MARITIME REVIEW

PUBLICATION OF THE MARITIME LEAGUE

Issue No. 23 - 2

MAR - APR 2023

Blue Economy Annual Trade and Conference

BEACON 2023

THE MARITIME LEAGUE EXPO

EVENT SCHEDULE

6-8 SEPTEMBER, 2023

SMX CONVENTION CENTER

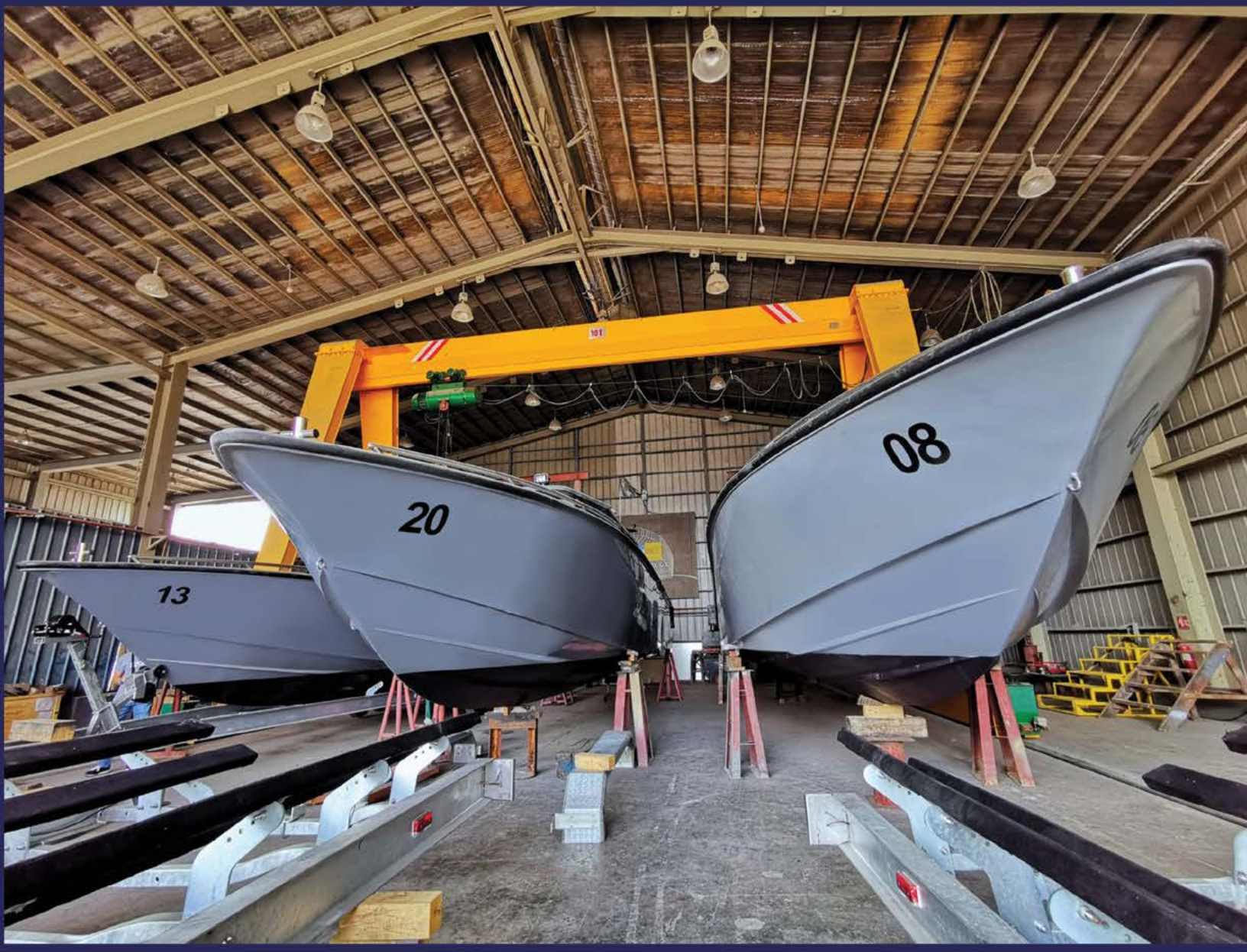
MALL OF ASIA COMPLEX, PASAY CITY

A JOINT PROJECT OF

www.maritimeleague-beacon.com

Also Inside:

DESIGNED & BUILT TO LAST



PROPMECH CORPORATION

SAFEHULL MARINE TECHNOLOGIES, INC.

PROVEN PERFORMANCE

Marine Technology Center, A. Soriano cor. Arzobispo Sts., Intramuros, Manila City (02) 8527 9055 • (02) 8527 6666

www.propmech.com

Ground Floor, Unit B, Waypoint Bldg,
No. 4 Bayani Road, AFPOVAI, Taguig City
www.maritimeleague.com
marrev@maritimeleague.com
+63 (2) 8715-7412

Table of Contents

ABOUT THE COVER

BEACON 2023 is the acronym for Blue Economy Annual trade and Conference to highlight the event theme: "PHILIPPINE BLUE ECONOMY: INSIGHTS AND FORESIGHTS." The photo features the Sabtang Lighthouse (Sabtang Island, Batanes). The lighthouse is one of the island's iconic landmarks, mainly because it is the first man-made edifice structure that welcomes guests upon their arrival at San Vicente Port. A lighthouse is a fixed marker to guide the various maritime stakeholders in their quest to explore, exploit, or preserve the nation's resources --from seafarers and maritime industries to marine and seabed resources.

MARITIME EVENTS CALENDAR

JANUARY 2023

23 – 24 INTERCEM SHIPPING FORUM (INTERCEMSF) - ATHENS, GREECE
23 – 25 MARITIME WEEK AFRICA - CAPE TOWN, SOUTH AFRICA
24 MARITIME FORUM #178 - VIRTUAL CONFIRENCE HOSTED BY DEPARTMENT OF FOREIGN AFFAIRS MARITIME AND OCEAN AFFAIRS OFFICE (DFA-MOAO)
24 DROP SHIPPING IN A POST-WAYFAIR WORLD WEBINAR VIRTUAL CONFERENCE
26 LONDON SHIP FINANCE FORUM - GROSVENOR HOUSE, JW MARIOTT HOTEL, LONDON, UK
26 – 27 WORLD OF SHIPPING PORTUGAL – AN INTERNATIONAL RESEARCH CONFERENCE ON MARITIME AFFAIRS - CARCAVELOS, PORTUGAL
30 – 31 TECHNOLOGY, SYSTEMS AND SHIPS SYMPOSIUM (TSS) SHERATON PENTAGON CITY HOTEL, WASHINGTON DC, USA

JANUARY – FEBRUARY 2023

30 – 2FEB TECHNOLOGY SYSTEMS AND SHIPS/COMBAT SYSTEMS SYMPOSIUM SHERATON PENTAGON CITY HOTEL, WASHINGTON DC, USA

FEBRUARY 2023

1 AGFO EXECOM MEET TO FINALIZE INTL MARITIME EXPO
1 – 2 SHIP RECYCLING CONGRESS - PARK PLAZA VICTORIA AMSTERDAM, AMSTERDAM, THE NETHERLANDS
1 – 2 MARITIME RECONNAISANCE AMD SURVAILLAMCE TECHNOLOGY LONDON, UNITED KINGDOM
6 – 10 TRAINING COURSE ON PACKAGING AND SHIPPING INFECTUOUS MATERIALS - VIRTUAL CONFERENCE
7 EUROPEAN DYNAMIC POSITIONING CONFERENCE (EDP) LONDON, UNITED KINGDOM
7 THE ANNUAL JOINT SHIPPING CONFERENCE- APELLA, NEW YORK, USA
7 – 8 AMERICAN MARITIME FORUM - MIAMI CONVENTION CENTER, KOZHIKODE, INDIA
7 – 8 HELLENIC MARITIME FORUM - DIVALI CARAVEL JOTEL, ATHENS, GREECE
8 – 10 ASSOCIATION OF PACIFIC PORTS WINTER CONFERENCE HILTON HAWAIIAN VILLAGE WAIKIKI BEACH RESORT, HONOLULU, USA
9 MARITIME FORUM #179 - VIRTUAL CONFIRENCE HOSTED BY CEBU PORTS AUTHORITY (CPA)
9 AGFO 179TH MARTIME LEAGUE FORUM VIA ZOOM
9 13TH ANNUAL CAPITAL LINK GREEK SHIPPING FORUM LEOF ANDREA SIGGROU, ATHENS, GREECE
11 CRUISE, BBQ AND BLUES FESTIVAL AND CAR SHOW ORO VALLEY MARKETPLACE, ORO VALLEY, USA
13 – 14 BREAKBULK MIDDLE EAST - DUBAI WORLD TRADE CENTER, DUBAI, UAE
13 – 17 TRAINING COURSE ON LEGAL MANAGEMENT AND THE SHIPPING BUSINESS - VIRTUAL CONFERENCE
13 – 24 PANAMA CANAL CREDIT UNION EDUCATIONAL CRUISE CONFERENCE PANAMA CITY, PANAMA
15 SMART MARITIME NETWORK CONFERENCE - SS ROTTERDAM, ROTTERDAM, THE NETHERLANDS
14 – 16 OCEANOLOGY INTERNATIONAL NORTH AMERICA SAN DIEGO CONVENTION CENTER, CALIFORNIA, USA
14 – 17 FPSO EMEA CONGRESS 2023 - COPTHORNE TARA HOTEL LONDON KENSINGTON, LONDON, UK
15 – 16 GREEN SHIPPING SUMMIT - ROTTERDAM, THE NETHERLANDS
16 – 18 LOGISTICS 2023 - PRAGATI MAIDAN, NEW DELHI, INDIA
24 EAST COST MARITIME FORUM - THE LALIT GREEN EASTERN KOLKATA, KOLKATA, INDIA

FEBRUARY – MARCH 2023

27 – 1MAR INTERNATIONAL CONFERENCE IN SOUTHEAST ASIA ON THE FUTURE OR MARITIME TECHNOLOGY AND USE OF THE SEA - GRANDE CENTER POINT, PATTAYA, THAILAND
28 – 2MAR SUBSEA TIEBACK FORUM AND EXHIBITION - MOODY GARDENS HOTEL SPA AND CONVENTION CENTER, GALVESTON, USA

MARCH 2023

1 – 2 CAL MARITIME CONFERENCE (CMC) - CAL MARITIME, VALLEJO, USA
2 HAMBURG SHIP FINANCE FORUM - EMPIRE RIVERSIDE HOTEL, HAMBURG, HAMBURG, GERMANY
2 – 3 SUITABLE SHIPPING FUTURES DIALOGUE - KUEHNELOGISTICS UNIVERSITY, GROSSER GASBROOK 17, HAMBURG, GERMANY
4 – 5 INTERNATIONAL CONFERENCE ON MARITIME METEOROLOGY, MARINE MODELING AND ANALYSIS (ICMAMMMA) RIO DE JANEIRO, BRAZIL
6 – 7 9TH INTERNATIONAL LNG CONGRESS (LNGCON 2023) HILTON DUSSELDORF, DUSSELDORF, GERMANY
8 – 9 MARITIME BATTERY FORUM - ABELDA-LOCATIE 3E KATENDRECHTSE HOOFD, ROTTERDAM, THE NETHERLANDS
15 – 18 ASTA GLOBAL RIVER CRUISE EXPO - BUDAPEST, HUNGARY
17 – 19 OPEN SHIPPING DAYS - WAAGNATIE EXPO AND EVENTS, ANTWERP, BELGIUM
19 – 23 AMPP ANNUAL CONFERENCE + EXPO 2023 COLORADO CONVENTION CENTER, DENVER, COLORADO, USA
21 – 23 CMA SHIPPING ANNUAL EXPO AND CONFERENCE HILTOM STAMFORD, CONNETICUT, USA
21 – 23 WORLD MARITIME WEEK - BILBAO EXHIBITION CENTER, BARAKALDO, SPAIN
21 – 24 METHANOL FOR MARITIME INDUSTRY MASTERCLASS VIRTUAL CONFERENCE
27 ANNUAL CAPITAL LINK INTERNATIONAL SHIPPING FORUM NEW YOURK, USA; VIRTUAL CONFERENCE
28 MARITIME FORUM #180 - MARITIME ACADEMY OF ASIA AND THE PACIFIC (MAAP)
27 – 30 SEATRADE CRUISE GLOBAL - FORT LAUDERDALE BROWARD COUNTY CONVENTION CENTER, FORT LAUDERDALE, FLORIDA, USA
28 HONG KONG SHIP FINANCE FORUM - RENAISSANCE HONG KONG HARBOR VIEW HOTEL, HONG KONG
28 – 30 INTERNATIONAL OFFSHORE WIND PARTNERING FORUM -BALTIMORE CONVENTION CENTER, ONE WEST PRATT ST, BALTIMORE, MARYLAND, USA
28 – 30 MEDITERRANEAN PORTS AND SHIPPING GRAND HYATT ATHENS, ATHENS, GREECE

MARCH – APRIL 2023

28 MYC 180TH ML FORUM HOSTED BY MAAP
28 PCG VESSEL 83 DEIGO SILANG LAUNCHING OF INTL MARITIME EXPO
31 – 1 APR BRITISH COMMISSION FOR MARITIME HISTORY NEW RESEARCHERS CONFERENCE - UNIVERSITY OF PORTSMOUTH, PORTSMOUTH, UK
31 – 1 APR NEW RESEARCHERS IN MARITIME HISTORY CONFERENCE UNIVERSITY OF PORTSMOUTH, PORTSMOUTH, UK

APRIL 2023

3 – 5 SEA – AIR – SPACE 2023 - GAYLORD NATIONAL RESORT AND CONVENTION CENTER, NATIONAL HARBOR, MARYLAND, USA
6 – 10 SALES CRUISE - ORLANDO, FLORIDA, USA
11 – 13 CLEAN WATERWAYS - HILTON DENVER CITY CENTER, DENVER, COLORADO
18 – 19 2ND HAMBURG MARITIME FORUM - ALTONAER FISCHAUKTIONSHALLE, GROSSE ELBSTRASSE 9, HAMBURG, GERMANY
18 – 20 OCEAN BUSINESS 2023 - NATIONAL OCEANOGRAPHY CENTRE, SOUTHAMPTON, UK
20 FUTURE FESTIVAL ORLANDO - ORLANDO, FLORIDA, USA
24 ANNUAL CAPITAL LINK SINGAPORE MARITIME FORUM WESTON HOTEL, SINGAPORE, SINGAPORE
24 – 25 INTERNATIONAL CONFERENCE ON SMART AND GREEN TECHNOLOGY FOR SHIPPING AND MARITIME INDUSTRIES, LONDON, UNITED KINGDOM
25 MARITIME FORUM #181- BUREAU OF FISHERIES AND AQUATIC RESOURCES (BFAR)
25 MARINE MONEY SINGAPORE SHIP FINANCE FORUM THE ST REGIS SINGAPORE, SINGAPORE
26 PORTS AND FREEPORTS DEVELOPMENT CONFERENCE CONGRESS CENTRE, LONDON, UNITED KINGDOM
25 – 27 FERRY SAFETY AND TECHNOLOGY CONFERENCE BROOKLYN WATERFRONT MUSEUM, BROOKLYN, NEW YORK, USA
25 – 27 INTELLIGENT SHIPS SYMPOSIUM - DELTA HOTEL PHILADELPIA AIRPORT, 500 STEVENS DRIVE, PHILADELPHIA, USA
27 21ST DIGITAL SHIP ATHENS CONFERENCE - DIVANI APOLLON PALACE AND THALASSO HOTEL, AGIOU NIKOLAOU, VOLIAGMENI, GREECE
24 – 28 SINGAPORE MARITIME WEEK - SINGAPORE, SINGAPORE
29 – 30 SHIPYARD OPEN STUDIOS - SAN FRANCISCO, USA

FastCat

FerrySafe. FerryFast. FerryConvenient.

BEACON 2023 LAUNCHED ABOARD BRP GABRIELA SILANG


BEACON 2023
BLUE ECONOMY ANNUAL TRADE AND CONFERENCE
THE MARITIME LEAGUE EXPO
THEME: PHILIPPINE BLUE ECONOMY INSIGHTS & FORESIGHTS
6-8 SEPTEMBER 2023
SMX


THE MARITIME LEAGUE EXPO
BEACON 2023
WELCOME
BEACON VIP GUESTS


THE MARITIME LEAGUE EXPO
BEACON 2023
BLUE ECONOMY ANNUAL TRADE AND CONFERENCE
WELCOME
MARITIME ASSOCIATIONS
ShAP
SOCIETY OF NAVAL ARCHITECTS AND MARINE ENGINEERS
Boating Industries Association of the Philippines
SMAP


THE MARITIME LEAGUE EXPO
BEACON 2023
BLUE ECONOMY ANNUAL TRADE AND CONFERENCE
WELCOME
MARITIME FORUM AGENCIES
MARINA
PHILIPPINE PORTS AUTHORITY
PHILIPPINE COAST GUARD
BFAR


THE MARITIME LEAGUE EXPO
BEACON 2023
BLUE ECONOMY ANNUAL TRADE AND CONFERENCE
SOLANDA ENTERPRISES, INC.
MERCURY
GO BOLDLY.
PAD 1925
GEARED FOR EXCELLENCE
OUR SPONSORS


THE MARITIME LEAGUE EXPO
BEACON 2023
BLUE ECONOMY ANNUAL TRADE AND CONFERENCE
Exhibits Today
Supporting Leaders, Inspiring People
MARINO WORLD
Trusted Since 1898
The Manila Times
FAS MARITIME
MEDIA PARTNERS


THE MARITIME LEAGUE EXPO
BEACON 2023
BLUE ECONOMY ANNUAL TRADE AND CONFERENCE
MARITIME LEAGUE BOARD OF TRUSTEES


CONCEPTUALIZED BY:
INTELLEVSION
Events Philippines
THE MARITIME LEAGUE EXPO
BEACON 2023
BLUE ECONOMY ANNUAL TRADE AND CONFERENCE
POWERED BY:
pci
TECH CENTER

BEACON EXPO 2023

Maritime League

In response to the growing opportunities in shipbuilding and waterfront development, The Maritime League as the organizing body, in partnership with the Department of Transportation (DOTr) and its attached agencies, will be hosting the BEACON EXPO 2023 on 6-8 September, 2023 at the SMX Convention Center, Mall of Asia Complex, Pasay City, Philippines. This Conference and Exhibition, consistent with the League's objectives, aims to advance the interests of the Philippine maritime industry, promote maritime development and safety through better information, cooperation, and synergy of effort among the stakeholders of the maritime industry.

BEACON EXPO 2023 will be showcasing the following event highlights:
More than 5,000 trade visitors and 150 exhibiting brands!
3–day Maritime Conferences
B–Level and C-Level Conference Attendees

BEACON EXPO 2023 will feature discussions on the latest issues and developments in the Maritime, Oil & Gas, and Defense Industries.

Some quick facts about the Philippines Maritime and Shipbuilding Industry:
The Philippines is ranked 4th in the world in Shipbuilding and 1st in South East Asia per the UNCTAD June 2022 report.
Maritime transport is the backbone of international trade and a key engine driving globalization and competitiveness. Around 80% of global trade by volume and over 70% by value is carried by sea, as per the UNCTAD estimate.

A copy of our BEACON EXPO 2023 event brochure is inserted in the Maritime Review for your perusal.

As of mid-January 2023, there are currently 20 corporations that have reserved a booth at the BEACON EXPO 2023.

To book your booth, please feel free to contact us by phone at **8 7157412** or email to: **mlbeacon2023@gmail.com** for more information.

Thank you and we look forward to welcoming you to the **BEACON EXPO 2023!**

A Maritime League International Conference & Exhibition of Developments in Maritime, Oil & Gas, Power , Naval Defense Industries, Maritime Security and Tourism, and many more...

BEACON 2023

BLUE ECONOMY ANNUAL TRADE AND CONFERENCE

THE MARITIME LEAGUE EXPO

THEME: PHILIPPINE BLUE ECONOMY INSIGHTS & FORESIGHTS

6-8 SEPTEMBER 2023

Smx Convention Center, Pasay City Philippines

https://maritimeleague-beacon.com/

https://maritimeleague.com/

For More Info, Please contact us: Tel. No: (+63) 8 7157412/09171458992 Email: mlbeacon2023@gmail.com

SUPPORTED BY:

ENDORSED BY:

Boating Industries Association of the Philippines

JOINT PROJECT OF:

MEDIA PARTNERS:

Exhibits Today

MARINO WORLD

The Manila Times

FAS MARITIME

"Maritime stories, told better."

POWERED BY:

pci

CONCEPTUALIZED BY:

INTELLEVISION

DOTR USEC – MARITIME SECTOR COMMODORE ELMER FRANCISCO SARMIENTO PCGA GIVES AN INSPIRATIONAL MESSAGE ON BOARD BRP GABRIELA SILANG

By DOTr USEC E.F. Sarmiento

At the BEACON 2023 Maritime Conference and Exhibition of the Maritime League launching on board BRP Gabriela Silang on 28-March-2023 at Pier 13 South Harbor, the Department of Transportation Undersecretary – Maritime Sector Elmer Francisco Sarmiento gave a speech. Here it is in its entirety.

Vice Admiral Eduardo Santos, president and board chairman of The Maritime League;

Admiral Artemio Abu, commandant of the Philippine Coast Guard;

Other officers of The Maritime League and the Philippine Coast Guard;

The new members of the Coast Guard Auxiliary Executive Squadron;

Media friends, honored guests, ladies and gentlemen,

Good Morning.

I would like to acknowledge and thank The Maritime League for organizing this launching ceremony for the upcoming Philippine International Maritime Conference and Exhibition, which is now named BEACON 2023.

Launching this conference and exhibition on board this vessel, the BRP Gabriela Silang, directs focus on the role of the Philippine Coast Guard at preserving safety and security in Philippine waters, which clearly supports the objective of The Maritime League – promoting maritime development and safety.

Initiatives like BEACON 2023 that is scheduled in September this year can be a prime occasion to redefine the direction of the maritime industry from the private sector perspective in this post-pandemic era.

The collaboration of various stakeholders lends timely support to the efforts of the Department of Transportation at pushing for much-needed reforms to an industry charged with the cost-efficient and safe movement of people and goods across our archipelago.

These industry reforms will help us elevate Philippine maritime to global standards.

As honorary chairman of The Maritime League, I urge this maritime foundation, with the support of its various partners, to help us identify international standards with which we can benchmark the operations of our agencies towards enhancing the level of passenger and customer service.

When borders reopened, the race to recapture pre-pandemic business dynamism should provoke the MARINA, the Coast Guard and the Philippine Ports Authority to level up their game by coming up with creative and inspiring initiatives that will reconnect our islands and boost the national economic rebound.

We cannot afford to miss the momentum of this economic renaissance but moreso, we should not abandon blue economy advocacy over the pursuit of rapid progress.

I strongly encourage our partners and stakeholders to anchor their individual efforts at preserving our maritime resources. No one else will do that for us.

Eco-friendly initiatives should not remain on paper – alternative fuels must be sought and used; coastal cleanup must be regular, with or without an oil spill; shipbuilding and ship repair should respect the environment; waste management should not be the usual; and more.

I hope BEACON 2023 will result to heightened awareness of our responsibility to actively care for our marine resources.

Your goals of improved yields should now be tempered by the inconvenient truth of climate change. It is here … now. What are we going to do about it?

Let me know your answer at BEACON 2023.

Thank you and good morning.

USEC-Maritime Commodore Elmer Francisco Sarmiento, PCGA

JAPAN'S FIRST LARGE-SCALE OFFSHORE WIND FARM STARTS OPERATIONS

by Vicky Viray Mendoza

Offshore wind turbines operate at Noshiro Port in Akita Prefecture on 22-December-2022. Photo Credit: The Yomiuri Shimbun

Japan's first large-scale offshore wind farm had finally started commercial operations at Noshiro Port in the northern prefecture of Akita on 22-December-2022. It is part of Japan's efforts to build a carbon-neutral environment.

Generally, offshore wind farms use larger turbines that enable more stable wind power generation than onshore turbines.

20 turbines with 60-meter-long blades started operating, with 13 more turbines joined operations in January 2023, after the trial operations and required legal inspections are completed.

The 20 turbines put into operation have a fixed-bottom with an output of 4.2 MW each. The height from the sea surface to the highest point of the blade is 150 meters (492 ft), which is about the height of a 40-storey building.

Akita Offshore Wind Corporation (AOW) invested ¥100 billion yen, or $760 million dollars, to build the 33 turbines in total. The project is operated by AOW, a special-purpose joint venture comprising 13 companies, including Marubeni Corporation, which is the largest investor, other major electric power companies, and construction companies.

The 33 wind turbines at Noshiro and Akita ports will generate a total of 140 MW. These turbines are expected to generate ample electricity for 130,000 average households in the prefecture.

The power generated by AOW will be sold to the Tohoku Electric Power Network under a 20-year contract.

Okagaki Keiji, President and CEO of AOW said, "Akita is blessed with very good wind conditions and has excellent offshore geological features. We also had a lot of support from the local government. We believe this is the beginning of a new era of offshore wind power in Japan. By showing a successful example of offshore wind power, which is regarded as the trump card for renewable energy, we will produce significant momentum for the future."

The Japanese government has designated 8 priority zones for offshore wind farms, of which 4 priority zones are in Akita. At least 103 more turbines are slated to be installed in the 4 priority zones by 2030.

Sources:

1. Large-scale offshore wind farm begins operation, https://japannews.yomiuri.co.jp/science-nature/climate-change/20221222-79036/
2. Large-scale offshore wind power generation starts in Japan, https://www3.nhk.or.jp/nhkworld/en/news/20221222_22/

THE DIFFERENCE BETWEEN ARMY COMBAT ENGINEER BRIGADE AND NAVY AMPHIBIOUS CONSTRUCTION BRIGADE

by Capt Tomas D Baino PN (Ret)

SAPPER

WE WILL TRY

SEABEES

CONSTRUIMOUS BATTIMOUS

INTRODUCTION

This article is a product of research work that will differentiate the function of the Army Combat Engineer Brigade from the Navy Amphibious Construction Brigade of the SEABEES.

HISTORICAL BACKGROUND

Army Combat Engineer

A sapper, in the sense first used by the French military, was one who dug trenches to allow besieging forces to advance towards the enemy defensive works and forts, over ground that is under the defenders' musket or artillery fire. This digging was referred to as sapping the enemy fortifications. Saps were excavated by brigades of trained sappers or instructed troops. When an army was defending a fortress with cannons, they had an obvious height and therefore range advantage over the attacker's guns. The attacking army's artillery had to be brought forward, under fire, so as to facilitate effective counter-battery fire. This was established by the French Army in 1775.

Navy SEABEES

In 1943, the SEABEES were organized by Rear Admiral Morrel, USN composed of civilian engineers who built air fields called the Henderson Field in the Island of Guadalcanal primarily to provide civil engineering works for the US marines in the Island. It also provided support to amphibious landing force operations in island hopping, fighting the Japanese in the South Pacific. Later, it was organized as part of the US Navy.

THE DIFFERENCE BETWEEN ARMY COMBAT ENGINEERS AND THE NAVY AMPHIBIOUS CONSTRUCTION BRIGADE

- A **combat engineer** pertains to air-land battle (also called pioneer or sapper) and is a type of soldier who performs military engineering tasks in support of land forces combat operations. Combat engineers perform a variety of military engineering, tunnel and mine warfare tasks, as well as construction and demolition duties in and out of combat zones. Combat engineers facilitate the mobility of friendly forces while impeding that of the enemy. They also work to assure the survivability of friendly forces, by building fighting positions, fortifications, and roads. They conduct demolition missions and clear minefields manually or through the use of specialized vehicles. Common combat engineer missions include construction and breaching of trenches, tank traps and other obstacles and fortifications; obstacle emplacement and bunker construction; route clearance and reconnaissance; bridge and road construction or destruction; emplacement and clearance of land mines; and combined arms breaching. Typically, combat engineers are also trained as riflemen and, when required, serve as provisional infantry.
- In contrast, the **Navy Amphibious Construction Brigade** is is concerned with Civil Engineering of facilities in support of a marine landing force and is to support marine landing forces in the amphibious objective area by providing and installing landing pontoons and bridging between the ship to shore, providing causeway at the beach storage for logistics such as water, supply, fuel, etc. building runways, barracks for the troops, sanitary systems, underwater clearing and construction which ensures smooth flow of logistics, etc.

CREATION OF PHILIPPINE NAVY SEABEES

President Marcos, the President of the Philippines in 1967, organized the three-major service Engineering Units under the AFP Core of Engineers.

1. **The Philippine Air Force Aviation Engineer** specialized in air field and aviation facilities for the country.
2. **The Philippine Army** established three engineering brigades such as the 51st, 52nd, and 53rd engineering unit and minor combat engineering mission.
3. **The Philippine Navy** established the Naval Construction Brigade in charge of dredging, port works, pier and

wharves causeway deepening or harbor and port participation in order to participate in the socio-economic development program of the government.

In 2015, the Naval Amphibious Construction Brigade of the Philippine Navy was changed to Naval Combat Engineer Brigade. It is a puzzle as to why such a name change transpired, from Construction to Combat Engineer. The latter is quite a confusing title for a construction brigade to hold.

TYPICAL EQUIPMENT OF THE NAVY SEABEES AMPHIBIOUS CONSTRUCTION BRIGADE:

Pontoons, tugboats, warping tugs, floating crane, causeway matting, and bulldozers to provide egress in the amphibious objective in the beachhead: jack hammers, welding machines, concrete mixers, mobile shop, road rollers, chainsaws, riggings, mobile generators, etc.

TYPICAL EQUIPMENT OF THE ARMY COMBAT ENGINEER BATTALION ARE:

1. Improvised Explosive Device (IED)
2. Mine Breaching and Clearing Equipment
3. Battlefield Mobility and Counter-Mobility
4. Gap Crossing and Bridge Launching
5. Route Proving and Clearance
6. Route Processing and Clearance Multi-Tools
7. Obstacle Marking System
8. Others
9. Material Inventory:
    - Concertina Wire
    - Picket Post
    - Anti-Personnel Mine
    - Anti-Tank Mine
    - Blasting Machine
    - Detonating Cord
    - C4 Explosive
    - Sheet charge
    - Booby Traps

THE QUESTIONS THAT I ASK MYSELF

Perhaps the following questions and opinions will help clear the apprehensions of my fellow taxpayers.

- By what authority such name change was promulgated and executed to the Naval Combat Engineer Brigade to that effect.
- Doesn't the Navy Seabees doctrine state that it is not to be combat engineering but rather Engineering Construction which is the main essence of its original mission and creation in the AFP?
- Was the table of organization and equipment allocation and training changed from original Navy Seabees Rating to combat engineer rating?

I believe the unit is the Naval Combat Engineer is deviating from its original mandate and must be given clarity for the taxpayer to understand why.

Acquiring additional combat engineering equipment is too costly and exorbitant which will just be a waste of taxpayer's money because later on such equipment will become a white elephant and will be of no use to its original mandate.

- If a mission in combat engineering are mine laying, mine breaching, and demolition, how sure can the construction engineer SEABEES perform the task and job of combat engineering?

THE PRESENT EQUIPMENT INVENTORY OF THE NAVAL CONSTRUCTION BRIGADE

The present equipment of the Naval Construction Battalion of the Philippine Navy in ports and harbor dredging equipment, tugboats, and barges are already becoming very difficult to maintain, have high life cycle cost, and practically are scrap value. The following projects seem neglected by the SEABEES:

- Siltation due to shallowness and extreme shallow water at Cavite Naval Base in Cavite is no longer capable of docking larger vessels like Frigates and submarines which are envisioned to be acquired by the Navy. It therefore needs maintenance dredging to deepen the harbor on a gradual basis.
- Siltation due to shallow water in Manila Yacht Club where docking facilities at the Headquarters Philippine Navy, Roxas Boulevard is no longer capable to accommodate Frigates and logistical support vessels of the Navy, in spite of the fact that the Navy built a modern and very expensive pier that will only serve for landing of helicopters and small craft units.

I believe it's not too late to correct such things that need to be corrected in order to use taxpayers' money effectively.

OBSERVATIONS

If the PN SEABEES is to adopt the mission of a Combat Engineer, it will be difficult for them to perform and accomplish the mission with mobility and counter-mobility as this is purely a function of the Army Combat Engineers instead. Assimilating the mission of the Army Combat Engineers makes the PN SEABEES irrelevant to its original purpose and mission as the Amphibious Construction Battalion which is the Engineering Unit of the Navy supporting the marine landing force. As a result, the PN SEABEES will always be subject to negative criticism.

I believe said changes in the name of the organization and the additional mission and equipment of the men including training has an effect on the budget allocation of the Navy which must be carefully scrutinized by the law makers of the Government budgeting authority.

RECOMMENDATION

Having laid out my opinions based on field observation, I respectfully hope this article will reach the Flag Officer in Command and I recommend it for his perusal.

About the Author

CAPT BAINO is a registered naval architect and civil engineer in the Professional Regulation Commission in the Philippines. He spent his early years in the PN SEABEES from 1972 to 1980 and was a recipient of the Engineer Basic Course and Combat Engineering at the Philippine Army Engineer School in Nueva Ecija and Engineer Officer Advance and Combat Engineering Course at the United States Army Engineer School in Fort Leonardwood, USA. Likewise, he undergone cross-training with the US NAVY Amphibious Construction Battalion and Mine Warfare and Demolition with the United States Marines also in Subic Bay, Philippines and has participated as Platoon Leader of the Beach Party to the Naval Beach Group during Balikatan and Cooperation Afloat Readiness Training in three amphibious exercises with the United States Marines and PHILINDO Amphibious Exercise in Sta. Cruz, Mindoro, Paluan, and Nabas, Aklan respectively.

MARITIME LEGISLATION

by Karl M. Garcia

According to Atty Brenda Pimentel:

"It is unfortunate that in this archipelago, there is no overarching policy direction that binds into a cohesive maritime aspiration. The fisheries sector, maritime transport industry, coastal tourism, recreational sector, marine environment protection and many more ocean-based activities are undertaken almost exclusively by each other, although at times it is submitted, collaboration is initiated.

The absence of legislative coherence is most pronounced in the maritime transport industry which embraces several subsectors such as seafaring (also considered as a subsector of the labor industry), maritime education (which is under the wider umbrella of the country's educational system), shipbuilding and repair (product and service providers), environment protection (the core mandate of which rests with the environment agencies), and many other subsectors. These enumerated subsectors of the maritime transport industry also stand as independent industries in their respective core activities."

Our President at the start of his term started reviewing legislation left by the previous administration and it is unfortunate that one of the casualties of the presidential veto is the legislation on National Transportation Safety.

A president's certification of urgency strengthens the chances of a few hundred bills filed in in the lower house and the senate, but unfortunately the chances of thousands of other thousands bills to be archived, if not vetoed, is high even if it reached the Bicameral conference.

Here are some of the important Maritime-related laws.

- PD 1284 Granting the PPA to plan, construct, and maintain all port terminals in North harbor;
- PD 1711 further amends PD 760 and encourages the chartering of specialized Ocean-going vessels;
- EO84 the creation of an inter-agency council on the International Maritime Organization (IMO) member-state audit scheme;
- EO 75 designates the DOTC through the MARINA as the single administration in the Philippines responsible for the oversight in the implementation of the international convention on standards of training and certification of Seafarers;
- EO 159 adopts an integrated approach in the ratification and accession to the International Maritime Organization conventions and instruments, reconstituting the inter-agency committee for the purpose.

Maritime-related legislation enacted in the last two decades pertains to maritime education and the seafaring sector. Republic Act 11659 which amended the Public Service Act is the most recent maritime-related legislation. It is expected to build up capital infusion from foreign investors, which is a departure from the focus given to maritime education and seafarers. Nonetheless, there are a slew of maritime bills under consideration by Congress related to maritime education, the welfare of Filipino seafarers (Magna Carta), the Philippine ship registry, and the implementation of international maritime conventions.

In my previous article on Safety of Life at Seas, I enumerated several bills that I think will need the President's certification of urgency, considering that there was the soon-to-be vetoed National Transportation Safety Board.

Presidential Certification of Urgency

Several bills including the vetoed National Transport and Safety Board Bill and others relating to maritime safety and or maritime governance had been filed and refilled in congress such as:

- The creation of a National Transport Safety Board
- Maritime Code of the Philippines
- Creation of Admiralty Courts
- Maritime Administration Act

- Ship Registry Bill
- Magna Carta for Seafarers
- Bills concerning Merchant Marine Officers
- Marine Environment Protection
- Splitting Regulatory and Operational Roles of the PPA
- Municipal Ports
- Privatize Ports
- Maritime Zones
- Philippine National Maritime Academy
- Other Senate Bills for the Philippine Ports Authority.

At present, the current Maritime Administration of our government is thinly spread among 14 bureaus and agencies under 7 departments. The fragmentation of our maritime administration has led to bureaucratic entanglement, functional overlaps, and conflicting maritime laws and regulations. The restructuring of maritime administration is a first step by creating one super-body consisting of maritime bureaus and maritime agencies.

The creation of a **National Transportation and Safety Board** is a major step to promote transportation safety by conducting independent safety investigations and by formulating safety improvement recommendations.

The **Maritime Code of the Philippines** hopes to address the Philippines' non-implementation of international conventions.

- The Philippines has been a party of the following international safety conventions:
- The International Convention for Safety of Life at Sea (1974);
- The International Convention for the Prevention of Pollution at Ships (1973);
- The Convention on International Regulations for the Prevention of Collisions at Sea (1972);
- The International Convention of Load Lines (1966);
- The International Convention of Tonnage Measurement (1969).

However, the Philippines is not a part of the following conventions:

- SOLAS Protocol of 1988
- MARPOL Protocol of 1997
- Load Lines Protocol of 1988 (amended, 2003)

The Bill seeks to implement these protocols with **MARINA** as the lead agency.

While the Bill is yet to be passed, Former President Duterte issued EO 159 which adopts an integrated approach in the ratification and accession to International Maritime Conventions, and reconstituting the inter-Agency Committees for that purpose.

It is a given that our nation's institutions are fragmented, ourbureaucracy is caught in an entangled web, turf wars and overlapping functions happen more often than not.

A creation of the Coast Watch system seemed to have a failure of launching because of Command and Control Issues, so a creation of a super-body with Command and Control to handle Maritime Administration is a must.

A non-regulatory independent investigative body is also needed to handle maritime accidents, and safety incident investigations.

A **Maritime Code** will make our local safety laws and regulations in consonance with international safety laws.

Lastly, the creation of the Maritime court will speed up the resolution of Maritime related cases.

The creation of specialized **Admiralty Maritime Courts** will unclog our courts of all maritime case backlogs.

Philippine Ship Registry

Photo Credit: by Michael Treu from pixabay | source: Portcalls

According to an article in Portcalls:

- A House bill seeking to set up a ship registry system in the Philippines and establish the country as a leading maritime nation and respected flag-state has gained support from government agencies, shipping, and maritime groups;
- HB No. 4336 aims to establish the scope and procedure for the Philippine ship registry;
- MARINA said the Bill's proposed new structure unifying the registration and licensing system of overseas and domestic fleets will *"give our domestic shipowners the opportunity to embark on overseas shipping and service the transport requirements of our import and export trade;"*
- A technical working group will be created to tackle HB 4336 and the written positions that will be sent by the involved government agencies and stakeholder groups.

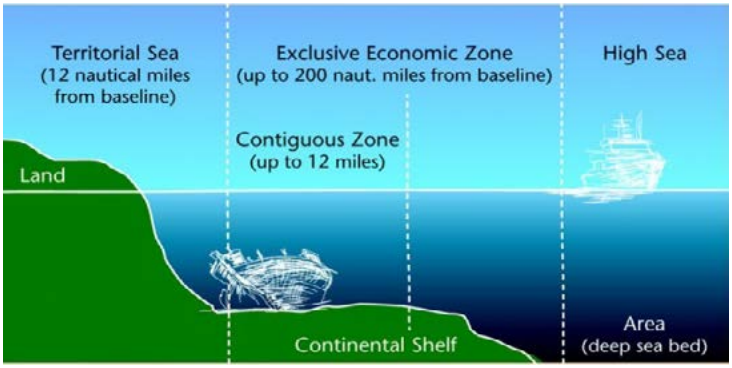
Senator Sotto talking about Maritime Zones:

Maritime Zones (NOAA Coastal Service Center)

'SB 2289 declares that "maritime zones of the Philippines comprise the internal waters, archipelagic waters, territorial sea, contiguous zone, exclusive economic zone and continental shelf." "All territories of the Philippines shall generate their respective maritime zones in accordance with internal law," the proposal said.

The internal waters mentioned in the measure refers to waters on the landward side of the archipelagic baselines not forming part of archipelagic waters, and waters on the landward side of the baselines of the territorial sea of territories outside of the archipelagic baselines. Archipelagic waters refer to the waters on the landward side of the archipelagic baselines.

The Bill likewise states that the territorial sea of the Philippines refers to the adjacent belt of sea measured 12 nautical miles from the baselines of the territorial sea, while the contiguous zone refers to the waters beyond and adjacent to its territorial sea and up to the extent of 24 nautical miles from the baselines.



In this zone, proposed SB 2289 says the government would exercise control to prevent infringement of its customs, fiscal, immigration or sanitary laws and regulations within its territory or territorial sea; and punish any infringement committed within its territory or territorial sea.

Also in the measure is the definition of the country's continental shelf, which comprises the seabed and subsoil of the submarine areas that extend beyond its territorial sea.

The proposal states that the Philippines could exercise sovereignty over its internal waters, archipelagic waters and territorial sea, and the airspace over it as well as its seabed and subsoil in accordance with the UNCLOS and other existing laws and treaties.'

Senator Tulfo on the Magna Carta For Seafarers.

'More than a quarter of the world's seafarers come from the Philippines. Translated into more specific figures, over 25% of the 1.5 million seafarers in the world are Filipinos.

Like other OFW's, our Filipino seafarers are looked up to as modern-day heroes. We take great pride in them because they are in fact preferred in the global fleet. Engineer Nelson Ramirez, the President of the United Filipino Seafarers attests to this preference and aptly describes that - "They speak English. They are hardworking. They are well-trained, they are adaptable, are able to turn to any job and "pliant like a bamboo."

While we are grateful for their contributions to our economy and we take pride in their admirable qualities, the question remains -are we giving enough protection to our Filipino seafarers? This is the reason why we are gathered here today.

Our seafarers have essentially similar employment issues and concerns as other OFW's but the nature of their work bear certain peculiarities that calls for separate legislation. Their Contracts are usually contracts of adhesion where terms and conditions are often times ambiguous to them. They are not only physically away from their families but they are at sea, sailing non-stop, where communication lines can be extremely difficult, and they are exposed to harsh weather conditions with the risk of injury or even death.

The Magna Carta for Filipino Seafarers codifies the rights of our seafarers into a single reference law. It seeks to secure their rights to decent, just and humane conditions of employment aboard sea-going vessels and set a guide for their training and education, overseas employment and ultimately retirement.'

Allow me to explore further on a bill that displays the difficulties of implementing our Local Government Code.

It is the Bill that proposes Municipal Ports be managed and run by the relative Local Government Unit (LGU) instead of the Philippine Ports Authority (PPA). This is important to know because cities like the City of Manila want a share of the ports income.

During the 14th Congress, Senator Jinggoy Ejercito Estrada filed Senate Bill 449 or the Municipal Ports Act of 2007.

There are at present approximately 19 base ports, 75 secondary ports, 528 municipal or tertiary ports and more than 300 private ports throughout the country. The control, management and operation of these ports, particularly the base and secondary or terminalports, is lodged with the PPA which was created under P.D. No. 504, as amended by P.D. No.857. With respect to municipal ports which are owned by LGUs, a majority of these are also managed or supervised by the PPA.

There appears to be no clear statutory authority vesting LGUs with the power to control, manage and operate ports within their respective jurisdictions. Section 17 of the Local Government Code provides that LGUs shall exercise and discharge such other functions and responsibilities as are necessary, appropriate, or incidental to efficient and effective provision of basic services and facilities to their constituents.

Although Sec. 17(e) of the said Code states that national agencies and offices shall devolve to LGUs the responsibilities enumerated in Section 17 (b) thereof, it will be noted from the list of infrastructure facilities to be devolved to LGUs that insofar as ports are concerned, only fishports are to be devolved.

Aside from the above vague and limited power of LGUs on the management and operation of ports. Sec. 133 of the same Code further provides that unless otherwise provided therein, the exercise of taxing powers of provinces, cities, municipalities and barangays shall extend to the levy of taxes, fees and charges and other impositions upon goods carried into or out of, or passing through, the territorial jurisdictions of LGUs in the guise of charges for wharfage, tolls for bridges or otherwise, or other taxes, fees or charges in any form whatsoever upon such goods or merchandise.

In view of the vague and limited powers exercised by LGUs over municipal ports that hinder their respective jurisdictions, they are, therefore, deprived of substantial revenues derived therefrom.

This bill, therefore, seeks to devolve the power and authority in the control, management and operation of municipal ports, including the power or revenue collection, from the Philippine Ports Authority to local government units. Such devolution of authority is in consonance with the declared policy of the State, as embodied in the Local Government Code, that local government units shall enjoy genuine and meaningful local autonomy to enable them to attain their fullest development as self-reliant communities and make them effective partners in the attainment of national goals.

The Philippine National Maritime Academy (PNMA) or House Bill 6503 as proposed by Representative Rufus Rodriguez, said that it will address the economic and defense requirements of the country, including naval, maritime law enforcement and other maritime trade and maritime education and training development in reference to UN-International Maritime Organization (IMO) Seafarers' Training, Certification, and Watchkeeping (STCW) requirements.

House Bill 6503 states that the PNMA will engage in the following academic engagements:

conferment of bachelor's degree in Marine Transportation (Major in Ship Management and minor in maritime cyber security or appropriate minor subjects required by the stakeholders);

- c*onferment of bachelor's degree in Marine Engineering (Major in Communications, Electrical Engineering, and minor in Maritime Software Development or appropriate subjects required by stakeholders);*
- *graduates of Philippine National Maritime Academy who are holders of a Bachelor of Science degree will be exempted from taking Operational Level Assessment of MARINA or PRC equivalent but shall undergo validation examinations by the PMMA Academic Board;*
- *conferment of Post Graduate degrees in Ship Management, and Maritime Education and others to be created by PNMA Graduate Studies Department;*
- *creation of a Research and Development Department*

engaged in the Academic Development of the PNMA and the Maritime industry in general, with the said Department shall be headed by a PhD category or MNSA graduate;

- *full academic freedom status will be bestowed to PNMA, wherein the Research Department shall monitor its annual academic curriculum growth and requirement with reference to the world economic and shipping trends.*

In addition, House Bill 6503 authorizes the PNMA to:

- *develop and create curriculathat will fit the needs of the end users and stakeholders in concurrence with UN-IMO-STCW and others regulations;*
- *share developed curriculum applicable to the maritime education institutions that is doable, realistic, and less expensive to the maritime school owners and training centers;*
- *ensure the proposed curriculum to be applied is approved and regulated by Commission and Higher Education;*
- *innovate and develop policies that can be used by the local maritime sector;*
- *be known as the third official Service Academy for Naval, Maritime Law Enforcement Institutions, Merchant Marine and other maritime related Agencies; maritime engineering, and marine services;*
- *ensure all students shall receive full scholarships which shall include their expenses for billeting, haircut, laundry, meals, and all uniforms;*
- provide monthly cash allowance to all cadets depending on their branch of service and career profession as Navy, Coast Guard, or Merchant Marine;
- ensure the academic curriculum format meets the needs of the following government agencies, private sectors, and the world maritime industry including:
  1. *Philippine Navy*
  2. *Philippine Coast Guard*
  3. *Philippine National Police Maritime Command*
  4. *International Shipping and Maritime Industry*
  5. *International and National Maritime Industry as Ship Surveyors, Shipping or Crewing Managers, Port Managers, Maritime Academic Institution Deans*
  6. *Bureau of Fisheries and Aquatic Resources*
  7. *National Mapping Resources Information Authority*
  8. *Philippine Ports Authority*
  9. *National Coast Watch Council*

CONCLUSION

We have ample Maritime Presidential Decrees and Executive Orders to steer us, but would it not be better if we also passed enabling laws for them to stand on their own with the test of time?

About the Author:

Karl Misa Garcia's interest in the Maritime Industry goes way back when he was an employee of Asian Terminals, a port operator at the South Harbor Port of Manila. But his interest in everything maritime maybe in his DNA being a son of a former Navy Officer. He also had a stint as a consultant to Senators Biazon and Trillanes. He is a graduate of BS Computer Science from AMA Computer University. He earned his MBA from De La Salle University Graduate School of Business.

GENERAL ASSEMBLY ADOPTS THE UNITED NATIONS CONVENTION ON THE INTERNATIONAL EFFECTS OF JUDICIAL SALES OF SHIPS

by United Nations Information Office (Vienna)

Photo Credit: by Günter at Pixabay

The United Nations General Assembly adopted the United Nations Convention on the International Effects of Judicial Sales of Ships on 7-December-2022.

The General Assembly authorized a signing ceremony for the Convention to be held as soon as practicable in 2023 in Beijing and recommended the Convention be known as the "Beijing Convention on the Judicial Sale of Ships.

In most States, courts have the authority to order the sale of a ship to satisfy a claim that is brought against the ship or shipowner.

Such a claim is typically brought to foreclose a ship mortgage (in the event of default in repayment) or to enforce a maritime lien against the ship. The judicial sale procedure is typically preceded by the arrest of the ship.

While the international community has achieved significant progress in harmonizing rules on the arrest of ships, much less progress has been achieved in harmonizing rules on the judicial sale of ships, which remain subject to varying domestic laws.

The Beijing Convention will enhance legal certainty by creating a uniform regime for the international effects of judicial sales of ships.

The Convention is expected to provide legal protection for purchasers of ships sold by judicial sale, while safeguarding the interests of shipowners and creditors.

It does this by providing uniform rules that the clean title acquired by the purchaser in the ship will be recognized internationally, while requiring a certificate of judicial sale only to be issued if certain safeguards are met, including notification of the shipowner, creditors, and other interested parties.

It is expected that these safeguards will positively impact the price realized at judicial sales of ships, to the benefit of both shipowners and creditors, including lienholders and ship financiers.

The International Maritime Organization will act as the repository of notices and certificates of judicial sales under the Convention.

The General Assembly calls on Governments and regional economic integration organizations to consider joining the convention to strengthen the international legal framework for shipping and navigation.

****

The United Nations Commission on International Trade Law (UNCITRAL) is the core legal body of the United Nations system in the field of international trade law. Its mandate is to remove legal obstacles to international trade by progressively modernizing and harmonizing trade law. It prepares legal texts in a number of key areas such as international commercial dispute settlement, electronic commerce, insolvency, international payments, sale of goods, transport law, procurement and infrastructure development.

UNCITRAL also provides technical assistance to law reform activities, including assisting Member States to review and assess their law reform needs and to draft the legislation required to implement UNCITRAL texts. The UNCITRAL Secretariat is located in Vienna, Austria, and maintains a website at uncitral.un.org.

Source: *https://unis.unvienna.org/unis/en/pressrels/2022/unisl335.html*

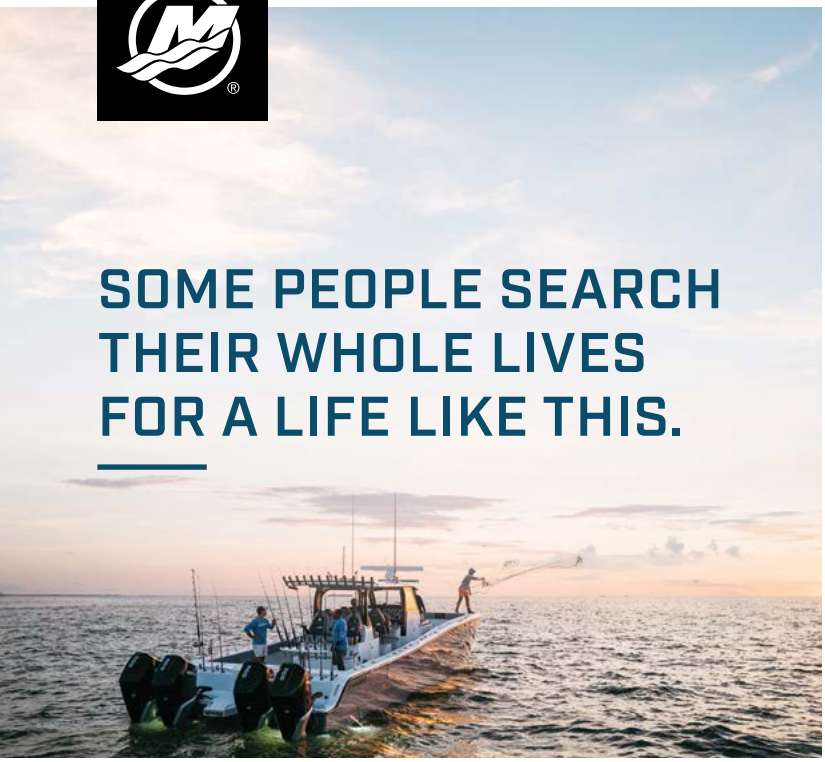
AMBASSADORS OF EUROPEAN UNION MEMBER-STATES IN THE PHILIPPINES VISIT NAVY BASE

by European Union in the Philippines

The Ambassadors of EU member-states in the Philippines led by H.E. Ambassador Luc Véron, visited the Philippine Navy's Naval Operating Base in Subic, and were warmly welcomed by the base commander LT COL Ferdinand Foronda. The dignitaries also received a briefing on-site.

The Ambassadors reiterated the EU's commitment to a secure, free, and open maritime supply routes in the Indo-Pacific, in full compliance with international law, in particular, the United Nations Convention on the Law of the Sea (UNCLOS).

SOME PEOPLE SEARCH THEIR WHOLE LIVES FOR A LIFE LIKE THIS.



SOLANDA ENTERPRISES, INC.
730 Anda cor. Solana & Magallanes Sts., Intramuros, Manila
Tel (632) 8527-8261; (632) 5328-5351 Fax (632) 8527-1315
www.solanda.com Email: solanda@solanda.com

ACS
ADVANCED COMPOSITE SYSTEMS

HAMMERHEAD
RIGID INFLATABLE BOATS

MERCURY
GO BOLDLY.®

MercuryMarine.com

OUR SUBMARINE CHASERS

by AUX CDR Mark R Condeno PCG

INTRODUCTION

After the reconstitution of the Offshore Patrol (OSP) in 1945, a subsequent build up followed with the arrival of former US Coast Guard Lighthouse Tenders by 1947, surplus ships of the United States Navy made its way to the OSP from the Patrol Craft Escorts (PCE), Landing Ship Tanks (LST's), and Submarine Chasers (SC's).

Unknown to many, from 1945 to the late 1970's, the country possessed 23 Submarine Chasers of two Types comprising the 14 SC 110 Type and the 9 SC 173 type. These ships formed the nucleus of our Anti-Submarine Warfare Force. All former USN units with 2 to 3 years of service were provided to the OSP under the US Mutual Defense Assistance Pact or MDAP.

9 units of the SC 173 Type **(PC-461 Class)**:

- RPS *Batangas* (PS-24)
- RPS *Bohol* (PS-22)
- RPS *Camarines Sur* (PS-21)
- RPS *Capiz* (PS-27)
- RPS *Negros Oriental* (PS-26)
- RPS *Negros Oriental II* (Ex-Cambodian Navy) (PS-26)
- RPS *Nueva Ecija* (PS-25)
- RPS *Nueva Vizcaya* (PS-80)
- RPS *Zamboanga Del Sur* (PS-23)

SPECIFICATIONS and ARMAMENTS

They have a top speed of 22 knots, armed with a 3inch/50, 1-40mm, 5x20mm guns, 2 K-guns, (Depth Charge Projector), 2 Mousetraps, and 2 Depth Charge Tracks. Compliment is 65, 5 Officers and 60 EP. The Commanding Officer was usually held by an LCDR though at the OSP at that time it would be a LTJG or LTSG.

14 units of the SC 110 Type **(SC-497 Class)**:

- RPS *Alert* (PY-54)
- RPS *Cagayan* (P-14)
- RPS Cavite (P-19)
- RPS *Ilocos Norte* changed to *RPS Malampaya Sound*
- RPS *Ilocos Sur* (P-16)
- RPS *Isabela* (P-18)
- RPS *Mountain Province* (P-15)
- RPS *Surigao* (P-17)
- plus 6 unknown named vessels of the type.

SPECIFICATIONS and ARMAMENTS

They have a Top Speed of 15 knots and armed with the following 1x 40mm gun, 1 twin mount 50 Cal MG, 3-K Guns, 14 Depth Charges, 2 Mousetrap Rails with Rocket Projectiles. Compliment is 3 Officers and 25 EP.

NOTABLE MISSIONS

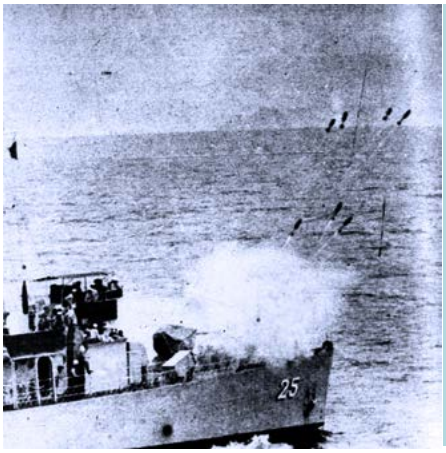
Aside from their Anti-Submarine Warfare (ASW) and Naval Gunfire Support (NGSF) duties, they also conducted patrol duties as well as escort missions to our larger units as exemplified by RPS *Capiz* (PS-27) and RPS *Negros Oriental* (PS-26) during the Korean War with some of the units deploying from the OSP Submarine Chaser Base in Corregidor Island where the LST's carrying our PEFTOK troops would rendezvous, escorted by the Submarine Chasers until the outskirts of the South China Sea. Prior to entering Korean waters the LST's would be met and escorted by two American Destroyers up to the Port of Pusan. The Escort Mission SOP at that time was to provide 2 Submarine Chasers as escort to every departing PN LST or US Navy Transport Ship carrying our troops to Korea.

RPS Capiz (PC-1563/C-27) actual photograph escorting USNS SGT Sylvester J Antolak (T-AP-192) carrying troops of the 10th Battalion Combat Team, PEFTOK, South China Sea. Photograph Courtesy of the late LT Faustino Tumamak PA, 10TH BCT.

SUBMARINE INTRUSIONS and COLD WAR FUNCTIONS

The presence of Submarine Chasers in the fleet alludes to the several reports of unidentified submarine intrusions in our territorial waters during those periods in which submarine sightings were at Northern Philippines, the waters of Albay and Quezon Province, Tawi-Tawi, and Palawan, among others.

Our Submarine Chasers also formed a critical mission during the Cold War in which the Philippines was tasked to perform Ant-Submarine Warfare and Minewarfare as exemplified by our Minesweepers, hence, the various bilateral and multilateral naval exercise involving these ships during the Southeast Asia Treaty Organization (SEATO) period.



RPS Nueva Ecija (PS-25/Ex-PC-1561) firing Hedgehogs during an ASW Exercise in the South China Sea. (Photograph from the Manila Chronicle, 2-February-1963/ https://farm3.static.flickr.com/2938/33138817073_7427e2e986_b.jpg

COMMISSIONING & DECOMMISSIONINGS

The first of the SC-173 type to be commissioned into the Offshore Patrol was the First RPS *Negros Oriental* in May 1945 and lost in a typhoon while in Guam in 1962. She was followed by RPS *Batangas, Bohol, Camarines Sur, Capiz,* and *Nueva Ecija* which were commissioned to the then Philippine Naval Patrol on 02-July-1948, while RPS *Nueva Vizcaya* and the second RPS *Negros Oriental* joining the fleet on 02-March-1968, taking a similar hull pennant number of the sunken Negros Oriental in April 1976. It was a former French Navy unit and later turned over to the Khmer Navy, then escaped to the Philippines in 1975. These last two vessels were the last to be decommissioned of the class in 1990, while the earlier ships bowed out of service during the late 1960's.

The SC-497 Class on the other hand were all jointly commissioned on 02-July-1948, where they spent most of their early days in training the nucleus of the Offshore Patrol crew at the United States Navy in Subic Bay Naval Base. Four ships of the Class were decommissioned in 1956, and the rest during the 1960's.

RPS Negros Oriental (PS-26) was formerly Khmer Navy E-312 which escaped to the Philippines in April/May 1975.

RPS Batangas (PS-24) was formerly USS PC-1134.
Photo Credit: Navsource.

RPS Bohol (PS-22) Philippine Navy, Official was formerly USS PC-1131.

RPS Camarines Sur (PS-21) was formerly USS PC-1121.
Photo Credit: Navsource.

SOURCES

- Guide to Far Eastern Navies: China, Japan, North Korea, South Korea, Philippines, Taiwan by Barry M. Blechman and Robert P. Berman, 1977.
- Janes Fighting Ships 1977-1978 by Captain Richard Moore, RN, 1978.
- History of the Philippine Navy by CAPT Aquilino Silverio PN (GSC) and LT Isidro G Espela PN, HPN, 1976.
- The Philippine Navy 1898-1998 By Commodore Regino P Giagonia AFP (RES).
- The Philippine Navy in the New Society, 1973.
- Conway's All the World's Fighting Ships 1947-1995 by Antony Preston, 1995.

About the Author

AUX CDR Mark R Condeno PCG is the On-Site Officer in Charge of the Philippine-Korea Friendship Center and Museum Curator of the PEFTOK Korean War Memorial Hall, Department of National Defense-Philippine Veterans Affairs Office. He holds a BS degree in Architecture from Palawan State University. He completed the Basic Naval Reserve Officers Training Course with the 420TH NROTCU. He is with Bravo Class of 1999 the Philippine Coast Guard Auxiliary Officers Indoctrination Course, Coast Guard District-Palawan. In 2002, he took the Aerospace Power Course from Air University, United States Air Force and is a 2008 Graduate of the Joint US Military Hist orical Operations Course. In 2007, he was Research Officer at the Office of the Naval Historian, PN. Lastly, he is with Class 26 of the Executive Course on National Security of the National Defense College of the Philippines.

MEDIEVAL SHIPWRECK DISCOVERED IN NORWAY'S LARGEST LAKE

by Marine Industry News

Researchers surveying the bottom of Norway's Lake Mjøsa have uncovered the remains of a historic shipwreck dating back to the 14th century.

Archaeologists working for the Norwegian Defence Research Establishment made the discovery while hunting for unexploded WWII ammunition, and say it could become one of the country's oldest-ever shipwrecks.

Sonar images of the wreck site show the hull of the 10-metre-long wooden ship, which is lying on the lake bed at around 410m beneath the surface.

Speaking to Live Science, maritime archaeologist Øyvind Ødegård says the ship's construction reveals it was likely built around 700 years ago, at the time that Viking ships began to transition to medieval designs with a distinctive bow and stern.

"We only have the acoustic [sonar] images of the wreck," says Ødegård. "But it appears from the data that there is the outline of something that possibly could be a stern — and if that's the case, then that doesn't really appear until the 1300s."

From the design of the vessel, researchers have concluded it likely had a square sail, comparable to Viking ships.

The researchers say that the ship's frame show it was a "clinker-built" ship, referring to a traditional Norse boatbuilding method, overlapping the hull planks to reduce overall weight equipment so far. Further investigations with an autonomous underwater vehicle called Hugin won't be possible until conditions improve next year.

The autonomous underwater vehicle *Hugin* is being used to map the bottom of Lake Mjøsa. Photo courtesy of Merete Nyheim/NTNU

Ødegård is part of a project led by the Norwegian Defence Research Establishment (FFI) in collaboration with Norwegian University of Science and Technology (NTNU) that is mapping hundreds of tons of ammunition dumped in Lake Mjøsa from the 1940s until the 1970s. He admits that the prospect of finding new cultural treasures was one reason he joined the project.

"Finding the wreck was almost a byproduct of the original mission to map dumped munitions," he says. "I expected to find some things — that's why I was participating in the project."

Hamar, a town on the shores Lake Mjøsa

Mjøsa was part of an important trade route that ran between several affluent communities between the 8th and 11th centuries. This means there could well be more artefacts to discover in 2023 and beyond.

It's not the only ancient shipwreck to be discovered in recent months. In November, researchers in Croatia found a Roman boat in the ocean off Sukošan, which is estimated to date from the 1st century. In October, the MIN reported that an unusual 'whaleback' steamship had been discovered in Lake Superior, after being lost for 120 years.

⛵⛵⛵

Source: *https://marineindustrynews.co.uk/medieval-shipwreck-discovered-norway-lake-mjosa/*

WHAT IS A RED TIDE?

by NOAA

A "red tide" is a common term used for a harmful algal bloom. Photo Credit: Stockvault.com

Harmful algal blooms, or HABs, occur when colonies of algae—simple plants that live in the sea and freshwater—grow out of control while producing toxic or harmful effects on people, fish, shellfish, marine mammals, and birds. The human illnesses caused by HABs, though rare, can be debilitating or even fatal.

While many people call these blooms 'red tides,' scientists prefer the term harmful algal bloom. One of the best known HABs in the nation occurs nearly every summer along Florida's Gulf Coast. This bloom, like many HABs, is caused by microscopic algae that produce toxins that kill fish and make shellfish dangerous to eat. The toxins may also make the surrounding air difficult to breathe. As the name suggests, the bloom of algae often turns the water red.

HABs have been reported in every U.S. coastal state, and their occurrence may be on the rise. HABs are a national concern because they affect not only the health of people and marine ecosystems, but also the 'health' of local and regional economies.

But not all algal blooms are harmful. Most blooms, in fact, are beneficial because the tiny plants are food for animals in the ocean. In fact, they are the major source of energy that fuels the ocean food web.

A small percentage of algae, however, produce powerful toxins that can kill fish, shellfish, mammals, and birds, and may directly or indirectly cause illness in people. HABs also include blooms of non-toxic species that have harmful effects on marine ecosystems. For example, when masses of algae die and decompose, the decaying process can deplete oxygen in the water, causing the water to become so low in oxygen that animals either leave the area or die.

Scientists at the National Ocean Service have been monitoring and studying this phenomenon for a number of years to determine how to detect and forecast the location of the blooms. The goal is to give communities advance warnings so they can adequately plan for and deal with the adverse environmental and health effects associated with these 'red-tide' events.

VIDEO: Learn about "red tides" and human health in this video from the U.S. Integrated Ocean Observing System®.

Source*: https://oceanservice.noaa.gov/facts/redtide.html*

LEADING SHIPPING BANKS AND MARINE INSURERS PAVE THE WAY FOR 1.5C-ALIGNED EMISSIONS BENCHMARKING

by Poseidon Principles

30 shipping banks and 17 marine insurance providers and brokers announce today the Poseidon Principles will add additional trajectories to report climate alignment with a 1.5C future. This new commitment will align the Poseidon Principles with the ambition of the UN and the latest available climate science.

The Poseidon Principles have committed to adopting an emissions reduction trajectory in line with net-zero commitments, as soon as such a trajectory or trajectories become available. The Poseidon Principles provide a framework for financial institutions and marine insurers to measure and publicly report the climate alignment of ship finance and marine insurance portfolios with global climate action goals.

"The urgency is clear. Because of the role that shipping plays in the global economy, we must accelerate our ambition towards the Paris Agreement's 1.5C temperature goal. This new ambition will allow the Poseidon Principles to continue playing our role in incentivizing and supporting the decarbonization of shipping," said Michael Parker, Chairman, Global Shipping, Logistics & Offshore, Citi and Chair of the Poseidon Principles for Financial Institutions.

The Poseidon Principles are already aligned with the International Maritime Organization's ambition to reduce GHG emissions from international shipping by at least 50% by 2050. The Poseidon Principles for Marine Insurance also benchmark against an emissions reduction trajectory in line with a 100% reduction by 2050.

The new commitment announced today means that once a new trajectory based on credible and well-recognized sources is established and adopted by the members of the individual initiatives, Signatories will benchmark their portfolios against two trajectories: one aligned with the IMO's 50% reduction by 2050, and one aligned with net-zero by 2050, and a maximum temperature rise of 1.5C above pre-industrial levels by 2100, to meet the temperature goals of the Paris Agreement. For the second trajectory to be consistent with a 1.5C future, the scope will be expanded to include all greenhouse gas species, and to account for well-to-wake emissions.

"Access to real emissions data through the Poseidon Principles creates tangible impact in our business as well as in the real economy. Establishing common global decarbonization trajectories will help us make business decisions that reflect the latest available climate science. This is the right thing for us to do," said Patrizia Kern-Ferretti, Head Marine, Swiss Re Corporate Solutions and Chair of the Poseidon Principles for Marine Insurance.

Learn more about the commitment in the Ambition Statement.

About the Poseidon Principles

The Poseidon Principles for Financial Institutions and the Poseidon Principles for Marine Insurance are frameworks for measuring and reporting the alignment of financial institutions' shipping portfolios and marine insurers' hull and machinery portfolios with climate goals. Recognizing financial institutions' and insurers' role in promoting responsible environmental stewardship throughout the maritime value chain, the Poseidon Principles provide them with tools to foster collaboration with clients, gain insight to enhance strategic decision-making, and address the impacts of climate change.

Both Poseidon Principles frameworks are built on four principles –Assessment of climate alignment, Accountability, Enforcement, and Transparency– which they share with the Sea Cargo Charter. Established under the auspices of the Global Maritime Forum, the three initiatives aim to increase the transparency of environmental impacts within global seaborne trade, promote industry-wide change, and support a better future for the industry and society.

Source: *https://www.poseidonprinciples.org/finance/news/leading-shipping-banks-and-marine-insurers-pave-the-way-for-1-5-aligned-emissions-benchmarking/*

IT'S TIME FOR WETLANDS RESTORATION!

by PCG Eastern Sarangani

The Philippine Coast Guard (PCG) Station Eastern Sarangani participated in the MANGROVE PLANTING & CLEAN-UP DRIVE activities in celebration of "WORLD WETLANDS DAY" at Sitio Mauswagon, Barangay Glan-Padidu, Glan, Sarangani Province, on 03-February-2023.

Personnel of CGS Eastern Sarangani led by Station Commander CG ENS KENNETH JOY R ALCANTARA,kqwd and the Sub-Station personnel joined the Mangrove Planting Activity and Clean-up Drive together with the Department of Environment and Natural Resources (DENR), PNP Maritime Group-Glan, and Volunteers from Sarangani Province, in line with the World Wetlands Day 2023 with the theme "It's Time for Wetland Restoration" held at the Alegado Beach Resort.

A GLOBAL LEADERSHIP IN THE TRANSITION TO A SAFE AND SUSTAINABLE FUTURE IS VITAL

by Haugland Bjørn Kjærand

Photo Credit: Enrique at Pixabay

We are pleased to host an exclusive interview with Mr Bjørn Kjærand Haugland, co-founder and Chief Executive Officer of Skift Business Climate Leaders which is a Norwegian business-led climate initiative with a mission to accelerate the transition to a low-carbon economy and support the government in delivering on its national climate commitments by 2030.

Mr Haugland enumerates the key areas that should be on top of the ESG agenda and highlights that a new generation leadership with more gender equality and competence on the field of ESG will make the difference.

Bjørn Kjærand Haugland: Shipping faces a wide variety of ESG risks through the entire value chain. The list below highlights the most critical ESG issues from a global perspective. The 13 areas cited below should be on top of the ESG agenda for the shipping industry in the next five years:

Environment:

- EMISSIONS, GHG emissions, and the ability to meet stricter climate-related regulations, concern over air pollution emission from ships, including Nitrogen Oxides (NOX), Sulphur Oxides (SOX), and Particulate Matter (PM) in harbour areas.
- CLIMATE RISK the fleet's preparedness to meet harsher and more unpredictable climatic conditions and stricter requirements.
- RECYCLING Reputational damage due to recycling taking place on the beaches in southeast Asia, where the health and safety of workers are not respected, and environmental protection is lacking.
- BIODIVERSITY AND POLLUTION transfer of invasive species through ballast water, impacts on marine life from anti-fouling chemicals, and insufficient on-board waste management.
- ACCIDENTAL SPILLS AND EMERGENCY PREPAREDNESS Financial markets are concerned with environmental damage from accidents.

Social:

- FORCED LABOUR Several cases of forced or compulsory labour have been uncovered in the recent past years, particularly involving migrant workers.
- SECURITY Shipping routes in high-risk areas require a greater focus on security practices.
- DIVERSITY Shipping is a male-dominated industry with limited opportunity for women and non-Western crew to advance.
- HEALTH AND SAFETY There are approximately 6 fatalities per 100 million work hours on board ships (excluding fishing) per year, which is 10 times the OECD average for all industries.
- LABOUR RIGHTS Extensive use of temporary employment agencies and short-term contracts weaken worker's rights and their ability to organize.

Governance

- POLITICAL ACCOUNTABILITY Controversy over the industry's supranational nature means it often escapes enforcement of national regulations and international agreements.
- TAX TRANSPARENCY Tax transparency and tax liabilities, the use of tax havens, and tax evasion.
- ANTI-CORRUPTION Shipping is highly vulnerable to corruption and the demand of facilitation payments.

S4S: What are the key barriers that the maritime industry is currently facing with regards to ESG? What are your suggestions to turn these into opportunities?

B.K.H.: The barriers are:

1. Finding the Right Framework

With SASB, TCFD, GRI and beyond, the proliferating array of ESG acronyms and frameworks have left much confusion and 'analysis paralysis' in their wake. Without standardized metrics, it's difficult for investors to evaluate companies. Equally, it's challenging for companies to know where to invest the considerable amount of time each framework demands.

2. Measuring and Tracking Performance

'You can't manage what you don't measure,' states the classic adage. Yet many ESG principles have historically lacked common definitions and metrics. To complicate the challenge even more, many ESG issues span organizational functions and departments.

3. Accessing Governance Data and Insights

As investors begin to shine a brighter spotlight on ESG, benchmarking becomes even more important. Companies must not only track their performance against ESG metrics but know how they stack up against competitors and peers. Companies need to identify red flags and discrepancies — and take corrective action.

Collaboration within the whole value chain is the key to turn these barriers to opportunities. Systemic changes require that all stakeholders are involved.

S4S: In your view, has our industry realized the importance of ESG? What should be the next steps towards an ESG-ready industry?

B.K.H.: I am today working across different industries and I believe the global shipping industry still has way to go in order to realize the importance of ESG. Next step should be a clear tone of voice from the top -from the CEO's of the main companies- industry association supported by a specific initiative to move the whole industry forward. This includes competence building on all levels in the industry.

S4S: How maritime industry can actually address all ESG requirements? What are the lessons learned from other sectors?

B.K.H.: The key is to encourage all companies to do baseline studies, set goals and targets and collaborate to build strength and speed of implementation

S4S: How will new trends, technologies, concepts and innovation influence our long-term ambitions and the way we achieve them towards ESG?

B.K.H.: The main trend and enabler will be technology platforms that will drive transparency in the whole value chain. Key focus should be digital transformation.

S4S: How do you expect ESG issues to evolve for the maritime industry in the coming years?

B.K.H.: I am optimistic. The pressure will come from the society at large through customer demands. ESG will be a main driver to build competitive advantages.

S4S: If you could change one thing in the industry to boost ESG awareness from your perspective what would it be and why?

B.K.H.: A new generation leadership with more gender equality and competence on the field of ESG. Commonly cited benefits of gender equality in leadership positions include: better decision making, better problem solving, effective challenges to traditional mindsets, and enhanced organizational communication.

S4S: What is your key message to industry stakeholders towards sustainable shipping?

B.K.H.: Take global leadership in the transition to a safe and sustainable future! With increasingly stretched land-based resources, we all depend on ocean industries to supply a growing world population with enough food and energy. At the same time, these industries must themselves strive to become more sustainable. All companies should understand the broader environmental and social consequences of their business operations and continuously evaluate risks and opportunities. The shipping world needs leaders who are the opposite of the old "company man" who coldly maximizes profits, and who instead embrace being more vulnerable, open, caring, empathetic, and human. A company will thrive when it has leaders courageous enough to challenge business as usual — leaders who understand that profit should come not from creating the world's problems, but from solving them. Willpower comes from cultivating leadership principles, such as purpose, humility, and courage.

Source: *https://safety4sea.com/cm-a-global-leadership-in-the-transition-to-a-safe-and-sustainable-future-is-vital/?utm_source=noonreport&utm_medium=email&utm_campaign=others&utm_source=newsletter&utm_medium=email&utm_campaign=SAFETY4SEA+-+daily+06%2F02%2F2023*

SHIPPING'S FUTURE ROLE IN CARBON CAPTURE AND STORAGE

by DNV Maritime Impact

Over the next decade, carbon capture will start to play a larger role in the fight against climate change. And with more industry stakeholders looking at different transportation options between capture sites and storage locations, liquid CO2 carriers will become an important link in the value chain.

Released in August 2022, the UN's Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment Report reached some disturbing conclusions about climate change. For the first time, the IPCC identified human activity as a root cause for a warming planet and noted that *"Global warming of 1.5°C and 2°C will be exceeded during the 21st century unless deep reductions in carbon dioxide (CO2) and other greenhouse gas emissions occur in the coming decades."* More recently, a draft of the Glasgow Agreement, released at COP26 in November, recognized that *"… limiting global warming to 1.5°C by 2100 requires rapid, deep and sustained reductions in global greenhouse gas emissions."*

CO2 abatement strategies. To slow global warming, the focus has been on abatement strategies, such as efficiency measures and further investments in alternative, low carbon fuels. As for removing carbon emissions at the source, analysts agree that carbon capture and storage (CCS) will be necessary to achieve meaningful reductions in CO2. As noted by DNV's Pathway to Net Zero Emissions, a DNV study released in late October, *"Carbon capture and removal technologies are a must …"* if the world has any chance of meeting the 1.5°C limit.

Work to scale up carbon capture has already begun. To date, there are 16 large-scale carbon capture facilities capturing more than 30 million tons of carbon per year from fertilizer (ammonia), steel, hydrogen production, and from natural gas processing plants. Safe storage of CO2 is a proven technology. For decades, energy companies have injected pressurized CO2 into reservoirs to displace oil and drive it to the surface.

Safe, flexible transportation of CO2. According to Erik Mathias Sørhaug, Business Development Leader – Maritime Advisory, DNV, large quantities of CO2 need to be transported from the capture site to storage either by pipelines or ships, or a combination of both. *"Shipping offers a safe, reliable and flexible transportation well-suited to shorter distances and low to medium volumes,"* he says. *"In our view, scaling up global CCS capacity will require a fleet of specialized tankers with the ability to collect CO2 from capture sites operated by many different industrial segments."*

Pioneering the transportation of liquified CO2. While shipping represents an alternative to pipelines, there are some technical challenges that need to be addressed. Martin Cartwright, DNV's Business Director Gas Carriers & FSRUs, explains that to efficiently transport CO2 at industrial scale, the industry is looking into different options for how to transport CO2 including high, medium, and low-pressure solutions, which will help integrate seaborne transportation into the CCS value chain.

"DNV has offered class services to CO2 carriers since 1988," he says. *"Through our work with various partners, we have developed expertise specific to vessels design, specialized tanks, piping and refrigeration systems for the transportation of liquified CO2."*

Alternatives for transporting CO2 at both high and low pressures. Vice President for Special Projects-Gas at DNV, Johan Petter Tutturen, explains that present experience with shipment of CO2 is with medium-pressure solutions. *"Low-pressure solutions will allow for larger cargo tanks, which enhances a vessel's transportation capacity and allows for more CO2 per transported unit volume,"* he says. *"However, low-pressure transportation of liquified CO2 introduces new risks and challenges that need to be thoroughly investigated to ensure safe and reliable operation. Unlike natural gas, CO2 must be pressurized to reach a liquid state. Pure CO2 has a 'triple point' at 5.12 bara and ÷56.6°C. For temperatures below the triple point, CO2 will only exist as gas or in solid states."*

VP Tutturen says that existing CO2 shipment is carried under medium pressure on smaller carriers serving the food and beverage industry, but the industry is exploring other pressure options. *"DNV is actively participating in several Joint Industry Projects and evaluating alternatives for transporting CO2 at both high and low pressures,"* he says. *"Factors being considered, among others, include choice of material for the containment system, effect of impurities in the cargo, transport volumes, safety considerations, and achieving the optimal balance between cost and operational complexity."*

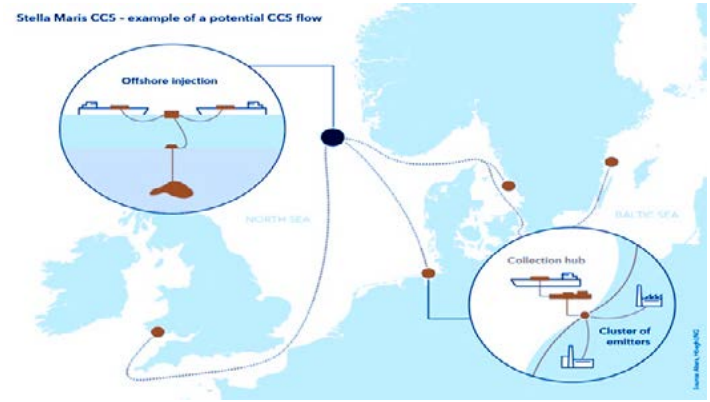
First mover: Northern Lights project. On 15-December-2020, the Norwegian Government announced its funding decision for full-scale demonstration project "Longship" for the capture, transportation, and storage of CO2. The Longship project has the Northern Lights project, a joint venture that includes Equinor, Shell, and Total Energies, and is focused on the transportation and storage of CO2. In the first phase, the project will capture CO2 from industrial sources in the Oslofjord region and ship it in liquid form to an onshore terminal on the Norwegian west coast, where it will be carried by pipeline to an offshore storage complex in the North Sea. In October, the project announced the

construction of two dedicated CO2 carriers, with a cargo size of 7,500 cubic meters.

Northern Lights ordered two CO2 transport vessels, each with a cargo capacity of 7,500 m3 and a length of 130 m, from Dalian Shipbuilding Industry Co. The carriers will load captured and liquefied CO2 from European emitters and transport it to the Northern Lights Terminal in Øygarden in western Norway from mid-2024.

Cartwright notes that while the first phase of Northern Lights only aims to store 1.5 million tons per year, the project's ambitions are to scale up capacity, allowing capture sites all over Europe to store CO2 at the Northern Light's facility. *"Northern Lights has shown how a public–private partnership can be leveraged to make this flexible CCS concept a reality and inspire other groups to develop their own CCS projects,"* he says.

Scaling up offshore CCS. Another project, known as Stella Maris and currently in the planning stages by Altera Infrastructure and Höegh LNG (and other partners), has benefited from an informal dialogue with the Northern Lights team. *"We plan to develop and manage the entire CCS value chain, from loading at port, ship transport to field and continuous injection of up to 10 million tons of CO2 per year into offshore reservoirs,"* says Director Christian Fiell, Sustainability for Altera Infrastructure. *"We will have greater capacity than the Northern Lights pilot project, but as a first mover in this space, they have helped show the way."*



Altera and Höegh LNG's Stella Maris CCS project involves large-scale collection, transport and injection of CO2 into subsea reservoirs. Located close to major land-based industrial clusters, floating CO2 collection, storage and offloading (CCSO) centers enable the capture and further conditioning of CO2, which is then transported by shuttle tankers to offshore offloading systems and continuously injected into the seabed using floating pumping stations.

In addition to a large storage capacity, the Stella Maris project will include three or four DP II liquified CO2 shuttle tankers delivering to a fixed or floating injection offshore unit, connected to a subsea wellhead. *"To keep our own carbon footprint low, the tankers will be fueled by LNG, but can take other low carbon fuels as they become available,"* says Frank Wettland, Project Manager for Altera Infrastructure. *"In addition, the tankers will power the unmanned injection unit, helping to reduce our power consumption."*

Scalable CCS solutions. Wettland says the Stella Maris business case is grounded in the EU's Emissions Trading Scheme and has benefited from government policy in Norway. In fact, the project was recently awarded partial funding from Gassnova, the Norwegian state enterprise that was established to promote CSS technology. But he is quite confident that Altera Infrastructure's decades of experience in the production, storage, and transportation of oil and gas can be applied to the transportation and storage of CO2, putting the company in a strong position to capitalize on the growing CCS market.

"We plan to develop and manage the entire CCS value chain, from loading at port, ship transport to field and continuous injection of up to 10 million tons of CO2 per year into offshore reservoirs."
Christian Fjell
Director, Sustainability, Altera Infrastructure

"Together with our partners, we have the expertise to develop a commercially viable offshore CCS solution," he says. "As other regions tighten regulations on carbon emissions or introduce carbon pricing, the Stella Maris concept can be applied to any region with offshore storage capacity. And that means more opportunities for shipping."

Collaboration is key. Nevertheless, everyone agrees that scaling up CCS infrastructure will take time. Sørhaug notes that while the technology is more or less in place, it will require collaborative action involving regulators, politicians, industry stakeholders, class and suppliers to make a difference. *"As demand for flexible transportation of liquified CO2 increases, we believe those owners active in the gas carrier segment who are willing to partner with other stakeholders on CCS projects will be rewarded in the years ahead."*

Reprinted with permission from DNV Maritime Impact.

Source: *https://www.dnv.com/expert-story/maritime-impact/Shippings-future-role-in-carbon-capture-and-storage.html#:~:text=%E2%80%9CShipping%20offers%20a%20safe%2C%20reliable,by%20many%20different%20industrial%20segments.%E2%80%9D*

MARINA LEADS PHILIPPINE DELEGATION TO IMO HTW 9 MEETING IN LONDON

by MARINA

The Philippine delegation, headed by the Maritime Industry Authority (MARINA), participated in the 9th Session of the Sub-Committee on Human Element, Training, and Watchkeeping (HTW) held on 06 to 10 February 2023 at the International Maritime Organization (IMO) Headquarters, London, United Kingdom.

The HTW deals with the human side of shipping, including training and certification, review and revision of IMO model courses; and guidance addressing issues such as fatigue bullying and harassment in the maritime sector, including sexual assault and sexual harassment (SASH).

The head of the Philippine delegation, Maritime Industry Authority (MARINA) Administrator, Atty. Hernani N. Fabia, expressed the country's position during the discussion of several agenda items, such as the implementation of the Standards of Training, Certification and Watchkeeping (STCW) Convention, 1978, as amended, Comprehensive review of the STCW Convention and Code, Comprehensive Review of the 1995 STCW-F Convention, Philippine measures to address fraudulent certificates, among others.

Meanwhile, in a separate meeting with the IMO Secretary-General Kitack Lim, MARINA Administrator Fabia shared the country's initiatives in pursuit of Filipino seafarers' interest consistent with the STCW Convention. The administrator extended his appreciation to the IMO for the support and assistance to the country through its Integrated Technical Cooperation Programme (ITCP). Secretary General Lim, in response, assured that the Organization will continue to provide technical assistance to the Philippines, and encouraged the Philippines to support the work of the IMO on maritime safety and marine environment

OVER 1,500 SEAFARERS WERE ABANDONED IN 2022

by Lloyd's List Maritime Intelligence

New guidelines seeking to address the rapidly increasing number of abandonment cases are weak, unenforceable and "make a mockery of the intended deterrent effect of international labour standards for maritime workers," says NGO Human Rights at Sea.

In 2021, the authorities saw 'an alarming spike' in cases of ships and crew being abandoned by owners in the wake of the Covid pandemic. The trend continued throughout 2022, which has ended up being the worst year on record.

Over 1,500 seafarers and 113 ships have been abandoned in 2022, the highest number of cases since records began.

Following a spike in abandonment cases in the wake of the Covid pandemic in 2021 the number of ships and crew being left without support by owners has continued to rise this year.

According to the joint database maintained by the International Maritime Organization and International Labour Organization there were 713 abandonment incidents listed in the database since it was established in 2004, concerning 9,971 seafarers. Of those incidents, 305 cases were resolved, 151 cases were disputed, and 50 cases were inactive. There are still 207 unresolved cases in the database.

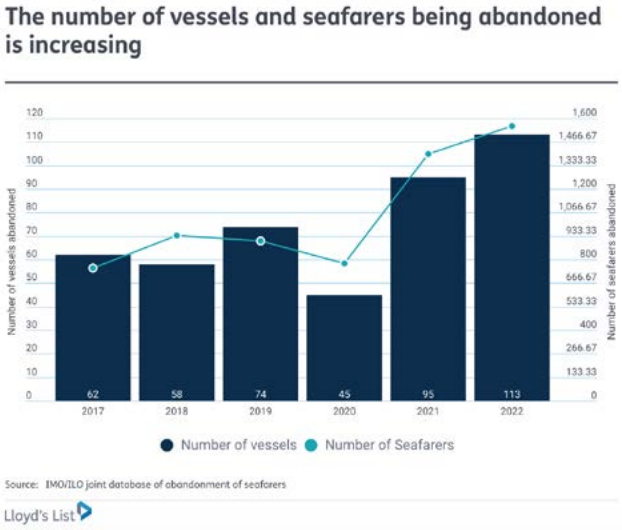
According to Maritime Labour Convention a seafarer is deemed to have been abandoned when a shipowner fails to cover the cost of repatriation and has left the seafarer without the necessary support or has "otherwise unilaterally severed their ties with the seafarer, including failure to pay contractual wages for a period of at least two months."

While such cases have been relatively infrequent in the past since 2017, the number of cases started to rise dramatically. From 2011 to 2016, the number of cases per year ranged from 12 to 19. But in 2017, there were 55 cases reported and by 2019, that had risen to 74. The international Maritime Organization described the record-breaking leap to 95 cases in the wake of Covid 19 last year as "an alarming spike," but hopes that the trend would subside along with the pandemic have proven to be overly optimistic.

"The insidious culture of seafarer abandonment is a direct result of a lack of effective enforcement of human and labour rights protections in the industry. There is still little, to no deterrent effect or transparency," said David Hammond, the founder and chief executive of the non-governmental organization Human Rights at Sea.

"Without the hard backstop of union, port and flag state inspections and associated ship arrests disrupting violator's financial liquidity, the rates of abandonment would keep rising without check."

"The recent draft guidelines tool on crew abandonment are a revisit of what we already know should be embedded in port, coastal and flag States' existing enforcement activities for upholding human and labour standards under the MLC, national and international instruments."



Earlier in December 2022, a joint IMO/ILPO working group agreed a new set of guidelines to address the significant rise in cases of abandonment being reported. The guidelines draw on relevant ILO international labour standards, notably the Maritime Labour Convention 2006, which requires flag states to ensure a financial security system is in place for ships. They also encourage port states to pay particular attention to this financial security during inspections of foreign ships that visit their ports.

The new guidelines, however, are voluntary and non-binding and add little to the existing requirements established under the MLC 2006. Of the cases reported in 2022, only 15 involved flag States which had not ratified MLC 2006.

Following the entry into force, on 18-January-2017, of the 2014 amendments to MLC 2006 concerning financial security in cases of abandonment, 426 abandonment cases have been reported to the joint IMO/ILO database.

According to the Mr Hammond, the new guidelines are weak, not legally-binding, aspirational, and entirely unenforceable. "The fact that in the drafting the word *"should" is used 44 times and the word "must" is used only twice positively for seafarer repatriation, and inspection of working and living conditions, says it all,"* said Mr Hammond.

"In plain-English, the guidelines are saying to violators either contemplating or undertaking abandonment of human beings, 'play nice, there are rules and kindly follow them'."

Authored by Richard Meade & Michelle Wiese Bockmann.

⛵⛵⛵

Source: *https://lloydslist.maritimeintelligence.informa.com/LL1143448/Over-1500-seafarers-were-abandoned-in-2022a*

WHY SKILLS DEVELOPMENT IS VITAL FOR SHIPPING'S GREEN TRANSITION

by World Economic Forum

Moving towards a low-emission global economy will create tens of millions of new 'green jobs' across sectors including shipping. The renewable energy industry alone is projected to generate 38.2 million jobs by 2030. The effects of the green transition on employment are also requiring workforces across multiple sectors to reskill and upskill. This, coupled with new technologies, such as artificial intelligence (AI) and digitalization, is leading to increased calls for investment in skills to ensure a thriving future workforce in 2030 and beyond.

Decarbonizing shipping will require new skills. Shipping's green transition is no different. Currently accounting for 3% of global greenhouse gas (GHG) emissions, shipping's decarbonization is expected to bring with it green job creation opportunities across new value chains, with 87% of the infrastructure projected to be land-based. According to the Africa Green Hydrogen Alliance, the production of green hydrogen –a fuel touted for zero emission shipping– could create 2 to 4 million green jobs by 2050 in member countries. There is also a significant need for skills development for green shipping. A seafarer currently trained in marine oil will require additional training as the industry transitions to future alternative fuel technologies, e.g., hydrogen, ammonia, and batteries. Meeting decarbonization goals, with fast-moving technological developments and ever-increasing smart ship technologies, reflects a general trend towards 'higher-skilled' seafarers and requires increased digital, science, technology, engineering, and math (STEM); safety and organizational skills to meet net zero emission demands.

Upskilling linked to speed of decarbonization. The speed and scale of upskilling the global maritime workforce is inevitably linked to the speed of its decarbonization. Within the spirit and framework of the Paris Agreement, there is still much to be decided in terms of global shipping's low-carbon trajectory – but time is running out. Governments from the world over are set to meet once again at the United Nations' shipping arm, the International Maritime Organization (IMO). Here they'll debate and adopt a revised GHG Strategy –a document that likely commits the world to a more ambitious target for cutting shipping's carbon and other climate change-producing emissions. Industry organizations and many member states are calling for total zero emissions by 2050 with strengthened 2030 and 2040 targets to align to the 1.5ºC of the Paris Agreement, reinforced at COP27 in Sharm-el-Sheikh. According to analysis commissioned by the Maritime Just Transition Task Force, this would represent a difference of training between 800,000 seafarers by the mid-2030s, in comparison to 350,000 seafarers by the end of the 2050s. This makes a stark difference in terms of training and skills development timelines.

Global policy coherence required at the IMO. The availability of skilled labor and the right education will be essential to shipping's green transformation. However, coherence between skills and environmental policies remains weak and fragmented in many countries. This poor cross-governmental coordination is hampering the effectiveness of governments being able to successfully plan their green skills formation, let alone deliver. While responsibilities for climate change policies often rest solely on a country's environmental ministry, ensuring a successful and just transition to a green economy which leaves no one behind must involve multiple governmental departments from labor and education to energy and trade. Poor cross-governmental coordination can hamper the effective planning of skills development and pose a bottleneck to the green transition. Luckily, shipping's global training standard "STCW Convention" is due for a comprehensive update. In the IMO Sub-Committee on Human Element, Training and Watchkeeping (HTW), national delegates have met in London in February to start discussing what the review of the convention should entail, which skills will be required for the green transition, and wider trends impacting the industry. This represents a real opportunity for shipping to demonstrate a coherent policy approach between skills and environmental policies, and for national governments to ensure their workforces capitalize on green job opportunities in the maritime industry. If the environmental policy-makers agree on a more ambitious decarbonization trajectory in July at the Marine Environment Protection Committee meeting (MEPC 80), then national governments at IMO should fast-track the development of training standards for alternative fuels to ensure a training infrastructure is in place to train a sufficient number of seafarers by the 2030s.

National-level action needed for low-carbon shipping. National governments can also ensure better coordination between their own departments, ministries, agencies and authorities that are responsible for the policy levers that need to be engaged to prepare populations and infrastructure for shipping's low-carbon future. Here, collaboration with industry, unions and training institutions will be critical. As advocated by the Maritime Just Transition Task Force, tripartite skills councils which effectively monitor and anticipate skills will be increasingly essential to match supply and demand. With the majority of about 2 million global seafarers coming from the Global South, crew-supply countries may need particular support during the transition, establishing national skills bodies.

In the Philippines –whose seafarers make up 14% of the global seafarer workforce– the government is already taking action to secure their nation's place as a maritime leader of tomorrow through engaging with the Maritime Just Transition Task Force and a newly-established tripartite 'International Advisory Committee on Global Maritime Affairs,' which will contribute to the global competitiveness of Filipino seafarers and prepare them for decarbonization. This includes advising the government on training for green shipping. Indonesia is another major seafaring nation showing leadership, by collaborating with already-established skill councils to participate in knowledge-sharing on maritime education. Global shipping is leading the way in ensuring a just transition for seafarers by establishing the first-ever task force dedicated to supporting a workforce to adapt to decarbonization. Governments demonstrating a joint coordinated approach to skills development and climate change policy can be its next step.

Source: *https://www.weforum.org/agenda/2023/02/why-skills-development-it-vital-for-shipping-s-green-transition/*

THE YEAR 2023 OPENS WITH A PROMISE: SAAD PROGRAM TO LIFT FISHERFOLK OUT OF POVERTY

by BFAR Region 9

The Bureau of Fisheries and Aquatic Resources (BFAR) Regional Office IX conducted the CY2023 Target Setting of Plans, Programs, and Activities Based on the Approved GAA FY2023 back-to-back with the conduct of Special Area for Agricultural Development (SAAD) Framework Planning Preparation Workshop headed by the newly appointed and full-fledged BFAR IX Regional Director, Al-zath K Kunting, RFP. The said activity was attended by all division chiefs, section chiefs, city/provincial fishery officers, station managers, project leaders, and staff on January 17-20, 2023, at Grand Astoria Hotel, Zamboanga City.

As the CY2023 begins, a thorough evaluation of targets of the different programs, projects, and activities by province and municipalities, with corresponding management solutions or recommendations to the challenges that may occur during their implementation. The activity highlights discussions not only on agency management, budgeting, and financial performance topics, but also on projects such as seaweed and salt.

A Special Area for Agriculture Development (SAAD) program is one of the most effective programs implemented by the Department of Agriculture where its purpose is poverty alleviation among the marginalized sectors of agriculture and fishery of the Philippines. Its primary strategy focuses on the increase of food production and the establishment of community enterprises through the provision of significant technology, financial assistance, marketing, and other support services to the farmers and fisherfolk.

On this target-setting activity, the SAAD Regional Framework Planning Workshop was simultaneously conducted, enjoining the BFAR-9 SAAD Technical Working Group (TWG) and preparing the comprehensive framework plan for the program's projects and activities. The SAAD TWG was able to finalize the SAAD Program action plans for the calendar year 2023 for this year's implementation.

In closing, BFAR 9 Regional Director Al-zath K Kunting emphasized that by being effective and efficient, one must commit to serving the Filipino fishers with due diligence in delivering honest and steadfast services championing the fisherfolk for the sustainability of the fisheries sector.

BOOK REVIEW: INNOVATING VICTORY NAVAL TECHNOLOGY IN THREE WARS

by Vicky Viray Mendoza

INTRODUCTION

The word technology is a compound of two Greek roots, tekhne for craft, and logia for learning. Technology then is the practical application of knowledge expressed through the use of a crafted device. This book focuses on 6 technologies in 3 broad categories: Weapon, Tool, and Platform. A weapon is to damage a target; a tool is to assist in using a weapon; and a platform is to deliver a weapon. Naval warfare was transformed through mine, torpedo, and radio in the Russo-Japanese War; submarine and aircraft in WW I; and radar in WW II.

1. USE, DOCTRINE, INNOVATION.

In the 1805 Battle of Trafalgar, British and Franco-Spanish fought with wooden wind-propelled battleships, and fired shells of 40 lbs out to 400 yards. In the 1905 Battle of Tsushima, Japan and Russia fought with steel armor plated ships of coal-fired triple expansion steam engines, and fired shells of 850 lbs out to 10K yards. Technologies included torpedoes, radio, mines, and submarines. In the 1916 Battle of Jutland, British and German navies fought with twice the size of battleships and shells at Tsushima. WW I had submarines, radio, and aircraft. Battleships –the platform in 1805, 1905, 1914, 1939– were taken over by submarines and aircraft carriers. WW II had radar and guided weapons. Long-range hits were by aircraft from navy carriers.12

The Test of Combat. Combat alone decides a technology's utility. The goal is combat advantage. Information technology enabled the U.S. Navy's victory in the Battle of Midway despite Japanese superiority in numbers, weapons, and platforms. Night optics gave Japanese tactical victories in darkness at Solomon Islands (1942-1945) despite the advanced U.S. radar.

The Role of Innovation. The difference between the 104-gun first rate ship of the HMS *Victory* of 1805 and HMS *Dreadnought* of 1905 is a clear example of technological progress. If the capital ship represents a synthesis of many technologies, then one can argue that behind the technological progress that produced this synthesis, there was profound innovation. The greatest power of new technology comes from innovative use.

The Role of Doctrine. The process of integrating new technology begins with a better bow. Naval designers and architects will agree. It is also selecting the proper target, determining the best circumstances of use, bending the bow itself, and then comes ascertaining. Radar was originally envisioned as a collision warning devise but became a way to trigger anti-aircraft rounds in proximity of a target. Results are best measured in combat. Then base the doctrine on results, and innovation follows.

The Lights that Failed. For navies, the ultimate criterion is whether the weapon, tool, or platform effectively advances the task of securing power at sea and contributes to victory. The searchlight had specific combat use, one that navies believed would be decisive, and a tool that navies invested research and funds to improve. In combat, it turned out to be a weakness.

Choices and Constraints. New technologies can be easily shoved aside as they make significant demands on limited assets, and hard to justify when benefits are impossible to quantify in peacetime. Navies are conservative organizations that embrace innovation, not closed-minded monolithic organizations. The best navies constantly seek an edge against opponents and are wary if their foes have an edge.

2. MINES: The Neglected Weapon.

Mines are the oldest naval technology that did not mature until the Russo-Japanese War in 1904–1905 when upgrades in triggers and explosives met the need for area-specific sea denial operations –denying the enemy use of the sea. WW I (1914-1918) saw the importance of mines as a crucial naval weapon system. In the 20th century, mines played a major role in the 3 major naval wars fought during 1905-1945. Yet, navies were still wary. The 21st century saw more effective and low-cost mines.

The Technology Described, Early Use, Expectations. Mines have a short shelf life and are dangerous to maintain due to spontaneous explosion during handling. 19th century navies saw mines as the weapon of the weak. To them, mines were just coastal defense weapons. In the 1866 Triple Alliance South American War, Paraguay sank Brazil's *Rio de Janeiro* with floating mines. The 1870 Franco-Prussian War, 1877 Russo-Turkish War, and 1898 Spanish-American War also used mines.

Discovery: The Russo-Japanese War. To overthrow Russia in China and Korea, Japan secured sea lanes in Asia by attacking the Russian fleet anchored near Port Arthur with torpedo boats to halt reinforcements from the Baltic. Russia used 1891 spherical mines with more explosives, better handling, and anchored at a set depth with a detonator and 140 lbs of pyroxylin. Russia used M1898 by 1905. Japan used spherical mines with 50 lbs of *shimose,* and pioneered offensive mines.

Countermeasures. Reinforced ships acted as mine exploders by sailing ahead of more valuable vessels. Germans did this in both world wars; the U.S. in Vietnam. Countermining detonates explosives in a minefield, hoping mines will explode. The Kite streams off the towing cable to set the cable's depth. Sweeps are deployed from the stern to cut the mooring cable and bring mines to surface. Japan cleared Kerr Bay with torpedo boats and grapples. Russia used steam tugs to tow a grappling hook.

Revised Expectations. The Russo-Japanese War was scrutinized for lessons on mine warfare. The 1907 Hague Convention banned unanchored mines unless with disarming mechanisms; anchored mines that remain harmful when broken loose from moorings; and forbade mining commercial vessels. Japan, U.S., Austria-Hungary, Italy, and Britain accepted. Germany, France, and Turkey accepted with conditions. Russia refused. Britain voted to ban mines. Germany and Russia vetoed.

Evolution: World War I. German and British losses in WW I were due to mine warfare. In 1915, submarines became the new mine delivery system. Navies could attack in difficult places. 1917 saw mines used against submarines with low success. Minesweepers became so important that Battleships now escorted sweepers. In 1918, U.S. minelaying barrier at Scapa Flow blocked entrants to the Atlantic. 1 submarine per 10,000 mines sunk.

Countermeasures, Continued. Two methods to cut moored mine lines: (1) Russo-Japanese War technique used a sweeping wire between two ships; and (2) Ronarc'h technique streamed 2 wires in a V from the stern of a single sweeper using Kites. Britain favored 2-sweepers, which destroyed 30K mines. France, Italy,

and U.S. favored 1-sweepers. In 1916, serrated wire was the best upgrade in minesweeping. British Paravane, a towed explosive antisubmarine device was better for vessels in mined waters.

Exploitation: World War II. Between WW I and WW II, advances in mine technology included sophisticated trigger mechanisms activated by water pressure, sound, or magnetic fields, instead of contact. The creation of a new delivery system (aircraft) expanded the range of mine warfare. Italy sunk the Austro-Hungarian dreadnought Viribus Unitis with hand-delivered mines at end-WW I. Refined delivery used motorized 2-man submersible sleds. Germans and British copied this in WW II.

British found 2 German magnetic mines that failed to self-destruct, and were disarmed by degaussing –changing a vessel's magnetic polarity. They shared this with the U.S., which began making mines. U.S. Navy built an underwater mine demolition and countermeasure school in April 1941. Britain made a magnetic sweep, an insulated wire with a magnetic field to explode mines. German countermeasures were clocks, delaying activation of mines up to 6 days; by war's end, up to 200 days.

Case Study: Mining the Normandy Invasion. In June 1944, German mines sunk or damaged Allied ships but losses were immaterial since Oyster mines were in storage to be used en masse once Allied landing location is known. When the Oysters were laid, invaders were already ashore. No Oysters at invasion was an intelligence failure. Taking 5 days to get the Oysters at sea was a planning failure. Upon recovery of an Oyster, Allies found it will not detonate if a ship's speed is below 4 knots.

The Technology Postwar and Today. There were low-tech delivery systems for mines which became the most effective weapon to less powerful navies and nonstate entities. In 1941, Italian swimmers riding a motorized mine damaged a pair of enemy battleships in Alexandria. What sunk Brazilian Rio de Janeiro in 1866 is the same mine that hit Argentine *Santissima Trinidad* in 1975 and Sri Lankan *Edithara* in 1995. By 2019, U.S. Navy believed Iranians planted mines on a Japanese tanker.

What This Tells Us. Mine warfare's basic characteristics are still valid in the 21st century: (1) Navies do not prioritize mine warfare as it is simple and not costly; (2) Mines are effective under the right conditions; (3) Mine warfare has been a core naval weapon system for 12 decades; its use and nature remain. Mines were less interesting to navies, except Russian and German. Most ironic was Germany's delay in laying Oysters in Normandy beach because their tiny torpedo boats were dueling Allied armadas.

3. TORPEDOES: The Long Arc.

A torpedo is a self-propelled underwater explosive device launched from a platform such as a ship, submarine, or aircraft and explodes upon contact with or in close proximity to its target. When self-propelled torpedoes first appeared, they were called automobile torpedoes or fish torpedoes. The mine waited for its target or was carried to it. The torpedo had its own motor. It was ADM David Farragut who said at Mobile Bay, "Damn the torpedoes. Full speed ahead!"

Introduction: Technology Described, Expectations, Early Use. English engineer Robert Whitehead produced in 1866 the first automotive torpedo designed to operate underwater. It had 2 advantages: (1) can strike beneath the waterline, increasing chances of fatal damage; and (2) can be hard to see and avoid. The Austrian navy ordered the Whitehead torpedo in 1868; British in 1871; French in 1872; Italians and Germans in 1873; Russians and Ottomans in 1876; while the U.S. made its own.

Whitehead designed the weapon to be launched from submerged tubes. But navies tested above-water launches as this allowed a torpedo to be fitted without ship redesign. Britain equipped corvette Shah in 1876. By 1880, torpedoes were common in capital ships and cruisers. The 1876 *Lightning*, a 32.5-ton boat with a single above-water tube and 2 reloads, became the template for torpedo boat designs. Britain, Japan, Austria, Italy, and Germany had torpedo carriers.

A new type of warship was needed to hunt down and destroy torpedo boats before they got too close to battleships. This led to the Destroyer, the first naval vessel to use turbine propulsion and later fuel oil. The Destroyer's larger size than the torpedo boat had the advantages of heavier firepower, and could escort a fleet over longer distances in all-weather conditions. It played a major role in the Russo-Japanese War.

Most significant is the device to keep the torpedo on course. This was called the internal gyroscope. It was invented by Austrian Ludwig Obry in 1895. The gyroscope would sense the torpedo's horizontal movements and realign using steerable vanes. Whitehead adopted it to his torpedo. In 1902, Russia and Japan adopted long range torpedo attacks up to 3,000 meters at low torpedo speeds of 11-15 knots, taking 6 minutes to hit, giving targets time to evade the torpedo.

Discovery: The Russo-Japanese War (8-Feb-1904 - 5-Sep 1905) began with 10 Japanese destroyers attacking Russian warships anchored near Port Arthur, Manchuria. The attack took the Russians by surprise but the results were not devastating; 2 Japanese destroyers collided, several boats fell out of formation, and got lost. Attacking from a 400-1,500-meter range, only 3 of 20 torpedoes hit Russian ships –2 battleships and 1 armored cruiser. Corbett called this the first great naval torpedo attack.

In June 1904, Japanese torpedo boats attacked Russian fleet again. The Japanese released torpedo boats until evening, but a fully alert enemy made it difficult. The 3 attacks against the rear of the Russian fleet failed again. Japanese torpedo boats then made 8 attacks with 67 torpedoes. All missed, while Russian defense damaged 5 Japanese torpedo boats.

The Japanese torpedoed Russians again in August 1904 in the Battle of Yellow Sea as Russians were retreating to Vladivostok. ADM Togo ordered 18 destroyers and 29 torpedo boats to attack. They launched 74 torpedoes but missed all targets at the cost of 1 destroyer disabled and a torpedoed torpedo boat, hit likely by one of their own. Russians turned off their searchlights and sailed under a moonless night. Japanese had coordination problems, and some could not even locate a target.

After 141 torpedoes missed, Japan questioned the efficacy of long-range attacks on moving targets. Thus, the next torpedo action occurred against Battleship Sevastopol, under repair for hitting a mine. In December 1904, Japan launched 124 torpedoes on the stationary *Sevastopol.* They scored 1 hit and 3 near-misses, but lost 2 torpedo boats and damaged many ships, proving a well-defended enemy is not an easy prey.

In the May 1905 Battle of Tsushima, 2 torpedo divisions were dispatched to sink the smoldering Russian flagship, Suvorov, commanded by ADM Rozhestvensky. 21 destroyers and 32 torpedo boats fired at straggling Russian ships. In this 2-day battle, over 30 Russian ships sunk. But in this show of Japanese torpedo force, 4 divisions failed to find the enemy at all, while 9 of 13 huge Russian warships survived torpedo strikes.

Revised Expectations. The analysis of the Russo-Japanese War produced no consensus on the effectiveness of the torpedo. It did not perform well in short or long-range attacks on moving targets; only on stationary targets. But no navy cast it aside.

Evolution: World War I. The decade leading to WW I saw a jump in range, speed, and warhead weight. The breakthrough was

the "Heater" Torpedo of 1904. A refinement in 1905 introduced water. Torpedo effectivity increased, but gave a visible wake. Surface warfare showed big guns could hit long range, and warship torpedoes were effective on anchored short-range targets. Mine warfare became critical naval technology. Submarines launched torpedoes at close range in ambush.

Evolution: Between World Wars. Torpedo technology increased in range and power using pure oxygen, developing torpedoes purposely-built for aerial drop, and increasing lethality with new detonators. Britain canceled pure oxygen and chose oxygen-enriched air as a booster for performance. Japan, unaware Britain shelved pure oxygen, began work in 1928. By 1933, Type 93 oxygen-propelled torpedo went into service.

The airborne torpedo could be dropped from a height of 50 ft at a speed of 80 knots, hit the water, dive a preset depth, and run straight to target. At the start of WW II, big navies developed aerial torpedoes. Japan tested this in 1922 and realized the need for a specially designed weapon –Type 91 – which appeared in 1931 and became the best in its class in WW II. Type 91 could be dropped from a height of 330 ft at a speed of 100 knots.

The U.S. Navy took to war in 1941 the Mk 13, sacrificing speed for range and a heavier warhead. In a prewar practice, Mk 13 had a 90% failure. In the May 1942 Battle of the Coral Sea, Yorktown's torpedo bomber squadron used Mk 13 and Mod I. Both were erratic. In mid-1943 Mk13 yielded a 69% failure. But by 1944, with the help of California Institute of Technology, torpedoes could be dropped from a height of 800 ft at a speed of 300 knots. Platform and mission magnified torpedo power.

Then came the development of a magnetic exploder for torpedo use. The torpedoes were designed to detonate as it passed under the target's hull, avoiding anti-torpedo protection, tearing up vulnerable bottom plates, and breaking the ship's back. Despite enhanced lethality, the British shelved magnetic exploders for submarine torpedoes putting a premium on aerial torpedo light warheads to explode under the target's soft bottom rather than against its well-protected sides.

Exploitation: War II. British, Germans, and Americans met detonator problems with the magnetic exploders. When attacking degaussed hulls, the exploder required the torpedo to be within 2-3 ft of the hull to activate. German T5 Zaunkönig was designed to home on propellers of convoy escorts. The submarines could blast through the escorts with acoustic torpedoes then ravage enemy ships. Allies responded with towed noisemakers to distract and neutralize the T5.

In late 1941, U.S. honed its acoustic homing torpedoes. Mark 24 (Fido), designed as an air droppable anti-submarine weapon, was short, light, and ran circular patterns at a depth of 125 ft at 12 knots for 15 minutes, homing on submarines within detection range of 1,500 yards. It sunk 2 submarines and damaged 1 for every 10 torpedoes dropped. Air-dropped or surface-launched torpedo was a war-winning weapon if paired with a submarine.7

The Technology Postwar and Today. Torpedoes had a long development arc in the 150 years of use. Its best platform is still a submarine and its best target is still a ship. Faulty torpedoes plagued Argentine attacks in the 1982 Falklands War. When the British nuclear submarine *Conqueror* attacked Argentine cruiser *General Belgrano*, Britain used WW II straight running battle-tested torpedoes than the modern Tigerfish guided-weapons. 7

What This Tells Us. The combination of the right platform and target transforms a technology of marginal application into a war-winning weapon. While Japan succeeded with Type 93, U.S. and Germany failed. Japan's navy applied revolutionary enhancements to technology in pursuit of a tactical dead end. Type 93 was superb but designed for a different battle. The U.S. torpedo was substandard but collaboration with academic, industrial, and military sources made Mark 24 effective.

4. RADIO: The Mixed Blessing.

Introduction: Technology Described, Expectations, Early Use. Marconi invented wireless radio in 1896. It raised hopes of communications at sea, augmenting telegraph network lines and undersea cables. Italy tested the radio in 1897 and installed it in 1898; French tested radio onboard in 1900; Britain in 1901; U.S. and Germany bought Slaby-Arco in 1903, having the longest range of 74 miles; Austro-Hungarians bought a Siemens-Braun; and Russia bought Slaby-Arco in 1904. Japan made its own.

Discovery: The Russo-Japanese War. Russian and Japanese navies used radio extensively in the war. VADM Kamimura Hikonojō discovered it was difficult to transmit information and accurately determine the enemy's location in relation to his. Japanese also discovered their radio network could only carry so much traffic, or none at all, when swamped by transmissions from VADM Zinovy Rozhestvensky's fleet, who later chose radio silence, but it only delayed his eventual detection.

Evolution: To World War I. German equipment generally bested British equipment in range and clarity. Early German submarine radio sets could reach 300 miles vs the British of 60 miles. In 1914: French navy radio sets were the major form of communication ship-to-ship and ship-to-shore; Italian navy had 250 shipborne sets and introduced Marconi voice telephony; Austria-Hungarian navy had 55 German shipborne sets. Russia had a sophisticated radio used in the Russo-Japanese War.

Exploitation: World War I. German VADM Reinhard Scheer used a combination of low-powered radio and flags with a maneuver communicated by radio and flag. VADM Scheer could order his entire battle fleet to reverse course from rear ship to front ship –a difficult maneuver successfully executed 3 times during the Battle of Jutland via radio. By 1917, German submarine radio reached 2K miles. British ADM John Jellicoe relied on the shortest-ranged signaling method: flags, searchlights, radio.

Countermeasures: (1) navies jammed enemy traffic with their own transmissions; (2) radio Direction Finding (DF) used enemy transmissions to locate the ship transmitting; (3) interception of enemy transmissions led to cryptanalysis –the breaking of enemy codes and vast transmissions; (4) access to enemy communications traffic analysis, and checking origin and pattern of transmissions to deduce enemy location and intentions.

Evolution: Between World Wars. At end-WW I, U.S. Navy equipped subchasers with voice telephony using 5 medium frequencies; introduced Very High Frequency (VHF) in 1929 and the TBS, dubbed "Talk Between Ships," in 1938. Airborne radio DF aided navigation while U.S. Navy carriers developed radio homing beacons to guide aircraft back to deck. Sea-based aircrafts carried shortwave radios and antennas, extending sightings several miles from the parent carrier.

Exploitation: World War II. The British-U.S. attack on the Enigma cipher is famous. Lesser known is the high-frequency direction finding (HF/DF), which provided a shore-based capability to locate submarines, and a precise shipborne capability to run them down. Britain devised the QD monitoring system called "Headache" to intercept German VHF voice transmissions. Matched with radar, QD erased German edge in night combat. 7

The Technology Postwar and Today. If the Germans had a generation of operators raised on video games, the outcome of their Fritz-X armor piercing bomb, and the radio-controlled, aircraft-launched, rocket-propelled cruise missile Henschel HS293, may have been much different. Cellphones are highly developed radiotelephones; Wi-Fis are just short-ranged radio communications networks –the modern TBS.

What This Tells Us. Better communications offered benefits such as conservation of forces, improved scouting, and coordination of strategic movements over long distances. But

In the Russo-Japanese War, radio transmissions alerted ships to the enemy's presence and provided useful intel. Sheer volume of communications can slow and overwhelm decision-making processes over radio. When systems fail, they open avenues of attack through insertion of false information via cyber.

5. RADAR: Magic Goes to Sea.

Technology Described, and Early Use. Radar is the acronym for *ra*dio *d*etection *a*nd *r*anging. A radar transmits electro-magnetic waves and receives tiny portions of those waves reflecting distant objects. The radar calculates an object's range by measuring the time it takes for the wave to reach the object and return. As radar evolved, it could determine with more precision the object's bearing and height. Radar had wavelength and frequency; pulse frequency rate; power output.

Differences in Development by Nation.

- ***Germany.*** Its strategic outlook was offensive, but its military commanders perceived radar as providing defensive capability, which made it seem less useful in advancing their offensive agenda. Germany squandered its early lead in radar technology by focusing more on purely technical aspects instead of how else it could be used. Early experience with magnetrons revealed they had fluctuating frequencies. Rather than solve the problem, they focused on precise but less lethal microwave transmitters.
- ***Great Britain.*** British saw the value of radar as a defensive aid. Aircraft reflecting radio waves meant a possibility of detecting aircraft at great distances. Churchill said British achievement was operational efficiency than novelty of equipment. British navy's first T79X air-search radar came in 1936. The T282 was the first fire control set in 1938, and specialized in short-range anti-aircraft gunnery. Anti-aircraft cruiser *Curlew* was supplied with T79Z in 1939. Battleship *Nelson* with the T284 in 1940.
- ***United States.*** U.S. Naval Research Laboratory took interest in the radar in 1931 after radio navigation generated data from passing aircraft. Priority was low so a primitive radar was produced in December 1934. In 1937, the first radar test aboard destroyer USS *Leary* detected an aircraft 20 miles out, enticing U.S. Navy to pursue radar. This led to the prototype Model XAF radar on Battleship USS *New York* in 1939, enabling air and surface target detection, and tracking projectile flight.
- ***France.*** In 1935, the SFR developed a 16 cm continuous wave obstacle detection device for the new *Normandie* liner. It did not spark any interest in the navy even after detecting a ship 5 miles out. French focused instead on land-based electromagnetic air defense barrier system. In 1939, Britain shared its progress in radar. This led the French navy to make a pulsed metric air surveillance system (DEM). Battleship *Richelieu* received the first operational DEM in May 1941.
- ***Italy.*** Radar-facilitated British naval victory at Cape Matapan in March 1941 shook Italian complacency, but by then it was too late. Italy's failure to realize a workable radar before the war was due to underfunding, poor options when exploring how to deploy the technology, and inadequate intelligence as Germany did not share with its ally Italy any of its advances in shipborne radar until April 1941. Italy deployed radar after Spring 1942.
- ***Japan.*** Japan saw the benefit of detecting aircraft and ships using reflected radio waves in 1936. Upon inspecting German radar installations in early 1941, Japan's navy learned of the pulsed radar, then produced a land-based air-search radar by end-1941. Type 21, the first shipborne air-search radar, mounted on Battleship Ise in May 1942, detected aircraft 55 km out, and warships 20 km out. But admirals valued radar only after the Battle of Midway, a fatal mistake.

Expectations. Germans expected the British would attempt to detect their radar, thus used it with extreme caution. This concern affected radar development, Germans putting greater emphasis on passive detection devises instead. British and Americans accepted the possibility of interception to get the benefit of detection. This approach made sense in 1943 tactical situations. Allies were after finding than avoiding the enemy.

Discovery: World War II. Inexperience, ignorance of Japanese attack methods, and lack of IFF (identification Friend or Foe) returns blunted U.S. during early 1942 carrier raids in Marshall Islands, Southwest Pacific, and Rabaul. Lessons learned are the need for practice; coherent DF; better radios; better radar fire control; and IFF. U.S. and British navies identified lessons needed to be learned, and found ways to get answers, while Germans preferred passive learning systems.

Evolution: World War II. It took 2 years for U.S. radar-assisted DF and fleet air defense to become a fluid system. In the Battle of the Philippine Sea, radar tracked 4 Japanese air strikes 60 miles out. 33 attempts gave 85% success, with no ships lost. DF gave carriers reliability to defeat air strikes, enabling U.S. carriers to decimate Japan's land and sea-based airpower. It took a year for U.S. to master surface search radar (SG) to beat Japan in night combat. Of 85 attacks pre-1942, Allies hit 42%; Axis hit 43%. Of 68 attacks post-1942, Allies hit 72%, Axis, 15%.

Case Study: Technological Integration Off the Normandy Beaches. British light forces intercepted German intruders. But when frigate flagship HMS Lawford sunk, defensive plans suffered. Whereas, in USS Frankford's first action on 6 June, she detected German S-boats at 13.6K yards out, plotted movements to 8K yards, and opened fire at 4.5K yards. British and German destroyers were no match to U.S. SG radar.

Exploitation: World War II. German warships, torpedo boats, minesweepers, submarines, and aircraft did not carry a search radar until April 1944. They relied on land stations to locate the enemy. Seaborn radar *Seetakt* was designed for fire control and target ranging, not air or sea search. There was never a motive to make a shipborne radar. Germans preferred radar detectors as they were easy to make. When submarines received radar, passive radar detectors and hydrophones were used instead.

Allies exploited radar-fuzed shells, a small radar unit in a shell that detonates when the shell is near the enemy aircraft. The Allies also gave importance to anti-aircraft artillery by radar. In 1939, effectiveness of anti-aircraft fire ranged from thousands of rounds per bird in daylight, to tens of thousands at night.

Countermeasures. Jamming blinds the enemy's radar. Spoofing uses a transponder to generate false echoes to register phony attack formation. While the enemy is focused on intercepting bogus information, attackers are flying low and may strike at will. Japanese aircraft were disguised with bogus IFF responses to penetrate Allied aircraft carrier forces. Philippines in October 1944, saw Japan rule the skies using young kamikaze pilots.

Radar and countermeasures had the greatest impact. German submarines deployed decoy floats and balloons to distract Allied radars, but these had only limited effects because they were

rather tuned to metric radar wavelengths. More successful were radar-absorbent coatings that they put on submarine snorkels, a "stealth" technology, making snorkels invisible to Allied radar.

The Technology Postwar and Today. Postwar radar increased in power and precision. Navies combined radar with high-performance guided missiles to counter enemy jets. Soviets produced shipboard antiship missiles in 1957. Antiship missile threat became the focus of both the passive –maneuvering, chaff, electronic countermeasures (ECM), and active responses –guns and missiles, the passive proving more effective.

What This Tells Us. The British centralized approach of pushing development via government committee proved more fruitful than the German approach of agency competition with no communication nor collaboration. Limited German resources were directed to land-based air defense, with the navy adapting air force devices. Limited Japanese resources were squandered by army vs navy silos, and lack of cooperation with scientists. Italian and Japanese navies came too late to value the radar.

6. SUBMARINES: The Mission Matters.

The Technology Described, Early Development. The first engine-propelled submarine used in combat was the semi-submersible Russian Keta that almost attacked a Japanese destroyer in 1905. The first torpedo attack was in December 1912 in the First Balkan War where Greek *Delfin* missed Ottoman cruiser *Mejidieh*. In 1914, the best submarines were the British *E* and German *U-19.* E's range exceeded U.S. Navy's *Holland-C. MAN* 2-stroke diesel engine was the best German diesel sub.

Expectations. In 1914, navies agreed that submarines had 3 basic missions: attrition, coastal defense, and fleet cooperation. Attrition consisted of patrol missions to find and destroy enemy warships. Coastal defense consisted of patrolling friendly ports to deter enemy incursions. Fleet cooperation was difficult, with battleships streaming at 15 knots and 20 knots in action. The most modern submarines could make 16 knots on the surface but less than 10 knots submerged, and for only a brief time.

Discovery: World War I. As of August 1914, these nations had submarines: Great Britain, 76; France, 50; U.S. 32; Germany, 27; Russia, 22; Italy, 18; Japan, 13; and Austria-Hungary, 5. German and British submarines torpedoed each other's warships. The only active weapon in WW I was the depth charge, which was hardly more successful in sinking U-boats than gunfire or ramming, and far less successful than mines. The first submarine sunk by a depth charge was German *U-68 in March 1916.*

Evolution: World War I. Unrestricted submarine warfare triggered U.S. declaration of war, which suggests that submarines caused Germany's defeat. Submarines violated international norms and enraged the neutrals. Germany proved inept in addressing the problem, and provides an example of why considering military issues but excluding non-military concerns in the use of new technology is dangerous.

Countermeasures. ADM John Jellicoe first proposed a droppable antisubmarine mine in December 1914, but were put in ships only in January 1916. German C15 standard depth charge was fragile with a 50% dud rate. French Guiraud depth charge detonated hydrostatically but was delicate and unstable. American Mk I – Mk IV depth charges were produced in 1916. Overall, depth charges were ineffective in WW I and only 5% successful in WW II. Tools to locate submarines underwater were the sonar in 1927 and the hydrophone in 1935.

Exploitation: World War II. Navies embraced submarines as a weapon of war, and its roles were coastal defense, antiwarship patrol, fleet cooperation, commerce warfare, mine warfare, and special operations. France, Britain, Japan and U.S. made missions against enemy warships a primary function of submarines, but were also building types for trade war in disregard of treaty obligations. Germany switched from their WW I "lurk-and-shoot" to "wolf pack" approach of attack.

Evolution: German Super Submarines. In WW I and WW II, Allies managed with an influx of technology and resources; Japan, with less technology and fewer resources failed. In 1934, Germans responded to the growing superiority of Allied anti-submarine technology by developing one that could travel underwater a long distance at high speeds, run down a convoy, attack and escape without surfacing. But the finished boats fell short.

The Technology Postwar and Today. Britain integrated a wide range of technologies in a system that neutralized submarine technology like escort convoys. Once U.S. fixed their defective torpedoes, the destruction of Japan's merchant marine quickly began. Germany's response to Allied countermeasures were new sensors, stealth, air independent submarines –impressive but too late. In the next war into the future, submarines will do missions simultaneously, with unimaginable lethality.

What This Tells Us. The most effective way to deal with submarines is to mitigate their impact, rather than a direct attack. It was not about better sensors or weapons; it was organizing merchantmen into escorted convoys. New ASW technologies proved capable of managing German submarine threats in 1917-18. But from start to finish, submarines remained hard to detect, and harder to kill.

7.AIRCRAFT: Vision and Competition.

The Technology Described, Early Development. Naval aviation, blended with the right weapons and tools, proved more versatile than any other platform in naval warfare history. The Wright brothers achieved the first powered heavier-than-air flight in December 1903. In 1910, U.S. Navy launched an airplane from cruiser Birmingham; France set up an army air service; and British navy developed seaplanes. In 1911, planes trialed air dropping torpedoes. In 1912, machine guns were aloft.

Expectations. In 1912, CAPT Irving Chambers, the first head of U.S. Navy aviation, considered the primary function of aircraft as scouting, and ancillary tasks were locating and destroying mines, submarines, airships, cooperating with submarines and torpedo boats, and bombing enemy bases. In 1914, LT Richard Saufley USN, added the roles of attacking ships at sea and directing naval gunfire. But machines capable of these duties did not exist.

Discovery: World War I. By 1918, 6 general missions evolved: (!) Scouting and Patrol; (2) Gunnery Spotting; (3) Attacking Ships from the air; (4) Striking from the Sea; (5) Anti-Submarine Warfare; and (6) Air Defense. Despite all technological advances, aerial reconnaissance was unreliable. Using aircraft to direct gunfire was problematic. Warships proved difficult to hit. The most versatile form of air attack was one delivered from ships, exploiting mobility to strike targets outside the range of land-based aircraft. Only 5 ships were sunk out of thousands that sailed in convoys with air escorts due to German U-boat threats. Zeppelins made the British take fighter planes to sea, making air defense an important mission for sea-based aircraft.

Infrastructure Needs. The infrastructure required to maintain just a dozen airplanes in service was considerable. To begin to explore

the combat potential of aircraft, navies had to make a significant investment in men and resources.

Countermeasures. Navies had quick-firing guns of up to 4-inch caliber to deal with enemy torpedo boats. Guns provided some defense to discourage aircraft attacks, but aircraft would become the best defense against aircraft.

Evolution: Between World Wars. The lesson that failed to emerge from 1914-18 was navies had special needs, and aviators required special skills to be effective over water. This was eclipsed by the need for better aircraft, which became more of a platform of land than of sea, creating problems for naval aviation 20 years into the future. First, it created a perception of naval air being unnecessary; and second, the serious effects for lack of sea-based aircraft and training upon entering WW II.

Exploitation: World War II. Reconnaissance aircraft powers were magnified when fitted with radar, radio, radio navigation devices – Signals Intelligence (SIGINT) and DF. In the June 1944 Battle of the Philippine Sea, U.S. carriers with radar defeated enemy air strikes at a distance. With air mobility, carriers struck enemy fleets in bases. Defense against aircraft was airborne interception guided by radar and controlled by radio.

The Technology Postwar and Today. Technique, technology, and geopolitics merged to keep the carrier relevant. The technique of an angled flight deck enabled landing jets to overshoot without crashing into parked jets. The steam catapult hurled jets off flight decks at high speeds, and mirror landing systems allowed jets to land on deck. Helicopters were armed to sink submarines. Carriers became the arbiter of sea power.

What This Tells Us. An anonymous author's vision in a 1913 Naval Review article that believed every warship should have its own self-contained aviation component was right after all, even though his vision took more than a century to realize. Navies will still require wings, but those wings may be of a new type such as unmanned drones flying from new platforms than costly large sea carriers. Air power at sea will remain paramount as antisubmarine warfare is still a major task of naval aviation.

CONCLUSION

The Genesis of Naval Technology. A navy's core function is to win wars and the role of any technology is to advance that function. Its role in situations short of war as a means to project power and intimidate is even more influential. Navies that lost the battle to retain their own aerial resources after WW I were hampered throughout the interwar years amidst the rapid advances in aviation and in acquiring special skills to operate aircraft at sea. They began WW II critically handicapped.

Use It or Lose It. In 1905, Japanese torpedoes missed in long-range attacks against moving targets then concluded it was not the best way to use the weapon. Torpedoes made submarines weapons of war, and turned aircraft into ship-killers. Mines sank a third of Russian and Japanese warships. German navy focused on acoustic devices disclosing user location, and took passive hydrophones to places unknown to U.S. and Britain.

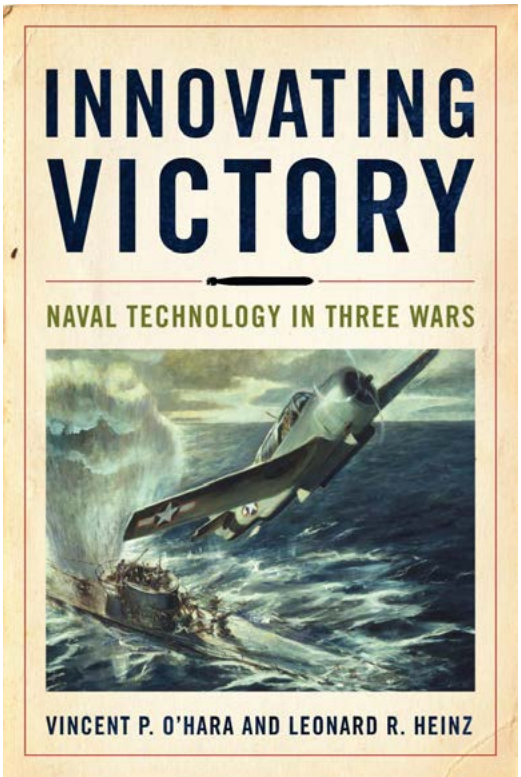
Need and Use. There was a power of combination such as submarines and aircraft, radar and acoustic torpedoes, radio and radar. Radar-assisted torpedo shells could explode near the target. Radio and radar increased the power of aircraft in WW II. Navies used both tools as anti-aircraft defense.

Principles of Success. Broad principles that govern the successful development, introduction, and use of naval technology: (1) Expectations do not determine best use; (2) Users have valuable input; (3) Needs influence use; and (4) New technologies bring new vulnerabilities.

What This Tells Us. Navies would do well to keep broad horizons in looking out for disruptive technologies. In the end, it is not about machines and tools. It is about the men and women who use them and the way they are used. Technology is not the weapon, tool, or platform. It is the application of knowledge expressed through the use of weapons, tools, and platforms.

RECOMMENDATION

This book titled, **Innovating Victory – Naval Technology in Three Wars,** authored by Vincent P. O'Hara and Leonard R. Heinz, and published by USNI, is well worth the read! This book examines how the world's major navies developed and used in combat 6 different technologies: 2 weapons (mines and torpedoes); 2 tools (radio and radar); and 2 platforms (submarine and aircraft). The historical events of 3 wars and the case studies open your mind to step back and imagine how the mere absence or presence of these technological feats, particularly when paired perfectly, could portend to be a matter of loss or victory in war. Combat is technology's acid test. Only in war can technologies be truly tested for effectivity.













SEABEES AND ENGINEER RETIREES GENERAL SERVICES COOPERATIVE

Our Vision:

To be a successful cooperative engaged in Construction Engineering and Manpower provider in the Construction Industry, that provides Livelihood Assistance and additional Financial Resources for Seabees Retirees, their dependents and other members of SERGS Cooperative.

Our Mission:

To undertake Quality Construction Engineering Projects, or provide Skilled Labor and Construction Management and other Engineering Services, in order to provide Livelihood Assistance and additional Financial Resources to Retired Seabees and other members of SERGS Cooperative.

Objective:

To engage in General Services particularly in Construction Engineering, Repair and Maintenance of Facilities and Buildings.

RADM MARGARITO V SANCHEZ JR AFP (RET)
Chairperson, SERGS Cooperative

SURVEYING • PLANNING • DESIGN • ESTIMATES
CONSTRUCTION • REPAIR • AIRCONDITIONING

IN PARTNERSHIP WITH:

ARISTOS CONSTRUCTION

PCAB License No.: 45198
Classification: General Engineering

RADM MARGARITO V SANCHEZ JR AFP (RET)
President

For Inquiries and other concerns:

Address: Ground Floor Unit B, Waypoint Bldg. No. 4
Bayani Road, Fort Bonifacio, Taguig City

Tel No.: 8 7157412 / 09770338155

E-Mail: sergscooperative@yahoo.com

Our Clients:

Habitat for Humanity · Hukbong Dagat Pilipinas · Robinsons Land Corporation · AC Multipurpose Cooperative · SHDC · Northpine · and many more....

Maritime Academy of Asia and the Pacific - Kamaya Point

Associated Marine Officers' and Seamen's Union of the Philippines-PTGWO-ITF

Kamaya Point., Brgy. Alas-asin, Mariveles, Bataan, Philippines
Tel. No.: (02) 784-9100 Fax No.: (02) 741-1006 Mobile No.: (0917) 533-8263
URL: www.maap.edu.ph E-mail: info@maap.edu.ph

AMOSUP - PTGWO - ITF

QUALITY SYSTEM CERTIFICATION ISO 9001:2008 DNV

QMET PSB

Welcome Aboard!

Courses Offered:

BSMT - Bachelor of Science in Marine Transportation
BSMarE - Bachelor of Science in Marine Engineering
BSMTE - Bachelor of Science in Marine Transportation and Engineering

Courses Offered:

Master of Science in Marine Transportation (Marine Superintendent)
Master of Science in Marine Engineering (Technical Superintendent)

Testing Assessment Center of TESDA

MAAP Profile

Geographic destiny has given the Filipino the innate talent to be an excellent seafarer. To enhance this natural skill, the Maritime Academy of Asia and the Pacific (MAAP) was established on January 14, 1998. The Academy stands on a 103-hectare property in Kamaya Point, Mariveles, Bataan.

The Associated Marine Officers' and Seamen's Union of the Philippines (AMOSUP) founded by the late Capt. Gregorio S Oca, capitalized and developed the Academy. The new AMOSUP President,Dr. Conrado F. Oca, heads the Academy's board of governors. The board is comprised of representatives from the private sector, the International Transport Workers Federation, the Filipino Association of Maritime Employers, the International Transport Workers Federation, the All Japan Seamen's Union, the International Mariners Management Association of Japan, the Norwegian Seafarers' Union, the International Maritime Employers' Committee, the Danish Shipowners' Association, the Norweigan Shipowners' Association, and the Japanese Shipowners' Association.

MAAP conducts shipboard training aboard T/S Kapitan Felix Oca, a 5020 DWT dedicated training ship capable of accommodating 180 midshipmen and 9 instructors in 30 air-conditioned cabins and six berths.

AMOSUP Seamen's Training Center

Full Mission Bridge Simulator

Full Mission Engine Simulator

Full Mission Bridge Simulator on Motion Platform

Japanese Compact Ship Handling Simulator

Our Curricula

MAAP students are all scholars who are entitled to free tuition, board and lodging. They receive a comprehensive, up-to-date and well-rounded education that fully complies with the requirements of STCW 95 and the Commision on Higher Education (CHED). To ensure the highest standards of quality, MAAP adheres to a Quality Standards System that has been certified to comply with ISO 9001 version 2008, the Det Norske Veritas (DNV) Rules for Maritime Academies, and the Productivity and Standard Board (PSB) of Singapore.

The Academy offers three main programs: the Bachelor of Science in Marine Transportation (BSMT), Bachelor of Science in Marine Engineering (BSMarE) and the Bachelor of Science in Marine Transportation and Engineering (BSMTE). The curricula for the three courses were designed with the help of the United States Merchant Marine Academy at Kings Point, New York. Courses are four-year courses with sea phases scheduled in the third year. The BSMT curriculum requires a total of 192 units: 152 at MAAP, 40 practicum/shipboard units on board T/S Kapitan Felix Oca and/or a shipping company sponsorship. The BSMarE curriculum requires a total of 193 units: 153 at MAAP, 40 practicum/shipboard units on board T/S Kapitan Felix Oca and/or a shipping company sponsorship.

FROM SEA TO SHORE:

Gothong Southern Group of Companies Innovates for the Future

The Gothong Southern Group stays ahead of the curve with its innovative solutions and appetite for exploring new opportunities in emerging markets - all while maintaining its core values and commitment to excellence.

COMMITMENT AND EXCELLENCE

From shipping to logistics, we offer a wide range of services to meet your every need. Let us be your partner on land and sea, and together, we will sail towards a brighter future.