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Performance, Outcomes and Results
The MET Network with NGO Observer Status at IMO

GlobalMET NEWSLETTER

Cadets of the GlobalMET member "Bangladesh Marine Academy" taking the oath

To promote, develop and support in the spirit of cooperation, the common interests of its members in all matters concerning the development and quality of maritime education and training.

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Inside this Issue

In Memoriam

Dear Members,

It is with complete shock and disbelief that we received the news of the sudden demise of the Executive Secretary (GlobalMET), Captain Richard Teo (Dr Hon), on 13th November 2021.

Richard was associated with GlobalMET for most of the organisation's life and undertook various activities for its members. He spoke very highly of GlobalMET and was proud to be Board Member. He will be greatly missed both here and internationally within the maritime and political spheres.

Subsequent to the announcement, we received many messages from members and colleagues. These are reproduced below.

Remembering Richard...

It is with great sadness that I received news of the demise of Capt. Richard Teo.

Richard was a good friend and a treasured colleague. During our association of more than two decades, there was much that I learnt from him, especially in the fields of governance, rules and responsibilities of directors. I liked his attention to detail in processes and he had an eye to pick out what none of us had noticed. His articles in the newsletters were read by us with much relish.

Richard had the unique ability of being able to address the regulatory aspects of maritime education and training activities and initiatives of GlobalMET in a practical manner. He led many workshops this regard. His presence at the GlobalMET meetings always had a calming effect.

He will be sorely missed by all of us.

On behalf of the GlobalMET family, I offer our sincere condolences to his family.

Capt. Pradeep Chawla
Managing Director - Group QHSE and Training,
Anglo Eastern Ship Management, Hong Kong,
Chairman, GlobalMET.

This is truly a sad and shocking news. Richard has been a credible, amiable fellow worker and a true friend. We have known each other for over 20 years. We shared a common background and I had very close ties with the Republic of Singapore Navy when I was still in the active service.

He was always very helpful and unselfish with his vast experience, expertise and valuable insights. In fact, in his last email to me only 20 days ago, he even gave some pointers on AMSA's Practical Assessment for Onboard Training. He was always physically present in Manila in all major international maritime meetings/activities.

He will sorely be missed. We fervently pray for his eternal rest. Our thoughts and prayers are with his family and close friends in this time of bereavement.

You have ran the race, you have kept the faith. I salute you, Capt Richard Teo!

VADM Ed Santos, AFP (Ret.)
President, Maritime academy of Asia and the Pacific, Philippines
Director, GlobalMET; President, The Nautical Institute (Philippine chapter).

I am truly sad to hear this news. May his soul rest in peace. Richard was a very nice and empathetic person.

My condolence to the family.

Swapan Das Sarma
President, American Digital University.

My first recollection of Richard Teo was shortly after I moved from New Zealand to Singapore as Head of Nautical Studies at the Singapore Polytechnic in 1978. We were blessed with a new Advisory Board with Richard as a member. I recall him as a young and active member. We were friends for a long time including after I went to Australia in 1990 and then returned to NZ.

When we set up AMETIAP in Hong Kong in 1996 Richard was appointed to the Board. By this time Richard had moved to Australia, was living in Tasmania but spending a lot of time in Darwin. We changed the name to GlobalMET 10 years later and Richard was again appointed a Director. We attended conferences and meetings in several countries in Asia and Australasia.

I last saw Richard Teo at a meeting in Manila in 2018. I was still full of admiration for his skills and dedication. May he rest in peace.

Capt. Rod Short
Founding member – AMETIAP,
Former Executive Secretary – GlobalMET.

I am deeply saddened by the obituary of Captain Teo.

Please accept my sincere deepest condolences.

I would like to express my deepest condolences to the family.

Capt. Yoshiaki Kunieda Ph.D.
Faculty of Marine Technology, Tokyo University of Marine Science and Technology (TUMSAT), Tokyo, Japan,
Director, GlobalMET.

I can only echo the many sentiments. I was so saddened to hear this news. Richard has been a colleague, friend and mentor. I am grateful I had the opportunity to know Richard even if only for a few years.

Vale, Richard

Jillian Carson-Jackson, M.Ed., FNI, FRIN
Managing Director, JCJ Consulting, Australia
President, The Nautical Institute (Australia chapter).

I am saddened by this sudden news. Richard taught me from day one of my becoming part of GlobalMET. Will miss him.

May God rest his soul in peace and give strength to the family.

Jagmeet Makkar
Director, SkillsPlus pte ltd
Chairman (Hong Kong branch), Institute of Chartered Shipbrokers.

I am very sorry to hear the news. Our deepest condolences to all Richard's friends and family and of course all of you at GlobalMet

Raal Harris
Group Creative Director, Ocean Technologies Group.

We are saddened to hear of the sudden passing of Capt Richard Teo.

Our deepest condolences to Capt Teo's family.

Capt Mohd Salleh A Sarwan
Director, Singapore Polytechnic.

Totally shocked by this sad news. Richard and I worked together on a number of occasions- most notably for a couple of weeks at MAAP. Richard had a lively mind and we complemented each other very well in the classroom. I look back to those times with great fondness.

Please convey my condolences to his family.

Chris Haughton
Haughton Maritime, Lancashire, United Kingdom.

Saddened with the sudden demise of Captain Richard Teo (Dr Hon). Our sincere condolences to the family.

It was an honor & a privilege to have been associated with him for almost 16 years.

He was very methodical/meticulous in his approach and believed in following the Best Practices.

He will be greatly missed and fondly remembered.

Sanjay Kumar Bugnait & Shilpa Bugnait
Director, Core Competency Marine Training Pvt. Ltd., Gurugram, Haryana, India.

Saddened by the demise of Capt. Dr. Richard Teo. My sincerest condolences to Richard's family at this time.

I have known Richard personally for the last ten years and have interacted with him on many projects.

His contribution to GlobalMET's work was immense.

He was a great educationist and advocated OBE (Outcome-Based Education) and CBETA (Competence Based Education and Training and Assessment) which is the need of the hour.

He will be greatly missed.

Capt. Vinayak Mohla
Head- Cadet Recruitment and Competency Management,
Anglo-Eastern Ship Management.

Very sad and painful, but comforted with the thought that Richard is happy and smiling with God in Heaven. I have known Richard for 16 years and he is one of the maritime leaders who I admire and respect. He has been my mentor, my adviser, co-facilitator in workshops and my true friend. He will be missed, especially his kindness. Richard is one of my expert friends that I always consult whenever I have projects or activities because he is helpful and never runs out of bright ideas. True to his name, he was a powerful Leader (Richard) with a heart, and a gift of God (Teo). Professionally, I am one of his many friends in the maritime industry that have been enriched by interacting with him.

Richard has left behind a legacy of leadership, kindness, and generosity, which I shall always remember and forever be grateful for, in my lifetime. My condolences and prayers to the family, friends and loved ones who are left behind.

Dr. Angelica M Baylon, AFNI
External Relation Director, MAAP Philippines.

Please offer our sincere condolences to Captain Teo's family. The GlobalMET family will greatly miss him as well.

Captain Kees Buckens, CMMar, FNI, MBA
Industry Engagement and Simulator Training Manager,
New Zealand Maritime School, Auckland, New Zealand.

Staff at the Australian Maritime College (AMC) were saddened to learn of the passing of their friend and colleague Capt Richard Teo. Richard had a long association with AMC in a number of roles. As the former principal of Papua New Guinea Maritime College, Richard initiated a number of collaborative proposals to benefit seafarers' training in the region. During GlobalMET's existence as an Australian entity, Richard liaised closely with staff at AMC for administrative tasks. Many staff and students remember him fondly for his engaging and insightful teaching as a visiting lecturer. Through his passing, the MET community has lost a leading figure who championed change through the power of learning.

Prashant Bhaskar
Associate Professor, Maritime and Logistics Management, National Centre for Ports & Shipping, Australian Maritime College, Tasmania, Australia.

Please convey my heartfelt condolences to Bing Teo and the bereaved family members.

May God give them the strength to bear the loss.

Capt. Keith Miranda
Marine consultant.

We are saddened to hear of the sudden passing of Capt Richard Teo.

Our deepest condolences to Capt Teo's family.

Capt Mohd Salleh A Sarwan
Director, Singapore Polytechnic.

My first interaction with late Capt. Richard Teo was during a LinkedIn group discussion on possible shortcomings in the International Rules for Preventing Collisions and how the Rules may be improved to bring about easier understanding and application.

Later I had the pleasure of meeting him in Manila in 2015 when he was present in two events and graced the former when my book on preventing collisions was released in the Philippines.

I remember him as a very articulate and down to earth person, full of knowledge and varied experiences, both in the Navy, Merchant Navy and dedicated to training and education in the latter part of his long career.

He will be missed by all who have known or interacted with him.

I pray for his soul and share my deepest condolences.

Capt. Yashwant Chhabra
Senior QHSE Superintendent, Anglo Eastern Ship Management (Hong Kong).
Ex Training Manager - MSI (Singapore). Ex Training Manager, Wallem training center (Mumbai).
Author: *A mariner's guide to preventing collisions and A mariner's guide to navigational watches.*

It is with regret to hear the passing of Executive Secretary (GlobalMET), Captain Richard Teo.

The Kiribati Marine Training Center is a committed and long member of the Global MET.

Our heart and prayers go out to the family. We are truly sorry to hear of the loss of Captain Richard Teo. Please accept our condolences and may our prayers help comfort the family and hasten the journey of his soul to Heaven.

The Deputy Captain Superintendent
Kiribati Marine Training Center.

I first met Capt. Teo about 15 years ago, however it was only recently during the last one year that we began to work more closely with each other.

There was much that I learnt from him during this period. In fact, we had exchanged emails just a few weeks back, while discussing and finalizing the contents of the organization's website and newsletter.

This news has come like a sudden bolt.

We will all miss him.

Capt. Sriram Rajagopal
Senior QHSE and Training Superintendent, Anglo Eastern Ship Management
Head of outreach activities, GlobalMET.

IMO Update: Marine Environmental Protection Committee - MEPC 77 (Nov 2021)

The 77th session of IMO's MEPC was held remotely from 22nd to 26th Nov 2021. GlobalMET, represented by Capt. Vinayak Mohla and Capt. Sriram Rajagopal attended the meeting. The following sums up important aspects of the proceedings that may be of interest to members:

IMO strategy on GHG emissions

There was no consensus for zero emissions in 2050 (Initial IMO targets were to reduce GHG emissions by 50% by 2050). However, there was an agreement to initiate the revision of the initial IMO GHG strategy and the updated strategy is likely to be finalized at MEPC 80 (spring of 2023).

EEDI Update- Wind Propulsion

MEPC approved MEPC.1/Circular 896 providing updated guidance to the application of EEDI and EEXI methodologies to innovative energy efficiency technologies. This circular replaces MEPC.1/Circular 815 and is mainly relevant to ships equipped with wind assisted propulsion systems.

Revised Guidance on Indication of Ongoing EGCS Compliance in the case of Failure of a Single Monitoring Instrument

MEPC 77 approved a revision to MEPC.1/Circular 883 on Guidance on indication of ongoing compliance in the case of the failure of a single monitoring instrument. Additionally, guidance was added regarding the exceptional need to use non-compliant fuel oil in the event of EGCS failure to safely complete a ship's intended voyage which is to be done in consultation with the relevant flag and coastal state authorities.

Protecting the Arctic from Black Carbon Emissions

Resolution MEPC 342 (77) was adopted on protecting the Arctic from Black Carbon emissions from shipping. It encourages member states and ship operators to voluntarily use distillate or other cleaner alternative fuels or methods of propulsion that are safe and could contribute to the reduction of Black Carbon emissions from ships when operating in or near the Arctic.

Unified Interpretations of BWM Convention Regulations E-1.1.1 and E-1.1.5

MEPC 77 approved BWM. 2/Circular 76. The timing for mandatory implementation of the commissioning testing should be based on the actual completion date of the applicable surveys following the installation of BWMS. The commissioning test should be regarded as mandatory for relevant surveys completed after 01 June 2022 and remains optional or at the discretion of administration for relevant surveys completed before 01 June 2022.

2021 Guidelines for Exhaust Gas Cleaning Systems

Resolution MEPC 340 (77) was adopted which supersedes 2015 guidelines [MEPC 259 (68)]. This would be applicable to systems installed on/after 26 May 2022. Systems approved under 2015 guidelines and installed before 26 May 2022 will not require re-approval. The guidelines are updated to clarify several parameters, provide consistent technology, and enhance uniform application.

IMO strategy to address Marine Plastic Litter

Resolution MEPC 341 (77) was adopted to address marine plastic litter from ships. The main aim is to reduce marine plastic litter generated from and retrieved by fishing vessels and improvement of the effectiveness of port reception and facilities and treatment in reducing marine plastic. Short term actions include making a Garbage Management Plan/Garbage Record Book mandatory for ships of 100 GT and above. Mid- and long-term actions would be dependent on IMO Study on Marine Plastic Litter.

International Maritime Research Board (IMRB)

The committee considered proposals regarding establishment of IMRB for the purpose of advancing research and development of GHG reduction technologies. However, there were divergent views. No decision was made at MEPC 77 and this matter will be addressed further at the Intersessional Working Group on GHG Reduction (ISWG- GHG).

BWM Convention: Ships Operating at Ports with Challenging Water Quality

MEPC recognized situations where port water quality is not conducive to successful ballast water treatment due to system design limitations. This will be further discussed at MEPC 78.

BWM System Approvals

Final approval granted to

- JFE Ballast Ace®
- HiBallast NF®

About the author

Capt. Vinayak Mohla started his sea career in 1992 as a deck cadet and gradually rose to the rank of a Master. He stepped ashore in 2008 and is presently working with Anglo-Eastern Ship Management as "Head- Cadet Recruitment & Competency Management". He has been the Review Group co-ordinator for several IMO model courses (2017-2021) and chaired the Drafting Group 1 at IMO, London in 2018 (HTW 5).

By **Capt. Vinayak Mohla**
GlobalMET delegate to MEPC 77

Sea is the Future

This article is an abridged version of a keynote address by the author on the occasion of World Maritime Day 2021 celebrations in Bangladesh on 30 September 2021.

1. Introduction

"Seafarers: at the core of shipping's future" is the theme of this years world maritime day. The theme mirrors a clear necessity to raise awareness of the vital role that seafarers play in world trade and to highlight their prominence. Seafarers have always been at the heart of everything IMO does. Observing the World Maritime Day gives us an opportunity to focus on the importance of safety, maritime security, the marine environment and links to the UN Sustainable Development Goals (SDGs). The recent and ongoing COVID-19 pandemic has demonstrated the importance and dependence of global supply chains on the safe and efficient operation of maritime transport and on the professionalism and dedication of seafarers.

1.1 IMO, UN and seafarers as 'key-workers'

In his message for the day, the present IMO Secretary General, Kitack Lim said, "Through these difficult times, the international community has seen how the ability for shipping services and seafarers to deliver vital goods, including medical supplies and food, has been central to responding to, and eventually overcoming, this pandemic. A first step would be for all countries to designate seafarers as key-workers, as outlined in the United Nations General Assembly Resolution adopted in December. To date, just over 50 IMO Member States have done so. I strongly urge Governments to designate seafarers as key-workers." Echoing a similar sentiment, the UN Secretary General, António Guterres has said, "I renew my appeal to Governments to address their plight by formally designating seafarers and other marine personnel as "key-workers", ensuring safe crew changes, implementing established protocols, and allowing stranded seafarers to be repatriated and others to join ships."

2. Seafaring and its importance

In my opinion, seafarers play a role in almost everything that occurs on this earth today. We could say that the construction of bridges, sky scrapers and infrastructure, generation of electricity in our homes, availability of goods in stores and online, availability of petrol and diesel oil in gas stations, availability of gas in our kitchens, all are made possible by the nearly 1.89 million seafarers – marine officers, marine engineers and marine ratings who make their movement possible. They work day and night, on a 24 hour basis, 7 days a week, for anywhere from four to eleven months, moving nearly 11 billion tons of cargo (commodities, fuel, foodstuffs, goods and products) every year on over 74,000 merchant ships, from country to country, thus ensuring the well-being of 7.8 billion humans beings.

Unfortunately, they are simply not on the radar of most of these 7.8 billion people. They are still invisible to most of the world. Just imagine that there is no shipping! The entire world would come to a halt, a sentiment that was echoed by the Hon'ble Prime Minister of Bangladesh Sheikh Hasina in her speech at the graduation parade of our academy on 25 February 2021.

2.1 Seafaring for the Blue Economy

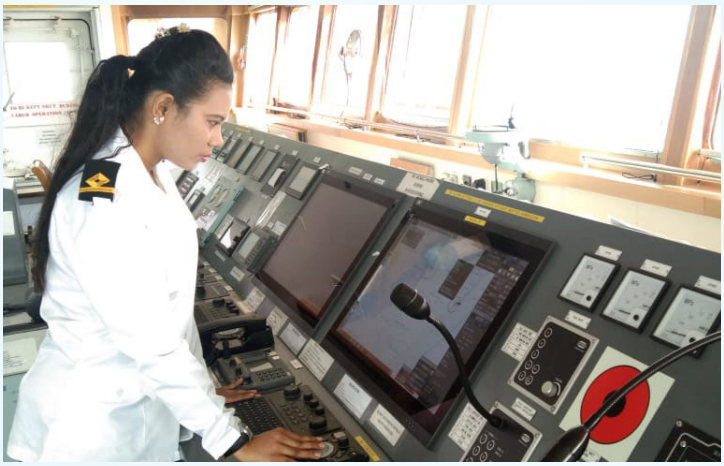
Highly skilled, trained and educated seafarers are the driving force for developing a blue economy. They, along with their counterparts ashore, namely marine scientists, offshore engineers, fishery technologists and biotechnologists are needed for blue economic growth. As per the latest UNCTAD Review of maritime transport, the current global fleet (>100 GT) has already increased to about 95,000 ships. This is expected to expand still further, and an estimated additional 600,000 seafarers will be required to man them. In this 21st century, with the rise of various newer sci-tech based professional pathway options, recruitment and retention of seafarers is both a challenge and an opportunity.

3. Shipping as an amazing industry and a smart choice for the new generation

Educated and skilled seafarers are needed to operate and maintain ocean-going ships in international waters. Education and work take place simultaneously on ships, learning, work and earning take place simultaneously on board. Since ships move continuously, seafarers stay on board for months on end. An ocean-going ship is like an independent floating city, with its own navigational equipment, propulsion machinery and services, namely electricity, drinking water generation, fire-fighting, emergency, health, food, living and sanitation.

3.1 Challenging Seafaring

Seafaring has always been a dangerous and hard yet attractive profession. It contains professional pressures and risks. At the end of a lengthy and stressful day, there is no home or family to go and talk to; no pleasant evening gossiping with



friends at home or at restaurants; no social life; no variations of surroundings; no relaxation or way to de-stress – just the persistent murmur of the engine & waves and the movement of the ship. It is a floating lonely home-cum-workplace for the seafarers who work on it– 24 hours a day, 7 days a week, 30 days a month and 365 days a year! Additionally, seafarers always face the possibility of encountering rough seas, gale force winds and sometimes, storms.

3.2 Joyful Seafaring

On the other, many find seafaring charming and see it as a smart life-style in the blue-world! Modern shipping is highly regulated for ensuring 'safe, secure and environment-friendly' operations by the IMO. Every few days, seafarers enter a new timezone! Every port, they meet people from different nationalities! Earning while learning! It is a salty salary which is rather huge and compensating! Communication with friends and families is possible on some ships through phone, email and video chat! The top four are allowed to bring and sail with their wives and children on board. It allows leadership positions while a person is still young! It is normal to reach the top of their career in 10-15 years, namely to become a Master Mariner/Captain or Marine Chief Engineer! Mobility ashore has improved as compared to earlier times.

3.3 Bangladesh and the Merchant Marine

Working in the merchant navy comes with its challenges. Living a lonely life, working on floating hulks of steel for months, away from one's family and friends is not an easy task. It needs a high level of skills and competence in terms of academic, professional and mental strength. Much like the merchant marine in every country, the Bangladesh merchant marine too try their best to follow a strategy for developing world-class cadets and mariners for national and international ocean-going merchant ships through degree programs like the Bachelor/Master of Maritime Science degree and through professional marine certificates of competence (CoC). Bangladeshi mariners are, in my opinion, playing a remarkable role in seafaring and in shore-based marine management and shipping.

4. Conclusion

Seafaring is an international engagement that contains continuous challenges. It also presents opportunities to all of us, even more so in developing nations. As long as new joiners have the right attitude, professionalism and patience, they can lay stake to a fair share in the world of oceans. Although Bangladesh, where I am from, has a centuries-old heritage of seafaring, we have merely a tiny presence today in the world maritime manpower map – 16 thousand among 1.89 millions world-wide. We may be very small in number but are not small in our excellence. Seafarers tend to be a large family, and often nationalities do not matter much. Every seafarer goes through the same problems and challenges, the same ups and downs of professional life. We need to have spontaneous combination of professional skill and academic excellence.

Sources

- Seafarer Workforce Report 2021: BIMCO & International Chamber of Shipping
- International Maritime Organization website
- International Shipping Federation website (http://www.marisec.org/shippingfacts)
- World Maritime University website
- International Maritime Rescue Federation website
- Bangladesh for shared maritime prosperity 2021: Department of Shipping, Bangladesh
- Mission to Seafarers website

About the Author

Sajid Hussain has been associated with Bangladesh Marine Academy since 1993 and has been its Commandant since 2009. He was a minor freedom fighter in Sector-7 at his age of 12. He is an IMO Goodwill Maritime Ambassador, a Governor at World Maritime University (Sweden), a Trustee, Fellow, Council Member and Recognized Speaker of IMarEST (London), a Chartered Marine Engineer of the UK Engineering Council, a maritime expert at the IMO, and a member of the senate, syndicate and council of the Bangabandhu Sheikh Mujibur Rahman Maritime University, Bangladesh.

He was Chief Cadet Captain during his Cadetship in Bangladesh Marine Academy in 1980; sailed in BSC ships as Cadet to Chief Engineer during 1980 to 1993; possesses a CoC Class ONE Marine Engineer from UK, MSc in Maritime Safety (Marine Engineering) from World Maritime University, (Sweden) and awarded with a DSc in Maritime Education (Honoris Causa). He received the "Outstanding Contribution to Marine Education Award 2019" from IMarEST and has authored 23 books, 30 research papers and over 250 features. He initiated the establishing the "Bangabandhu Sheikh Mujibur Rahman Maritime University, Bangladesh" based on his thesis 'A proposal for establishment of a Maritime University in Bangladesh'.

By **Dr. Sajid Hussain**
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Commandant, Bangladesh Marine Academy
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Problem-based Learning Approach to Maritime Education and Training

An abridged version of this paper appeared in GlobalMET Newsletter 76 (November 2021). On popular demand, we herewith present the full paper with permission from the author. This paper was originally presented by the author at the International Conference of Shipbuilding and Offshore Engineering (ICSOE) 24-25 June 2021 and appeared in the proceedings to the same.

1. Introduction

It is no longer a surprise for maritime trainers to see their academically brilliant student coming back with mediocre reports from their superiors, while some average students earn a reputation of being trustworthy professionals. For a teacher, it gives a feeling of twofold failure: failing to train that bright student in the skills s/he would need at sea, and failing to see the makings of a professional in that unassuming student he often ignored. Is this the failure of the individual teacher/trainer or the roots of this paradox go deeper than that? To answer this question, a few more questions need to be asked and that will show us the way.

- Did the teacher decide which topics should be taught in the classroom? (No).
- Did the teacher decide how the topic should be taught? (No)
- Did the teacher have adequate experience in the subject being taught? (Yes)
- Did the teacher undergo adequate training in teaching and assessment? (No)

In an ideal world the answers to all these questions should have been "Yes".

A majority of maritime trainers have extensive sailing experience and hence have a good understanding of what knowledge and skills are needed at sea, and what is superfluous; however their knowledge about the process of learning is limited. In India, a typical maritime trainer receives two weeks of instructions by way of a "Trainer and Assessor" course, which is far from sufficient for making a sailor into a teacher. This paper examines the feasibility of application of 'Problem-based Learning' to maritime teaching/training; and the subsequent discussion is on maritime training and assessment.

1.1 The Industry, its Product and the Clients

If "Maritime Training" is to be considered an industry by itself, its product is the trained seafarer and client is the ship-owner who employees the seafarer. The typical Indian seafarer is viewed by the foreign ship-owners as 'possessing good scholastic abilities and sound theoretical knowledge'. This is no surprise, having been chosen mostly on the basis of academic performance. The downside is the attitude: 'dishonest, resentful of authority and unwilling to work with own hands'. We, as their trainers and mentors, must not contest this perception, nor can we afford to ignore it; if that is going to decide the employability of the Indian youth in a highly competitive international job market. This feeling is akin to the "Sputnik Shock" felt in 1957 by the American educationists and policy-makers when the U.S.S.R. won the space race and launched the first satellite. As a result of this incident, America was made to realize that it was lagging behind the Soviet Union in preparing scientists, and also citizens from whom future intellectual leaders would emerge. The blame was largely placed on the inadequate educational principles and practice. The shock felt by the Maritime Training Industry of India, as a major supplier of seafaring manpower, may not be as loud and jarring, but is certainly very perceptible. The "Problem" here is "What makes a professional seafarer?" If the training of the seafarer begins with this end in mind, we will find ourselves on the right path.

1.2 The Evil of Rote-learning

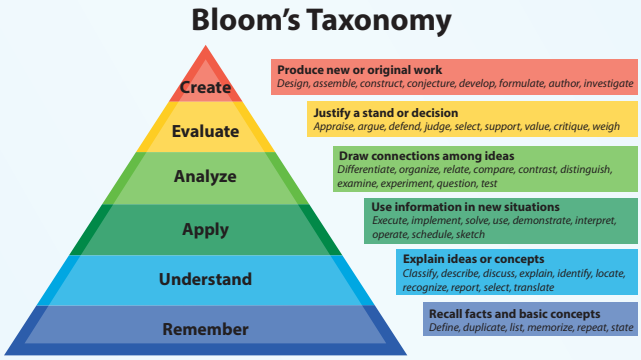
Much as we may want to deny it, our education system has not risen above rote-learning. For a majority of teachers and students, the ability to reproduce the text from 'the' text book is the ultimate aim of education. 'Facts' learnt this way may remain with the learner but are not applied in real-life situation. A very common example of this phenomenon is, a navigating officer who knows the rule of the road by heart, takes an action based on 'gut feeling' and ends up in a collision; or an engineer who overhauls a sophisticated piece of machinery, not by reading the manual but on the basis of 'past experience of similar stuff', and destroys it.

"Some of the most brilliant, creative people I know did not do well at school. Many of them didn't really discover what they could do—and who they really were—until they'd left school and recovered from their education." – Sir Ken Robinson, eminent educationist, thinker.

During incident investigation both will exhibit their familiarity with the underpinning knowledge, but what is missing is the attitude. Such incidents are typically followed by questioning the trainers about the training being imparted, scrutiny of the training material and some changes, often of the knee-jerk kind, are made. The cycle goes on. What is missed out is the gap between knowledge and its application.

1.3 Bloom and the levels of learning

Benjamin Bloom professed six levels of learning. In that hierarchy, knowledge (read 'remembering facts') is at the lowest level. For a professional to perform effectively, s/he has to ascend at least two more rungs of this proverbial ladder and those are 'Comprehension' (understanding) and 'Application' (using). To achieve this, the teaching methodology as well as the assessment system has to undergo a sea-change.



2. Problem-based Learning

Stephen Covey, in his famous book 'Seven Habits of Highly Effective People', has observed that to 'Begin with the end in mind' is one of such habit. Known to the engineering fraternity as 'Reverse Engineering', this technique starts with the end product (an efficient marine professional) in mind.

In Problem-based Learning, "Students work in collaborative groups to identify what they need to learn in order to solve a problem. They engage in self-directed learning (SDL) and then apply their new knowledge to the problem and reflect on what they learned and the effectiveness of the strategies employed. The teacher acts to facilitate the learning process rather than to provide knowledge." Hmelo-Silver, Cindy. (2004). Problem-Based Learning: What and How Do Students Learn?. Educational Psychology Review.

2.1 Applications of PBL in fields other than maritime education:

Medicine

"Implementation of problem based learning requires fundamental changes in the way educators conceive, design, deliver, and assess the curriculum. Despite the cost and resource implications, problem based learning has been introduced to varying degrees throughout the world—for example, it is used in most medical schools in the United States and many new medical schools in developing countries". Wood, Diana F. (2008) "Problem based learning." BMJ (Clinical research ed.)

Management

"The results indicate that the PBL teaching strategy has positive implications for student learning in that it promotes the integration of theory and practice, which enhances the motivation to learn. The students perceived the practical aspect, teamwork and presence of an entrepreneur/manager in the PBL classes as factors facilitating learning. By contrast, teamwork and the time involved were seen as factors limiting learning". Silva A.B.D. et al (2018), "Problem-based learning: A proposal for structuring PBL and its implications for learning among students in an undergraduate management degree program",

The Vigyan- Ashram Experiment

Vigyan Ashram is a center of Indian Institute of Education (IIE) Pune. A scientist turned educationalist Late Dr S.S. Kalbag started Vigyan Ashram (Website http://vigyanashram.com/) in 1983 to find a solution to the problems in education. Vigyan Ashram is working on the above philosophy named as 'Rural Development through Education System (RDES)' spelled out by Dr Kalbag, taking inspiration from Mahatma Gandhi's 'Nayi Talim' system of education. Various appropriate Technologies developed are disseminated through education program. Students learn by 'Learning while doing' methodology and while doing so they provide services to community at modest cost. This gives students experience and confidence to start their own enterprises. Appropriate technologies are disseminated through these rural enterprises. Education based on 'Learning while doing' philosophy gives meaningful education to students and helps to develop scientific temper and work culture in them.

Ken Robinson observed, "We have to go from what is essentially an industrial model of education, a manufacturing model, which is based on linearity and conformity and batching people. We have to move to a model that is based more on principles of agriculture. We have to recognize that human flourishing is not a mechanical process–it's an organic process. And you cannot predict the outcome of human development. All you can do, like a farmer, is create the conditions under which they will begin to flourish."

Unfortunately, maritime education and training has a strong element of 'regimental thinking'. The syllabi are often reactive, having been shaped by accidents, rather than being designed proactively by foreseeing the future. Further, those who design these syllabi are far removed in time and space from the trainees. Although their professional knowledge is beyond questioning, their understanding of matters related to education and the learning process leaves much to be desired.

3. Experiments in application of PBL to Maritime Education

What if the student begins learning at the highest level, to create?

Example 1 Ship Construction

Problem: A ship suffered heavy-weather damage to the shell plating in the fore-peak region. What constructional features could have prevented this damage?

To solve the above problem, the team of learners will have to first find out about the structure of the ship's fore part, what stresses it is exposed to and how to strengthen it. It is not necessary that every team will eventually rediscover the "only correct answer that is panting beams". There is every possibility that each team will come up with some innovative ideas. Even if nine out of ten solutions may not be feasible, this process itself will take the students through the various levels of learning and help them build a robust base of underpinning knowledge. This discussion will pose the right opportunity for introducing the concept of 'Section Modulus' and how to enhance it by utilizing various design features.

Example 2: Ship-handling (Simulator-based exercise)

Task: To maneuver the given ship to the designated anchoring position through vessels anchored in shallow water, in strong current.

Here, the students are required to study the maneuvering characteristic of the ship, to appreciate the set and drift of the prevailing current, influence of shallow water effect and anticipate the ship's response to it, rather than following a 'cast-in-stone' kind of procedure dictated by the trainer. The trainee is allowed to discuss and plan the task with team-mates, make mistakes, weigh pros and cons, understand the principles involved, and then come upon a safe and repeatable maneuver. This is Self-Directed Learning.

3.1 The assessment process, its validity and reliability

The teacher's intrigue of 'Why my bright student did not do well at sea?" can be answered here. The fault lies neither with the teacher, nor the student, it lies with the assessment system. A valid and reliable assessment system is as important as high quality training. It gives feedback to the teacher whether or not the student is on the right track and if any correction is necessary to stay on track.

3.2 The efforts a teacher needs to put in

The two week course in teaching and assessment methodologies is just a short introduction to what is expected of a teacher; it certainly is not a one-time solution. The teacher needs to "Sharpen the Saw (Covey)" regularly to be effective. Maritime teachers and trainers are seen taking pride in staying abreast of the latest technological advancement and commercial developments, but not enough is done by way of honing one's skill as a teacher. Introspection and enhancement of teaching skills must be an ongoing process.

3.3 Autonomy of a Training Institute and relevance of ranking system

Competitive spirit is not always conducive to efficient functioning of a marine professional. Developing a team-spirit is more productive. In a competition there is one winner and, although not said in as many words, the rest all are losers. This is

certainly not a desirable situation. Self-Directed Learning (SDL), aimed at developing high grade of professional skills including team-work, is a better alternative. The present day focus on percentage and competition between training institutes, trainers and other stake-holders attaching their prestige to these numbers, and a pat on the back by one rating authority or the other; everything needs to be questioned.

3.4 Assessment Systems

The lacunae in our current assessment systems include:

- Time restrains imposed on the assessment process (Is one 3 hour written examination sufficient to assess a student's performance over a whole term?).
- Subjective view resulting in poor inter-rater reliability and divergent assessments.
- Poor design of assessment scenarios. The environment does not closely resemble the real work situation due to designs which are 'stuck in time'.
- Loosely defined performance criteria which have not been reviewed over time.
- Assessor's personal biases.

4. The Need for a Valid and Reliable Assessment Framework

There is a need to develop a framework of assessment that:

- Comprises of competencies that are clearly defined and known to the students
- Focuses on observable behaviours
- Defines detailed observable rating criteria
- Is easy to implement
- Results in high inter-rater Reliability
- Helps the assessor identify training needs
- Has high degree of Validity

The bottom-line is that an assessment system should be valid (Actually assessing the competencies it claims to assess) and reliable (returning similar scores when rated by different assessors).

At this point it must be appreciated that an assessment process is not the ultimate goal to be achieved, but a step in a cyclic process of education. The assessment is not limited to assessing what knowledge the student has 'acquired', but of 'how well s/he is suited to become what s/he training to be. Thus, in addition to assessing the student's performance, the assessment process should give a valuable feedback about the effectiveness of training, the methodologies employed and point out the lacunae needing attention.

4.1 The Role of the Teacher

Having observed the shortcomings of the present day system of maritime education and assessment, it is evident that some major changes are necessary not only to the system but also to the teachers and trainers who are involved in its implementation. The current training imparted to the maritime trainers about education is grossly inadequate. A systematic regime for the maritime trainers is absolutely necessary and the most appropriate method may be problem-based, self-driven learning under expert tutelage.

5. Conclusion

The Indian maritime training community needs to perceive the diffused 'Sputnik Shock' about Indian seafarers and act proactively on it. We need to closely examine our curricula and teaching methodologies to ensure maximum relevance to the challenges of the seafaring profession. A systematic study needs to be jointly undertaken by experts in the fields of shipping and pedagogy, for this purpose. Case studies of nationalities other than the Commonwealth seafaring countries, implementing very different systems of maritime education will be helpful in understanding the bigger picture and changing our system for better. This process will be meaningful only when the maritime trainers get involved in the process of continuous introspection and upgradation of their pedagogic skills.

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"About the author" description of Capt. Suneel Sule from last month;'s newsletter - Page 5

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Speed input into an ARPA

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1. Introduction

In recent years, there has been an overemphasis on the idea that speed through water should be used in automatic plotting devices or the Automatic Radar Plotting Aid (ARPA) to determine risk of collision. This tendency has increased substantially over the last two decades or so – and it is, in my opinion, entirely incorrect. In this article, we will see why.

1.1 Collision between *Norwegian Dream* and *Ever Decent*

To my mind, the above started after the infamous collision between *Norwegian Dream* and *Ever Decent* in August 1999. The concluding remarks of the accident investigation report stated, among other things, that: 'Bridge watchkeepers should be reminded that the speed input for an anti-collision plot on radar/ARPA should always be speed through the water not speed over the ground.' Nowhere in the main report/analysis does it say that wrong speed input was a contributing failure point, or that there was an error in analyzing the aspect or the applicable situation. The OOW was using manual speed input based on estimated speed over the ground. The report claims that although this was not a significant factor in causing the collision, it was 'wrong in principle'. Likewise, it says that using the *true* vectors of approaching ships to determine the risk of a close quarters situation – as the OOW was doing – is 'correct in principle'.

Both remarks are, in my opinion, incorrect.

Differences in speed input do not change the predicted CPA/TCPA, and relative vectors should be the preferred method to determine risk of collision as they provide an instant answer. In addition to the recommendations in the investigation report, the Bahamas Maritime Authority released an information bulletin, BMA. B14-12/0, stating that course and speed through the water should be used for all anti-collision plotting. This has since been withdrawn, but may well have contributed to confusion over the issue. The Marshall Islands issued a similar marine safety advisory, (NO. 23-04' on 22 March 2004), which has also since been withdrawn.

2. Determining risk of collision

Rule 7 of Colregs states that risk of collision shall be deemed to exist 'if the compass bearing of an approaching vessel does not appreciably change'. Frequently missed but also applicable in clear weather is the following, from paragraph 43 of STCW Code A-VIII/2: 'The officer in charge of the navigational watch shall take frequent and accurate compass bearings of approaching ships as a means of early detection of risk of collision and shall bear in mind that such risk may sometimes exist even when an appreciable bearing change is evident, particularly when approaching a very large ship or a tow or when approaching a ship at close range.'

SOLAS requires that 'an automatic tracking aid, or other means, to plot automatically the range and bearing of other targets to determine collision risk', for all ships 500 gross tonnage and upwards, (Reg. 19, para. 2.5.5, Chapter V). Paragraph 2.8.1 expands this for ships of over 10,000 gross tonnage, to require 'an automatic radar plotting aid, or other means, to plot automatically the range and bearing of at least 20 other targets, connected to a device to indicate speed and distance through the water, to determine collision risks and simulate a trial maneuver.'

If speed and distance were critical for determining collision risk, then SOLAS should require this for all vessels and not just for those of 10,000 GT or more. As it is, SOLAS does not seem to indicate that this is a necessity. Despite this, however, para 2.8.1of SOLAS Reg. 19 is frequently quoted by inspectors and auditors when they find that speed through water has not been used during navigation, especially 'to determine collision risk', noting it as a deficiency.

3. How ARPA calculates risk

It is worth looking at how an ARPA or Automatic Tracking Aid (ATA) calculates risk of collision, and whether it needs the ship's course (or heading) and speed for the purpose. Even today, ARPA or equivalent plotting systems do little more than plot the relative bearing and range of a target, and then provide the predicted relative movement of the target. There is no need to use own ship's course/heading or speed for this calculation.

CPA from the radar/ARPA is almost always more accurate than the CPA from the AIS. The latter merely calculates the CPA between the GPS positions of the two AIS receivers or antennae (depending on the inputs of both ship's AIS transceivers). The ARPA on the other hand tells us the CPA between the actual ships. Yes, it too has some errors and limitations, but most of the time, the radar/ARPA CPA and TCPA are far more reliable and relevant for the OOW compared to the AIS CPA/TCPA. Some of the ARPA's errors can even make us err on the safer side.

The AIS does give us a quicker update of the heading of the other ship (as received from the other ship's gyro), especially when the other ship is altering course, and it's COG (as received from the AIS GPS). However, this AIS information has its own share of limitations including errors due to incorrect inputs from various reasons. These include signal loss and corruption due to wiring issues, loose wires and short circuits due to moisture damage. It can also confuse the OOW when the other ship's heading changes rapidly on both sides, for example due to the sea, swell and steering. In any case, the OOW is required to take action based on 'systematic means of observation', normally interpreted as a number of visual or radar bearings over 6-12 minutes, supported by other information from the ARPA. Not based on AIS CPA and TCPA.

4. Impact of the ISM code

The ISM Code requires that the SMS should take into account 'applicable codes, guidelines and standards recommended by the Organization, Administrations, classification societies and maritime industry organizations' (ISM Code 1.2.3.2)'. The latter implies that publications not just by flag states, but industrial bodies are incorporated.

4.1 Industry publications and guidance

While the two flag state guidelines referred to above have since been cancelled or withdrawn, the widely used Bridge Procedures Guide published by the International Chamber of

Shipping recommends that 'To determine the closest point of approach (CPA) of a target and to determine whether or not there is a risk of collision, radar requires an accurate input of own ship's heading and speed through the water', (4.11.4.1.) Similar remarks are made in 4.11.6, referring to 'heading and speed inputs'. This guidance, although misleading, features in the SMS of most companies and is the source of reference in various inspections.

On the other hand, the UK MCA's MGN 379, published in 2008 and updated in 2019, clearly and correctly states that any change in input of own ship's compass heading or speed will impact the accuracy of the true vectors. This will create a problem in determining the aspect between the vessels and thus ascertaining the applicable situation as per the Rules for preventing collisions. Paragraph 3.12 goes on to clearly emphasize that risk of collision is best determined by use of relative vectors. These remain independent of the mode a radar is in or any course/heading or speed inputs.

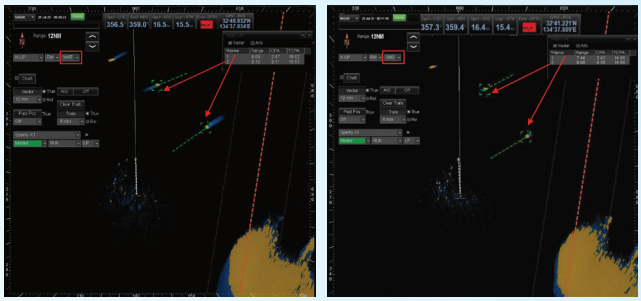
5. COLREGS and the radar

COLREGS prescribes the actions vessels are to take are based on the relative aspect of the vessels involved. Use of water stabilized mode on a radar/ARPA ensures the radar picture is the same as that seen visually from the bridge windows. This assists the watchkeeper in comparing the two scenarios – assuming that all vessels in the vicinity are experiencing similar drift patterns due to the prevailing winds and currents.

Even here, navigators should remain mindful that the impact of wind depends on the size and profile of a vessel's freeboard. However, if vessels in the vicinity are experiencing differing currents, which is quite likely in close coastal waters or when passing vessels at anchor or other stationary objects including buoys and beacons, then the use of speed through water or water stabilized mode (sometimes referred to as sea-stabilized) on an ARPA may not be advantageous. Wind and current do not affect stationary fixed targets in the same way – including vessels at anchor. In these scenarios it is highly recommended to use ground stabilization mode in an ARPA which also helps monitor the set and drift instantly. A glance at a tidal streams atlas will show that currents can be quite different even within a very small area.

A word of caution when switching between modes: ARPA systems have an inherent time lag in calculating predicted data, as they need a series of readings in order to conduct the analysis. It takes one minute to calculate a rough prediction and three minutes for an accurate reading, assuming no change in course and speed of the vessels involved. If your vessel and/or the target vessels change their course and/or speed during this process, the predictions will be in error due to the time lag.

An example is shown in the two radar picture screenshots below. Two targets were acquired on radar and were tracked using ARPA. Image 1 (Left) was taken with the ARPA on water stabilised mode and image 2 (Right) on ground stabilized mode. The ship's course and speed were more or less steady except for the usual variations experienced at sea in auto pilot mode.



ARPA displays on (Left) Water or Sea stabilized mode and (Right) Ground stabilized mode.
Source: 2nd Officer Ajay Poonia.

Analysis of the results shows that:

1. CPA and TCPA of both targets are the same irrespective of the mode selected for ARPA. The small marginal difference in the values is due to lapse of time in taking pictures after changing the stabilization modes.
2. In water stabilization mode, own ship's vector is along the heading line, whereas in ground stabilization mode own ship's vector is displaced from the heading line, showing the effect of current and external factors on vectors.
3. A similar effect can be noted for both targets.

The change in vectors will result in two different scenarios when seen on the PPI [Plan Position Indicator] or radar display as compared to what is seen visually. This difference will be more evident if there is a strong cross current and the two vessels are meeting head on. Vectors in water stabilization mode will match or correspond to the scenario being seen through the window, whereas vectors in ground stabilization may lead to confusion in assessing the situation in accordance with COLREGS Part B section II.

6. Conclusion

With a change in stabilization mode, the course and speed of a target vessel may appear to change. Crucially, however, the CPA/TCPA of targets will remain the same irrespective of which mode is selected, independent of any heading and/or speed inputs. In other words, the relative vectors of the target will not change – and it is these vectors which should be used to assess risk of collision.

About the author

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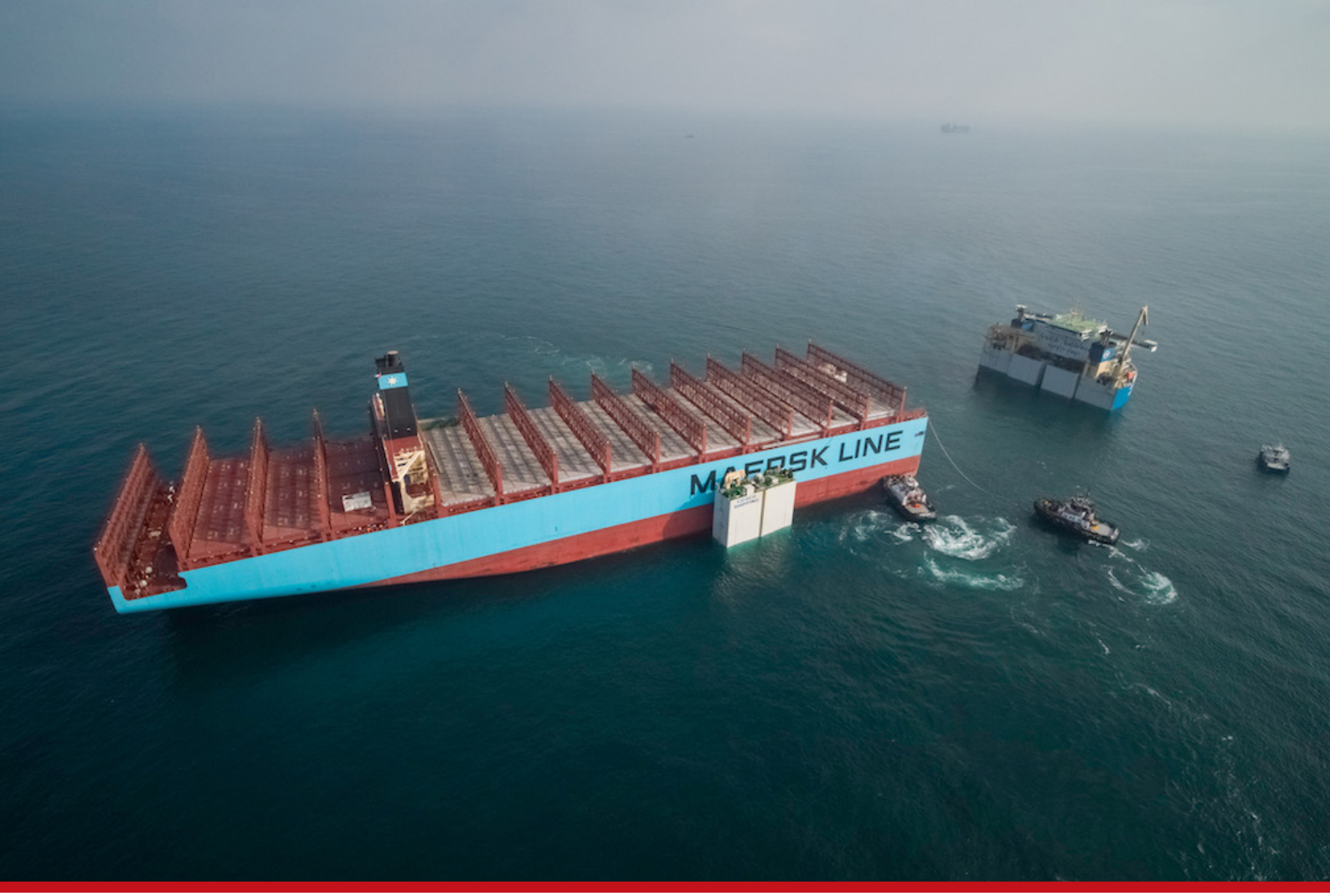
By **Captain Yashwant Chhabra**



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