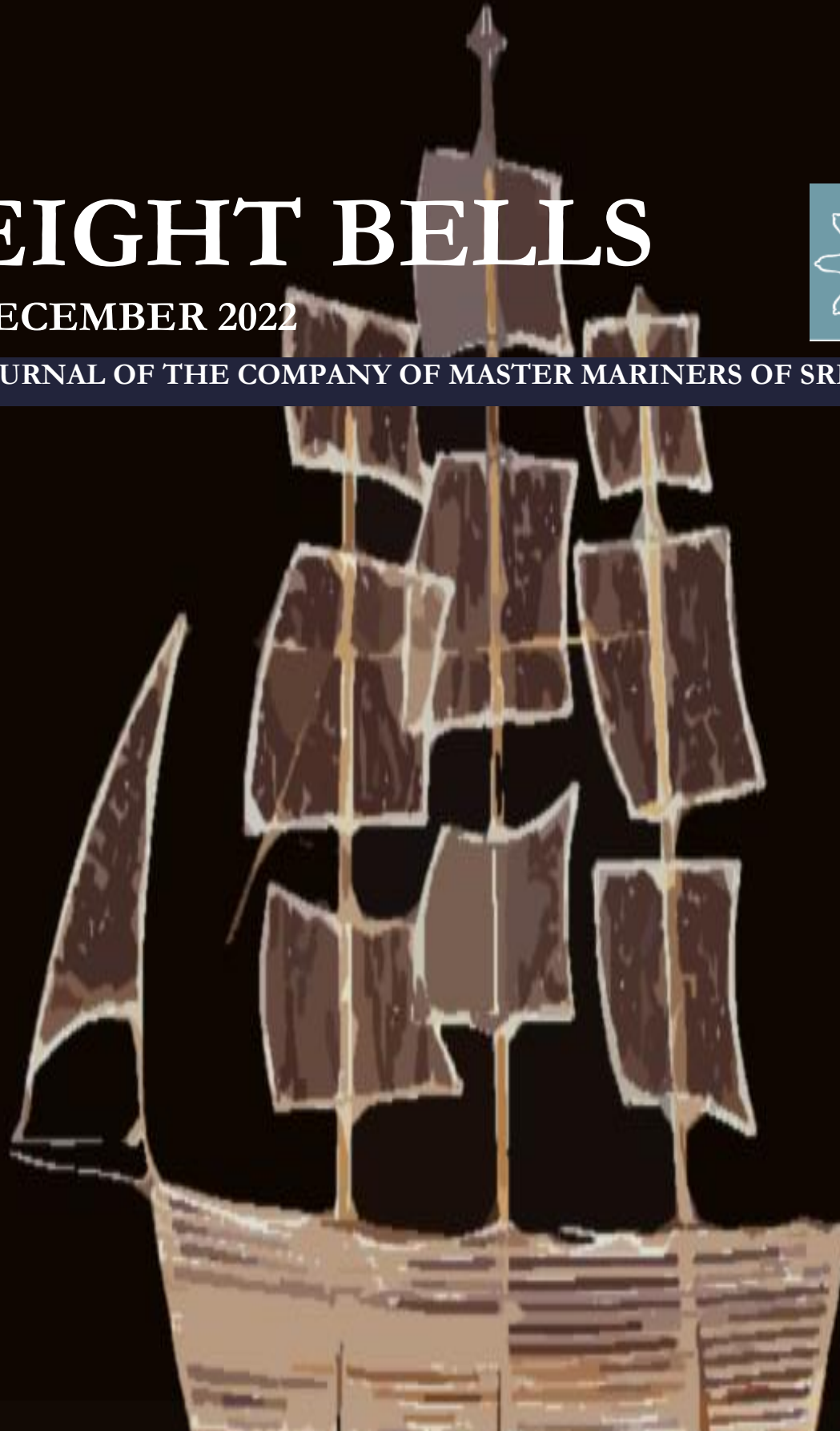


EIGHT BELLS

DECEMBER 2022



JOURNAL OF THE COMPANY OF MASTER MARINERS OF SRI LANKA



*They used to tell me I was building a dream, and so I followed the mob,
When there was earth to plow, or guns to bear, I was always there right on
the job.*

*They used to tell me I was building a dream, with peace and glory ahead,
Why should I be standing in line, just waiting for bread?*

“Brother, Can You Spare a Dime?” 1932, Considered the anthem of the Great Depression, Lyrics by E.Y. Yip Harburg and composed by Jay Gorney

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Membership as at December 2022

Membership Status (Total-380, Life-281, Due-95, Ordinary-04 Overseas-56)

COUNCIL MEMBERS FOR THE YEAR 2022/2023

<i>Name</i>	<i>Designation</i>
<i>Capt. Mahendra Ranatunga</i>	<i>President</i>
<i>Capt. Upul Peiris</i>	<i>Vice President</i>
<i>Capt. Peshala Medagama</i>	<i>Vice President</i>
<i>Capt. Sanjeewa Usgoda Arachchi</i>	<i>Secretary</i>
<i>Capt. Sanjeewa Delgoda</i>	<i>Asst. Secretary</i>
<i>Capt. Sampath Athukorale</i>	<i>Treasurer</i>
<i>Capt. Hemantha Madanayake</i>	<i>Asst. Treasurer</i>
<i>Capt. Prawala Perera</i>	<i>Editor</i>
<i>Capt. Nirmal Silva Shore</i>	<i>Member</i>
<i>Capt. Lasitha Cumaratunge</i>	<i>Shore Member</i>
<i>Capt. Aruna Kotalawela</i>	<i>Shore Member</i>
<i>Capt. Sumudu Lakmal</i>	<i>Shore Member</i>
<i>Capt. Miyuru Gunasekara</i>	<i>Shore Member</i>
<i>Capt. Pramal Fernando</i>	<i>Shore Member</i>
<i>Capt. Janaka Mathalawa</i>	<i>Sailing Member</i>
<i>Capt. Sumudu Dodampalage</i>	<i>Sailing Member</i>
<i>Capt. Nishantha Hettiaratchy</i>	<i>Sailing Member</i>
<i>Capt. Yasas Sanjeewa</i>	<i>Sailing Member</i>

Editorial

First of all, let me wish a Merry Christmas to all our members and their families! This edition comes to you at a time of celebrations-at a time of welcoming a new year and at a time of reflection of a year gone by.

Unfortunately, at present we the citizens of this paradise isle have only a few things to celebrate. Therefore, it is imperative that we make the most of what we have!

Covid Pandemic is over! It is a pity that this once eagerly awaited occasion has come to pass with no recognition, fanfare or celebration. One could be forgiven for such a lapse of recognition as we were all engrossed in something even bigger! Amidst a financial, social and a political crisis of extreme proportions, it is not beyond comprehension that anyone hardly noticed that the pandemic is no more.

The financial crisis started with those in control of the economy either willingly or negligently ignoring economic norms of a sustainable economy. It is interesting to look at this from a seafarer's perspective; no master worth his salt will take his vessel to sea without adequate bunkers, provisions, fresh water, manpower, spare parts etc. In other words, a master at the most basic level is expected to exercise due diligence to make his ship seaworthy and fit for the intended voyage. The manner in which our country was allowed to run bankrupt by our leaders therefore is remarkable, and was naturally unacceptable to the average citizen. In the aftermath of a phenomenal political crises that ensued as a result of this frustration, there is now a resemblance of normalcy that has returned to daily life.

One however should not be deceived by the apparent calm in the economic climate-we are far from being recovered. In fact, our country's economy is currently at an angle of loll. Whether we capsize or regain positive stability from this precarious situation will depend upon whether corrective action is taken in the most thought out and considered manner and whether it will be delicately and deftly executed. Unfortunately, there are no immediate cures for the ailing economy and the next few years would be difficult for the rich and would be far worse for the poor. If the boat is rocked too much(internally) or faces bad weather(externally) there is every chance that the economy will capsize! An exodus of desperate souls have already taken

to lifeboats and have migrated to safer shores. Those of us who chose to remain or made to remain due to a lack of opportunity will have to endure until positive stability is finally and hopefully regained someday.

The only silver lining in this monumental dark cloud is that seafarers are once again earning a higher wage in comparison to the earning potential of a shore job. This has the propensity to attract young talent to the industry. It is heartening to note that the quality of people availing for officer and rating trainee slots is already showing improvement. If handled properly we will be able to capitalize and improve upon our already sought-after seafarer brand.

With this positive note I would like to invite you to dive in and enjoy some interesting articles written by our esteemed contributors.

Capt. Prawala Perera

Editor

prawala.perera@gmail.com

President's address at the AGM

Good evening everyone,

Let me start off wishing all our members and their families the best of health and a brighter future that all of us are hoping for.

It has been another difficult year for us mainly due to the impact of the economic situation of the country. The life was getting back to normal gradually when the economic downturn hit us with long power cuts and long ques for fuel causing many disruptions and hardships.

CMM too had to adjust to these difficult times and most of our committee meetings were held online and many events that we planned had to be postponed. Many times, we planned to have a day outing for our members to meet and to catchup on the lost times BUT the circumstances were not favorable for us to do so. We even had to postpone and delay the AGM as well as we thought somehow, we need to have a physical meeting this time.

Despite the difficulties and restrictions faced, CMM participated in organizing P.B. Karandewela Memorial Lecture together with CILT. CMM also conducted a CPD program for the Class 111 candidates and I would like to thank all the lecturers who volunteered for this program. Most of them were our own members. I believe all who attended learn a lot and got updated from this program.

CMM participated in couple of discussions with the officials of The Director General of Merchant Shipping Secretariat on topics such as

1. Responding to maritime emergencies
2. Promoting of Sri Lanka flag Registry
3. Seafarers' education, examination and maritime labour matters
4. Promotion and welfare of Sri Lankan Seafarers'
5. National Marine HR Policy

We are working towards developing our recommendations through the sub committees and the representatives appointed by us and hoping to submit our proposals to DGMS for consideration and implementation.

Furthermore, CMM also engaged with DGMS Secretariat to establish a mechanism for CMM and other maritime professional bodies to act as resource personal and advisors when responding to maritime emergencies.

We also submitted a list of CMM member who volunteered to be in the pool of examiners which DGMS secretariat is planning to establish. On request by DGMS Secretariat, CMM submitted a proposal on Re-Engineering study of the Functions and Process of the Merchant Shipping Secretariat. I thank Capt.Indika Jayawardena for providing us a detail proposal.Responding to an invitation by the DGMS Secretariat, CMM engaged with DGMS officials and SOCEM on Formation of a Board of Examinations for Seafarers Trust , which will be a collaborative body of CMM and SOCEM. As discussed we would like to obtain proposals from members on way forward on this matter.

CMM also did respond to a request sent by OPA and presented our proposals on way forward to stabilize the country situation during the ARAGALAYA days.CMM did participate in the OPA annual conference where our own member Capt Peshala was a panelist on one of the technical sessions.

During this year we are planning to organize few seminars and conduct CPD programs where we could impart knowledge and experience of our members. We are looking forward to closely work with NI , CASA , CILT , OPA and other professional organizations where our expertise and knowledge could be shared with the industry professionals.

We will be also working closely with DGMS secretariat and the Ministry of Ports and Shipping to support Maritime Administration by actively engaging and taking part in various Advisory Committees.As a new initiative we are looking at conducting few carrier promotions for school leavers to promote Seafaring as lucrative carrier path.

We need to take CMM to greater heights and our aspiration should be to be a professional organization that supports and advices the Government and the Maritime Industry on all Professional and Technical matters.

To do that I would like to request the membership to give your fullest support to the committee by volunteering, attending and actively taking part in the sub committees that we may appoint and in the events that we organize.

The success of CMM over the years has been the collective efforts of each and every one of us.

Apart from the serious stuff, we are looking forward to organize a few social events too where we could meet up which most of us are looking forward to.

I would like to thank our Dynamic and energetic secretary Capt.Sanjeewa Usgoda ----Capt Upul,Capt. Kolitha, Capt,Sampath, Capt.Kottalawala, Capt.Nishantha and the entire organizing committee for organizing this event.

Thank you every one for attending today and once again I would like to wish you and your families best of health and a brighter future.

Enjoy the evening, take care and stay safe!!!!!!

Capt. Mahendra Raratunga

President – CMM

Vote of thanks AGM 2022

President of CMM, newly elected CMM Office Bearers, Past Presidents and dear members.

In today's economic and social atmosphere, I know how difficult it is to break your busy schedules and find time for an event such as this, especially when it includes an overnight stay. I am truly thankful for each and every one of you for your presence here today. One of our main objectives according to our constitution is to endeavor to encompass all Sri Lankan Master Mariners into a coherent unit and to provide an opportunity for them to meet and interact with each other. I am very happy to state that we have achieved that objective tonight in style in spite of a global pandemic, in a country gone bankrupt and soon after a few months of unprecedented mass agitation and political turbulence.

You the membership deserves a round of applause for beating all these odds and turning up in numbers.

It is indeed my pleasure and privilege to be delivering the vote of thanks at the conclusion of our very successful AGM. First and foremost, I would like to thank you for appointing me for another year as the secretary of CMM. I will continue to endeavor my utmost to fulfil the obligations to the CMM as secretary in the year ahead.

My sincere thanks goes out to Capt. Nandika Peiris , Capt.Kolitha Gunawardana and Capt. Palitha Lanarolle who have stepped down from the council for their services.

Let me express my gratitude to Capt. Rajendra for accepting our request to act as the pro-term President when electing office bearers for the year 2022/2023

I would be failing in my duty if I don't acknowledge the tremendous effort taken by Capt. Aruna Kotelawala for arranging a plethora of benefits for the members through various companies, and also for taking the leadership in planning a membership card for every member which will be a reality in the near future.

I would like to thank the members of the committee and especially Capt. Sanjeewa Delgoda, Capt. Sampth Athukorala and Capt. Nishantha Hettiarachi who formed the core of the subcommittee in organizing this event for their tireless efforts.

Thank you Capt. Kolitha Gunawardana for your role in securing this wonderful location for our AGM and for your constant communication with the staff in order to make this event a success.

I would like to thank our sponsors SAGT, CICT, Hamka Shipping , Ceyline Shipping ,Centrum Marine Consultancy, Aitken Spence Shipping, CMA CGM Ships Lanka, Sri Lanka Shipping, Hayleys Advantis and Colombo Dockyard for their generous contributions for this event and for their support throughout the years to the CMM.

I offer our sincere thanks to the management and the staff of the Hotel Club Palm Bay Marawila for their support and coordination.

Thank you very much Fadna Shape up tea for arranging the program for the ladies and keeping them entertained during the AGM and also my thank you goes to Capt.Chandana Kahagalla for coordinating this program.

It is my pleasure to thank Capt. Lester Weinman for his contributions towards the fellowship which will follow this event.

The ladies and children have been waiting for too long with patience and it is time to bring our proceedings to a completion. The night is still very young and I promise you that we have an existing evening lined up for you. A few lucky winners of the raffle draw are going to win some valuable gifts as the evening progresses. Most importantly I know that you too have a lot of catching up to do and I don't intend to delay you any longer. Gentlemen lets have some fun!

Thank you!

Capt. Sarjeewa Usgodarachchi

Secretary CMM



Situational awareness – the unheard dangers

By Capt Mehran Wahid

You walk onto the bridge and glance around to see whether all is well and that the Officer of the Watch has everything under control. It looks calm, the OOW going about his duties, a well-kept bridge, the look-out on the bridge wing looks wide-awake, the weather is good, normal coastal traffic, no alarms flashing. You glance at the chart, the radar and then a quick look around and you see the land where it should be. All the while your senses are tuning in, and the faint VHF transmission in the background begins to come into focus.

You ask the OOW how everything is and he replies “All is fine sir!”. That vague unease is building up, sixth sense they call it. You listen to the rescue operation being discussed on the VHF as you study the chart and realize that the vessel is heading into it and the young OOW is blissfully unaware of this. It is a very common problem with officers who are speaking English as their second language – however good they are, they need to tune in to English conversation and it doesn’t come naturally to them and requires some effort. If, for example, they are approaching Pilot or a port, they are tuned in because they know there could be calls on the VHF and make the effort to listen either for the pilot boat or Port Control. However, normally, especially with the number of unregulated conversations going on channel 16, most English conversation washes right over them.

You can check this last out yourself when you walk into the TV room by asking the others what is happening on the English movie they are watching. Quite often the details of the plot are lost on non-English native speakers, but regularly doing so will encourage the officers in future to make the effort – all it needs is some extra effort. For Sri Lankan officers this is probably the biggest problem – I have seen it all too often! They normally tune-out unless like I said, they are expecting a call on the VHF.

Whatever the training and experience an officer has, if he is not English-speaking (that means actually THINKING in English), it requires an effort to translate to or from English. In the usually calm, orderly environment of a bridge, this effort does not come naturally unless, like I said, the officer(s) have been trained like when watching an English movie to follow the plot. They do not naturally follow the plot and this is a symptom of the problem. English is the de facto language of the world, in spite of all the different accents – the language most often

spoken on the VHF and the language of rescue operations is in it. Although strictly following the Collision Preventing Regulations (COLREGs) is preferable to a discussion on the VHF with another person who is not English-speaking and with a different accent to what one is used to can easily lead to a disastrous misunderstanding! This last practice however is not to be followed in USA waters where it is a requirement to do so and a subsequent investigation following an accident without a VHF discussion will fault one's own vessel regardless of whether you are to blame or not. This last point I often emphasised to our officers – in US waters always discuss your actions on VHF including anchoring/weighing anchor, berthing/unberthing, etc. This is mentioned in the bible to navigation there, the CFR books, which one has to legally declare to have read prior to entering USA (even though it is unbelievable that one would read the entire contents of these huge books)!

Of course, VHF conversations are not the main factor in situational awareness (SA) on a navigation watch. From nearly 20 years as a Master with different nationalities I believe while most Sri Lankan officers go through training, experience, being mentored and qualify way better than the average international seafarer, their weakness is in this part of SA.



Normally the problem with SA is many fold – the need to have an overall view of the position of the ship, its proximity to dangers, any weaknesses in the equipment (eg a weak magnetron on one radar, a problem with the engines, etc), bad weather or its

approach, density of traffic including proximity to areas where the traffic may increase, are a

few of the many factors affecting one's awareness. Experience plays a big part but like everything else, being AWARE of SA and the need to sharpen this skill is half the battle.

While certain situations require greater situational awareness, extra alertness in such situations can sharpen one's senses into having better SA – to fail in this can be more catastrophic than at other, less stressful times.

Of course, poor SA isn't limited to inexperienced junior officers. Numerous accidents have been found to have been caused by a lack of SA on the part of senior officers including Masters! This is where Bridge Resource Management (BRM) can play a big role in avoiding accidents due to a lack of SA – this easily happens in today's minimum crewing and with high commercial and environment protection demands with senior officers under pressure for these responsibilities while they are taking the con!

While there are numerous factors affecting SA, having a good idea of your surroundings is one of the main things, another thing is having a good understanding of what is happening around and understanding how these will affect the vessel. All these factors must take an extrapolation in time into account as well – the present situation may not be a close quarters situation but with time, such as both a target vessel and your own reaching an alteration point, a risk of collision may take place after the alteration. The further forward one extends the field of view or the 'fortune-telling', the better the situational awareness. With dependence both on GPS and ECDIS, SA is more likely – one of the best remedies is the old Mark I Eyeball! For one to look outside and see what is outside. It sounds very simple but can easily be overlooked, especially by junior, inexperienced officers. Not that it cannot happen to senior officers as well!

Some of the biggest enemies of SA are boredom, fatigue and complacency. One needs to consciously work on these to create a better SA.

My favourite question to the officers is to ask what the difference is between them and the OOW on a vessel which has met with an accident before the incident. Of course, if I have never asked that officer this question I am met with a blank stare. My reply is that there is no difference – before the accident they both think they will not meet with an accident and this can happen to others and not to them! Once you think of the things that can go wrong – which is of course part of the safety culture we follow on board – you are better prepared to avoid them. Our Sri Lankan culture normally frowns on thinking of what can go wrong – hence

before the wearing of seat belts became compulsory, many didn't wear it because it meant you were anticipating an accident and was therefore 'going to bring it about'!

For those trained, like we are, in safety, it is obvious that the more one thinks about what can go wrong, the better one is prepared. To a large extent in an accident the mind tends to react automatically to what it has been prepared for – the proper way to handle an accident and not like someone once said, running around like a headless chicken!

<https://iopscience.iop.org/article/10.1088/1757-899X/1052/1/012012> -

The data report that covered Indonesian accidents only from 2008 to 2018 - collision, grounding, and sinking accidents. 37 cases found due to SA. (Human Error Assessment of Situation Awareness in Bridge Operations: A Case Study of Indonesian Maritime Accidents)

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Editors Note:

Capt Wahid has hit the nail on the head and described what most of us have known for some time.

There was once an incident with a newly certified officer in a ship under my command. It happened at noon in perfect visibility while we were approaching Walvis Bay. There was some time left for EOSP and turning towards the port, but something made me go up on the bridge a good half an hour earlier than I planned.

I was horrified to see that we were heading straight into the desert at full sea speed. I got the officer on the wheel and turned her around. When the dust settled and I had recited the complete French dictionary I found out that this youngster when plotting positions had plotted the GPS position erroneously. He had then assumed that we had passed the waypoint and altered course. However, he was in doubt about the position but never considered to 'call the master' and was still trying to fix the position by GPS when I came on the bridge.

This couldn't have happened if he had used a secondary means of fixing position, especially as the vessel was coasting. He had completely lost his SA and was not keeping a visual lookout by looking out the window. The desert was there on all its glory and you could even see the port in the horizon far away.

Is the industry ready to face IMO 2023?

By Capt. Prashanthen Athipar

Introduction

We are only a few days away from IMO 2023. International Maritime Organisation (IMO) will be introducing what is now known as “IMO 2023” to further reduce shipping’s carbon emissions. This new regulation is part of the initial IMO Greenhouse Gas (GHG) strategy, which aims to reduce the carbon intensity of international shipping by 40% by 2030, and by 70% by 2050 compared with a 2008 baseline level. IMO is currently reviewing this strategy and we may see a revised strategy in mid-2023.

In June 2021, IMO introduced amendments to the International Convention for the Prevention of Pollution from Ships (MARPOL) Annex VI. The amendments include technical and operational requirements to improve the energy efficiency of ships in order to meet the targets established in the 2018 Initial IMO strategy on reduction of GHG emissions from ships.

The requirement

Among other requirements, the amendments will require all ships over 400 GT to adhere to the following components of the requirement:

1) *Technical - Energy Efficiency Existing Ship Index (EEXI):*

EEXI measures CO₂ emissions per transport work, purely considering the ship’s technical and design parameters. Similar to the Energy Efficiency Design Index (EEDI), which has been in force since 2013, EEXI is a one-off thing and it does not require any measurement or reporting of CO₂ emissions while the ship is in operation. Ships to which the regulation applies will be required to calculate EEXI value of each individual ship and this is referred to as ‘attained EEXI. This value shall be equal or less than the allowable maximum value, which is referred to ‘required EEXI.

- Required EEXI = $(1 - \text{Reduction factor}/100) \times \text{Reference line value}$
- Reduction factor is (for example):
 - 15 for bulk carriers with Deadweight (DWT) 200,000 or above
 - 20 for bulk carriers with DWT between 20,000 to 200,000
- Reference line value = $a \times b - c$, where:
 - $a = 961.79$
 - $b = \text{DWT of the ship when } \text{DWT} \leq 279,000 \text{ and is } 279,000 \text{ where } \text{DWT} > 279,000$
 - $c = 0.477$
- Attained EEXI = $(\text{Engine power} * \text{fuel consumption} * \text{CO2 factor}) / (\text{reference speed} * \text{DWT} * \text{correction factors})$
- Attained EEXI \leq Required EEXI to receive the International Energy Efficiency index Certificate (IEEC)

Ship owners are likely to consider among other things, the following technical options to boost energy efficiency and therefore reduce CO2 emissions to narrow the gap between 'attained EEXI' and 'required EEXI'.

- Engine Power Limitation (EPL) – gives up to 37% CO2 emission reduction
- Change in fuel type from convention fuels (HFO & VLSFO) to Liquefied Natural Gas (LNG) – gives up to 25% CO2 emission reduction
- Propeller retrofit – gives up to 10% CO2 emission reduction
- Installation of a shaft generator – gives up to 5 % CO2 emission reduction
- Installation of energy saving devices such as Propeller Boss Cap Fins (PBCF) and wake equalizing duct – gives up to 4% CO2 emission reduction
- Installation of rotor sails – gives up to 3% CO2 emission reduction
- 10% increase in transport capacity (deadweight) – gives up to 3% CO2 emission reduction

IMO's intention was to bring some kind of a level playing field between existing and new ships, and take an approach which is dependent on ship type and size but not the age. All ships will have to meet this requirement from 1 January 2023 and will be enforced during the first annual survey scheduled after 1 January 2023.

2) Operational - Carbon Intensity Indicator (CII) rating scheme:

CII is a measure of how efficiently a ship transports goods and is given in grams of CO₂ emitted per cargo-carrying capacity and nautical mile. This requirement is applicable to ships above 5,000 GT and measures the operational carbon intensity of a ship. This translates to the carbon emissions per unit of transport work or the used mileage per year.

- Required CII = $[(100 - \text{Reduction Factor})/100] * \text{CII ref}$
- Reduction factor is based on 2019 baseline as below:
 - Data year 2023: 5%
 - Data year 2024: 7%
 - Data year 2025: 9%
 - Data year 2026: 11%
- CII ref = $a \times \text{Capacity} - c$, where:
 - $a = 4745$
 - Capacity = DWT of the ship when $\text{DWT} < 279,000$ and is 279,000 where $\text{DWT} \geq 279,000$
 - $c = 0.622$
- Attained CII = $(\text{Annual fuel consumption} * \text{CO}_2 \text{ factor}) / (\text{annual distance} * \text{DWT}) * \text{correction factors}$

Whilst EEDI and EEXI focus ship design, CII through Annual Efficiency Ratio (AER) focuses ship operation. In other words, two sister ships with same EEDI and EEXI can have two different AER and therefore CII ratings because of their operational profiles. The following things will

collectively improve a ship's AER / CII, noting the relevant factors are total fuel consumption, total distance travelled, deadweight, type of fuel, but not cargo quantity:

- Ballast voyages (relatively less consumption because no cargo on board, thus less main engine load)
- Long and slow steaming [C3 (Brazil – China) trading route may have a better AER / CII outcome compared to C5 (Western Australia – China) trading route]
- Short port and anchorages
- Very clean hull and well maintained main and auxiliary engines

A	Major Superior
B	Minor Superior
C	Moderate
D	Minor Inferior
E	Inferior

Depending on the attained CII, the ship is then given an annual rating ranging from A to E as displayed on the side, whereby the rating thresholds will become increasingly stringent towards 2030 carbon intensity reduction requirement.

There are two ways in which to calculate a ship's carbon intensity:

1. AER framework:

$$\text{AER} = \frac{\text{Annual CO}_2 \text{ Emissions}}{\text{Distance (nm)} \times \text{DWT}}$$

Distance x DWT is often referred to as deadweight distance

AER has been approved by the IMO as mandatory. It calculates a ship's operational carbon intensity by dividing a ship's annual carbon emissions by its total annual deadweight distance, irrespective of whether the ship is sailing ballast or laden.

2. Energy Efficiency Operational Indicator (EEOI) framework:

$$EEOI = \frac{\text{Annual CO}_2 \text{ Emissions}}{\text{Laden Distance (nm) x Cargo Quantity}}$$

Laden Distance x Cargo Quantity is often referred to as tonne miles

The IMO's Data Collection System (IMO DCS) does not collect the cargo data required to calculate the EEOI (emission per tonne-mile). Therefore, the EEOI is not an option to use for the CII today. However, it will be possible to voluntarily report cargo data and report the EEOI for those who wish to do so. This method calculates carbon intensity by dividing annual carbon emissions by the tonne mile.

CII can be verified through Ship Energy Efficiency Management Plan (SEEMP), which is requirement under Reg 26.3.1 of the International Convention for the Prevention of Pollution from Ships (MARPOL) Annex VI. It provides a comprehensive picture about the ship for the next 3 years, meaning there shall not be any surprises during the performance of voyages. SEEMP has been there since 2013, so there is nothing new. However, from 01/01/2023 onwards there will be three different versions of SEEMP in force as outlined below:

- SEEMP Part 1 came into force in 2013 for ships engaged in overseas voyages of 400 GT and above. SEEMP Part 1 provides guidance on shipboard procedures and practices aimed at improving the energy efficiency and conservation.
- SEEMP Part II came into force in 2016 for ships engaged in overseas voyages of 5000 GT and above. SEEMP Part 2 (IMO DCS) includes a ship-specific method to collect, aggregate, and report ship data with regard to annual fuel oil consumption, distance travelled, hours underway and other data required by regulation 22A of MARPOL Annex VI from 2019.

- SEEMP Part III (widely known as IMO 2023) will come into force for ships engaged in overseas voyages of 5000 GT and above. It requires, a ship must have a verified Ship Energy Efficiency Management Plan (SEEMP Part III) on board to document how the ship's CII targets will be achieved over the next 3 years.

Reaction from the industry

United Nations Conference on Trade and Development (UNCTAD) modelled DNV data (*pages 94 to 102 – see below abstract*) compared 'No IMO 2023' against the likely technical pathway to achieving 'IMO 2023'.

Scenario in 2030		Speed reduction (%) relative to design)	Number of ships	Cruising hours	Number of voyages	Transportation work (tonne-mile per year)
No IMO Regulations	Total	14.7%	627	3,435,753	8,973	6,559,927,950,432
	Per ship			5,480	14.3	10,462,405,025
IMO's EEXI and CII	Total	25.1%	713	3,924,673	9,012	6,561,839,453,822
	Per ship			5,504	12.6	9,203,140,889
Change	Total	10.50%	13.7%	14.2%	0.4%	0.0%
	Per ship			0.5%	-11.7%	-12.0%

IMO 2023 scenario predicts less transportation work carried per ship annually (-12.0%), requiring an uplift (+13.7%) in the total number of ships in the fleet. Total cost per tonne nautical mile is expected to increase by 7.7% (i.e. expect a gradual rise in index over the coming years). Maritime logistics cost impacts for mined commodities, partly encompassing the impacts of the above, have also been forecasted as follows for the major iron ore trade:

- Brazil to China is expected to increase by 4.5%
- Australia to China is expected to increase by 2.5%

Geographical distance will increase in its scale of cost impact as we move closer to 2030 as speeds slow down without any future fuel uptake or on-board innovation.

Given EPL is one of the easiest ways to achieve the required EEXI, majority of the ship owners are likely to implement this first before they consider other means. Although, classification societies and Original Equipment Manufacturers (OEM) are involved the process, some are worried about the impact on larger and heavier ships' ability to manoeuvre successfully against the tidal flow within a narrow channel in laden condition. Similarly, others are worried about the consequences of slower voyages, i.e. delayed deliveries and need for more ships to carry the same cargoes.

The CII aims to reduce carbon intensity by 11% by 2026 which leaves a considerable gap between 2026 and 2030 to reach the overall 40% reduction. Unlike the EEXI regime, CII regime will put the commercial world on notice. It means, long term ship charterers may be exposed coverage risk if any of their long-term chartered ships have a 'D' or 'E' rating that is essentially non-compliant with IMO's trajectory towards its 2030 goal. In some circumstance, ship owners may look to pass-through costs to the ships' long term charterers. Thus, depending on the individual circumstances and overall market conditions, charterers may rely heavily on market ships over term ships for coverage purposes.

Ships which receive a D rating for three consecutive years and ships which score an E for one year are required to submit a corrective action plan to demonstrate ways in which they can improve their performance. So, ship owners will have to do the needful to maintain the appropriate rating prescribed by the IMO to maintain their licence to trade.

Potential conflicts between environmental benefits and commercial interests?

The industry is not expecting any major disruptions due to IMO 2023 triggered by non-compliant ships until 2025. Compliance becomes more challenging, especially with respect to CII from 2025 onwards. This means, ships may change their trading patterns to stay compliant. For ship owners and charterers, IMO 2023 will have significant implications, especially relating to existing ships. New build projects can be designed for compliance, whereas ships already in operation may have to be retrofitted by taking these ships out of service.

One very significant outcome of the regulations will also be the possible conflict between environmental benefits and commercial impacts. Terms of a charter contract determines parties rights and obligations, mainly who pays for what. In the current typical contract structure, laytime demurrage charges to the charterer, take effect the moment the ship's notice of readiness for port arrival is tendered. Thus, the shorter the laytime, the faster the ship can be berthed, and its cargo loaded and/or unloaded, and the lower the costs are to the charterer.

Slow-steaming and just-in-time arrival schedules, which benefit the environment through lower fuel consumption leading to fewer exhaust emissions would benefits the charterer. Conversely, the owner's demurrage revenues increase with a longer laytime. Owners' interests, therefore, can be to sail as fast as possible, thereby burning fuel and creating more

emissions, to arrive at the port sooner so that demurrage can begin earlier. The longer the ship waits, the more the owner earns.

Sustainability targets are unlikely to be met so long as the conflict of interest between environmental benefits and commercial interests continues to exist. The disconnect needs to be addressed so that laytime cannot be an instrument of revenue or penalty.

It can be expected that charter parties, particularly time charter contracts, will become subject to potential legal disputes should non-compliance cause interruptions to normal operations. Any changes to the way in which a ship is operated, be it by speed, routing or whatever, may affect compliance and, unless covered by contractual agreement, be completely out of the owner's control.

Key takeaways

Whilst IMO 2023 requirement is a step in the right direction, regrettably IMO's own analysis shows that this rate of improvement is no better than business as usual, meaning too weak and too slow.

Nevertheless, indexes such as the EEXI and CII help cultivate a mind-set of continuous improvement among stakeholders than maintain status quo.

With such a mind-set, ship owners and charterers will have no option other than to take an ecosystem approach by working collaboratively to implement major and minor modifications to the ship's design and operating profile over time to ultimately make the shipping industry more sustainable and more environmentally friendly.



LNG Bunkering – The Future Energy for Propulsion

By Capt. Chandra Godakanda Arachchi

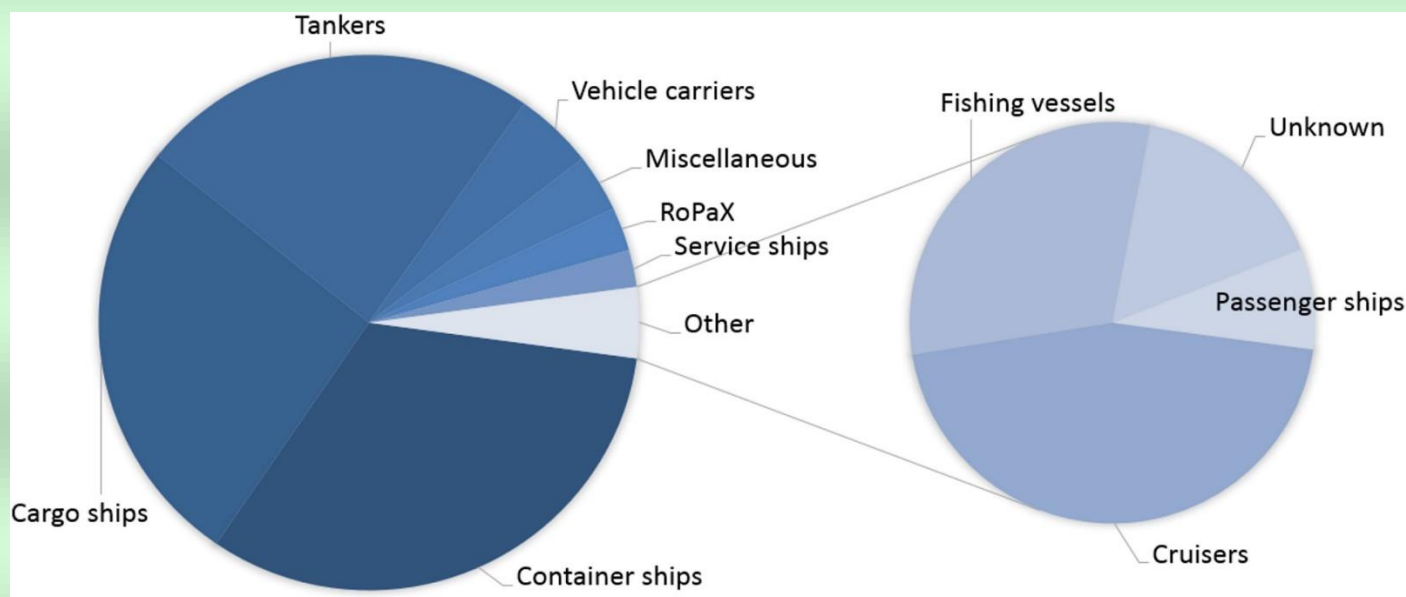
It's no secret that shipping is the backbone of global transport with ships carrying over 80% of global cargo around the world. Consequently, a significant percentage (over 8%) of global oil production is being consumed as bunker fuel oil, thus shipping is contributing the highest in global emission, which certainly is not music to the ears of environmentalists and global community. Emissions by shipping in comparison to the share of global transport is acceptable as efficient but International Maritime Organization (IMO) is rightfully playing a role in the effort in reducing harmful emissions by ships. Therefore, IMO bunker fuel regulations 2020 came into force from 01st January 2020 which requires bunker fuel to contain no more than 0.5 % m/m Sulphur. That's not the end of the effort as there will be more and more stringent targets on further reduction. Therefore, following emission targets were further included.

- Any new ships-built post 2025 must have 30% more energy efficient than ships built in 2014
- Targets have been set up to reduce Carbon intensity by 40% in 2030 or earlier and 70% reduction by 2050, both taking the benchmark as at 2008 levels

Natural gas make up is generally more than 85% of Methane (*Coal Seam Gas in Queensland Australia contains approximately 98% of Methane*) and Ethane, Propane, Butane and very small percentage of inert gas (Nitrogen and Carbon Dioxide) which is considered as one of the cleanest of fossil fuels available. Emissions from natural gas includes Nitrogen Oxide, Carbon Monoxide, Carbon Dioxide and a trace of Sulphur Dioxide. What is important to note here is significant reduction in Sulphur Dioxide emission (only a trace). Liquefied Natural Gas (LNG) is therefore emerging to be a front runner as a viable solution to achieve set emission targets.

It is interesting to note (*refer to the chart below - Global CO2 emissions by various types of ships – 2015*) the global emission by container ships is leading in terms of highest CO2 emission percentage followed by cargo ships and tankers which is a direct comparison of Sulphur Dioxide emission. As such it is likely that new container ships will in near future will be fueled by natural gas. Then it comes down to the question of “Has Colombo port got plans

to develop LNG bunker infrastructure?”, if not Colombo should get to the drawing board sooner than later. On slightly a different topic though connected to LNG bunkering, Colombo has been talking about natural gas fired (Dual cycle) power plants for a considerable period of time. This highlights the importance of Shipping and Energy big wigs talking to each other well in advance to draw up plans for LNG infrastructure as well in order to have a win-win situation for both shipping and the energy industries. It is quite prudent to have a combined “Shipping and Energy Policy” on medium- and long-term basis. The point further emphasizes as our own SPBM is aging, the only link in the supply chain to deliver crude oil to Sapugaskanda. As the world is more and more talking about clean and renewable energy though this element of power is not without its own challenges such as reliability, power storage for dark hours, on-going cost in maintenance of solar panels, storage batteries and environmental concerns of disposing aged panels, batteries etc. In this backdrop LNG is a viable cleaner energy option, then let’s talk about the nitty gritty of LNG and LNG bunkering.



What is LNG

As described earlier natural gas (NG) mainly consists of Methane. There are different types of natural gas, the type depends on where it’s originated from, mainly Shale gas and Coal Seam Gas, Shale gas is originated from underground Shale rock, sometimes referred to as “unconventional gas” as shale gas is found in less permeable rock whereas Coal Seam Gas (CSG) is extracted from underground Coal seams. Common to both types is that both gases are found in underground rocks millions of years old and is formed due to decomposition organic material in wells drilled over 1500 meters underground. End product required for the

use in any ship engine or power plant turbine is natural gas (NG) at ambient temperature. Then why is LNG?. It is impossible to store and / or transport NG in huge quantities across seas and in other mode of transport. NG has a boiling point (*boiling point is the temperature at which phase change takes place from liquid to gas or vice versa or evaporate in simple term*) of negative 162 Celsius. As can be seen it is impracticable to transport NG in it's natural form, therefore in order for transport purposes, the NG is cooled until the phase change takes place (usually in three stages cooling) so that liquid can be pumped to storage tank then to a tanker for transportation across oceans, Generally 600 volume units of NG becomes one unit of LNG volume. Density of LNG as a rule of thumb can be taken as half of the value of water density.

Major Hazards unique to LNG (in addition to hazards present in normal conventional hydrocarbon products)

Cryogenic liquid

Boiling point of LNG is approximately negative 162 C, back end of LNG process produce liquid at negative 162 C. There are few major hazards associated with cryogenic liquid. Due to the nature of the liquid in terms of being extremely cold, LNG coming into contact with the skin can seriously burn the skin similar to those of thermal burns and frostbite. Prolonged exposure to cold air inhalation can cause damage to lung tissues too. Apart from health issues, cryogenic liquid can make the steel brittle. All associated pipework and tanks are made with rated steel to withstand cryogenic liquid.

Extremely low temperature pipework

Pipework associated with LNG transfer is always very cold, always with ice built up having similar hazards as cryogenic liquid.

LNG at boiling temperature

LNG is transferred always closer to the boiling point which means that there is a likelihood of pressure building up within pipework and tanks if subjected to any undue heat. Liquid has to continue moving if not the pressure can build up quickly.

Oxygen in empty arms, hoses

LNG is generally safe although all bases must be covered not to have any Oxygen in arms and hoses to prevent forming a flammable mixture.

Asphyxiation

Natural gas has a high content of Methane (CH₄) in generally over 98% of NG produced in Queensland Australia. This therefore means there is no Oxygen to breath should a leak occur in a confined space which can cause asphyxiation pretty quickly.

Mitigation

- Awareness of the risks associated when handling LNG, be familiar with SDS (safety data sheets), Risk assessments, control risks (or follow the procedures), proper PPE and right gear for the right job (LNG rated hoses etc) at all times
- Restricted vehicle access
- Ship / shore communication / instrumentation link connected (for ESD etc)
- Familiar with emergency response plans
- Agreed ship / shore check lists
- Mooring ropes at right tension to prevent movement.
- LNG is usually very safe though extra control measures are required to ensure safety. Purging of arms / hoses before commencing the transfer, until the Oxygen content is below 3%. This will ensure all arms, hoses and tanks are well below flammable range
- It is imperative to commence the transfer at recommended slow rate should the pipework be warm as It is extremely important to reduce pipework and tank temperatures. Transfer should be done only at the recommended rate, if not pipework and tank brittle fractures can occur resulting in severe structural damage. (Any pipework and tanks subjected to extreme low temperatures are built with stainless steel or similar material to withstand extreme low temperatures though it's extremely important to follow recommended rates and slow initial transfer).
- Water curtain to be operational on shipside (manifold side of the connection) to reduce the impact on steel work should there be a leak / spray of LNG onto shipside. This will wash off LNG quickly into water minimizing the impact on shipside steel work due to extreme cold temperatures.
- Any drip trays made out of suitable quality steel to withstand LNG dripping etc.
- As LNG is handled nearly at boiling point (negative 162 Celsius), it will form a flammable vapour cloud should there be an unplanned LNG release. This can lead to an explosion particularly within an enclosed space should it finds an ignition source (*Methane is flammable between 5.3% and 14% by volume in air*). A gas cloud can form even in open air depending on the amount of LNG released and wind conditions. Gas cloud may dissipate quickly in strong wind conditions from the right direction. Gas clouds can drift slowly to a certain distance depending on weather conditions. Whatever the case maybe it is extremely important to manage the area without any ignition sources throughout the transfer. No unauthorized entry should be allowed into the area. It is also important to have continuous gas testing (with calibrated gas detectors and bump tested).

- Standardized connection used
- Periodic inspection and testing of equipment
- Periodic certification of hoses
- It is important to maintain all hoses / arms including vapour returns, associated valves, pipework, seals, PRVs (Pressure relief valves) etc in good condition. PRVs must be tested as required intervals.
- Asphyxiation can occur particularly in an enclosed area should there be an unplanned LNG release, preparation of LNG transfer procedure, a risk assessment done with the work party and following the procedure is important.
- Emergency Shut Down (ESDs) Associated with LNG Transfers (need regular testing and confirmation as required)
- High level in receiving tank
- Low level in Terminal tank
- Presence of flammable vapour (usually two gas detectors will have to activate out of three).
- Presence of fire (Flame detectors) -
- Low temperatures indicating cryogenic spill
- Manual activation of ESD

- ESD activation will
 - Shut down transfer pumps
 - Shut ESD valves on shoreside as well as on shipside.
 - Disconnection of breaking coupling / release depending on the emergency

LNG Transfer

Other important considerations for LNG transfer

Bunkering / Loading temperature

LNG is usually transferred closer to atmospheric pressure and approximately at negative 162 C. Density of the receiving LNG is reduced If the loading / delivering temperature (delivery source) is greater than the receiving tank temperature means more ullage is required to receive the intended quantity. Also the vapour pressure of the receiving tank will rise and PRV will open releasing the pressure should the vapour pressure rises above the set pressure of Pressure Relief Valve (PRV).

Reference Temperature

If the receiving tank temperature is higher, LNG volume will increase thereby reducing the available vapour space thus increasing vapour pressure. Reference temperature of LNG is

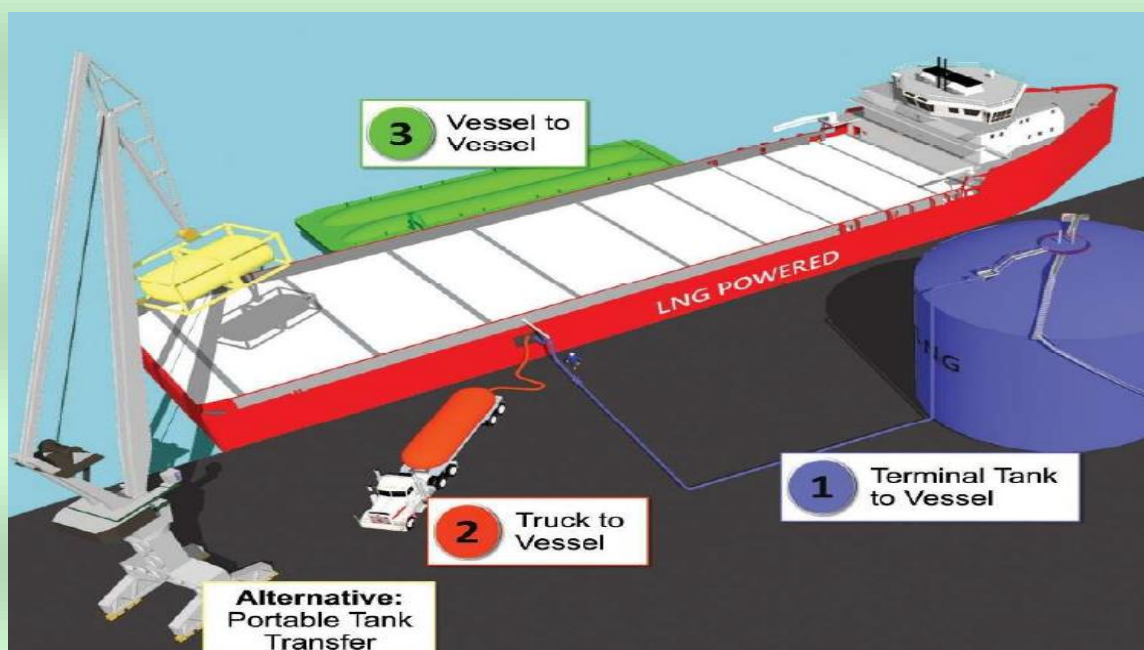
the corresponding temperature at which pressure (Set point of PRV) the PRV will open releasing saturated vapour pressure. This could happen is the receiving tank temperature is higher. PRV pressure SP is important in calculating the ullage available for receiving.

Rollover

If there is a temperature difference between the delivery and receiving tanks, the one with lower temperature will have a higher density and vice versa. LNG with the higher density will settle towards the bottom. LNG towards the bottom will continue to rise in temperature due to outside heating thus creating vapour. Mixing of LNG will occur if there is movement of the vessel however in the absence of movement vapour in the bottom might rise to the top rapidly creating sudden rise in vapour pressure consequently lifting PRVs and releasing vapour pressure. The stratification can be avoided either using top or bottom line for loading depending on densities to mix with the heel (Heel- LNG remaining in tank prior to receive).

If the receiving tank is completely empty, it is important to inert the tank completely with Nitrogen or similar prior introducing warm gas to displace inert gas. In this process inert gas is replaced with warm gas initially, which is called gassing up. LNG transfer can then commence upon completing necessary check lists, arm / hose connections, ship/shore/terminal/other sources in agreement with the procedure, communications, relevant ESD details etc. Then arms/ line and tank cooling can begin at a slow rate, on confirmation the flow rate can be increased. Comparison of received and delivered regularly during the transfer is important to ensure delivery of correct quantities.

It is imperative to drain lines, arms (or hoses) soon after completion of loading to prevent pressuring up of lines and arms, then purge with inert gas.



Snippets:

This article covers only aspects unique to LNG transfer not fully covered common aspects to hydrocarbon transfer.

Loading on Membrane LNG Tankers for sea transport - Tank vapour pressure is an important parameter to look for. Tank vapour pressure should not exceed the maximum vapor pressure (usually 70 to 100 Kpag) to prevent tank membrane damage. Vapour is returned by vapour return line though if the pressure rises above the set pressure this is usually controlled by logic (PID Loop) sending excess vapour to generators as fuel gas. Generators power propulsion motors with propeller connected via a gear box to reduce to the required RPM.

There are suitable size Nitrogen generators available for bunker vessels (trailer mounted Nitrogen generators too are available. It is common knowledge that normal air contains about 78% of Nitrogen and 21.4% of Oxygen. There are Oxygen absorbing beds in Nitrogen plants, the end product containing Nitrogen more than 98%.

Food for thought**Future LNG Transshipment Hub**

As the natural gas is widely accepted as a much cleaner fuel and due to increased emphasis by global agencies to minimize the impact on environment, it is that most likely future power generation plants will be fueled by natural gas. It could be anticipated that there will be regional LNG demand from remote areas / islands in the Indian Ocean for various industries including power generation. Sri Lanka once again can capitalize on its location in the Indian ocean to set up an LNG transshipment hub upon completion of a feasibility study. We can explore the possibility of supplying LNG to some regional ports in the Indian Ocean whilst LNG is being used for our power plants, LNG bunkering (by LNG Trucks) and other industrial needs. There are LNG shuttle carriers about 40000 cubic metres in capacity being built for this transshipment purpose.

Which Port is suitable!

Average size of an LNG tanker loading from a LNG Plant in East Coast of Australia is about 160000 cubic meters with a loaded draft of about 11.3 meters. To be economically viable, any LNG infrastructure to be built in future in Sri Lanka should have a combined objective of power generation, transshipment and marine fuel. Also import LNG tankers will have to be

big enough to be cost competitive. Ideally LNG storage tanks should be built away from populous area due to its inherited volume expansion characteristics and flammability.

Port of Colombo has nearly run out of a suitable area for LNG storage tanks. Therefore Port of Colombo may not be right place for LNG storage tanks unless a suitable site is found. Bunkering is possible using purpose-built LNG trucks. Port of Galle may not be suitable due to shallow depth in the channel for big LNG tankers, therefore can to be ruled out.

Port of Trincomalee is suitable for a LNG Terminal and power generation but the downside is Trincomalee being further away from container hub activities hence may not be the best port for LNG bunkering.

Port of Hambantota can further be developed similar to South Port in Colombo upon reclaiming land combined with breakwater, and if executed properly will be much bigger in comparison to Colombo. There is plenty of land available in Hambantota, no question of depth in the channel for big LNG ships (post doing up new port), not far from Colombo port too on the motor way for LNG trucks for bunkering in Colombo. In fact, Hambantota has the potential to be the first planned hub port and the city in modern Sri Lanka. Port of Hambantota ticks every box for an LNG Terminal, Gas Turbine power plants and for a second container transshipment port.

Scientists have broken the record for the coldest temperature ever recorded in a lab, achieving a temperature just trillionths of a degree away from absolute zero by dropping freezing, magnetized gas down a tower 120 meters tall.

The exact temperature scientists measured was 38 trillionths of a degree above -273 degrees Celsius — the closest that has ever been measured to absolute zero in a lab.



Damage To A Cargo Of Sodium Sulphate

By Capt.Lalinda Namalarachchi

The following is an incident that I attended some time ago to survey the nature, extent, and cause of the damages to a consignment of bulk Sodium Sulphate. *“Sodium Sulphate is mainly used for the manufacture of detergents and in the Kraft process of paper pulping, although it has many other uses. About half of the world's production is from the natural mineral form of the decahydrate (mirabilite), and half from by-products of chemical processes. The white or colourless crystals were originally used as a laxative”*. Courtesy of Wikipedia. Fortunately for my clients, the P&I Club of the Owners, Sodium Sulphate is considered to be relatively cheaper material commanding about USD 120 per metric tonne (mt).

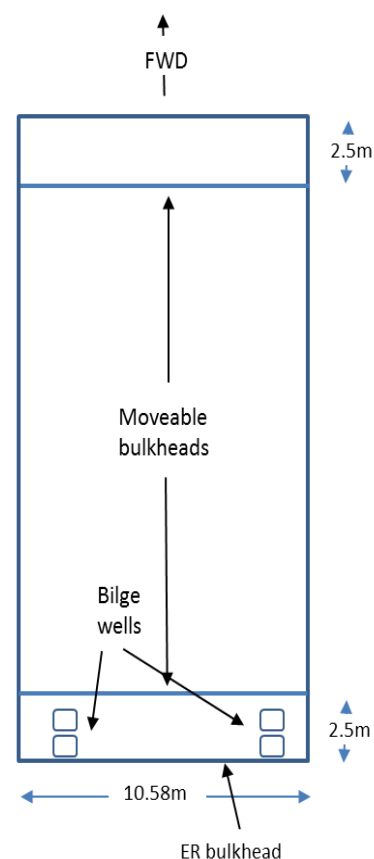
The Vessel

The Vessel involved was a 4,300mt deadweight, gearless, general cargo ship with the navigating bridge, accommodation housing and engine spaces located aft of a single Open Hatch Box Shaped hold. The hold was equipped with lift away steel pontoon hatch panels and two moveable transverse hold bulkheads.



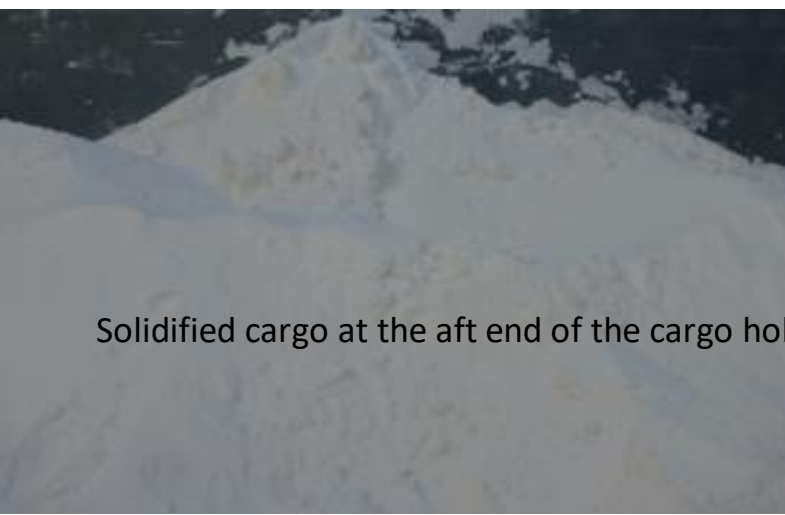
For the subject voyage, one moveable hold bulkhead was positioned about 2.5m aft of the forward bulkhead and second moveable bulkhead about 2.5m forward of the Engine Room (ER) bulkhead. Cargo was loaded between the two moveable bulkheads leaving gaps of approximately 2.5m at the forward and aft ends of the cargo hold. See diagram below.

The type of vessel is predominantly engaged in North European coastal trades.



Survey Findings

Shortly after my arrival onboard, I proceeded to the aft end of the cargo hold to witness the alleged contamination as the following photographs illustrate.



Solidified cargo at the aft end of the cargo hold.



I noted that most of the cargo from the hold had been discharged and only a small quantity towards aft remained which was alleged to be damaged. I measured lengths, breadths and heights of the remaining cargo and calculated/estimated the following. Upon agreeing the above dimensions/quantities with the Terminal Manager who halted discharge operations until my arrival, we instructed stevedores to resume cargo operations immediately to avoid further delay.

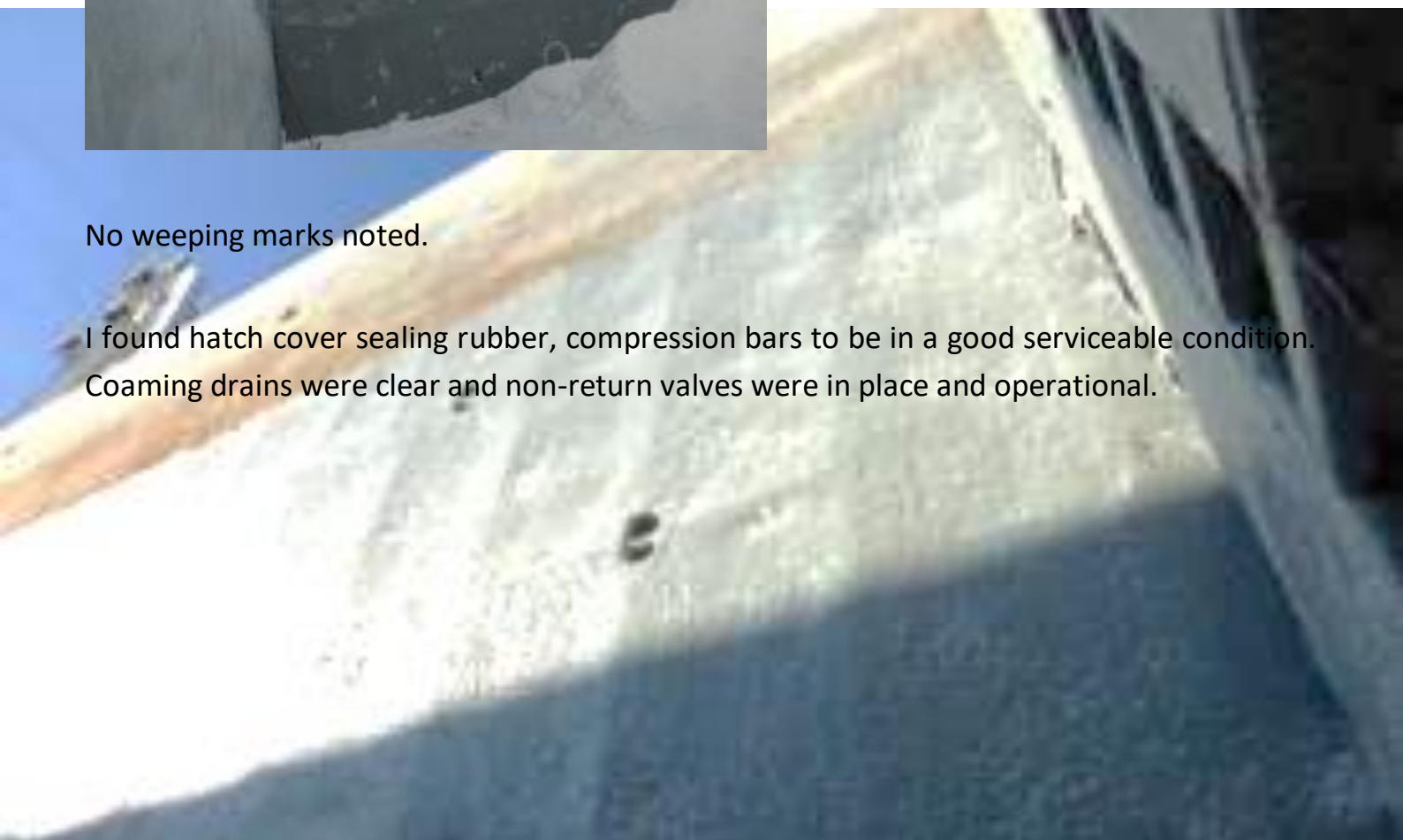
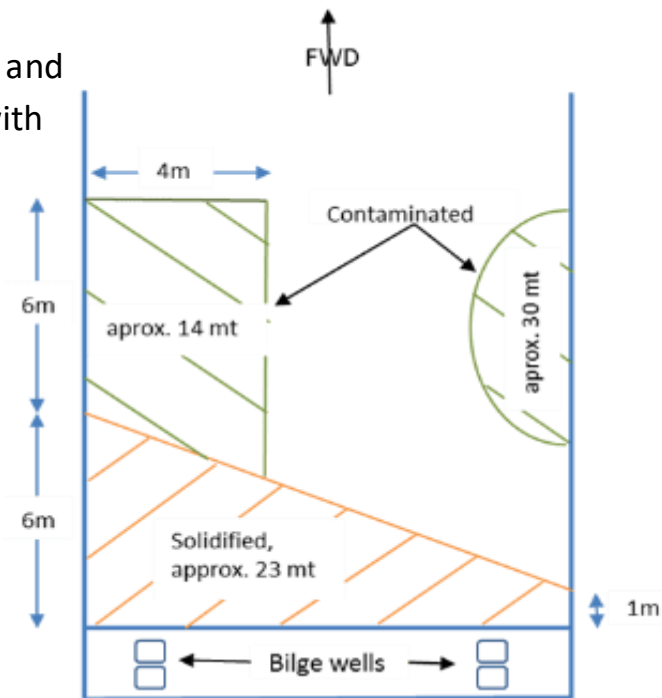
I then carefully inspected the Vessel's hatch covers and associated fittings to identify any obvious concerns with regards to weathertightness.

I did not witness any weeping marks along the bulkheads that are typically seen with leaking hatch covers.



No weeping marks noted.

I found hatch cover sealing rubber, compression bars to be in a good serviceable condition. Coaming drains were clear and non-return valves were in place and operational.





Hatch sealing rubber was in a good serviceable condition.



Compression bar in good condition.



Coaming drains clear, non-return valves in place.

The pattern of damage and evidence suggested that the damage to the cargo occurred from the bottom up. i.e. the cargo was made wet from the tank top upwards and not from water falling on top of the cargo.

I noted a small amount of water that was still seeping out into the void area behind the moveable bulkhead and there was a small amount of water on the manhole covers.



Water seeping out under the moveable bulkhead.



Water on manhole cover.



Bilges having 1–2 cm of water.

My initial suspicions were, water had back flowed into the tanktop via the bilges or a leaking manhole cover. However, this was not the case, as explained later.

When all the remaining sound cargo was discharged, stevedores placed a back-hoe with a hammer attachment to break the solidified cargo.



Back-hoe with a hammer attachment at work.



Solidified cargo.

Based on my calculations, short landed cargo quantity against the BL and weighbridge figures of the actual damaged cargo discharged (this figure was including the weight of the water absorbed), I agreed a total of 116.52 mt with the Terminal Manager as the damaged cargo weight. At an FOB value of €120 per mt and a freight of £16 per mt, I calculated the Loss amount to be £14,177.

Weather On Passage

I was informed by the Master that during the voyage the Vessel had encountered very heavy weather with SW'ly Beaufort force 9/10 winds and 8–10 m swells.

The Master confirmed that he had received regular weather forecasts during the passage in the form of weather maps and NAVTEX weather broadcasts.

The following table was prepared based on the information from the Deck Logbook, with comparisons to intended route on the passage plan and weather forecasts.

Date	Time	Position	Course		WX on log book		NAVTEX WX forecast	Log Book remarks
			Passage Plan	Steered	Wind	Swell		
#####	0200	46° 48.1'N, 005° 48.4' W	345*	000*	SW 9/10		SW'ly storm force 10 decreasing severe gale force 9 imminent.	Much water passed through hatch covers - condition of cargo unknown
#####	0600	47° 22.7'N, 005° 41.3'W	345*	020*	WSW 8			Have to change course to 020*. Have damaged fire box on p/s.
#####	1005	48° 00.4'N, 005° 20.0'W	345*	310*	W 8/7	Swell	BISCAY FITZROY: W or SW 7 to Sev Gale 9. Ognl Storm *1* *-5 84'5, veer NW 6 to gale 8 later. Very rough or High. Rain then squally shwrs. Vis mod or poor.	
#####	1700	48° 23.7'N, 006° 00.4'W	345*	035*	W 7			
#####	2000	48° 45.2'N, 005° 34.5'W	029*	059*	W 7			
#####	2045	48° 48.7'N, 005° 25.7'W	029*	075*				Due to still no access to the deck can't check condition of the hold/possible leaking of water to fore part the hold.
#####	0200	49° 02.7'N, 004° 04.4'W	029*	075*	W 6/7	Swell		
#####	0800	49° 19.9'N, 002° 30.6'W	029*	075*	W 6/7	Swell		
#####	0910	49° 24.1'N, 002° 16.6'W	029*	020*	W 6/7	Swell		Have checked fore/aft part of hold-fore part p/s leaked cargo 5-10 mt
#####	1145	49° 47.7'N, 002° 01.0'W	059*	066*	W 6/7	Swell		
#####	2000	50° 20.7'N, 000° 08.0'E	073*	066*	NW 4			During attempt to check fore part of hold/condition after heavy weather was injured ch. Eng Koposhilov Vasily.

The weather forecasts and the logbook weather recordings were compatible. The Master had altered course up to 35° to starboard to get the weather on the port quarter so as to make the effect of weather less on the Vessel's beam. However, there was no evidence as to a reduction in propeller pitch to reduce speed.

There was a deck log entry on 16 January stating that attempts were made to check the cargo condition and that 5–10 mt of cargo was noted to have seeped into the forward empty space forward of the moveable bulkhead but there were no entries related to any sea water ingress.

I checked the bilge sounding records and found the ship's crew had not been able to monitor the soundings, apparently, due to bad weather.

Master's Statement

The Master had prepared a statement of the incident, and this was presented during our meeting.

On the 14 January, the port side cargo hold bilge alarm had activated and an Able Seaman (AB) had checked the hold, confirmed it to be dry and the Chief Engineer (C/E) had re-set the alarm (It is usual for bilge alarms on cargo ships to activate during heavy weather due to the sloshing effects of any unpumpable water in the bilges).

Through the night, the hold bilge alarm had activated several times but sending someone on deck/into the hold had not been possible for safety reasons during heavy weather. However, the C/E had been able to re-set the alarm every time.

On 15 January at 0330 the Vessel began encountering severe weather which triggered many alarms on board including the bilge alarm and the abandon ship alarm. The crew managed to get this situation under control and re-set all alarms except for the bilge alarm.

I questioned the Master as to why they did not attempt to pump out the hold bilges. He explained that the bilge operating console was situated on the main deck portside of the accommodation block and the eductor valves are on the main deck port side on the hatch coaming. The heavy weather had prevented anyone going outside the accommodation to operate the bilge eductor system.



Bilge eductor operating console.



Eductor valves on hatch coaming.

When the weather eased, the Master altered course eastwards to get a lee on the port side and upon inspection found about 20 cm of water in the aft part of the cargo hold (above the tanktop) which was subsequently pumped out.

On investigation, it was found that the entrance to the cargo hold on the port side had been left open by the AB who entered the hold last to inspect the condition of the hold/bilge allowing shipping seas to enter the cargo hold through the entrance.



Port side cargo hold entrance.



Sealing rubber found in good condition.

The Master in his statement stated that he deliberately did not report water ingress as he was expecting water damage to be minimal. This explains the lack of a Deck Logbook entry to this effect.

CAUSE OF DAMAGE/SUMMARY

My findings suggest that sea water entered the aft part of the cargo hold aft of the moveable bulkhead where the hold bilges are located. This water had slowly seeped forward into the cargo underneath the moveable bulkhead contaminating/solidifying the cargo from the tank top upwards.

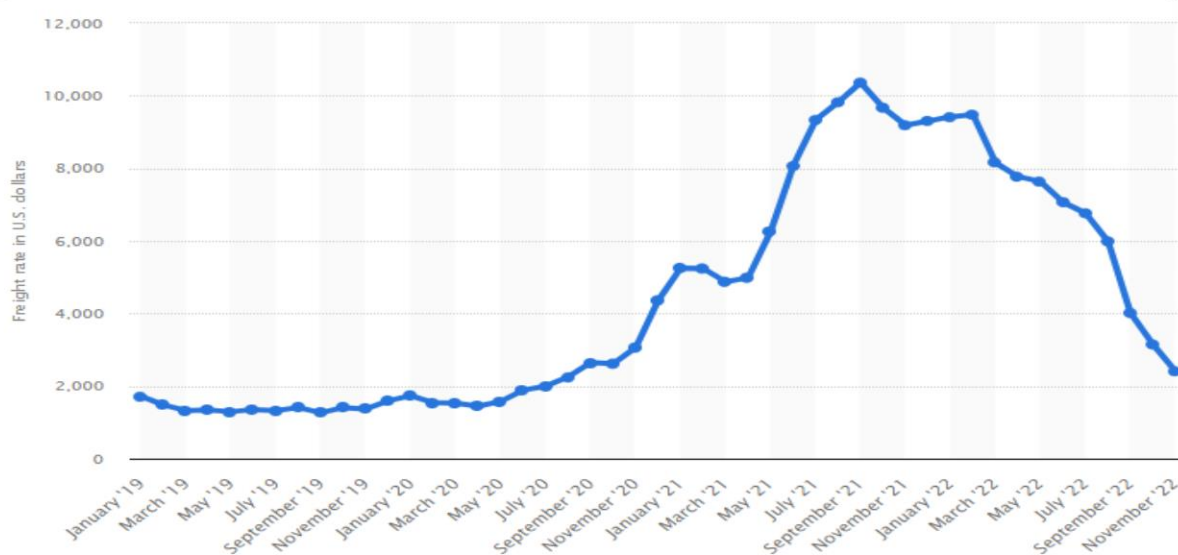
The shape of the solidified cargo aft of the hold was thicker towards the port side and aft, thickness tapering towards starboard and forward suggesting a wedge of water on the port side (typical shape for a ship with a stern trim and a port list).

Together with the Master's statement, the weather encountered during the voyage, the position of the bilge operating console, we believe that sea water had entered the aft part of the cargo hold through the open cargo hold access door contaminating the cargo.

I also wish to note the Vessel had a major design fault where their hold bilge pumping arrangement was placed in a very vulnerable area where crew were not able to access it during heavy weather. Had the water ingress been severe, this incident may have led to disastrous consequences.

Container freight rates oscillated dramatically between January 2019 and November 2022. The year 2021 saw an especially steep increase in global freight rates, reaching a record price of nearly 10,400 U.S. dollars in September 2021. In November 2022, the global freight rate index stood at 2,400 U.S. dollars.

Source Statstia.com





Harassment and bullying onboard - *what we should be aware of*

By Capt. Lasith Anthony De Silva

Introduction

Harassment and Bullying (H&B) is a growing concern onboard ship specially in crew employed from countries with high hierarchical and cultural differences. According to facts available today, almost 8-25% of all seafarers are subjected to some form of harassment and bullying at sea and not much seems to have changed over the years.

As a ship is often a seafarer's home for many months, harassment and bullying on board ships can have serious consequences for the physical and emotional health of seafarers, leading to decreased motivation and increased sickness and can compromise cohesive and effective teamwork onboard. These illegal and disgraceful behaviors and trends can affect a seafarers' short- and long-term mental health, safety and well-being which in turn affects recruitment and retention rates of seafarers. These behaviors could have further negative impacts on companies, resulting in a deterioration of working conditions and potential organizational, economic and legal consequences.

People working within the maritime sector should be able to work in a safe and healthy environment regardless of gender, age, cultural background or other differences. A psychologically safe and inclusive maritime workplace culture for all seafarers and maritime professionals has a positive effect on operational safety and security onboard.

Harassment includes any form of inappropriate and undesirable conduct which was intended or unintended, and may result in the recipient feeling unease or humiliation. Harassment could come in many forms. It could come physically in the context of a sexual or work place violence, and psychologically by non-physical mistreatment, bullying or mobbing.

Bullying is a particular form of harassment that includes hostile or vindictive behavior, which can cause the recipient to feel threatened or intimidated. It is repetitive and regular activity or behavior which will affect the victim negatively. A single occurrence is not considered as bullying.

Shipboard work environment could be categorized as a total institution, which includes working conditions such as, uncertain employment, shift work, and weak margins between the work life and private domains. Further, compliance to increased and complex safety and environmental regulations has added to the already high workload and demands faced by

modern seafarers. This article is an attempt to highlight the industry norms about Harassment and Bullying with an aspect of enlightening the general seafarer about shipboard harassment and bullying in a Q & A format.

1. Why Harassment and bullying?

Life at sea has always been a place where hierarchical concept exists. Back in the day life at sea was very haphazard and very risky, therefore responding to emergencies successfully needed to have an authoritarian leadership and a hierarchical structure. With the development of safety standards through ISM, seafarers' rights through MLC and standardization through STCW, industry has identified many of the risks, and as a result the need to maintain hierarchy has been less important. Harassment and bullying now-a-days is mostly due to individual personality ego, cultural clashes, language barriers, psychological instability, and a variety of such other reasons. In some situations, people are not aware that their behavior is unwelcome and causing distress to others.

2. How does it affect the seafarers?

There are two aspects when dealing with harassment situations. The seafarers could be either be the victim or the perpetrator. No matter what the case maybe, in both roles there is significant effect on the seafarer. If you are the victim there is constant fear of under-performing or making mistakes, and all other causes and effects of harassment and bullying described below (Q8). Secondly, if one is found as the perpetrator or the alleged perpetrator, it may affect his/her own performance, which will compile added pressure, stress, added work load, and fear of reputational damage.

Victimization is penalizing the victim as he or she may be of a less operational expense to the organization as compared to the perpetrator. Onboard ships sufferers of harassment and bullying may have to endure it until the end of the voyage and maybe asked to be transferred to a different vessel for the continuation of their next voyage, instead of reporting it. These actions would be inappropriate and could be categorized as victimization of the seafarer.

Performance is a must in the maritime environment, as mostly there are limitations to personal substitutes at sea. In other words, each individual needs to carry out their duty, as the ships are already under manned compared to yesteryears. Finding the balance between consideration to the training of the new joiner and completing daily tasks is of utmost important in preventing harassment onboard.

Other effects from harassment and bullying includes increased stress levels onboard, lack of motivation, reduced work performance, absence from duties, and resignations. Eventually the effects on seafarer will directly and indirectly influence the company level, which include

decreased in productivity, increased absenteeism, employee turnover, and costs for repatriation.

3. What is the legal frame work against harassment & bullying?

Addressing harassment and bullying on board ships requires seafarers to report incidents. These reporting process should ensure to maintain confidentiality, avoid victimization, allow representation, and address issues raised equally and justly. Onboard there are several instruments which defines the legal frame work against H&B.

Implicitly, the risk factors are covered in the International Safety Management (ISM) Code which requires a safety management system (SMS) that encompasses the assessment of all identified risks to ships, personnel and the environment, and the establishment of appropriate safeguards. The factors are more explicitly covered under the 2016 amendments of the Maritime Labour Convention (MLC), which added bullying and harassment to the guidelines of Regulation 4.3 on health and safety protection and accident prevention. These 2016 amendments to the MLC 2006, was entered into force on 8 January 2019.

Further, latest version of “Guidance on eliminating shipboard harassment and bullying”, jointly published by the International Chamber of Shipping (ICS) and the International Transport Workers Federation (ITF) is a model guide to companies to develop anti-harassment policies. They must have a clear policy statement that dictates the commitment to eliminate workplace bullying and harassment, communicate standards of expected staff behavior, and contain information on reporting routines, and grievance procedures.

International Maritime Organization under MSC sub-committee of Human element, Training and Watchkeeping (HTW) is to start a comprehensive review on STCW convention and code targeted for 2026. The sub-Committee proposes to extend the delivery of the Personal Safety and Social Responsibility (PSSR) training from four to eight hours focusing on the H&B training and awareness to the seafarer in the additional time allotted.

There are several other maritime NGO’s such as COPE° (Center for Ocean Policy and Economics -a subset of The Northeast Maritime Institute), together with WISTA (Women’s International Shipping and Trading Association), IHMA (International Harbor Masters Association) and ISWAN (International Seafarers Welfare and Assistance Network) working on developing regulatory aspects for “Psychological Safety and Sexual Assault and harassment in the Maritime Sector”.

4. Company and Seafarer's role in preventing harassment & bullying

Combined effort of ICS and ITF has set guidelines on H&B to the company and seafarer. A company should have a policy statement enable prevention of harassment and bullying onboard. The policy statement should contain a message from the CEO or from a person of equivalent level from the company setting the commitment to eliminate, goals to achieve, appointing responsible or dedicated personal, types and examples of H&B, and procedure in reporting the same. Further, company have the responsibility in reminding the crew to identify and respect individual ethnicities, and cultural or behavioral differences among shipboard crew. How to handle cyber bullying onboard should be covered by the company responsibilities.

When enforcing actions against H&B, at national level incorporating company policy in the collective bargaining agreements will be an effective way to ensure company commitment.

5. How does seafarers gather knowledge on harassment & bullying?

As a part of gathering knowledge, communication and awareness are important aspects in the fight against onboard H&B. Awareness programs such as briefings to seafarers when joining, onboard posters and notices, section in the staff handbook, MLC reading materials and seafarer's code of conduct, posting of cultural policy and anti-harassment and bullying policy, relevant sections in the SMS, grievance procedure, collective bargaining agreement (CBA) or union agreements, onboard training and safety familiarization are some of the sources where one could gather information on prevention of onboard harassment and bullying. Some companies have systems in place to follow-up on new joiners' progress on onboard placement, allocating and dedicated onboard personal as a friend, and routine follow-up by the shore organization to prevent vulnerabilities of the new joiners.

6. Physical contact onboard the vessel

Physical contact is almost non-existent onboard a ship. This may be a new social change to the new joiner coming from a more socially interactive environment. What one could expect is a simple hand shake, dancing in parties, or a hug when signing-off if it is a close friend onboard. Some form of physical contact could be present while working or responding to emergencies, but same needed to be handle with dignity and gently in a non-abusive method. Examples of some forms of physical harassment would be touching, grabbing, patting or other unnecessary bodily contact such as brushing up against others.

When situations with mix-genders the physical contact should be given much attention, as it could lead to a sexual harassment charge to the recipient under several circumstances. For

this reason, most of the seafarers are dogging working with opposite sex, and it could lead to mental harassment for the recipient.

7.What forms of sexual harassment can we expect onboard?

Sexual assault and sexual harassment (SASH) are modern terms used in the industry. It is possible that sexual harassment may be deemed to have occurred irrespective of whether it was intended by the alleged perpetrator. This is because it is related to the effect it has on the individual concerned. Initiative from South Korea, Busan Declaration – supporting women seafarers around the world was part of the IMO sustainable goals. There are other best practices guide on prevention of SASH in the United States Merchant Marine Act.

Woman seafarers on the other hand when trying to deal with the masculine workspaces onboard, may resort to hide their femininity and reinforce their masculinity. This phenomenon is described as ‘rubbing out gender’. Sexual harassment is more often seen with the minority and people with lower social status.

Most seafarers are employed from the 3rd world nations, where the gender equality and opposite gender interaction is not very common and not natural in a public domain. Therefore, in a close working and living arrangement such as shipboard environment, it is natural to have more interaction between opposite sex due to lack of social and regulatory influence. This may lead to more sexual harassments and assault cases by these type of seafarers as compared to European nationalities; difference being not being able to socially interact between opposite gender. Remedy is to give adequate education and evaluate seafarers psychological status prior encountering such an environment.

8.Examples of harassment and bullying

Following are some examples of harassment:

- Showing un-welcome, offensive, suggestive materials
- Mockery, lewd, sexist, racist, homophobic jokes
- Use of offensive language in describing or making fun of someone with a disability
- Comments about personal appearance or character which may make the recipient embarrassed
- Unwelcome attention such as spying, stalking, pestering, overly familiar behavior
- Cyber harassment by making or sending unwanted, sexually suggestive, hostile or personally intrusive telephone calls, text messages, emails, comments on social networks, faxes or letters

- Unwarranted, intrusive or persistent questioning about a person's age, marital status, personal life, sexual interests or orientation, or similar questions about a person's racial or ethnic origin, including their culture or religion
- Unwelcome sexual advances or repeated requests for dates or threats and requesting sexual favors which may further a person's career
- Leering, rude gestures, touching, grabbing, patting or other unnecessary bodily contact such as brushing up against others
- Spreading malicious rumors, or insulting someone

Following are some examples of bullying:

- Verbal threats or abuse, such as shouting or swearing at colleagues, either in public or in private, including derogatory or stereotyped statements or remarks
- Belittling or ridiculing a person, or his/her abilities, either in private or openly
- Sudden rages or displays of temper against an individual or group, often for unimportant reasons
- Subjecting someone to unnecessary excessive or oppressive supervision, monitoring everything they do or being excessively critical of minor things
- Persistent or unjustified criticism
- Making unreasonable demands of staff or colleagues
- Setting menial or demeaning tasks that are inappropriate to the job or taking away areas of responsibility from an individual for no justifiable reason
- Ignoring or excluding an individual from social events, team meetings, discussions and collective decisions or planning
- Making threats or inappropriate comments about career prospects, job security or performance appraisal reports
- Spreading malicious rumors, or insulting someone repeatedly
- Banishment of people at work and refusing their efforts to participate with others if they are believed to 'not fit in'

9. What is not harassment and how do you distinguish?

More often we encounter strict Masters and senior officers which could be mis-interpreted as a bully or perpetrator of a harassment act. Although there are many aspects which could be interpreted as H&B as per examples above (Q8), one of the best ways to understand a situation is to see the circumstances, who is initiating the action, and net result of the incident. Ex: shouting and being aggressive over a serious near miss which could have endangered the safety of a fellow crew member would not be a case of harassment or even bullying if it happened repeatedly, as the case may be the victim may be a continuous danger to the shipboard environment. Another measurement to the same circumstances would be how low is the margin of error allowed, which could initiate or prevent a maritime incident in this challenging industry.

There are sometimes situations when excuses are made to define or refer to behavior or situations between people at work which may involve 'hidden bullying'. Examples are, strong or robust management styles, a working relationship that is described as a 'personality clash', someone being described as 'over-sensitive' or 'unable to take a joke', describing someone as having an 'attitude problem', a manager who 'has a low tolerance for non-safety critical mistakes which are made unintentionally, and making fun of someone who has made a minor mistake at work are definite cases of harassment and bullying.

Conclusion

What we should look forward as an industry is to have a perspective change and behavioral change in preventing shipboard harassment and bullying. Apart from the knowledge from the above topics discussed, promoting self-awareness and addressing personal biases, supporting clear, consistent and open communication, calling out inappropriate behavior, setting and respecting boundaries, and providing multiple professional and confidential reporting routes will be considered as positive enforcement to prevent H&B.

As an industry all stakeholders, should look into more stringent monitoring and enforcement instead of more legislations.

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Bloodiest Mutiny of All Time – VOC ship Batavia - 1629

By Capt. Chandra Godakanda Arachchi

Mutinies are hardly heard of this day and age though mutinies did happen even centuries ago however punishment centuries ago if found guilty could be even execution. Mutiny is termed as an open rebellion against the authority of the unit or the ship particularly in armed forces and merchant navy. There was a famous mutiny back in 1976 on Lanka Keerthi, a Ceylon Shipping Corporation vessel. Vessel was in anchorage in Tripoli, Libya for about a month causing food shortages and severe hardships for the crew on board. Crew were regularly complaining about insufficient food and the quality of food. It is unsure whether any attempts were made to purchase additional provisions despite repeated complaints and discussions with the crew and senior officers. The situation dragged on without any satisfactory solution until crew's patience flew out through portholes. Master, a foreign national was assaulted by the crew- most of them from were from Colombo suburbs and well known for fist fights. Chief Engineer and Chief Officer were also assaulted by the crew with helmets until they were pleading the crew on their knees not to assault them. Mutiny ended up with serious head injuries to the master.

Working on ships in that era was a relatively new experience for Sri Lankans and the crew were picked up to serve from various backgrounds certainly included a few rough necks too. First carpenter on m v Lanka Rani was a coffin maker just to give a perspective of the caliber of crew at the time.

Second Engineer with the greatest difficulty managed to intervene and stop the commotion. Master was taken ashore to be hospitalized; full complement of crew was forced to disembark by Libyan Police (who refused to get off the ship earlier) under warnings to shoot any crew disobeying orders. Libyan Police meant business and the crew went ashore in double quick time. New Mater (Captain Henricus) and crew flew from Colombo, the business was honky dory from that point onwards. If one calls aforesaid a mutiny what happened in 1629 on Batavia was bloody unimaginable.

Existence of VOC (Vereenigde Oostindische Compagnie) or Dutch East India company in Ceylon or the Dutch for one hundred and fifty years from 1640 to 1796 is known to most. But what's unknown is VOC was the first multinational corporation in the world established on 20th March 1602 when six rival companies merged together to form a very powerful and ruthless multinational. They were at times forging ahead with their business objectives at any cost. They evidently attacked at least one Portuguese trading ship 'Santa Catarina' in the

middle of ocean, thereafter grabbing the victim ship's treasure thereby increasing VOC's asset base significantly. However, VOC's lawyers argued attacking the ship was "Just war" and directed towards the Portuguese to end the monopoly as none can claim the ocean as their own territory. Therefore, it was the VOC who first brought about the terminology "Freedom of Navigation" in international waters. Readers can decide whether attacking a ship and then robbing all treasure is an act of piracy or an act of fighting for freedom of navigation in international waters. VOC also had engaged in torture, slavery and did anything good or bad to protect their business or the spice trade.

VOC's new polished wooden flagship Batavia, 57 metres in length and 10.5 metres wide 650 tons DWT with 24 cast iron cannons sailed on her maiden voyage from Texel in Holland on 28th October 1628 under Francesco Pelsaert, a senior merchant in Batavia (Formerly known as Jayakarta now Jakarta). Adriaen Jacobsz, an experienced ship captain was second in



Replica of Batavia

command who was not too happy even at the beginning of the voyage about appointing Francesco, a senior merchant to be in command. She was the ship of glorious at the time with VOC demonstrating their power and wealth. Batavia set sail with six other ships in a convoy though ships got separated due to bad weather in Atlantic Ocean with only three ships were in sight

on one another post storm. Batavia had about 200 passengers including women and children, wives of those serving in Batavia, over 100 soldiers and crew totalling well over 325 on board though in present day terms it's unimaginable to have 325 souls in a ship of only 57 metres long. It is interesting to note that crew in those sailing ships used to sleep on hammocks underdeck, carried salted meat, live animals for slaughtering, wine and rum too. There was a middle level merchant Jeronimus Cornelisz on board and also 27 year old woman named Lucretia Janz Van der Mijlen who was sailing to Batavia to reunite with her husband (Boudewijn Van der Mijlen).

Lucretia managed to secure a small cabin due to her social status. Lucretia's maid Zwaantje Hendrix too was on board. Resentment between Pelsaert and Jacobsz grew from the word go of the voyage over the appointment. In the meantime Jacobsz tried to make advances to charm Lucretia without success then he turned to Hendrix for romantic comfort. Lucretia brought to the notice of Pelsaert of what occurred, soon Lucretia and Pelsaert became good friends. Jacobsz resentment for Pelsaert grew more and more during the voyage, then Jacobsz began day dreaming about how it would be like to overthrow Pelsaert to take command with the idea of pursuing a life of piracy with thrilling adventures in the oceans and becoming rich. Jacobsz with these thoughts in mind then confided with Cornelisz who shared similar sentiments.

Batavia called Cape of Good Hope in mid-April, 1629 to source provisions, water etc. As usual crew was allowed to go ashore in Cape of Good Hope, where Jacobsz, Cornelisz and Henrix went on a week-long drinking session and hard partying creating troubles ashore. There were many complaints from crew as well as from residents of Cape of Good Hope. Pelsaert wasted no time reprimanding Jacobsz over his behavior. Voyage resumed after the stop over. Jacobsz being bitter about the reprimand held secret meetings with Cornelisz in order to turn their fantasies into reality. The pair planned to muster a group of rebels, do away with those who oppose and get rid of Pelsaert and the pair were ready to set the plan into motion come June 1629. As part of the plan a group of rebels cornered Lucretia and sexually assaulted her, the plan was to discredit Pelsaert to gather momentum for the conspiracy, the conspirators could take the next step in their plan. Lucretia managed to escape the event traumatized. She reported the incident to Pelsaert who then wanted to take action against likely crew involved. Lucretia could identify (by voice) at least one crew who attacked her. In the meantime, in a twist of events, Batavia ran aground on 04th June 1629 during Jacobsz watch in the morning at Morning Reef near Beacon Island, Abrolhos off Western Australian coast, had bottom damage the she began to sink. Most of those on-board including women and children managed to survive and reached a nearby Abrolhos islands. However about 70 people remained on board in the long boat including Jacobsz and they managed to rescue some water and barrels of biscuits. About 40 drowned when Batavia broke apart completely.

Pelsaert and Jacobsz set aside their differences and were looking for drinkable water. Many discussions were held and they decided to look for water in the islands and to sail to Batavia should the water not found in the islands. Pelsaert then had to take a tough and desperate decision to sail on the long boat with 48 crew to Batavia, Indonesia as the provisions left was not sufficient to last long given the number of mouths to feed. Jacobsz too joined the voyage to Batavia which took 33 days with over 1600 miles. Batavia's boatswain was executed on arrival Batavia on Pelsaert's indictment on charges of outrages behaviour prior to the

grounding of the ship not confirmed though the offence related to sexual assault of Lucretia. Jacobszto despite his contribution in sailing to Batavia in the long boat was arrested for negligence on for grounding Batavia upon arrival in Batavia. Pelsaert had to wait another week to get yacht the Sardam ready so that Pelsaert could embark on a rescue voyage.

Cornelisz managed to survive the breaking and sinking of Batavia and made ashore in shallow corals. Helplessness of survivors in the islands created an opportunity for the criminal minded Cornelisz to convince a group of about 40 men for wrong doings to come on board with his plans. His intention was to seize any rescue ship that might arrive from Batavia failing which to spend his life seeking sensual pleasures. Cornelisz arrived at the conclusion that it is imperative to eliminate all remaining survivors to put a stop to any opposition to his plans.

The Massacre

Cornelisz tricked a party about 45, cabin boys, men and women into believing the water could be found in Seals Island and the group found no water upon landing and Cornelisz was certain they would not survive. He then instructed a group of soldiers under the command of Wiebbe Hayes to explore highlands over the horizon for water however confiscating their weapons prior to leaving on the mission. Hayes was asked to set a smoke signal should they find water. Cornelisz did not expect them to return either. Next mission was to take good many people by boats and then pushing them overboard by his accomplices. They all drowned. Now having eliminated much of the potential opposition his next plan was to murder remaining survivors including women and children though sparing a few of the women for obvious reasons. Lucretia Janz too was included in the group for surviving and Cornelisz claimed Lucretia for himself. Cornelisz found out later that the group sent to Seals Island had survived longer than expected sent some of his accomplices to finish them off. A smoke signal was received from highlands, meaning they had found water and had a means of survival, detrimental to his plans. Cornelisz then sent another group to highlands persuade Hayes to join Cornelisz. This request was declined. Angered by not being able to persuade Hayes group and sensing the looming risk Cornelisz took the task of eliminating Hayes himself. However, the result was entirely different as Cornelisz was overpowered and tied up when his gruesome reign came to an end, was held a prisoner. The preacher Gijsbert Bastiaenz witnessed all the atrocities without having courage or the power to intervene to put a stop. The preacher himself lost his wife and all his children in the massacre. He noted all these events in a letter which supposedly exists even today. Later the rescue ship Sardam was seen on the horizon.

Sardam the rescue vessel wasted lot of days trying to locate the wreck site as Batavia had already sunk. Pelsaert upon hearing what Wiebbe Hayes had to say upon arriving the islands, couldn't believe what happened, said he was holding Cornelisz a prisoner. Pelsaert captured rest of the mutineers when they tried to board Sardam. Mutineers offered no further resistance and laid down their weapons. Pelsaert could piece together what exactly happened and committed in his absence upon interrogating the mutineers. Cornelisz blamed everyone but himself for the massacres and crimes.

- Murder of many Batavia's survivors
- Rape of women
- Looting of VOC property and private valuables belonging to passengers and crew

Punishment

Cornelisz's both hands were chopped off prior to hanging until death whereas other mutineers with the exception of a few had one of their hands cut off before sending to gallows, especially set up in Seal Island for the execution. Few with lesser offences were taken to Batavia and two were marooned in the Beacon island left for themselves to survive, perhaps the Europeans live in New Holland.

It is interesting to note, only 10 could be rescued out of 12 boxes of treasure on Batavia. Coen VOC Governor General at the time was appointed very young for the role, was extremely business smart changed the course of VOC. He was also an extremely ruthless administrator both in business treaties and handling personnel. All these attributes for an extra Guilder.

There were only 116 Batavia survivors counted after the executions means more than two third had perished. Pelsaert passed away a penniless man within a couple of years post the event whilst Governor General Coen did not last long either! Fate of Jacobsz not known after he was arrested in Batavia. Batavia mutiny is the bloodiest mutiny of all time.

Note:

Interested readers are encouraged to visit <http://captainsstories.com> where numerous articles by Capt. Chandra Godakanda Arachchi can be found.