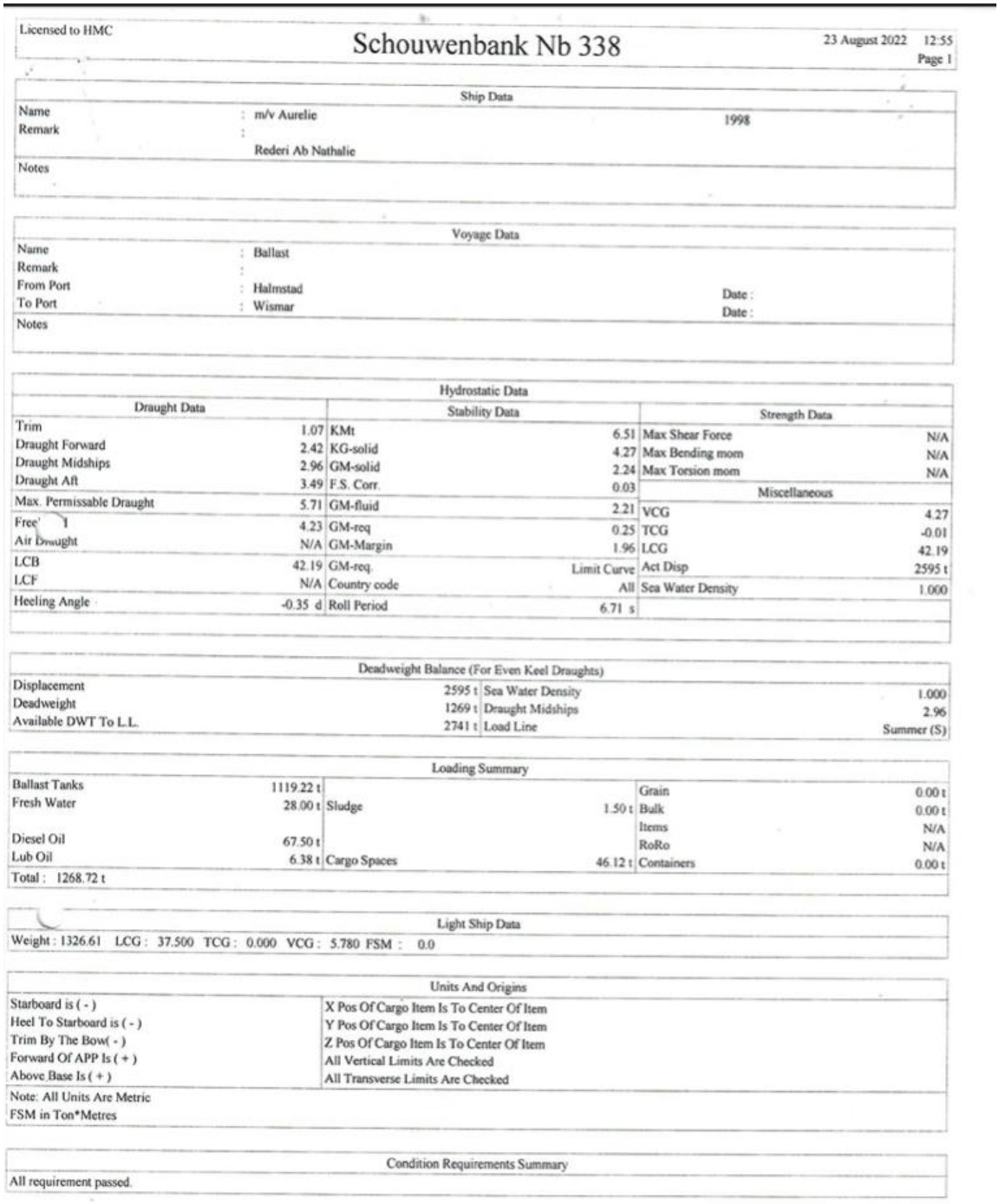
	Checked consumption figures and fuel on board
	Verified all checks for legal and insurance area limits
	Minimum Safe Transit Depth calculation verified
	Safe Transit Criteria calculated for relevant passages
	Last update of charts and publication acceptable
	ECDIS Route monitored
	Embarking and disembarking of pilot at departure
	Height restriction (bridges, overhead cables, etc.) properly recorded
	Reporting points properly recorded
	Are ECDIS settings changed at logical positions
	Recorded when master (or other specific person) must be on bridge
	Details of fuel changeover correct
	Details of Ballast Exchange correct
	Narrow and shallow passages sufficiently described
	Readiness of bowthruster recorded
	Embarking and disembarking of pilot at arrival

Notes:

Master's signature for approval

Figure 16. Voyage plan file page 5.

This is the final page of produced voyage plan. The master's checklist page.



Licensed to HMC

Schouwenbank Nb 338

23 August 2022 12:55
Page 1

Ship Data

Name	: m/v Aurelie	1998
Remark	: Rederi Ab Nathalie	
Notes		

Voyage Data

Name	: Ballast	
Remark	:	
From Port	: Halmstad	Date :
To Port	: Wismar	Date :
Notes		

Hydrostatic Data

Draught Data		Stability Data		Strength Data	
Trim	1.07	KMt	6.51	Max Shear Force	N/A
Draught Forward	2.42	KG-solid	4.27	Max Bending mom	N/A
Draught Midships	2.96	GM-solid	2.24	Max Torsion mom	N/A
Draught Aft	3.49	F.S. Corr.	0.03	**Miscellaneous**	
Max. Permissable Draught	5.71	GM-fluid	2.21	VCG	4.27
Freeboard	4.23	GM-req	0.25	TCG	-0.01
Air Draught	N/A	GM-Margin	1.96	LCG	42.19
LCB	42.19	GM-req.	Limit Curve	Act Disp	2595 t
LCF	N/A	Country code	All	Sea Water Density	1.000
Heeling Angle	-0.35 d	Roll Period	6.71 s		

Deadweight Balance (For Even Keel Draughts)

Displacement	2595 t	Sea Water Density	1.000
Deadweight	1269 t	Draught Midships	2.96
Available DWT To L.L.	2741 t	Load Line	Summer (S)

Loading Summary

Ballast Tanks	1119.22 t			Grain	0.00 t
Fresh Water	28.00 t	Sludge	1.50 t	Bulk	0.00 t
				Items	N/A
Diesel Oil	67.50 t			RoRo	N/A
Lub Oil	6.38 t	Cargo Spaces	46.12 t	Containers	0.00 t
Total : 1268.72 t					

Light Ship Data

Weight : 1326.61 LCG : 37.500 TCG : 0.000 VCG : 5.780 FSM : 0.0

Units And Origins

Starboard is (-)	X Pos Of Cargo Item Is To Center Of Item
Heel To Starboard is (-)	Y Pos Of Cargo Item Is To Center Of Item
Trim By The Bow(-)	Z Pos Of Cargo Item Is To Center Of Item
Forward Of APP Is (+)	All Vertical Limits Are Checked
Above Base Is (+)	All Transverse Limits Are Checked

Note: All Units Are Metric
FSM in Ton*Metres

Condition Requirements Summary

All requirement passed.

Figure 17. Stability calculation page 1.

This is the first page of a stability calculation produced by the chief officer. This accompanies the voyage plan produced by the author. From this page, the author gets information about displacement and stability (GM-fluid).

Licensed to HMC

Schouwenbank Nb 338

23 August 2022 12:55
Page 2

Ballast Tanks	Weight	Sounding	Fill %	Density	LCG	TCG	VCG	FSM
Forepeak WB CL	0.00	0.0	0	1.000	0.00	0.00	0.00	0.0
Deeptank WB CL	0.00	0.0	0	1.000	0.00	0.00	0.00	0.0
DB centretank 1WB CL	144.52	1.1	100	1.000	67.22	0.00	0.56	0.0
DB sidetank 1 WB SB	164.42	7.2	100	1.000	63.71	-5.67	3.07	0.0
DB sidetank 1 WB PS	164.42	7.2	100	1.000	63.71	5.67	3.07	0.0
DB tank 2 C WB CL	0.00	0.0	0	1.000	0.00	0.00	0.00	0.0
Db tank 4 C WB CL	117.61	1.1	100	1.011	22.56	0.00	0.55	0.0
DB sidetank 2 WB SB	264.12	7.2	100	1.011	45.50	-5.71	2.95	0.0
DB sidetank 2 WB PS	264.12	7.2	100	1.011	45.50	5.71	2.95	0.0
DB tank 3 WB SB	0.00	0.0	0	1.011	0.00	0.00	0.00	0.0
DB tank 3 WB PS	0.00	0.0	0	1.011	0.00	0.00	0.00	0.0
Total	1119.22				51.24	0.00	2.42	0.0

Diesel Tanks	Weight	Sounding	Fill %	Density	LCG	TCG	VCG	FSM
DB tank 3 C MDO CL	0.00	0.0	0	0.850	0.00	0.00	0.00	0.0
Sidetank 3 MDO SB	0.00	0.0	0	0.850	0.00	0.00	0.00	0.0
Sidetank 3 MDO PS	0.00	0.0	0	0.850	0.00	0.00	0.00	0.0
Sidetank 4 MDO SB	18.00	1.8	25	0.850	20.05	-5.91	2.05	3.4
Sidetank 4 MDO PS	18.00	1.8	25	0.850	20.05	5.91	2.05	3.4
Settlingt MDO DO SB	9.50	2.4	91	0.850	7.18	-4.21	5.13	5.2
Daytank MDO DO	6.00	1.5	88	0.850	6.36	-5.47	7.62	1.1
Bunker GO PS	15.00	2.7	65	0.850	8.56	4.23	4.66	9.6
Dail vice GO	1.00	1.0	52	0.850	4.23	-5.18	7.35	0.1
Tota	67.50				14.23	-0.22	3.64	22.9

Dirty Water Tanks	Weight	Sounding	Fill %	Density	LCG	TCG	VCG	FSM
Sewage tank SL SB	0.00	0.0	0	1.000	0.00	0.00	0.00	0.0
Total	0.00				0.00	0.00	0.00	0.0

Fresh Water Tanks	Weight	Sounding	Fill %	Density	LCG	TCG	VCG	FSM
Afterpeak FW SB	14.00	2.0	45	1.000	2.41	-1.34	4.76	25.9
Afterpeak FW PS	14.00	2.0	45	1.000	2.41	1.34	4.76	25.9
Total	28.00				2.41	0.00	4.76	51.7

Lub Oil Tanks	Weight	Sounding	Fill %	Density	LCG	TCG	VCG	FSM
Circulation t LO CL	2.30	0.6	88	0.900	10.75	0.00	0.92	0.4
Lub oil storage LO	4.08	2.0	49	0.900	10.01	-4.16	4.10	2.9
Lub oiltank 2 SB	0.00	0.0	0	0.900	0.00	0.00	0.00	0.0
Lub oiltank 3 SB	0.00	0.0	0	0.900	0.00	0.00	0.00	0.0
Total	6.38				10.28	-2.66	2.96	3.3

Slud nks	Weight	Sounding	Fill %	Density	LCG	TCG	VCG	FSM
Dirty oil SL	0.00	0.0	0	1.000	0.00	0.00	0.00	0.0
Sludge tank SL	1.50	0.5	26	1.000	11.18	-1.87	0.28	1.2
Total	1.50				11.18	-1.87	0.28	1.2

Container Bay	Weight	LCG	TCG	VCG
Bay 01(Hold)	0.00	0.00	0.00	0.00
Bay 03(Hold)	0.00	0.00	0.00	0.00
Bay 04(Hold)	0.00	0.00	0.00	0.00
Bay 05(Hold)	0.00	0.00	0.00	0.00
Bay 07(Hold)	0.00	0.00	0.00	0.00
Bay 08(Hold)	0.00	0.00	0.00	0.00
Bay 09(Hold)	0.00	0.00	0.00	0.00
Bay 11(Hold)	0.00	0.00	0.00	0.00
Bay 12(Hold)	0.00	0.00	0.00	0.00
Bay 13(Hold)	0.00	0.00	0.00	0.00
Bay 15(Hold)	0.00	0.00	0.00	0.00
Bay 16(Hold)	0.00	0.00	0.00	0.00
Bay 17(Hold)	0.00	0.00	0.00	0.00
Bay 19(Hold)	0.00	0.00	0.00	0.00
Bay 01(Deck)	0.00	0.00	0.00	0.00
Bay 02(Deck)	0.00	0.00	0.00	0.00
Bay 03(Deck)	0.00	0.00	0.00	0.00
Bay 05(Deck)	0.00	0.00	0.00	0.00
Bay 06(Deck)	0.00	0.00	0.00	0.00
To Be Continued				

Figure 18. Stability calculation page 2.

This is the second page of the stability calculation produced by the chief officer. This page contains information about the tanks and their weight and stability coordinates. There is also information about cargo spaces.

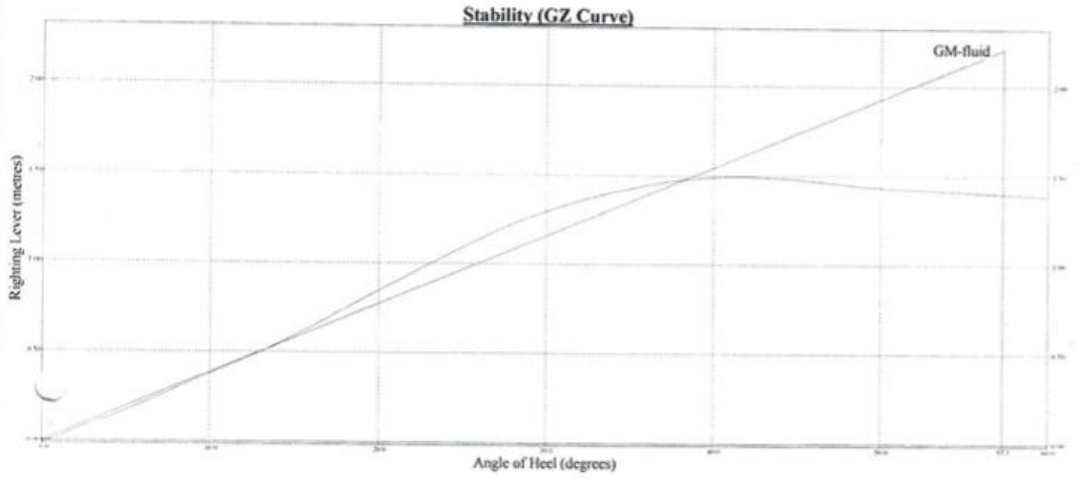
Licensed to HMC

Schouwenbank Nb 338

23 August 2022 12:55
Page 3

Container Bay(Continued)	Weight	LCG	TCG	VCG
Bay 07(Deck)	0.00	0.00	0.00	0.00
Bay 09(Deck)	0.00	0.00	0.00	0.00
Bay 10(Deck)	0.00	0.00	0.00	0.00
Bay 11(Deck)	0.00	0.00	0.00	0.00
Bay 13(Deck)	0.00	0.00	0.00	0.00
Bay 14(Deck)	0.00	0.00	0.00	0.00
Bay 15(Deck)	0.00	0.00	0.00	0.00
Bay 17(Deck)	0.00	0.00	0.00	0.00
Bay 18(Deck)	0.00	0.00	0.00	0.00
Bay 19(Deck)	0.00	0.00	0.00	0.00
Total	0.00			

Cargo Spaces	Weight	XPos	Length	LCG	TCG	VCG
Crew and stores	20.00	30.00	64.40	41.00	0.00	7.50
Grain bulkhead 1	13.06	17.80	0.50	17.80	0.00	6.10
Grain bulkhead 2	13.06	17.80	0.50	17.80	0.00	6.10
Hold homogeneous	0.00	45.94	61.80	45.94	0.00	5.28
Timber on deck layer 1	0.00	45.80	61.80	45.80	0.00	16.00
Timber on deck layer 2	0.00	45.80	61.80	45.80	0.00	11.56
Timber on deck layer 3	0.00	45.80	61.80	45.80	0.00	12.66
Draft survey weight oa	0.00	20.00	40.00	20.00	0.00	0.00
Draft survey weight fwd app	0.00	20.00	40.00	20.00	0.00	0.00
Draft survey weight aft app	0.00	20.00	40.00	20.00	0.00	0.00
Total	46.1			27.9	0.0	6.7



Stability (GZ Curve)				
Angle (°)	Sin (°)	KN sin(°)	KG sin(°)	GZ
0	0.000	0.000	0.013	-0.013
2	0.035	0.225	0.163	0.062
5	0.087	0.560	0.388	0.171
10	0.174	1.139	0.760	0.378
12	0.208	1.365	0.908	0.457
15	0.259	1.717	1.127	0.591
20	0.342	2.329	1.484	0.845
30	0.500	3.459	2.163	1.296
40	0.643	4.267	2.776	1.491
50	0.766	4.741	3.305	1.436
60	0.866	5.121	3.733	1.388

Figure 19. Stability calculation page 3.

This is a third page of the stability calculation produced by the chief officer. This page contains information about cargo spaces and stability curve.

Voyage No.: **Ship's Name:** **FROM:** **TO:** **Master's Name:**

Route name: Halmstad - Wismar

WAYPOINTS

WPT	Name	Position	Leg	Total Distance	X PORT X STBD	Turn Radius	Draught	UKC	Masthead	Overhead Clearance
0	Berth	56° 39.635 N 012° 51.290 E	XXX.X XXX.X	XXX.X	XXX.X XXX.X	XXX.X	XXX.X	XXX.X	XXX.X	XXX.X
1		56° 39.296 N 012° 50.949 E	209.0° 0.38 NM	0.38 NM	0.10 NM 0.10 NM	0.10 NM	Undefined	Undefined	Undefined	Undefined
2		56° 39.163 N 012° 50.838 E	204.5° 0.10 NM	0.49 NM	0.10 NM 0.10 NM	0.10 NM	Undefined	Undefined	Undefined	Undefined
3		56° 39.061 N 012° 50.194 E	254.0° 0.38 NM	0.87 NM	0.10 NM 0.10 NM	0.10 NM	Undefined	Undefined	Undefined	Undefined
4		56° 37.576 N 012° 48.136 E	217.4° 1.90 NM	2.76 NM	0.10 NM 0.10 NM	0.10 NM	Undefined	Undefined	Undefined	Undefined
5	PBP	56° 37.018 N 012° 47.170 E	223.7° 0.78 NM	3.54 NM	0.10 NM 0.10 NM	0.10 NM	Undefined	Undefined	Undefined	Undefined
6		56° 27.262 N 012° 31.340 E	221.9° 13.11 NM	16.65 NM	0.10 NM 0.10 NM	0.10 NM	Undefined	Undefined	Undefined	Undefined
7	SOUNDREP VTS Sector 1 ch 73	56° 18.083 N 012° 25.282 E	200.1° 9.80 NM	26.45 NM	0.10 NM 0.10 NM	0.10 NM	Undefined	Undefined	Undefined	Undefined
8		56° 10.618 N 012° 24.010 E	185.4° 7.48 NM	33.93 NM	0.10 NM 0.10 NM	0.10 NM	Undefined	Undefined	Undefined	Undefined
9		56° 03.155 N 012° 38.532 E	132.6° 11.04 NM	44.97 NM	0.10 NM 0.10 NM	0.10 NM	Undefined	Undefined	Undefined	Undefined
10		55° 58.976 N 012° 37.375 E	188.8° 4.27 NM	49.24 NM	0.10 NM 0.10 NM	0.10 NM	Undefined	Undefined	Undefined	Undefined
11		55° 55.033 N 012° 38.053 E	174.5° 3.97 NM	53.20 NM	0.10 NM 0.10 NM	0.10 NM	Undefined	Undefined	Undefined	Undefined
12	Sector 2, change ch to 71	55° 50.003 N 012° 42.081 E	155.8° 5.51 NM	58.71 NM	0.10 NM 0.10 NM	0.10 NM	Undefined	Undefined	Undefined	Undefined
13		55° 46.413 N 012° 40.699 E	192.2° 3.70 NM	62.41 NM	0.10 NM 0.10 NM	0.10 NM	Undefined	Undefined	Undefined	Undefined
14		55° 44.324 N 012° 40.702 E	180.0° 2.10 NM	64.51 NM	0.10 NM 0.10 NM	0.10 NM	Undefined	Undefined	Undefined	Undefined
15		55° 38.551 N 012° 41.387 E	176.2° 5.79 NM	70.31 NM	0.10 NM 0.10 NM	0.10 NM	Undefined	Undefined	Undefined	Undefined
16		55° 37.699 N 012° 41.731 E	167.1° 0.88 NM	71.18 NM	0.10 NM 0.10 NM	0.10 NM	Undefined	Undefined	Undefined	Undefined
17		55° 36.143 N 012° 41.941 E	175.6° 1.57 NM	72.75 NM	0.10 NM 0.10 NM	0.10 NM	Undefined	Undefined	Undefined	Undefined
18		55° 33.044 N 012° 42.385 E	175.4° 3.09 NM	75.85 NM	0.10 NM 0.10 NM	0.10 NM	Undefined	Undefined	Undefined	Undefined
19		55° 31.818 N 012° 41.568 E	200.7° 1.32 NM	77.17 NM	0.10 NM 0.10 NM	0.10 NM	Undefined	Undefined	Undefined	Undefined
20		55° 17.563 N 012° 37.541 E	189.1° 14.47 NM	91.64 NM	0.10 NM 0.10 NM	0.10 NM	Undefined	Undefined	Undefined	Undefined
21		54° 56.231 N 012° 36.673 E	181.3° 21.36 NM	112.99 NM	0.10 NM 0.10 NM	0.10 NM	Undefined	Undefined	Undefined	Undefined

Printed: 10/23/22 09:12:59 Prepared by nav. Officer Checked by Master **Page** 5

Figure 20. Waypoints in ECDIS.

This is a voyage plan made by the author in the ECDIS. This page contains information about waypoints, their coordinates, distances from the first waypoint, berth in Wismar, and ECDIS safety settings.

9 Discussion

This portfolio shows, how a logical and streamlined voyage planning template can help young officers produce voyage plans quickly. This is important, as usually on a small tonnage vessel, there isn't much time left for voyage planning as all hands on deck are usually needed. Whether it's for mooring, unmooring, cargo hold cleaning, loading, discharging, bulkhead moving, or ballasting operations, the crews on small tonnage vessels are small compared to bigger vessels, and every crew member must help out where needed. The author's vessel had a minimum crew of 7 people, including the author himself. The author spent approximately an hour from getting the confirmation about the voyage until the last steps before getting the pre-departure information from the chief officer. Furthermore, having an easy and logical voyage planning template helps young officers get the hang of producing voyages more quickly, as it's something that isn't taught at school that extensively, as every company's policy requires different things to be considered and marked by the officer in the voyage plan.

Additionally, if an officer responsible for voyage planning moves inside the company from one vessel to another, having a standardized voyage planning template helps them produce voyages quickly and safely without having to have a more extensive familiarization done before getting to work, as they are familiar with the voyage planning system.

As one of the disadvantages the author can see is that if the voyage plan procedure is not thoroughly explained to a new officer, they might not completely understand the importance of each step and check in the process. This might lead to accidents. With paper charts and pilotage books, producing a voyage plan takes a lot longer time, as one has to draw out every leg of the route, one sees the dangers on a map, and has to find pilotage information from books. But on modern vessels, producing a voyage doesn't take that long time, as one just clicks and goes on ECDIS and has all the information available with just few clicks on ECDIS and electronic Admiralty books. And with that, one might lose the feeling of danger, as ECDIS usually has different safety settings integrated that warn about shallow waters and other dangers to navigation. But if the ECDIS' configuration is wrong, one might not see the dangers.

As this was the author's first officer position with voyage planning duties, the author saw the importance of a well thought out voyage plan template, and how it helps to get acclimatized quickly with a new company, vessel, and their procedures.

10 List of figures

11 Sources

Rederi Ab Nathalie Safety Management System. (22. August 2022).