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Impacts on rest hours due to Kiel-Canal transit on Finnish tankers

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Abstract

The aim of this thesis is to determine the impacts of Kiel-Canal usage to the rest hours. The increasing emission trading requirements set by European Commission are driving Shipping companies to further develop their shipping routes. The emission costs are leading to shorten the voyages and the Kiel-Canal being the most adequate option between the North Sea and the Baltic Sea.

The research was commissioned by OSM Ship Management Finland Oy. This thesis utilized the quantitative research methods. The research data was gathered with online questionnaire from the seagoing employees onboard four different OSM Ship Management Finland Oy vessels. In the analysis the descriptive and inferential statistics were used. The findings in this thesis showed the present work distribution and the company requirements are not favouring the rest hour management when transiting through the Kiel-Canal. The findings showed that the workload ensued was focused to a small group. The results showed, on each occasion, there was a group of personnel who must set aside one to two working days' worth of tasks, which are not falling into oblivion.

The results indicated eligible reasons to further develop the options for the workload optimization. For further implication the result did not consider the economic or environmental aspects of the Kiel-Canal transit.

Language: English
Key Words: Maritime, Rest Hours, Kiel-Canal

OPINNÄYTETYÖ

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Tiivistelmä

Tämän opinnäytetyön tarkoitus oli määrittää Kielin kanavan vaikutukset lepoaikoihin. Euroopan komission asettamat kasvavat päästökauppa vaatimukset ajavat varustamoita jatkokehittämään laivareittejä. Päästömaksut johtavat lyhentämään matkoja, jossa Kielin kanava on osuvin ratkaisu Pohjanmeren ja Itämeren välillä.

Tämä opinnäytetyö tehtiin tilaustyönä OSM Ship Management Finland Oy:lle. Tämä opinnäytetyö käyttää määrällisiä tutkimusmenetelmiä. Tutkimustyön tilastot kerättiin verkkopohjaisella kyselylomakkeella OSM Ship Management Finland Oy:n neljän aluksen merihenkilöstöltä. Analyysissä käytettiin kuvaavia ja episteemisesti päätteleviä tilastotieteitä. Tämän tutkimustyö tulokset näyttivät toteen, että tämänhetkinen työjakauma ja yhtiön vaatimukset eivät suosi lepoaikahallintaa Kielin kanavan osalta. Tutkimus osoitti työn kuormituksen jakautumisen kohdistuvan vain pienelle osalle henkilöstöstä. Tulokset näyttivät toteen osan työntekijöistä joutuvan jättämään sivuun yhdestä kahteen vuorokautta työtehtäviä, jotka eivät vaivu unholaan.

Tulokset osoittivat jatkokehitysehdotuksia työnkuormituksen parantamiseksi. Tämä tutkimustyö ei ottanut huomioon taloudellisia- tai ympäristönäkökulmia kuljettaessa Kielin kanavan kautta.

Kieli: Englanti
Avainsanat: Merenkulku, Lepoajat, Kielin kanava

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Concepts

Flag state (administration) is a governmental organization under which state ships are registered. **(**Wärtsilä Encyclopedia of Marine and Energy Technology, n.d.)

Minimum safe manning is issued by the flag state. The minimum safe manning certificate determines the number of minimum competence certificate holders. (Maritime Labour Convention, MLC 2006 (as amended 2018 § 2,7)

Officer of the watch (OOW) is a master's representative and oversees the vessel's safe navigation on the navigation bridge. Officer of the watch also refers to Master whenever he has taken over the responsibilities of the OOW. Duties and obligations do not alter between Master and Mate when in charge of the OOW duty. (SMS document 05-1-00.F.EN Definitions and abbreviations.)

Charter party is a party who has a written agreement with the vessel owner to set the terms of arrangement, the cargo prices and voyage orders. The voyage order contains instructions for voyage parameters such as ports involved, intended route and speed. **(**Wärtsilä Encyclopedia of Marine and Energy Technology, n.d.)

Loading parameters vary between ballast condition and laden conditions. The figures regarding the survey that have variation are vessels stability, draught and trim (the difference in draught between the forward and aft of the vessel). In ballast condition the vessel has no cargo onboard, and the water ballast tanks are filled in effectiveness to keep the stability related parameters within the safety limits. In ballast conditions the vessel has less draught, greater trim and air draught. **(**Wärtsilä Encyclopedia of Marine and Energy Technology, n.d.)

Unmanned machinery spaces (UMS) are operated remotely from navigational bridge rather than Engine Control Room (ECR) located within Engine compartment. **(**Wärtsilä Encyclopedia of Marine and Energy Technology, n.d.)

Aframax tanker is generally defined as tanker with a deadweight capacity range between 50,000 – 100,000 metric tons. **(**Wärtsilä Encyclopedia of Marine and Energy Technology, n.d.)

Product tankers are designed to carry oil, other than crude oil, such as petroleum products. **(**Wärtsilä Encyclopedia of Marine and Energy Technology, n.d.)

Chemical tankers are designed to carry noxious liquid substances in bulk. **(**Wärtsilä Encyclopedia of Marine and Energy Technology, n.d.)

Lock is a part of a canal or river which can be closed by gates. It is then filled or emptied to raise or lower ships. **(**Wärtsilä Encyclopedia of Marine and Energy Technology, n.d.)

Human resources (HR) is a company shore-based department focusing on organizing, planning manning training and other employee relations. (Encyclopedia Britannica, n.d.).

Non-conformity is an observed situation where requirements are not fulfilled. (ISM Code, 2015)

1 Introduction

The European Union set greenhouse gas emission requirements which are affecting the maritime sector from the beginning of the year 2024. The EU emission trading system is the European Union's drive to reduce manmade greenhouse gases. This emission trading system functions by setting an overall limit on emissions which are reduced annually. (Regulation of the European parliament and of the Council 2023/957, 2023).

These emission requirements are affecting shipping companies to further inspect their emissions. This includes more efficient voyage planning, which leads to more challenging shipping routes. The voyage planning changes will have an impact on several factors onboard of vessels including, manning and competence requirements to comply with rest hours, defined in Maritime Labour Convention, MLC 2006 (as amended 2018 § 2,3)

The OSM Ship Management Finland fleet renewed two vessels at the end of the year 2023 and those vessels have expanded trading area with more voyages to reach the North Sea ports. A total of four fleet vessels are dealing with challenging trading areas, without a clear structure on upcoming routes. (Finnish Seafarers' Union – SMU, 2024).

The charter party has informed the fleet of an increasing number of voyages to be sailed through the Kiel-Canal. In principle the vessels are requested to use the canal every time possible. Previously, the voyages between the Baltic Sea and the North Sea have been sailed frequently through the Danish straits.

2 Purpose

This research is directed to the shipping company OSM Ship Management Finland Oy, as commissioned. The purpose of this quantitative case study is to detect the impacts of increased Kiel-Canal usage to the rest hour management in 2024.

The Kiel-Canal transit increases the amount of watchkeeping hours as well as required number of personnel conducting watch. Increased number of working hours caused by watchkeeping is in straight correlation to the rest hours. The decreased amount of rest hours creates a risk for the violation of rest hours. The findings in this study include the identification of the duties most affected.

The voyages vary between different ports, in which some of those are within greater distance from Kiel-Canal than others. This study outlines the influence of the arrival and the departure port location with the combination of Kiel-Canal. The canal is operated around the clock and onboard vessels the regular working hours are conducted daytime, excluding watchkeepers. The study shows the difference whether the Kiel-Canal transit takes place at night time or daytime.

During the canal transit extra required watchkeeping personnel must set aside normal planned tasks, such as maintenance, repair, or office work. This work does not fall into oblivion. The study directs attention to the amount of missed working hours from other planned working hours.

The time-charter trafficking combined with the unpredicted delays during the Kiel-Canal transit has arisen concern in various quarters in the company. The study summarises rest hour violations in three different scenarios of seagoing personnel and present information about challenges concerning Kiel-Canal transit onboard four different vessels.

3 OSM Ship Management Finland Oy

OSM Ship management Finland Oy (later as OSM SMF Oy) was founded in 2014 after Neste Shipping Oy decided to externalize the ship management. The old Neste Shipping company employees were transferred under OSM SMF Oy. Now, ten years later, the company has in total around 250 seagoing and shore-based employees. The fleet consists of 10 vessels. Including two Aframax tankers (crude oil), four chemical/product tankers, three tugboats and one barge. The flag state to all fleet vessels is Finnish Transport and Communications agency (TRAFICOM). OSM SMF Oy is a subsidiary of OSM Thome Ship Management company. (OSM Ship Management Finland Oy homepage, 2022)

3.1 OSM Thome Ship Management

The OSM Thome Ship Management a merged company from OSM Maritime Group and the Thome Group. The OSM Maritime Group was founded in Norway in 1989. The Thome Group was founded in Singapore in 1963. The merger of the companies occurred in 2023 (OSM Thome Ship Management, 2024).

OSM Thome Ship Management employs approximately 31,000 personnel on shore and at sea. The company manages about 1000 merchant vessels of various vessel types. (OSM Thome Ship Management, 2024). The company's line of business is ship and crew management. OSM Thome is a forerunner of greener shipping by engaging sustainable solutions. (OSM Thome Ship Management, 2024).

3.2 Vessel particulars

Motor tankers Halti and Saana are sister vessels, which share the same dimensions and particulars. The vessels arrived under OSM SMF Oy operation in year 2023 (Finnish Seafarers' Union – SMU, 2024). The vessels are 150 meters in length, 22,8 meters in

breadth and maximum draft in fresh water is 9,4 meters. In normal ballast conditions the vessel maximum draft is 6,3 meters. Total cargo capacity is 19900 cubic meters when tanks are loaded 98%. (Finnish Seafarers' Union – SMU, 2024). The overall image of Saana (Figure 1) in laden condition at Sköldvik, Porvoo.

Figure 1. Overall illustration of Motor tanker Saana (Finnish Seafarers' Union, 2024)

Motor tankers Uikku and Lunni are sister vessels, which share the same dimensions and particulars. The vessels arrived under OSM SMF Oy operation in year 2021 (Finnish Seafarers' Union – SMU, 2024). The vessels are 155,5 meters in length, 23,96 meters in breadth and maximum draft in fresh water is 9,7 meters. In normal ballast conditions the vessel maximum draft is 6,5 meters. Total cargo capacity is 21927 cubic meters when tanks are loaded 98%. (Ship particulars document M/T Lunni) The overall image of Lunni (Figure 2) in laden condition at Svartbäck anchorage, Porvoo.

Figure 2. Overall illustration of Motor tanker Lunni (Finnish Seafarers' Union, 2021)

This means in general that Uikku and Lunni are slightly larger vessels than Saana and Halti. The maximum draught of Uikku and Lunni (9,7 meters in fresh water) means that when laden conditions exceed 9,50 meters in draught the vessel is not allowed to enter Kiel-Canal, as defined later in subchapter 4.2. In ballast conditions, all the four vessels may sail through Sound traffic in Danish strait, as defined later in subchapter 4.1.

The crew composition on all four vessels is identical. There are three different departments onboard, which are deck, engine and catering. The deck department consists of master, four officers, bosun, and three watchmen. The engine department consists of chief engineer, two engineers, repairman, electrician and motorman. The catering department consists of a chief steward and a cook. Total crew number is 17.

In voyage orders the intended speed is given and may vary according to the charter agreement. In this research the most common speed of 11,5 knots is used to calculate the sea voyage legs and 15 knots to calculate other pilotage legs than Kiel-Canal.

4 Theoretical background

This chapter contains an explanation of the literature related to this research. The chapter begins with definition of the North Sea and the Baltic Sea connecting shipping routes. The first subchapter explains the Danish Strait including two main routes and the second subchapter define the Kiel-Canal. The regulation with explanations about rest hours and the working hours conducted onboard follows the traffic area subchapters. Final subchapter explains the OSM SMF Oy Safety Management System (SMS) and the related SMS procedures to be followed onboard vessels.

4.1 Danish strait

The Danish waters have two main shipping routes that can be used passing Danish strait. The voyages can be sailed either through Great Belt traffic or Sound traffic. Despite shorter voyages there are more limitations in Sound traffic area. (DanPilot transit pilotage, n.d.).

Transit pilotage is not compulsory for vessels with draft under 11 meters (DanPilot transit pilotage, n.d.). However, the company watchkeeping requirements increases during narrow waterways and the pilotage areas through Danish strait is conducted under watch system B, defined later in subchapter 4.4.

The pilotage distance, which is travelled under watch system B in Sound traffic is 45 nautical miles. The pilotage route is between Drodgen and Sound North pilot stations (Figure 3) via Öresund and the passage is approximately 4 hours with defined charter speed (11,5 knots). The maximum allowed vessel draft via Sound traffic is 7,7 meters. (DanPilot transit pilotage (n.d).)

The pilotage distance, which is travelled under watch system B in Great Belt traffic is 105 nautical miles. The pilotage route is between Great Belt South and T10 pilot stations (Figure 3) and the passage takes approximately 9 hours with defined charter speed (11,5 knots). The maximum allowed vessel draft via Great Belt traffic is 15,0 meters. (DanPilot transit pilotage (n.d.)

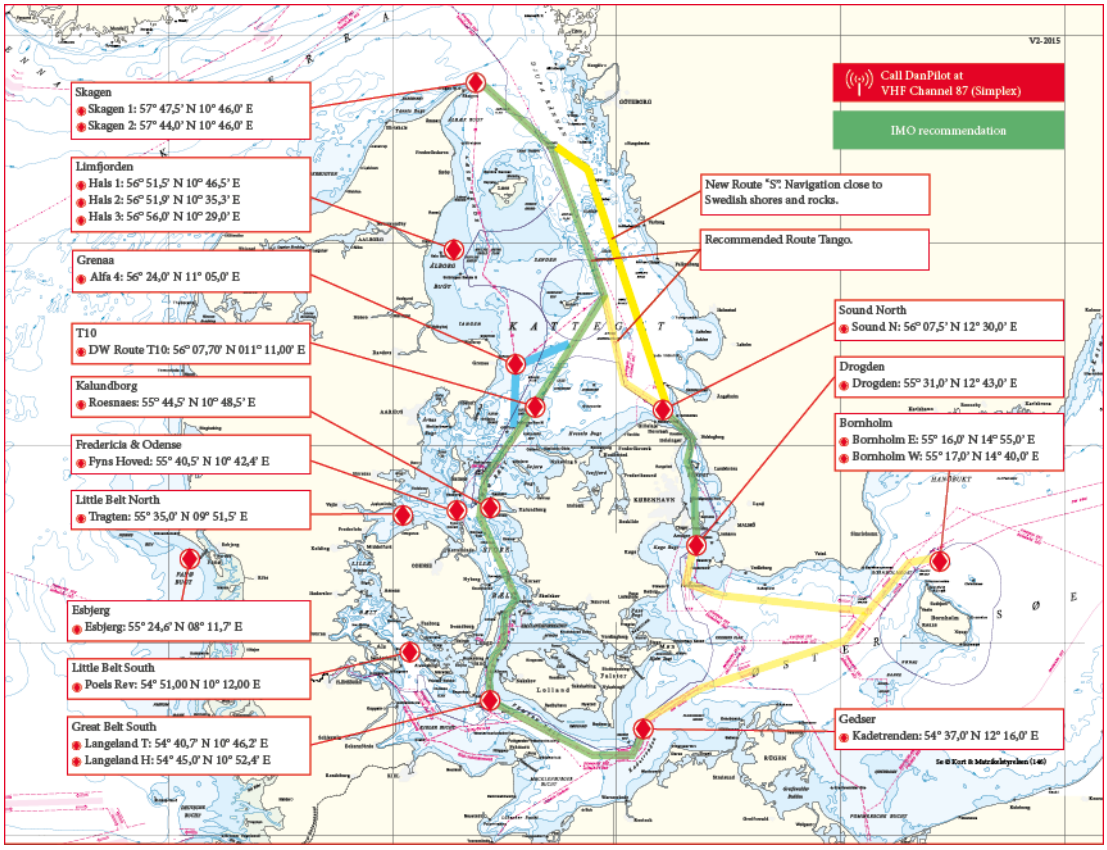

Figure 3. Shipping Routes in Danish Strait (DanPilot transit pilotage, n.d.).

4.2 Kiel-Canal

The Kiel-Canal is the shortest shipping route between the Baltic Sea and the North Sea. According to the Kiel-Canal agency the canal transit shortens the voyage 280 nautical miles comparing to alternatively passing around Denmark. (UCA – United Canal Agency GMBH, 2024).

The Kiel-Canal transit services are available every day around the clock and usually immediately upon arrival. There are locks on both ends of the canal, the eastern lock is located at Kiel-Holtenau, and the western lock is at Brunsbuttel. There is no convoy traffic in the canal meaning the traffic will flow both ways all the time. The estimated travel time from lock to lock is approximately 10 hours. The transit time can vary depending on the traffic situations and time required passing the locks. (UCA – United Canal Agency GMBH, 2024).

The vessels are categorized based on their particulars (length, breadth, draught). As the vessel size and draught increases, it falls into higher group number and more limitations to meet other vessels apply in the canal. (UCA – United Canal Agency GMBH, 2024).

As mentioned in the above paragraph, when the draught increases the category meeting other vessels increases. Meaning that there is difference between ballast and laden conditions, when meeting other vessels in the canal. In the canal there are designated meeting points when the meeting restrictions apply. This is causing unpredictable delays during the canal.

The Maximum speed over ground for vessels is 12km/h (6.5 knots). The canal breadth varies between 102 and 214 meters. The total length of the canal is 98.7 kilometers (53.3 nautical miles). The depth of the canal is 11 meters, and the height of the bridges are 42 meters above water level. (UCA – United Canal Agency GMBH, 2024).

The maximum length for vessels is 235 meters, maximum breadth is 32.5 meters and maximum draft in fresh water (for vessels under 160 meters of length) is 9.5 meters. The maximum air draught (height) is 40 meters above water level. (UCA – United Canal Agency GMBH, 2024).

The compulsory geographical pilotage area on the North Sea begins before the Elbe River and ends at the Kiel Lighthouse, on the Baltic Sea. The distance, including the Kiel-Canal, from Elbe 1 pilot station to Kiel LH pilot station is approximately 90 nautical miles, measured with Telko Tecdis electronic chart display equipment. The Kiel-Canal and Elbe River transit requires (without delays) approximately 11 hours of watch systems C and 2 hours of watch system D (subchapter 4.4.2). The times in watch system C is calculated with maximum speed in the canal (6.5knots) and with speed of 15 knots outside locks. The time in watch system D is the minimum required time required for both locks.

Based on the size of the vessel (subchapter 3.2), helmsmen will board the vessel at first lock and their presence is compulsory for the entire passage through the canal. (UCA – United Canal Agency GMBH, 2024).

4.3 Hours of rest

Seafarers rest hours as defined under MLC and Seafarers' Rest hour act, there are three conditions that should be met altogether on any point in 24-hour period. Within every 24-hour period the employee shall be allowed a rest period of at least ten hours, which may not be divided into more than two parts, which one of those must continue for at least 6 hours and the interval not exceeding 14 hours in between. A total rest period of 77 hours in each seven-day period must be compliant. (Maritime Labour Convention, MLC 2006 (as amended 2018 § 2,3)

4.3.1 Rest hour violations

When the rest hour periods, defined in chapter 4.3, are not met it creates a rest hour violation. The violations are treated as non-conformity onboard ships and must be reported through company's information channels.

If an employee's rest period is interrupted by calls to work, he shall be provided with sufficient compensating time for rest. Breaks of less than 30 minutes are not included in the rest period. (SMS document 05-0-04.F.EN Minimum Period of Rest, 2022)

The OSM SMF Oy has set HR goals and targets for the year 2024, which outlines the maximum of 2 pcs rest hour violations for one person within a month. The target is to avoid rest hour violations with work hour monitoring and efficient work planning. The master has the ship side responsibility for these targets. (OSM SMF HR Objectives and targets 2024, 2024)

4.3.2 Regular working hours

Regular Working hours of the vessel's personnel are mentioned in this chapter. The time onboard is remaining constant (UTC+2, summertime UTC+3).

The normal working hours are 'daytime working' hours 08:00-11:30, 12:00-15:00, 15:30-17:00. The crew and officers other than the watchkeeping personnel are conducting these hours, unless otherwise required by vessel's necessary operations.

Watchkeeping working hours are divided into three different segments to cover 24 hours shipboard operations a day. The watchkeeping organization consists of a total of six personnel. There are always one watch officer (OOW) and one watchman on duty. The different watchkeeping arrangements are 00-04, 12-16; 04-08, 16-20; and 08-12, 20-00. The watch personnel are also on standby watch two hours prior and after dedicated watch, to cover required extra manning for instance in mooring operations.

Duty Engineer watch schedule: 24h continuous hours beginning and ending at 12:00. Onboard the vessel there are two engineering officers performing duty engineer watches. Machinery spaces can be set to UMS mode outside daytime working hours, stated above in this chapter, when company procedures do not require engine room to be manned, the machinery and alarm systems are operating satisfactorily. Master and Chief Engineer can agree different UMS periods if needed, for instance due rest hours. (SMS document 05-2.K.015.F.EN Unmanned Machinery Space, 2024).

4.4 OSM SMF Oy Safety Management System

The International Safety Management (ISM) Code, which applies to all ships, requires shipping companies to have structured and documented Safety Management System (SMS). Safety Management System is a mode of operation allowing personnel to effectively

implement company safety and environmental protection policy. The SMS provides instructions and procedures among international and flag state legislation. (International Safety Management Code, as amended 2015).

4.4.1 Watch Systems

When underway there are four different watch systems for the Bridge and the Engine Control Room to ensure sufficient manning and awareness of specific duties. Under normal circumstances the required watch system is selected as specified in the separate instruction, defined in subchapter 4.4.2. (SMS document 05-1-04.F.EN Bridge Organization, 2022)

4.4.2 Selection of Watch System

This scope is to ensure sufficient manning on the bridge and in engine in different situations. Master evaluates the watch system suitable for each occasion. In the evaluation, navigable area, weather, visibility, traffic density of the area and the experience of the watch officers are considered. Lookout must always be on the bridge when it is dark, or the visibility is restricted. (SMS document 05-1.E.010.F.EN Duties in Different Watch Systems, 2024).

In navigable areas, normally used watch systems are A and B. They are used in open sea areas and coastal areas. In watch system A the bridge is manned by a Watch Officer, lookout and helmsman if needed. The Engine can be unmanned. (SMS document 05-1.E.010.F.EN Duties in Different Watch Systems.docx, 2024).

In watch system B, the bridge is manned by the Master or Chief Officer (holding master's certificate), Deck officer, lookout and helmsman if needed. Engine can be unmanned. (SMS document 05-1.E.010.F.EN Duties in Different Watch Systems.docx, 2024).

In Confined and narrow waterways, the watch system C is used. In watch system C bridge is manned by the Master or Chief Officer (holding master's certificate), Deck officer, lookout and helmsman if needed. Engine is manned by duty Engineer. (OSM SMF SMS document 05-1.E.010.F.EN Duties in Different Watch Systems.docx, 2024).

In lock, harbour area, arrival, and departure the watch system D is used. The bridge is manned by the Master or Chief Officer (holding master's certificate) acting as OOW, Deck officer, lookout and helmsman if needed. The engine room is manned by Chief Engineer, Duty Engineer, and Electrician. (OSM SMF SMS document 05-1.E.010.F.EN Duties in Different Watch Systems.docx, 2024).

Bridge manning matrix (Figure 4) used in addition to visualize the different requirements of each watch system.

BCL C2.2 Bridge Manning Matrix

Master to evaluate the watch system suitable for each occasion. In the evaluation, navigable area, weather, visibility, traffic density of the area and the experience of the watch officers must be considered.

Note: The OOW is in charge until master takes command of bridge from the OOW by clearly stating that he is in command.

Watch System	Conditions	Master 6)	OOW	Lookout 4)	Helmsperson	Pilot	ER	Helm
A OPEN SEA & COASTAL AREAS	Clear weather	Option		1)	Option		UMS	Auto
	Restricted visibility				Option 3)		UMS / DUTY/E INFORMED	Option
B OPEN SEA & COASTAL AREAS WHEN EVALUATED	All				Option 3)		UMS	Option
C CONFINED OR NARROW WATERWAYS & PILOTAGE	All				Option 3)	Option	EOW	Option
D HARBOUR AREA, ARRIVAL & DEPARTURE	Clear weather	2)		1, 5)	Option 3)	Option	C/E	Optional
	Restricted visibility			5)			DUTY/E ELECT.	

Figure 4. Manning matrix. (SMS document 05-1-F.A103.EN BCL C2.2 Bridge Manning Matrix, 2024).

1) At his/her discretion, the OOW may be the sole lookout in daylight provided that, on each such occasion, the situation has been carefully assessed and it has been established without doubt that it is safe to do so.
2) Master's conning
3) Qualified helmsperson shall always be ready without delay to take over steering control.
4) Lookout must always be on the bridge during the hours of darkness, or when the visibility is restricted.
5) While manoeuvring to and from the jetty additional lookout is an integral part of the duties of fore/aft mooring party leader.
6) Chief Officer with ship handling experience from the vessel in question may substitute master e.g., due to rest hour management.

5 Methodology

The quantitative methods were used in this study. The data statistics were analysed by using descriptive and inferential techniques. Gillham (2000) explains the descriptive ways to be numerical data summarizing such as totals, averages and ranges. The inferential way allows researchers to draw inferences, for instance finding correlations and differences between participant groups (Gillham, 2000). The quantitative methods are good because of the detailed and information rich data. As Gillham (2000) mentioned that quantitative data and its analysis are non-complex, and the numerous data clarifies the overall picture.

The target group was selected to be permanent seagoing personnel onboard four different OSM SMF Oy fleet tankers from deck and engine departments. These departments are known to experience difficulties with rest hour management. The tankers in question were MT Uikku, MT Lunni, MT Saana, and MT Halti, introduced in chapter 3.3. These vessels operate on the Baltic Sea and the North Sea surrounding ports and are known to use Kiel-Canal when applicable. The catering department was left out since the working hours do not change according to traffic area demands. The two Aframax vessels MT Jaarli and MT Jatuli were left out of the research since the size of these vessels confines them out from Kiel-Canal. The three tugboats and the barge do not traffic in Kiel-Canal area and were left out research.

The questionnaire consisted of 10 multiple-choice questions and 4 open questions. The aim was to conduct an online survey with 30 employees of OSM SMF Oy from 17th of November 2024 within 4 to 5 weeks. The questionnaire was sent to private e-mail addresses through the company HR information channel. The recipients consisted of approximately 120 permanent employees, who are employed at deck and engine departments on vessels Uikku, Lunni, Saana or Halti. A total of 32 employees responded to the questionnaire and 31 answers were included in the analysis, because one participant did not meet the requirements.

The questionnaire was created with online platform Microsoft forms. The platform has integrated response gathering and viewing tools. The results were transferred to Microsoft

excel, with a system created transferring tool, to analyse and explore the results. The respondents were divided into four groups. In the analysis descriptive statistics were used to find the mean value (average) and the mode (most frequent rating) from the selected groups.

To test the hypothesis inferential statistics were used. The hypotheses were tested with the t-Test. T-Test is a ratio that measures the significance between two means (averages) while taking into consideration the sample variance or distribution. In this thesis the paired t-test was chosen. The threshold value (alpha value) was determined to follow the 5% level. The statistical significance was judged by calculating the p-values. Akin to that the null hypothesis and the hypothesis were either accepted or rejected. (Wadhwa & Marappa-Ganeshan, 2023).

5.1 Ethics

Ethical research is important to provide moral principles guiding the research and publication of results. It is researchers' responsibility to ensure that every person whose data is gathered for the purposes of research, consents freely and voluntarily to participation and the participants have been given sufficient information to validate their choice. (Oates, Carpenter, Fisher, Goodson, Hannah, Kwiatowski, …, & Wainwright, 2021 p. 5 & p. 12).

The participants and researcher should share mutual respect for good and trustworthy research. (Oates, et al., 2021 p. 4). This aimed to reduce the number of participants not answering the questionnaire, because of the uncertainties concerning ethics.

The questionnaire was anonymous, and it was voluntary to answer. All data was collected, processed and stored in accordance with the General Data Protection Regulation (GDPR). By completing the questionnaire, the participant was informed obtaining consent to use their answers as part of the analysis. No written answers are to be published by identifying the position, vessel or department. The questionnaire was written in one form, in English and in Finnish, in case of discrepancy the English version was deemed as primary. The questions were created with respect for individual, cultural, and role differences.

5.2 Variables

The first section of the questionnaire contained survey variables. The section consists of five different questions. The first two questions were qualifying questions, which means that the respondent must fulfil these two requirements to include the answers to the study analysis. The qualifying questions were the department and the vessel currently working on. One participant did not meet these requirements and was left out from the analysis.

The first section included identification of duty performed onboard. To separate the duties in the analysis. The point was to identify the amounts of the workload between different duties. The regular working hours were asked to separate the daytime working personnel from watchkeeping personnel. The idea was to analyse these groups independently.

5.3 Scenarios

There were three different scenarios included in the second section of the questionnaire. The data gathered consists of the selected options that create rest hour violation on each scenario. The scenarios were created to be in consecutive order from better to worse scenario. Nine out of fifteen target group recipients have regular working hours during the daytime. The scenarios were created to find the difference between night time and daytime passing through the canal. The close-by location of the departure and arrival port is known to create more challenges in the rest hour management. In the scenarios the distance to Kiel-Canal from departure and destination ports varies.

The scenarios were created on a timeline basis. The timeline was calculated by estimated distances divided by the charter speed. (11,5knots). One scenario describes individual voyage through the Kiel-Canal. The ports and routes are well known in the company and have been sailed previously.

5.4 Final section

The last section of the questionnaire included two to three multiple choice questions, depending on the previous answers. The questions were about the concern for the lack of manning. The participants had multiple choice questions with three different options: 'yes', 'maybe' and 'no'. There was a follow up question for participants answering the first question 'yes' or 'maybe'. The second question requested the participants to answer in which previous section scenarios they felt most likely to have concern about lack of manning. The last question was an open question for free text entry around the subject.

5.5 Critical review

As stated in the first paragraph in this chapter the chosen methods are optimal to collect information rich data, which allows facilitate analysis even with larger focus groups. With quantitative methods the aspects 'why' and 'how' are not included as they would be in the qualitative methods. In this research the most important matter is to find the correlations and similarities and therefore the methods were chosen. The principle in the statistical data collection and analysis is to understand the ideology behind the questions. As Gillham (2000) states: 'But statistics only lie to those who don't understand them'. In the inferential statistics the t-Test was chosen to have the most appropriate function for the analysis (Beath & Jones, 2018). Since there was only single group with multiple time points the paired t-Test was chosen to test the hypothesis (Beath & Jones, 2018).

The researcher is a permanent seagoing employee of OSM SMF Oy. He has begun the working relationship with the company in 2023. The researcher has worked onboard Lunni as Ordinary Seaman, 3rd Officer, and 2nd Officer. The researcher is familiar with the company's standard procedures and has access to the company's databases. The researcher has not been employed onboard other fleet vessels.

6 Analysis

This chapter presents the results from the questionnaire and the hypotheses will be answered. First, the questionnaire variable results are presented and illustrated with figures. Second, the results of the statistics and hypotheses are presented and discussed.

In the first question the department were questioned (Figure 5). There was a total of 31 qualified answers, of which 21 were from the deck department and 10 from the engine department. There was a requirement to answer the question either option ‘Deck’ or ‘Engine’. Answering option ‘other’ to the question would have disqualified the participant to be part of analysis. No ‘other’ options were answered.

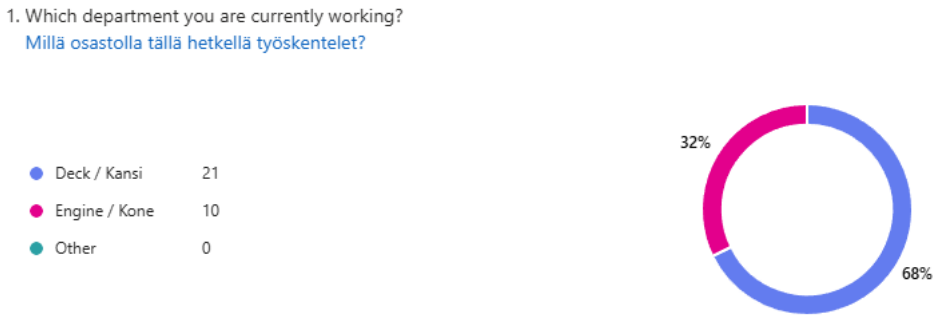

Figure 5. Summary of question 1 results.

The vessel specific distribution of the participants (Figure 6). Vessels Uikku and Halti shared expected amount of participation in voluntary based questionnaire, where the participants were asked to use more time and effort than in traditional questionnaires. There were lower number of answers from Saana than expected. There were a higher number of answers from Lunni than expected. One participant chose option ‘other’ and was left out from the analysis.

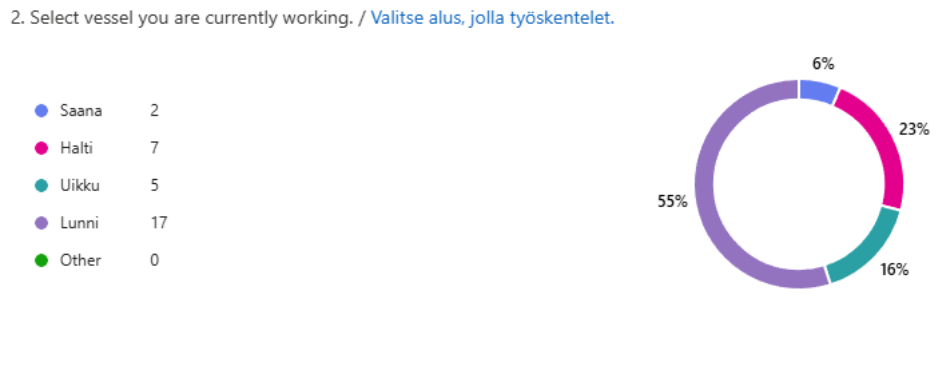

Figure 6. Summary of question 2 results.

The distribution of duties answered in the questionnaire (Figure 7). The number of deck officers answered the questionnaire was higher than expected. Otherwise, the answers are more evenly distributed, as expected.

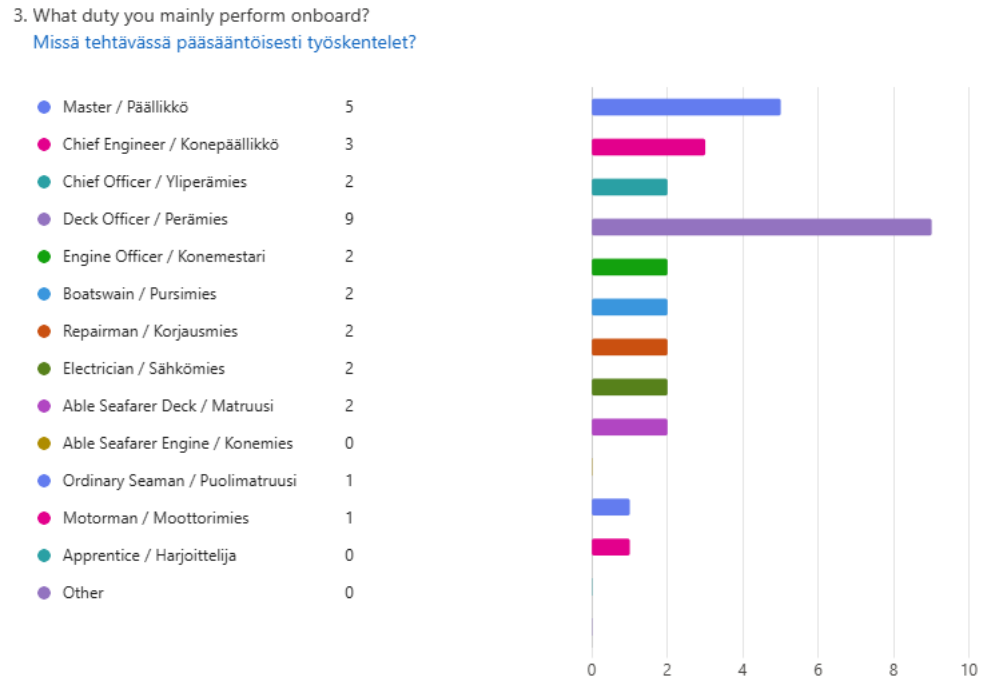

Figure 7. Summary of results in question 3.

The distribution between regular working hours and different watchkeepers (Figure 8). The Daytime job was selected 19 times and the watchkeeping 12 times. The distribution between the watch hours were distributed enough evenly to gain overall picture.

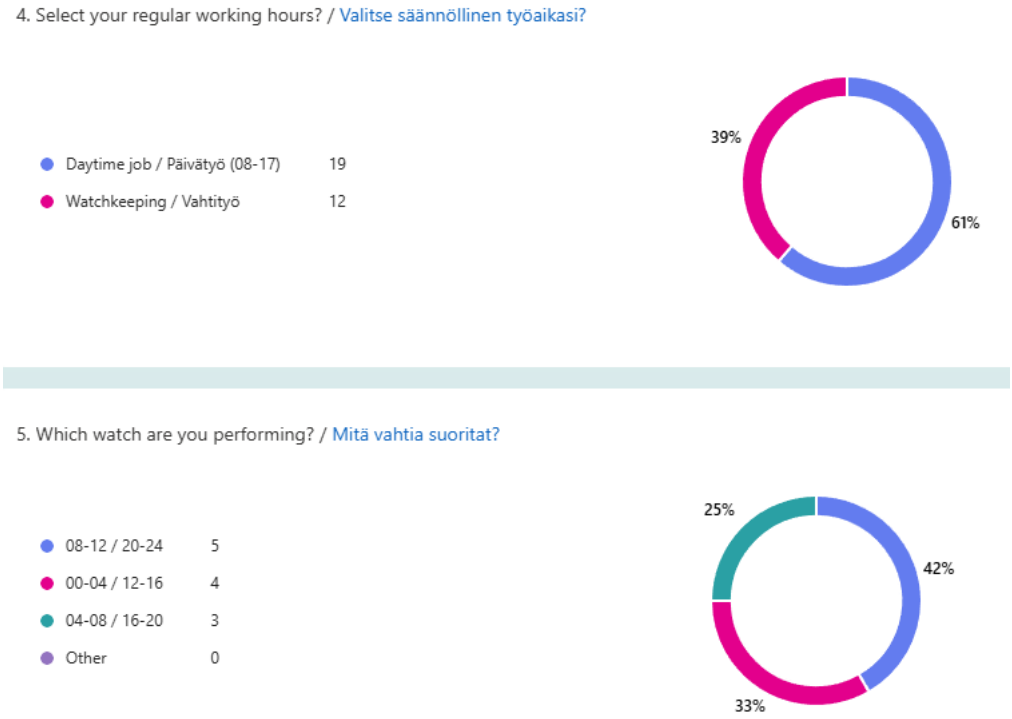

Figure 8. Summary of results in question 4 and 5.

6.1 Descriptive statistics

In the analysis there were selected four groups, which represent the sample in the descriptive statistics. The first group was the extra personnel performing watch during watch system type C and D (group count 9 answers). The second group was watchkeeping personnel (group count 12 answers) and the third group was the personnel performing watch only in watch type D (group count 5 answers) and the fourth group was the rest of the crew without any obligations to watchkeeping (group count 5 answers).

In the first scenario there were 10 different options that could affect rest hours during the Kiel-Canal transit. In the second scenario there were 12 options and in the third scenario there were 13 options. The identification of the affected groups was compared by the mean (average) value of selected options. The values for groups were collected with the descriptive statistical tool in excel. On average for group 1 there was 4,2 rest hour violations for scenario 1. For group 3 the mean value was 0,4. The mean value for group 2 and group 4 was 0. The mean values were repeated with other scenarios and the result was gathered to the table (Table 1). The standard deviation (Table 1) introduced to present the mean figures into context.

Table 1. Descriptive statistics.

	Scenario 1		Scenario 2		Scenario 3	
Group	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Group 1	4,2	2,6	8,2	4,0	7	4,3
Group 2	0	0	0	0	0	0
Group 3	0,4	0,5	1,4	0,5	1,2	1,3
Group 4	0	0	0	0	0	0

The descriptive statistics showed that even a small deviation from the planned Kiel-Canal and Elbe River transit has a high impact on sample group 1 (Master, Chief officer, Engine Officers) rest hour management. Sample group 3 (Chief Engineer, Electrician) rest hours were slightly impacted by the transit. Sample group 2 (Watchkeepers) and sample group 4 (bosun, repairman, motorman) rest hours were not impacted by the Kiel-Canal and Elbe River transit.

In the survey the participants were asked how many planned working hours they were not able to conduct due the Kiel-Canal and Elbe River transit. The question was divided to represent each scenario.

In the first scenario (daytime passing) the Group 1 mean value was 7 hours. Within group 1 the Master and Chief Officers answered with one accord 7-8 hours and Engine Officers answered likewise 4 hours. Group 2 answered on average 0,7 hours within range from 0 to 4 hours. Group 3 answered on average 2,4 hours in the range from 0 to 4 hours. Group 4 answered on average 0,8 hours in the range from 0 to 2 hours. All three scenarios are summarized in the table below (Table 2). The mode (most frequent value) indicates the most common answer. Group 3 did not have any frequency in scenarios 2 and 3, therefore marked as 'NA' in table 2.

Table 2. Descriptive statistics.

	Scenario 1		Scenario 2		Scenario 3	
Group	Mean (h)	Mode (h)	Mean (h)	Mode (h)	Mean (h)	Mode (h)
Group 1	7	8	11,6	16	12,2	16
Group 2	0,7	0	0,38	0	0,48	0
Group 3	2,4	2	2,7	NA	3	NA
Group 4	0,8	0	1,4	0	1,4	0

In the second scenario (night time passing) the Group 1 mean value was 11,6 hours. Within group 1 the Master and Chief Officers answered within range from 8 to 16 hours and Engine Officers answered with one accord 8 hours. Group 2 answered on average 0,38 hours within range from 0 to 2 hours. Group 3 answered on average 2,7 hours in the range from 0 to 4,5 hours. Group 4 answered on average 1,4 hours in the range from 0 to 4 hours.

In the third scenario (night time passing) the Group 1 mean value was 12,2 hours. Within group 1 the Master and Chief Officers answered within range from 10 to 16 hours and Engine Officers answered with one accord 8 hours. Group 2 answered on average 0,38 hours within range from 0 to 2 hours. Group 3 answered on average 3 hours in the range from 0 to 6 hours. Group 4 answered on average 1,4 hours in the range from 0 to 4 hours.

The first scenario was conducted during daytime and Kiel-Canal was not in near vicinity of the departure and arrival port. The results favour the ascending ideology behind the scenarios. The statistical values showed that there were significant differences between the scenarios. In addition, the statistical results showed that both, the night time passing and the arrival/departure port location, have an impact on the rest hours.

The third and final section of the questionnaire begun with question about lack of manning (Figure 9). 19 participants out of the 31 did not have duty specific concern about lack of manning. 17 out of the 19 participants answering ‘no’ belong to groups 2, 3, and 4. In total 11 participants were either possible concerned or concerned about the lack of manning in their position. 7 participants out of 9 in group 1 answered either ‘maybe’ or ‘yes’.

Figure 9. Result summary from question 12.

The 11 participants who answered previous question (12) either 'yes' or 'maybe' were questioned follow-up question (Figure 10). This was a specified question about the scenarios in section 2. The aim was to find which scenarios caused the concern about lack of manning. In total 11 answers were gathered and scenario 1 got 3 votes, scenario 2 got 8 votes, scenario 3 got 9 votes. 1 participant from group 3 did not have concern about any of the scenarios. One participant chose option 'other' without clear explanation of where the concern lies.

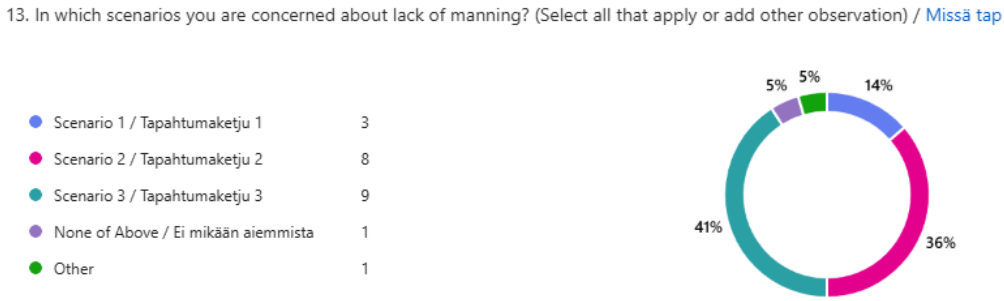

Figure 10. Result summary from question 13.

The final question in the questionnaire was an open question around the subject and it was voluntary to answer. A total of 18 participants answered the question. Every answer was categorized to represent a certain theme. There were several categorical themes that duplicated in the answers. The results were aggregated into the table (Table 3). Every

category was given with an example answer (translated citations) in the middle column and specified with the count of the duplicates in the right column (Table 3). The untranslated table is attached at the end of this thesis as an appendix (Appendix 2).

The two most common themes were the challenges in the rest hour management (abbreviated 'Challenging RHM' in the table) and the unpredictability of the delays in the canal. These categories are known to correlate with each other. Also, the opinions about the manning level were rising in the free speech section, four of the participants considered the manning level to be adequate and two participants suggested more personnel. Three participants were concerned about their rest hours in case the substitution is needed. One participant considered that the changes in the traffic area have brought compensation with longer sea voyages. One participant suggested, if the Kiel-Canal combined with Hamburg or Bremerhaven was becoming a routine route, longer period in the anchorage either before or after the canal transit to gain compensation for the rest hours.

Table 3. Aggregation of answers.

Category	Example	Count
Challenging RHM	Arranging preventive rest challenging at times [own translation]	7
Unpredictability	Kiel cause problems for lack of predictability [own translation]	5
Enough manning	Enough manning [own translation]	4
Substitute	Likely if others have problems with rest hours, I am obligated to stand in for, then risk for own rest hour violations increase. [own translation]	3
Extra manning	I would not see as a bad option at all, that these vessels engaged in this traffic had extra for instance junior chief officer, who could handle part of the Kiel passages and ease up the master's and chief officer's paper workload. [own translation]	2
Dissatisfaction towards reporting system	With new traffic area also for instance the reporting has increased so dramatically, that only managing that a person could be employed. [own translation]	2
Compensating sea passages	Even though ARA-area and Kiel-Canal increases the length of watches, then longer sea passages even up the workload compared to the coastal traffic. [own translation]	1

Extra rest in anchor	If Kiel – Hamburg/Bremerhaven become normal route, with regular traffic, the other work tasks remain undone and rest hour violations are not avoided. To this, only corrective action is extra over 10h rest stay at anchor before or after Kiel passage. [own translation]	1

6.2 Inferential statistics

The scenarios were created to show rest hour violations during the transit either with or without preventive rest. This aimed to answer the hypothesis, if there was difference whether preventive rest is taken or not before Kiel-Canal transit. To test this hypothesis the paired two sample t-test was performed in excel (Table 4). First group was the number of the rest hour violations with preventive rest in three different scenarios. The second group was the number of the rest hour violations without preventive rest in three different scenarios. The mean value for the first group was 3,33 and for the second group the mean value was 6,66. The null hypothesis being that there was no difference and the hypothesis being there was difference. The t-test returned p value of 0,074. The alpha value (significance level) was determined to be standard 0,05 (5% level). Since the p value was greater than the significance level the null hypothesis was accepted, and the hypothesis was rejected. The result showed, in statistical perspective, that there was no significant difference between the preventive rest taken before the Kiel-Canal transit. However, the mean value of second group being twice higher, the frequency of rest hour violations without preventive rest was shown to be more likely.

Table 4. t-Test: Paired Two Sample for Means.

	Variable 1	*Variable 2*
Mean	3,333333	6,666667
Variance	2,333333	10,33333
Observations	3	3
Pearson Correlation	0,644902	
Hypothesized Mean Difference	0	
df	2	
t Stat	-2,29416	
P(T<=t) one-tail	0,074372	
t Critical one-tail	2,919986	
P(T<=t) two-tail	0,148743	
t Critical two-tail	4,302653	

7 Conclusion

The increasing usage of Kiel-Canal has shown that there is a group of personnel onboard who are experiencing additional workload. The Kiel-Canal requires more watch type C and D hours than the voyages around Denmark. The unpredictability about the delays creates even more difficulties to rest hour management. The duties that were most impacted are Master, Chief Officer and Engine Officers. The impossibility to substitute these duties creates this group to be self-dependent. Within this group, 7 out of 9 were either concerned or partly concerned about lack of manning. Therefore, the concern within these duties are shown to be genuine.

In this paper, the most important findings were the risks for rest hour violations rises significantly when the passages are sailed through the Kiel-Canal compared to the voyages around Denmark. The unpredictable changes and delays caused the Kiel-Canal to be unreliable and caused the rest hour management to be highly demanding. The distribution of work tasks onboard these vessels were not structured to face these demands.

The results in this paper showed that the long sea voyages before and after the canal were essential to prepare and recover from the transit. The voyages were reducing the working hours of the personnel involved in the canal transit. This workload was not disappearing and therefore the risks for other factors such as fatigue might increase.

The chosen methods supported the coherent aggregation. The qualitative result would also facilitate the result for example with interviewing methods. The chosen questionnaire on the other hand remained the research bias more efficiently aside.

The questionnaire was created to provide very specific information, which would support fluent analysing. The questionnaire was known to require focus and background study around the subject. This factor was considered beforehand, and the participants were informed to reserve enough time and focus before beginning the questionnaire. The subject of the questionnaire was known to cause for concern onboard vessels and therefore the motivation to answer, even more challenging questions, was adequate.

In the beginning of the questionnaire the variables were chosen to identify the duties performed onboard. One participant refused to specify the vessel currently working since the variables were questioned too precisely and was a questioning the anonymous of the survey. There might be some participants not submitting the questionnaire because similar thoughts. When creating the questionnaire, the dilemma between these factors were consider carefully. However, the desired amount of the answers was reached, and the questionnaire answers did not contain any sensitive personal information.

The distribution of answers between the vessels were more uneven than expected. Thus, the possibility to compare the answers between vessels was deemed to be unreliable and was left out from this paper. The researcher being employed at Lunni could have affect to the motivation to answer. This could be seen as high number of the answers from Lunni. There was no interference in the results and no guiding help were asked. There were lower number of answers from Saana than expected. The voyages being still more between the Baltic Sea surrounding ports could explain some of the reason.

This paper limits to the rest hour violations and workload caused to the Kiel-Canal transit and thus are not considering the fatigue levels. The paper does not include the cost efficiency nor the environmental benefit from the Kiel-Canal.

For further implications the research left open the research question about the effects of the fatigue. The economic and environmental aspects of the Kiel-Canal transit have not been shown and the data around these subjects are increasing while the environmental demands continue.

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OSM SMF HR Objectives and targets 2024, 2024

Appendices

Questionnaire about impacts on rest hours due traffic area changes

Kyselytutkimus lepoajoista muuttuneiden liikennöintialueiden johdosta.

Hello, I am Tommi Kanerva and I am conducting research to OSM SMF Oy as a part of my Thesis. I would appreciate your time to answer few questions about rest hours due increased use of Kiel-Canal. The questionnaire is completely **anonymous** and it is **voluntary** to answer. All data is collected, processed and stored in accordance with General Data Protection Regulation (GDPR). By completing this questionnaire you give your consent to use your answers as part of the analysis. No written answers are going to be published by identifying the position, vessel or department. The questionnaire is written in English and in Finnish, in case of discrepancy the English version is deemed as primary. If any questions about the questionnaire or thesis, please do not hesitate to contact via e-mail: tommi.kanerva@edu.novia.fi Thank you in advance for your participation!

Hei, olen Tommi Kanerva ja suoritan kyselytutkimuksen OSM SMF Oy:lle osana opinnäytetyötäni. Arvostan, jos käytät hetken aikaasi vastaamalla muutamaan kysymykseen, liittyen lepoaikoihin, kasvaneen Kielin kanavan käytön johdosta. Tämä kyselylomake on täysin **anonyymi** ja vastaaminen on **vapaaehtoista**. Kaikki tieto kerätään, käsitellään ja säilytetään Yleisen tietosuoja-asetuksen (GDPR) mukaisesti. Vastaamalla tähän kyselyyn annat suostumuksen vastaustesi käyttöön osana analyysiä. Mitään kirjoitettua vastausta ei tulla julkaisemaan tehtävää, alusta tai osastoa yksilöiden. Kyselytutkimus on kirjoitettu englanniksi ja suomeksi, poikkeavuuksissa englanninkielinen versio katsotaan ensisijaisena. Jos kysyttävää tutkimuksesta tai opinnäytetyöstä, niin ole yhteydessä sähköpostitse: tommi.kanerva@edu.novia.fi Kiitos osallistumisesta etukäteen!

* Required

Variables / Muuttujat

This section includes essential data for survey variables. The questionnaire is directed towards personnel working **deck and engine departments** onboard Saana, Halti, Uikku and Lunni. / Tämä osio sisältää tutkimuksen kannalta välttämättömät muuttujat. Kyselytutkimus on suunnattu Saanalla, Haltilla, Uikulla ja Lunnilla työskentelevälle **kansi- ja koneosaston** henkilöstölle.

1. Which department you are currently working?
   Millä osastolla tällä hetkellä työskentelet? *

- ◯ Deck / Kansi
- ◯ Engine / Kone
- ◯ Other

2. Select vessel you are currently working. / Valitse alus, jolla työskentelet. *

- ◯ Saana
- ◯ Halti
- ◯ Uikku
- ◯ Lunni
- ◯ Other

3. What duty you mainly perform onboard?
Missä tehtävässä pääsääntöisesti työskentelet? *

- ◯ Master / Päällikkö
- ◯ Chief Engineer / Konepäällikkö
- ◯ Chief Officer / Yliperämies
- ◯ Deck Officer / Perämies
- ◯ Engine Officer / Konemestari
- ◯ Boatswain / Pursimies
- ◯ Repairman / Korjausmies
- ◯ Electrician / Sähkömies
- ◯ Able Seafarer Deck / Matruusi
- ◯ Able Seafarer Engine / Konemies
- ◯ Ordinary Seaman / Puolimatruusi
- ◯ Motorman / Moottorimies
- ◯ Apprentice / Harjoittelija
- ◯ Other

4. Select your regular working hours? / Valitse säännöllinen työaikasi? *

- ◯ Daytime job / Päivätyö (08-17)
- ◯ Watchkeeping / Vahtityö

5. Which watch are you performing? / Mitä vahtia suoritat?

- ◯ 08-12 / 20-24
- ◯ 00-04 / 12-16
- ◯ 04-08 / 16-20
- ◯ Other

This section contains three different scenarios / Tämä osio sisältää kolme tapahtumaketjua

The scenarios describes voyages and are built in order neutral - medium - challenging case. When answering consider your normal working hours. All the times mentioned in scenarios are **ship's times**. There are **two** questions for each Scenario:

1. Select all the options which give you **rest hour violation**. Process options **individually** without combining them with each other. If not any then select only 'no rest hour violations'. You may also add your own option. (Watchkeeping Engineers: imagine that you are at watch when the canal transit begins.)
2. In the second scenario specific question mark the amount of hours questioned. /

Tapahtumaketjut kuvaavat merimatkoja ja ovat rakennettu järjestyksessä neutraali - keskivaikea - haastava tapaus. Vastatessasi ota huomioon normaalit työtuntisi. Kaikki tapahtumaketjuissa mainitut ajat ovat **laivan aikoja**. Jokaista tapahtumaketjua kohden on **kaksi** kysymystä:

1. Valitse kaikki vaihtoehdot, joista aiheutuu **lepoaikarike**. Käsittele vaihtoehtoja **itsenäisinä** ilman yhdistelyä keskenään. Jos sinulle ei koidu lepoaikarikeitä valitse ainoastaan 'Ei lepoaikarikettä'. Voit myös lisätä oman vaihtoehdon. (Vahtia suorittavat konemestarit: kuvittele olevasi vahtivuorossa kanavamatkan alkaessa.)
2. Toisessa tapahtumaketju kohtaisessa kysymyksessä merkitse kysyttyjen tuntien määrä.

6. Scenario 1: Porvoo - Rotterdam via Kiel-Canal (daytime passing). Day 1: Departure Porvoo 2200, Day 4: Kiel LH 0800, Holtenau Lock 0900, Brunsbuttel Lock 1900, Elbe POFF 2200, Day 5: Rotterdam Pilot Station 2200, Arrival to Rotterdam 2330 / Tapahtumaketju 1: Porvoo - Rotterdam, Kielin kautta (läpikulku päiväaikaan). Päivä 1: Lähtö Porvoo 2200, Päivä 4: Kielin Majakka 0800, Holtenau sulku 0900, Brunsbuttel sulku 1900, Elbejoen Luotsinjättö 2200, Päivä 5: Rotterdam Luotsipaikka 2200, Saapuminen Rotterdam 2330 *

- [ ] Transiting Kiel-Canal with preventive rest beforehand (no delays) / Kielin kanavamatka ennakoivalla levolla (ei viivästyksiä)
- [ ] Transiting Kiel-Canal without preventive rest (no delays) / Kielin kanavamatka ilman ennakoivaa lepoa (ei viivästyksiä)
- [ ] Anchoring before entrance to Kiel-Canal more than 4 hours / Ankkurointi ennen Kielin kanavaa enemmän kuin 4 tuntia
- [ ] Anchoring before entrance to Kiel-Canal less than 4 hours / Ankkurointi ennen Kielin kanavaa vähemmän kuin 4 tuntia
- [ ] Delay in Holtenau lock less than 2 hours / Viivästys Holtenaun sulussa vähemmän kuin 2 tuntia
- [ ] Delay in Holtenau lock more than 2 hours / Viivästys Holtenaun sulussa enemmän kuin 2 tuntia
- [ ] Delay in Brunsbuttel lock less than 2 hours / Viivästys Brunsbuttelin sulussa vähemmän kuin 2 tuntia
- [ ] Delay in Brunsbuttel lock more than 2 hours / Viivästys Brunsbuttelin sulussa enemmän kuin 2 tuntia
- [ ] Arrival to Rotterdam without preventive rest / Saapuminen Rotterdamiin ilman ennakoivaa lepoa
- [ ] No rest hour violations / Ei lepoaikarikkeitä
- [ ] Other

7. Scenario 1: How many planned working (e.g. service, repair, other) hours you are not able to conduct due Kiel-Canal and Elbe river transit? Take into consideration rest hours/preventive rest / Tapahtumaketju 1: Kuinka monta suunniteltua (esim. huolto-, korjaus-, muu) työtuntia sinulta jää suorittamatta Kielin kanava- ja Elbe-jokimatkan takia? Ota huomioon lepoajat/ennakoivalepo *

8. Scenario 2: Porvoo - Bremerhaven via Kiel-Canal (night time passing). Departure Porvoo Day 1: Departure Porvoo 1100, Day 3: Kiel LH 2100, Holtenau Lock 2200, Day 4: Brunsbuttel Lock 0800, Elbe POFF 1100, Bremerhaven Pilot Station 1330, Bremerhaven lock 1500, Arrival to Bremerhaven 1600 / Tapahtumaketju 2: Porvoo -Bremerhaven, Kielin kautta (läpikulku yöaikaan) Päivä 1: Lähtö Porvoosta 1100, Päivä 3: Kielin Majakka 2100, Holtenau sulku 2200, Päivä 4: Brunsbuttel sulku 0800, Elbejoen Luotsinjättö 1100, Bremerhaven Luotsipaikka 1330, Bremerhaven sulku 1500, Saapuminen Bremerhaven 1600 *

- [ ] Kiel-Canal transit with preventive rest / Kielin kanavamatka ennakoivalla levolla
- [ ] Kiel-Canal transit without preventive rest / Kielin kanavamatka ilman ennakoivaa lepoa
- [ ] Anchoring less than 4 hours before channel transit / Ankkurointi vähemmän kuin 4 tuntia ennen kanavamatkaa
- [ ] Anchoring more than 4 hours before channel transit / Ankkurointi enemmän kuin 4 tuntia ennen kanavamatkaa
- [ ] Elbe river transit (no delay) / Elben jokimatka (ei viivästyksiä)
- [ ] Delay in Holtenau lock less than 2 hours / Viivästys Holtenaun sulussa vähemmän kuin 2 tuntia
- [ ] Delay in Holtenau lock more than 2 hours / Viivästys Holtenaun sulussa enemmän kuin 2 tuntia
- [ ] Delay in Brunsbuttel lock less than 2 hours / Viivästys Brunsbuttelin sulussa vähemmän kuin 2 tuntia
- [ ] Delay in Brunsbuttel lock more than 2 hours / Viivästys Brunsbuttelin sulussa enemmän kuin 2 tuntia
- [ ] Arrival to Bremerhaven (no delays) / Saapuminen Bremerhaveniin (ei viivästyksiä)
- [ ] Anchoring before arrival to Bremerhaven less than 4 hours / Ankkurointi ennen Saapumista Bremerhaveniin vähemmän kuin 4 tuntia
- [ ] Anchoring before arrival to Bremerhaven more than 4 hours / Ankkurointi ennen saapumista Bremerhaveniin enenmmän kuin 4 tuntia
- [ ] No rest hour violations / Ei lepoaikarikkeitä
- [ ] Other

9. Scenario 2: How many planned working (e.g. service, repair, other) hours you are not able to conduct due Kiel-Canal and Elbe river transit? Take into consideration rest hours/preventive rest / Tapahtumaketju 2: Kuinka monta suunniteltua (esim. huolto-, korjaus-, muu) työtuntia sinulta jää suorittamatta Kielin kanava- ja Elbe-jokimatkan takia? Ota huomioon lepoajat/ennakoivalepo *

10. Scenario 3: Hamburg - Ensted via Kiel-Canal (night time passing). Day 1: Departure Hamburg at 1900, Brunsbuttel Lock 2200, Day 2: Holtenau Lock 0800, Kiel LH 1000, Tank Washing 1000->, Ensted Pilot Station 1600, Arrival to Ensted 1700 / Tapahtumaketju 3: Hampuri - Ensted, Kielin kautta (läpikulku yöaikaan). Päivä 1: Lähtö Hampurista 1900, Brunsbuttel sulku 2200, Päivä 2: Holtenau sulku 0800, Kiel LH 1000, Tankkienpesu 1000->, Ensted Luotsi paikka 1600, Saapuminen Enstediin 1700 *

- [ ] Departure Hamburg with preventive rest / Lähtö Hampurista ennakoivalla levolla
- [ ] Departure Hamburg without preventive rest / Lähtö Hampurista ilman ennakoivaa lepoa
- [ ] Elbe river transit / Elbe-jokimatka
- [ ] Entering Brunsbuttel lock (no delays) / Tulo Brunsbuttelin sulkuun (ilman viivästyksiä)
- [ ] Entering Brunsbuttel lock with delay less than 2 hours / Tulo Brunsbuttelin sulkuun vähemmän kuin 2 tunnin viivästyksellä
- [ ] Entering Brunsbuttel lock with delay more than 2 hours / Tulo Brunsbuttelin sulkuun enemmän kuin 2 tunnin viivästyksellä
- [ ] Kiel-Canal transit / Kielin kanavamata
- [ ] Entering Holtenau Lock (no delays) / Tulo Holtenaun sulkuun (ei viivästyksiä)
- [ ] Entering Holtenau Lock with delay more than 2 hours in Canal / Tulo Holtenaun sulkuun enemmän kuin 2 tunnin viivästyksellä
- [ ] Pilotage from Holtenau lock to Kiel LH / Luotsausmatka Holtenaun sulusta Kielin Majakalle
- [ ] Tank washing before Arrival to Ensted / Tankkien pesu ennen saapumista Enstediin
- [ ] Arrival to Ensted without delays / Saapuminen Enstediin ilman viivästyksiä
- [ ] Arrival to Ensted with delay more than 4 hours / Saapuminen Enstediin enemmän kuin 4 tunnin viivästyksellä
- [ ] No rest hour violations / Ei lepoaikarikkeitä
- [ ] Other

11. Scenario 3: How many planned working (e.g. service, repair, other) hours you are not able to conduct due Kiel-Canal and Elbe river transit? Take into consideration rest hours/preventive rest / Tapahtumaketju 3: Kuinka monta suunniteltua (esim. huolto-, korjaus-, muu) työtuntia sinulta jää suorittamatta Kielin kanava- ja Elbe-jokimatkan takia? Ota huomioon lepoajat/ennakoivalepo *

Findings / Havainnot

In this section you have one or two multiple choice question(s) depending your answer and free text entry. In free textbox you may write notes or comments regarding the subject. / Tässä osiossa on yksi tai kaksi monivalintakysymys(tä), riippuen vastauksistasi ja vapaa tekstikenttä. Vapaaseen tekstiruutuun voit kirjoittaa huomioitasi tai kommentteja aiheeseen liittyen.

12. Consider your position, are you concerned about lack of manning? / Tarkastele tehtävääsi, koetko aluksen miehityksen puutteelliseksi? *

- ◯ No / Ei
- ◯ Maybe / Mahdollisesti
- ◯ Yes / Kyllä

13. In which scenarios you are concerned about lack of manning? (Select all that apply or add other observation) / Missä tapahtumaketjuissa koet miehityksen puutteeliseksi? (Valitse kaikki, jotka käyvät tai lisää muu havainto)

- ☐ Scenario 1 / Tapahtumaketju 1
- ☐ Scenario 2 / Tapahtumaketju 2
- ☐ Scenario 3 / Tapahtumaketju 3
- ☐ None of Above / Ei mikään aiemmista
- ☐ Other

14. Free speech / Vapaa sana

Category	Example	Count
Challenging RHM	Ennakoivan levon järjestäminen toisinaan haastavaa	7
Unpredictability	Kiel aiheuttaa ongelmia ennustettavuuden puutteen vuoksi.	5
Enough manning	Väkeä on ihan riittävästi.	4
Substitute	Todennäköisesti jos muilla on lepoaika ongelmia, joudun niitä noissa tilanteissa paikkaamaan, jolloin riski omille lepoaikarikkeille kasvaa.	3
Extra manning	En näkisi ollenkaan huonona vaihtoehtona, että näissä liikenteessä olevilla laivoilla olisi ylimääräisenä esimerkiksi junioriyliperämies, joka voisi sitten hoitaa osan Kielin matkoista ja muutenkin keventää päällikön ja yliperämiehen paperityökuormaa.	2
Dissatisfaction towards reporting system	Uuden liikennealueen myötä myös esimerkiksi matkaan liittyvät ilmoittamiset ovat lisääntyneet niin dramaattisesti, että pelkästään sitä hoitamaan voitaisiin palkata henkilö.	2
Compensating sea passages	Vaikka ARA-alueella ja Kiilin kanavassa tulee välillä pidempiä vahteja niin pitkät merimatkat tasoittavat kuormitusta verrattuna rannikkoliikenteeseen	1
Extra rest in anchor	Jos Kiel - Hampuri/Bremerhaven tulee normaaliksi reitiksi, jota ajetaan usein, jää muut työt kyllä tekemättä ja lepoaikarikkeiltä ei voi välttyä. Tähän ainoa korjaava toimenpide on ylimääräinen yli 10h lepotauko ankkurissa ennen tai jälkeen Kielin matkan	1