



MARITIME REVIEW

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Lingayen Gulf: A Glimpse of Maritime History

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- ▶ The BOL
- ▶ 138th Maritime Forum
- ▶ PCG Warns of ASG
- ▶ PAL's Mabuhay Maritime Ferry
- ▶ Port of Cagayan de Oro

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About the Cover:
American General Douglas MacArthur lead his commanders and staff in Lingayen Gulf landing in January 1945 to liberate Manila from the Japanese.



Maritime Events Calendar

NOVEMBER '18

- 5-8 IRANIMEX 2018 (KISH INTERNATIONAL EXHIBITION CENTER, HORMOZGAN, KISH, IR)
- 7-10 INDO MARINE EXPO & FORUM (PRJ KEMAYORAN (GAMBIR EXPO), JAKARTA, ID)
- 16 MARITIME BREAKFAST FORUM #139 (DEPARTMENT OF TRANSPORTATION (DOTR))**
- 18-20 PACIFIC MARINE EXPO (CENTURYLINK FIELD, SEATTLE, US)
- 21-23 EASTERN INDONESIA INTERNATIONAL SHIPBUILDING OFFSHORE MARINE EQUIPMENT MACHINERY AND SERVICE EXHIBITION (GRAND CITY MALL & CONVEX SURABAYA, SURABAYA, ID)
- 20-22 IRAN INTERNATIONAL MARITIME & OFFSHORE TECHNOLOGIES EXHIBITION (KISH INTERNATIONAL EXHIBITION CENTRE, KISH, IR)
- 22-23 LNG & LPG SHIPPING SHIP/SHORE INTERFACE CONFERENCE (ILEC CONFERENCE CENTRE, LONDON, GB)
- 27-29 20TH INTERMODAL AFRICA 2018 (MÖVENPICK AMBASSADOR HOTEL ACCRA, GH)
- 28-30 INTERNATIONAL WORKBOAT SHOW (MORIAL CONVENTION CENTER, NEW ORLEANS, LA, USA)

DECEMBER '18

- 5-7 INMEX CHINA 2018 (POLY WORLD TRADE CENTER, HAIZHU DISTRICT, GUANGZHOU, CN)
- 13-15 SHIPPING & LOGISTICS INDIA (CHENNAI TRADE CENTRE, CHENNAI, IN)

JANUARY '19

- 4 GUJARAT JUNCTION (RADISSON HOTEL KANDLA, GANDHIDHAM, IN)
- 17-20 KREUZFAHRT & SCHIFFSREISEN (MESSE STUTTGART, STUTTGART, DE)
- 18 MARITIME BREAKFAST FORUM #140 (DEPARTMENT OF FOREIGN AFFAIRS (DFA))**
- 29-30 NAVAL TRAINING AND SIMULATION (LONDON, GB)

FEBRUARY '19

- 18-21 MARITIME RECONNAISSANCE & SURVEY TECHNOLOGY (ROME, IT)
- 7 MARITIME BREAKFAST FORUM #141 (CEBU PORTS AUTHORITY (CPA), CEBU)**
- 12-14 WORLD MARITIME WEEK (BILBAO EXHIBITION CENTRE, BARAKALDO, SP)
- 20-21 PHILIPPINE PORTS & SHIPPING (MAKATI, PH)
- 26-27 GREENTECH IN SHIPPING GLOBAL FORUM (HAMBURG, DE)
- 27 MARITIME BREAKFAST FORUM #142 (PHILIPPINE PORTS AUTHORITY (PPA), PORT AREA, MANILA)**

MARCH '19

- 13-14 LOGISTIC SUMMIT & EXPO (CENTRO CITIBANAMEX, MEXICO CITY, MEXICO, MX)
- 20-21 INTERMODAL AFRICA (SAROVA WHITESANDS BEACH RESORT, MOMBASA, KE)
- 18 MARITIME BREAKFAST FORUM #143 (MAAP, KAMAYA POINT, MARIVLES, BATAAN)**
- 26-28 NAVEXPO INTERNATIONAL (PORT DE LORIENT LA BASE, LORIENT, FR)
- 27-29 INMEX VIETNAM (SAIGON EXHIBITION AND CONVENTION CENTER, HO CHI MINH, VN)

APRIL '19

- 5-7 MARINE DIVING FAIR (SUNSHINE CITY CONVENTION CENTER, TOKYO, JP)
- 9-11 SEA ASIA '19 (MARINA BAY SANDS, SINGAPORE, SG)
- 16-17 CHEMLOGISTICS INDIA (MUMBAI EXHIBITION CENTRE, MUMBAI, IN)
- 1-5 LNG'19 SHANGHAI (SHANGHAI WORLD EXPO AND CONVENTION CENTER, SHANGHAI, CN)
- 4-5 MID ATLANTIC REPAIR & SUPPLY SUMMIT (ALFREDO KLAUS AUDITORIUM, LAS PALMAS PORT, ES)
- 19 MARITIME BREAKFAST FORUM #144 (MARITIME INDUSTRY AUTHORITY (MARINA))**

MAY '19

- 23-25 IMABARI MARITIME FAIR (TEXPORT IMABARI, IMABARI, JP)
- 17 MARITIME BREAKFAST FORUM #14 (PHILIPPINE NAVY HEADQUARTERS (PNHQ))**

JUNE '19

- 4-7 NOR-SHIPPING (LILLESTRØM, NO)
- 18-20 PHILMARINE '19 (SMX CONVENTION CENTER, SM MALL OF ASIA, PASAY CITY)
- 25-27 ELECTRIC & HYBRID MARINE WORLD EXPO CONFERENCE (RAI AMSTERDAM, AMSTERDAM, NL)

SEPTEMBER '19

- 18-21 MARINETEC INDEONESIA (JAKARTA INTERNATIONAL EXPO, JAKARTA, ID)

OCTOBER '19

- 23-25 OIL AND GAS VIETNAM (PULLMAN VUNG TAU, VUNG TAU, VN)

Lingayen Gulf: A Glimpse of Maritime History

by VAdm Emilio C Marayag Jr AFP (Ret)

Lingayen Gulf, where the famous Hundred Islands National Park lies, is one of the nation's historical bodies of water. It not only provides a source of livelihood, from fishing to tourism to the coastal cities and municipalities of Pangasinan province but also an ideal venue for naval exercises including amphibious landings. Lingayen town is the provincial capital and lends its name to the gulf. The word "lingayen" literally means "to look back" at an eye catching object which in the olden times was a tall, corpulent tamarind tree at the community center of the "encomienda" later named Lingayen.

Two historical footnotes link with Lingayen Gulf. The first was during the Spanish regime when the notorious Chinese pirate **Limahong** established his own kingdom in 1574 in the province with his governance center situated at some distance downstream the Agno River. Uncomfortable with the intruder, the Spanish ruler in Manila sent the Spanish Navy, along with hundreds of native troops, to capture and dislodge the pirate in 1575. The Spanish Navy succeeded in its mission to dislodge but failed to capture **Limahong**, who escaped to China, thereby effectively removing a significant threat to the colony's physical territory, trade, and commerce in northern Luzon. That specific location at the western part of Lingayen town is now officially marked as "*Limahong Channel*" and visitors flock the place to see a glimpse of maritime history.

The second was in the WWII when Japan's 14th Army led by Lieutenant General **Masaharu Homma** landed in the eastern part of the gulf particularly in the coastlines of La Union's towns of Agoo, Caba, and Bauang on 22-December-1941. The Japanese then marched towards Bataan and Manila to drive away the American and Filipino defenders and establish control of the country. Three years later, the American liberating forces, with Australian allies, as part of Vice Admiral **Jesse Oldendorf's** Task Group 77.2 landed at the gulf's center beaches in Pangasinan from Sual to San Fabian on 9-January-1945. General **Douglas MacArthur** joined the troops in Lingayen and Dagupan City a few days later and thereafter led the troops to liberate Manila. Lingayen Gulf became the major military staging point during the liberation with over 200,000 American soldiers setting foot on its beaches. **MacArthur** had his sentimental journey to Lingayen and Dagupan in 1961.

The years after the war up to early 1990s became a period of environmental abuse. Over-fishing, siltation from savaged watershed, and poor land and water use ravaged the gulf. Fishermen using dynamite and other toxic substances destroyed precious corrals and reefs while notorious land dwellers denuded the watershed including mangrove areas. Local government officials and law enforcers failed to institute measures to regulate the use of land and water resulting in environmental degradation that contributed to the pollution of the gulf. These man-made activities in the gulf and in some coastal nations in the region became prevalent, prompting the **ASEAN** and the **USA** with the **International Center for Living Aquatic Resources Management (ICLARM)** as the lead organization to embark on **coastal resource management (CRM)** project in early 1990s.

The gulf is one of the chosen areas under this CRM Project. The goals of this project are: increase awareness of the importance of CRM policies including the strengthening coastal resource management capabilities; analyze, document and spread out information on trends in CRM; provide technical solutions to resource-use conflicts; and promote institutional arrangements for multi-sectoral planning to improve coastal resource development. In 1992, the NEDA and the Philippine Council for Aquatic and Marine Research and Development formulated the **Lingayen Gulf Coastal Area Management Plan**. This led to the issuance in 1993 of Proclamation No. 156 declaring Lingayen Gulf as an **Environmentally Critical Area (ECA)**.

To facilitate the implementation of the 1992 Plan, the President created in 1994 a Presidential Commission through Executive Order No. 171. The DENR Secretary chaired the Commission with the secretaries of Agriculture, Interior and Local Government, Tourism, National Defense, NEDA Secretary General, Presidential Management Staff, Governors of Pangasinan and La Union, Regional Development Council Chairperson, and town mayors of municipalities along the gulf as members. Also included are consultants from the private, business, agricultural, and religious sectors and NGOs. In the same year, the President institutionalized the "*National Marine Policy*" to focus on marine-based industry development.

The **Lingayen Gulf Coastal Area Management Commission's** principal

task is to formulate a 10-year Master Plan and a 20-year Integrated Master Plan affecting Lingayen Gulf's preservation, use and sustainability. The local government executives perform the difficult tasks on the ground in respect of Lingayen Gulf as an **ECA**.

Already, several accomplishments have been noted since the management plan has come out. To highlight the significance of the gulf the provincial government in 1995 constructed a museum in an open space at the back of the capitol building and improved the public beach infrastructure. A concrete pavement known as the "*Baywalk*" along the beach from Lingayen to neighboring Binmaley town serves both the motorists, beachgoers and health enthusiasts. With the concerted efforts of Governor **Amado Espino Jr** and Representative **Leopoldo Bataoil**, the baywalk, started in 2013, will further extend eastward to Dagupan City.

Representative **Bataoil** complemented infrastructure building and tourism efforts with the planting of ilang-ilang trees in some denuded areas in his congressional district. As Chair of House Committee on Veterans and Affairs and Welfare, **Bataoil** constantly engages the WWII veterans in Pangasinan who as guerillas helped **MacArthur's** landing in Lingayen Gulf. Paying tribute to those freedom fighters during the awarding of WWII Gold Medals mid-November 2018, the Congressman committed to restore the historical value of Lingayen Gulf, and in doing so, increase tourism, and make it sustainable for the future generations. 🇵🇭



Photo Credit: Looloo Insights



T'boli Tribe of Lake Sebu, Mindanao. Photo credit: The Seeker's Choice

The BOL: We Got Our Indigenous History all wrong

by Commodore Carlos L Agustin AFP (Ret)

When spokesmen of the **Office of the Presidential Assistant on the Peace Process (OPAPP)** earlier talked about the Peace Process with the **MILF**, they often went into a lecture on Philippine history, and repeat what our Islamic brethren have always claimed and like to hear: Christian Filipinos have continuously been exploiting them together with other *indigenous* tribes.

Other indigenous tribes?

Many of us have gotten used to the reference to Muslim Filipinos, that they are "*indigenous*" and entitled to the rights under the **Indigenous People's Rights Act (IPRA)**, although it is far from the truth. In reality, the **IPRA** has properly defined this.

Arroyo administration

A recent glaring error was during the **Gloria Macapagal-Arroyo** administration, when her government negotiated, with Malaysian "*assistance*," the **Memorandum of Agreement on the Ancestral Domain (MOA-AD)** virtually recognizing as Ancestral Domain of the Muslims almost all of Mindanao, the Sulu Archipelago and Palawan province.

This idea was conceived as a result of negotiating with the MILF under dubious circumstances in Malaysia, with Malaysians closely advising the MILF panel, and Malaysia supporting the effort. Last year's investigations in Malaysia with regard to missing funds under the Office of the Prime Minister revealed large sums of money related to such.

Of course, Malaysia's covert role within its overt presence in the Peace Process is quite known, and its problems with the Sultanate of Sulu is the primary reason.

A **United Nations – International Organization on Migration (UN-IOM)** Mission to study the land distribution problem in Mindanao wrongly used the **Framework Agreement on the Bangsamoro (FAB)** as something "*given*" although such "*Agreement*" together with the **MOA-AD**, was deemed constitutionally questionable. Its report showed that the status has the same general nature as those in other parts of the country: poor people getting, or complaining about "*getting the raw end of the deal*." Its report, in fact even gives recommendations for the so-called Transition Commission under the **FAB** to address.

Let us look at the Philippines (before it got that name), say in the

years before the arrival of the Arab missionaries that brought Islam to Indonesia, Malaysia and the southern part of the Philippine archipelago.

There were many Philippine tribes scattered all over the archipelago. The islands were peopled by Pacific islanders, followed by Indonesians particularly at the height of the power of the **Majapahit Empire**, which reached the Southern Philippines before it ended during the **Islamization of Indonesia**. Early British and American scholars classified the Filipino people as part of the **Malay race**, but perhaps better classed as **Indo-Malays** descriptive of the people that eventually populated Indonesia, the Malay Peninsula, Borneo and the Philippines. These are the only people in Asia (from North Africa and the Caucasus to Japan) whose languages are not written in Sanskrit, characters or symbols.

The real **indigenous Filipinos**, are all the tribes from the **Batanes Islands to the Sulu Archipelago** prior to the arrival of foreign influence.

It is known that conversion to Islam started with the people of **Tawi-Tawi**, then spread to mainland Mindanao and even up to Southern Luzon. Thus, since we define **indigenous peoples as those unaffected by foreign culture**, even early Muslim Filipinos were already non-indigenous, compared to the northern tribes, who were still unaffected by an alien culture and religion; the other tribes from Luzon and the Visayas at that time would therefore be classed together with the true indigenous peoples of today.

So how did the common terminology get confused? I used the term "*common*" because the real indigenous tribes are better covered in scholarly references.

When the Spanish "discovered" and named the islands as Filipinas, the process of conversion to Christianity began. The indigenous tribes were easy to convert and conquer through conversion, despite the early demise of Ferdinand Magellan, who was slain by the Cebuano tribe in the Battle of Mactan. Once Christianized, the tribes were considered mainstream, and subsequent scholars grouped the Muslims commonly with the other non-Christians as "*indigenous*."

Reading a discourse on Constitutional policies regarding the ancestral domain as applied to **Indigenous Peoples (IPs)** does not imply a concession to what has become the current concept as developed under the past administrations, particularly with respect to the **MOA-AD** of the Arroyo administration, which has been ruled as unconstitutional by the Supreme Court.

The **1986 Constitution** institutionalized the commitment of the Marcos presidency that was made in the **Tripoli Agreement of 1976**: It called for the creation of two autonomous regions, one for the **Cordilleras** and the other for **Muslim Mindanao**. Not merely because they comprised areas where the two liberation movements were active, but because the peaceniks were convinced that these were the only means of getting peace finally secured.

Aquino and Duterte Administrations

During the administration of **Benigno Simeon Aquino Jr.**, the negotiation with the MILF, still with Malaysian involvement, continued and ended with the high profile signing of the **Comprehensive Agreement on the Bangsamoro (CAB)** at Malacañang. This Executive Agreement became the starting point for the **Bangsamoro Basic law (BBL)**, indeed an unconstitutional reference. The **Association of Generals and Flag Officers**

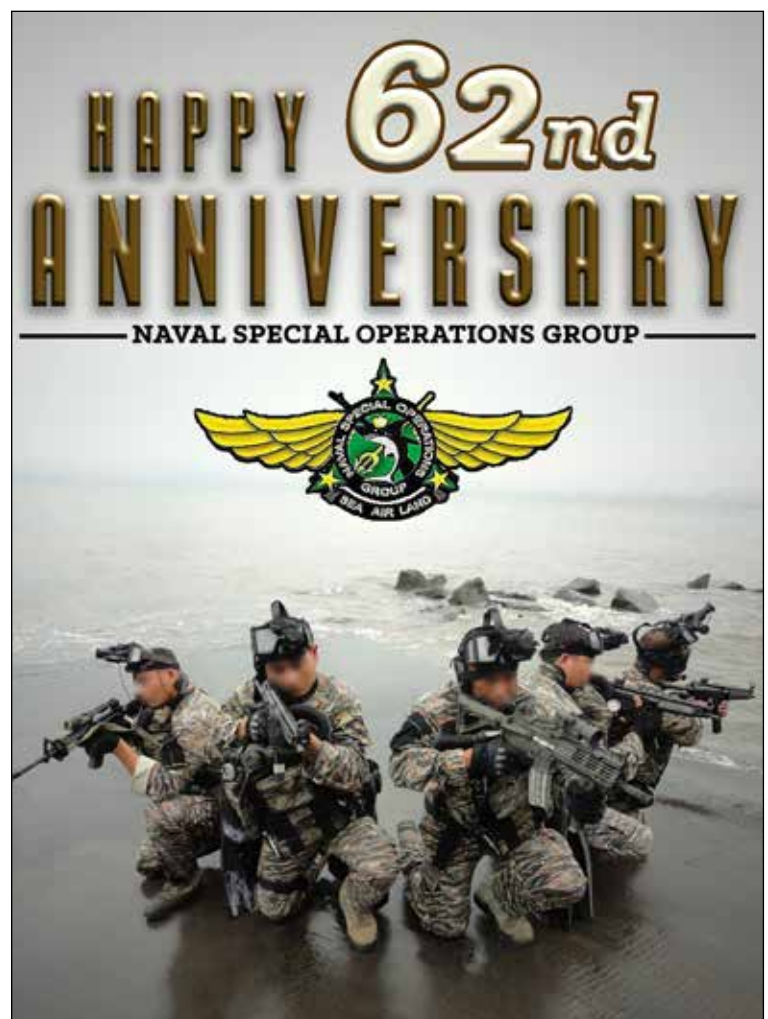
(**AGFO**) opposed the BBL. Notwithstanding the exchange of views with the representatives of the **AGFO** at the Office of the President in late 2014, the **Aquino** government pursued the BBL, but its passage was nevertheless delayed. However, President **Rodrigo Duterte** contends that the only way to solve the Muslim insurgency is to proceed with the **BBL**, and Congress went on to enact a much watered-down version, renamed the **Bangsamoro Organic Law (BOL)**. It has been signed into law but opposed by some quarters, including the provincial government of Sulu just this October, 2018.

In a lecture early this year (2018) before the Association of Generals and Flag Officers, the PHILCONSA Chairman Justice Manuel Lazaro stated clearly that creation of any new **Bangsamoro** region is **unconstitutional** because **Section 19 of Article X** prescribes the manner the **ARMM** should be created:

Section 19. The first Congress elected under this Constitution shall, within eighteen months from the time of organization of both Houses, pass the organic acts for the autonomous regions in Muslim Mindanao and the Cordilleras.

Thus, the only way to effect any change is to amend the existing **ARMM Law**. This also appears to be the same rationale in Sulu pleading before the Supreme Court.

We hope that the final resolution of this issue will not result in dire consequences for the integrity of the country and the real interest of the Filipino people . 📌



138th Maritime Forum



The 138th Maritime Forum was hosted by DENR Secretary Gen Roy Cimatu, and chaired by Maritime League President Commo Carlos L Agustin AFP(Ret) on 19-October-2018 at DENR HQ, Manila. Guest speakers Dr Cora Claudio; CDR Carter Luma-

ang, NAMRIA; Laguna Lake representative Jose Salandan; Ambassador Vidal Querol (Retired PNP Director), as well as Trustees and members of the Maritime League were also present. ⚓

Induction of New Maritime League Members at SMX PhilMarine 2018 Conference

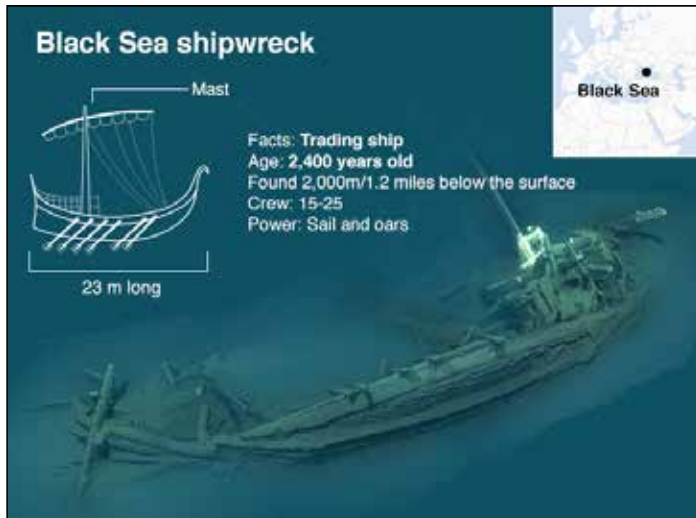


1st row (top) - Leoncio D Paz; Bernardo Benedicto; LTG Edilberto P Adan AFP(Ret); Delfin Supapo; Chryss Alfonsus Damuy; and Darwin Neil Morano. 2nd row – Radm Rafael Mariano AFP(Ret); Arthur Kenneth Sy; Former DILG Sec. Rafael Alunan III; Joshua Rafael S. Tolin; LTJG Christian Chua PN(Res); NSC DDC Vicente M Agdamag AFP(Ret); and Commo Amado A. Sanglay AFP(Ret).

World's Oldest Shipwreck Found Intact in the Black Sea

by Vicky Viray Mendoza

The British-led **Black Sea Maritime Archaeology Project (Black Sea MAP)** claims to have found the world's oldest intact wreck, an ancient Greek sailing vessel that was radiocarbon dated back to 400 BC, making the shipwreck over 2,400 years old.



Ancient Greek shipwreck. Photo Credit: Black Sea MAP.

The wooden hull is quite well preserved because it had been lying below the surface of the Black Sea about 2 kms deep, where an abnormally oxygen-free water level allows organic material to remain intact for thousands of years with almost no decay. Its mast, rudder, and rowing benches were still clearly visible in almost pristine state considering it had been lying there for millennia, and the shipwreck was just jutting up from the bottom of the Black Sea. Even the contents of the shipwreck's holdings remain intact.

A team of British and Bulgarian researchers found the skeleton of the Greek trading vessel during an exhaustive survey of 2000 square kms of seabed. It is an incredible find. The research team stated that a vessel of this age and kind has never been seen before in modern times.

The shipwreck's design bears a remarkable similarity to a ship depicted on a famous piece of Greek pottery in the British Museum, called the Siren Vase, an artifact that shows *Odysseus*, the hero of Homer's epic poem, *The Odyssey*, strapped to the mast of the ship to protect himself from the Sirens, as his ship and crew pass three mythical Sirens with their enchanting deadly songs that were believed to lure sailors to their death.

The **Siren Vase** dates back to 480 BC, and the shipwreck confirms its representation of the naval architecture of that era – single mast forward, high forecastle, rowing stations amidship, and a slender, upswept stern, with a length of 23 m or 75 ft. The Greek ship was built about 100 years after the **Siren Vase** was made.

The **Black Sea MAP** project benefited from the capabilities of today's maritime technology through the use of an offshore survey vessel. They chartered the **Stril Explorer**, a survey ship that was built for offshore oil and gas exploration, and provided an ideal platform for marine archaeology. On board are two sophisticated ROVs: the "**Supporter**," equipped



Siren Vase. Photo Credit: Theo.com

for high resolution 3D photogrammetry and video, and the "**Surveyor Interceptor**," which carries a full set of geophysical instruments, with a laser scanner and remote controlled deep-water camera systems that can provide ultra high-definition images from more than 2 kms deep.

The 3-year expedition began with a different mission at the outset, which was to study prehistoric sea level changes in the **Black Sea** region, but it quickly expanded to include shipwreck hunting, with over 60 ancient shipwrecks found so far. Their hunt unearthed a 17th-century Cossack raiding fleet, and Roman merchant ships, among others.

The **Black Sea MAP** scientific team includes researchers from the **University of Southampton's Centre for Maritime Archaeology** that has established a formal partnership with the **Bulgarian Institute of Archaeology** and the **Bulgarian Centre for Underwater Archaeology**. Partner institutions include **Södertörn University**, Sweden; University of Connecticut; the **Hellenic Centre for Marine Research**; and **MMT**, the firm behind the "**Surveyor Interceptor**" ROV.

Professor John Adams, **Black Sea MAP** Principal Investigator, and the **University of Southampton** helped lead the expedition, with students from disadvantaged schools observing on board.

"A ship, surviving intact, from the Classical world, lying in over two kms of water, is something I would never have believed possible. This will change our understanding of shipbuilding and seafaring in the ancient world." ~ Prof. John Adams



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Stella Maris – Star of the Sea

by Josephine M Viray and Vicky Viray Mendoza

In the Roman Catholic Church, the Blessed Virgin **Mary**, Mother of the Divine Savior, Jesus Christ, is **Stella Maris – The Star of the Sea**. **Mary** is the daughter of St. Anne and St. Joachim. Both her parents descended from the Royal House of David from the land of Judah. Her father was a shepherd. Her name is Miryam in Hebrew; Mariam in Greek; and Maryam in Judeo-Aramaic – Mar for “drop” and yam for “sea.”

In the old Aramaic language, **Stella Maris** meant pilot, leader or guide, someone who could navigate through the sea or the desert through the position of the stars, and lead people to safety. The stars were and are used as a guide to safety and to new life. The sea covers all the earth and symbolizes all the people of the earth. Mother **Mary** was therefore identified from the very earliest days of the Church as the “guiding star” to Her Son for all the people of the earth.

Mary is believed to calm raging storms in the seas, as well as the storms in our lives. She leads us to the right path to Jesus Christ, Her Son, and is a ray of hope. Thus, **Mary** is regarded as the Stella Maris of fishermen as well as fishers of men, and many coastal churches are named **Stella Maris**.

The sea has always been the most feared because of its enormous power to sustain or destroy life. People are powerless and insignificant in the midst of the sea’s rage. Yet the sea is a constant source of food and nourishment. The waters of the sea are therefore a metaphor for blessings and perils; beauty and destruction; stillness and turbulence.

In the 12th Century, **St. Bernard** of Clairvaux, France (1090 AD-1153 AD), a former Benedictine Monk who formed the Cistercian Order, wrote this prayer: *“If the winds of temptation arise; if you are driven upon the rocks of tribulation, look to the **Star**, call on **Mary**. If you are tossed on the waves of pride, ambition, of envy, of rivalry, look to the **Star**, call on **Mary**. Should anger or avarice, or fleshly desire violently assail the frail vessel of your soul, look to the **Star**, call upon **Mary**.”*

In 1221, **St. Anthony** of Padua, a Portuguese Franciscan Friar (1195 AD-1231 AD) wrote a similar prayer: *“Our Lady, **Star of the Sea**, we pray that You shine upon us when we are buffeted by the raging sea. Guide us to harbor, defend our going out with your watchful presence so we may be found fit to go out safely from this prison, and come joyfully to unending joy.”*

In the 8th Century, **St. Paschasius Radbertus** of Corbie, Neustria (785 AD-865 AD) wrote this prayer: *“Mary is the **Star of the Sea** to be followed on the way to Christ, lest we capsize amid the storm-tossed waves of the sea.” **St. Paschasius Radbertus** was a Carolingian theologian, poet, writer and in 844 AD became the Benedictine Abbot of*

Corbie, a monastery in Picardy, France founded in 657 by the Queen Regent Bathilde. His letter on the **Assumption of Mary** was formerly attributed to **St. Jerome** of Stridon (Patrologia Latina, 30:122-142), a Desert Father (367 AD-420 AD) who identified in his writings that *“**Mary**, Mother of God, is the **Star of the Sea**.” **St. Jerome** was often cited in Christological treatises of the middle ages. Regarding the “Real Presence” of Christ in the Eucharist, **St. Paschasius Radbertus** described it as **Mary’s** own flesh which had suffered on the cross, was buried, and rose again (De Corp. 4.3 and 7.2). He had many critics but managed to have great influence because in the 11th Century, a number of passages copied from his work were circulated under the name of **St. Augustine** of Hippo.*

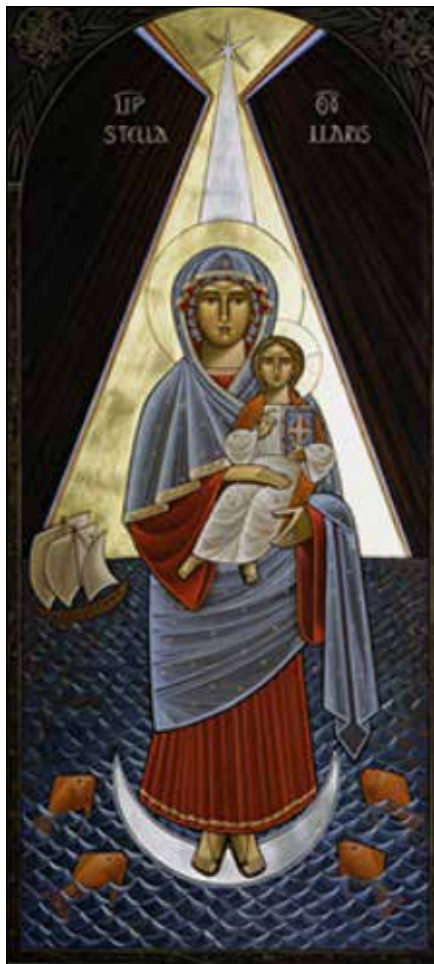
The Roman Catholic Church commemorates worldwide the **Feast of Stella Maris** every September 27th of the year.

Mary, the **Stella Maris**, is the venerated guide and protector of seafarers. She is the Patron Saint of the **Apostleship of the Sea (AoS)**, an official Apostolate of the Catholic order founded in Glasgow, Scotland. She is the patroness of the Netherlands.

The **AoS** has for many years commemorated the **Feast of Stella Maris – Star of the Sea**, with Mass each year on September 27 for seafarers. It is a day to pray for all seafarers and give thanks for their several; months at sea and contribution to global trade. In 2014, AoS port chaplains in Great Britain visited 9,951 ships and assisted 199,020 seafarers. A total of 173 masses were celebrated on ships. In 2015, **Archbishop of Manila, Cardinal Luis Antonio Tagle** wrote a letter of thanks to AoS for its continuous spiritual support for Filipino seafarers arriving at British ports.

*“Caring for seafarers is profoundly a Christian thing to do” –said **Archbishop of Westminster Cardinal Vincent Nichols** in the **Stella Maris** Mass at Westminster Cathedral in 2016,*

*“**Stella Maris - Star of the Sea-** has long been the favorite title by which people of the sea have called on Her, in whose protection they have always trusted, the Blessed Virgin **Mary**. Her son, Jesus Christ, accompanied His disciples in their vessels, helped them in their work and calmed the storms. And so the Church accompanies seafarers, caring for the special spiritual needs of those who for various reasons live and work in the maritime world.” – **Pope John Paul II** ✠*



Stella Maris. Photo Credit: Apostleship of the Seas

The trustees of the **Maritime League** and staff of the **Maritime Review Magazine** would like to wish everyone a very Merry Christmas, Happy Holidays and a Happy New Year ahead. May you be blessed with safe travels, fair winds and following seas.



Photo Credit: Maritime Labour Convention (MLC)

Guidelines for Implementing Welfare Aspects of the Maritime Labour Convention

by Maritime Executive News

The International Chamber of Shipping (ICS) and the International Transport Workers' Federation (ITF) have jointly released new **Guidelines for implementing the Welfare Aspects** of the Maritime Labour Convention (MLC).

Adopted by the International Labor Organization (ILO) in 2006, the MLC aims to ensure comprehensive worldwide protection and enforcement of the rights of seafarers and to establish a level playing field for ILO Member States and shipowners committed to providing decent working and living conditions for seafarers.

ICS and ITF emphasize that a number of countries with highly developed arrangements for providing seafarer welfare services and facilities are not yet signatories to the MLC, while many seafarer supply countries have also not yet developed welfare organizations to provide services or facilities for seafarers either at home or abroad.

The new complementary publication is intended to assist governments and welfare agencies in drafting their own guidelines for implementing the welfare provisions of the MLC or in adapting the new Guidelines to complement their current practices.

ITF General Secretary, **Stephen Cotton** said, "Seafarers are separated from their families and communities for long periods of time and remain on board ships with very limited time ashore. They therefore require adequate services at sea and in ports where different national, cultural and political experiences can create challenges."

The new Guidelines, which can be downloaded from the ICS and ITF websites free of charge, are currently being distributed throughout the global shipping industry via ICS national shipowners' associations and ITF union affiliates.

As representatives of shipowners and seafarers respectively, ICS and ITF have previously teamed up to promote initiatives of mutual benefit. In 2016, both organizations joined forces to publish the international **Guidance on Eliminating Shipboard Harassment and Bullying**, which can also be downloaded from the ICS and ITF websites free of charge.



The Maritime Labour Convention 2006 (MLC) is an international agreement of the International Labour Organization (ILO), which sets out seafarers' rights to decent conditions of work. It is sometimes called the seafarers' Bill of Rights. It applies to all seafarers, including those with jobs in hotel and other passenger services on cruise ships and commercial yachts. In 2013 the MLC became binding law for 30 countries. As of July 2017, a total of 84 countries had ratified the MLC 2006, which has resulted in more than 90% of the world's shipping fleet being regulated. For the latest updates please visit the ILO website.

The MLC 2006 sets minimum requirements for nearly every aspect of working and living conditions for seafarers including recruitment and placement practices, conditions of employment, hours of work and rest, repatriation, annual leave, payment of wages, accommodation, recreational facilities, food and catering, health protection, occupational safety and health, medical care, onshore welfare services and social protection.

Slavery Persists in Thai Fishing Vessels

by Vicky Viray Mendoza

Between 2014 and 2016, **Greenpeace** had been tracking Thailand's rogue fishing vessels, and found that as many as 76 vessels with Thai flags had moved their operations to the Saya de Malha Bank area off the coast of east Africa to avoid being policed on illegal unreported and unregulated (IUU) fishing, and slave seafaring. Despite all international pressure on Thailand, its human rights abuses in the fishing industry have been persisting on ships that actively fish in remote and unpoliced waters.

Slave labor has been rampant on the fishing vessels that sustain the seafood industry in Thailand. According to the **United Nations' Food and Agriculture Organisation (FAO)**, Thailand is the world's fourth-largest exporter of seafood, after China, Norway and Vietnam. Helpless migrant workers, mainly from Myanmar, Cambodia and Laos, and very poor Thais, are being lured onto fishing vessels with the assurance of a well-paid job, although most claim to have never received a salary because of the exorbitant fees they have had to pay up first.

The **Human Rights Watch** documents murders on the high seas, forced drug use and beatings, and says migrants are being trafficked to work on Thai boats, prevented from changing employers, not paid on time, and paid less than the minimum wage. The report documents multiple cases of physical abuse and violence against workers on boats. The report indicates men who attempt to escape are frequently beaten or killed, and the other workers are being forced to watch the punishments.

Slavery, trafficking, murder and corruption at all levels of the Thai government are still pervasive in Thailand's billion-dollar fishing industry, despite arrests linked to human rights abuses. The Thai government introduced reforms to clean-up the country's US\$6.5 billion seafood fishing industry after revelations about seaborne forced labor abuses that prompted the **European Union** to warn Thailand it could face a ban on its seafood. **America** has placed Thailand on its "Tier 2" watch list, one rung above the worst rating in its latest **Trafficking In Persons (TIP)** report. Seafood sellers in **Australia** have declared they would not buy seafood from Thai suppliers who take seafood from slave labor boats, and where other abuses occur.

Mongkol Sukcharaenkana, a representative of Thailand's

National Fisheries Association, said the industry had used illegal labor "in the past" but no longer does. "Every problem has been fixed by the current government." But Brad Adams, Asia director at Human Rights Watch, urged Western governments to keep the pressure on Thailand, and make sure reforms are not just window-dressing. "No one should be fooled by regulations that look good on paper but are not properly enforced."

"In an industry that relies heavily on migrant labor – more than 90% of those working in the fishing sector are from neighboring countries, many of them trafficked. It is the government's job to create a framework that protects migrant workers both on the ground and at sea. Yet Thailand has failed to implement a strategy, putting millions of workers at unnecessary risk," claims migrant rights activist **Andy Hall**.



Chronic patterns of forced and trafficked labor. Photo credit: Ergonassociates.net

Drug money is laundered to cover up its illegal origins, just as slave-labor seafood is also covered up. The captive workers sweat it out in unregistered "ghost ships." Their catch is transferred to a large motherboat stationed out in the far seas where it is mixed with fish from other vessels before being off-loaded at the docks.

"More than 25,000 fishing vessels are legally registered by Thailand. Each one should be outfitted with a GPS-powered monitoring system," argues **Steve Trent**, the Environmental Justice Foundation's Director. **"For just a couple of thousand dollars a year, an authority can monitor the exact locations of boats, which have benefits for both fisheries management and ensuring the safety of crews,"** Trent said. **"There is absolutely no excuse for a country as developed as Thailand not to employ this very basic technology."**

Fishermen in Ranong, Thailand say that that reforms, coupled with decades of overfishing and ecological destruction that have pushed fish stocks to the brink mean fisherfolk are increasingly unable to make a living. Instead, they are increasingly turning to another line of business called **people trafficking** because right now it is very difficult to find fish in the Gulf of Thailand. A local boat owner told the Guardian that he knew of 10 boats operating from the same port where he works, carrying 12,000 Rohingya migrants a month. These migrants, he said, are worth around \$24M in ransom money. ⚓

Steps to Creating Safety

by Safety4Sea

At the last SAFETY4SEA Conference, Capt. Hans Hederström, Managing Director, Center for Simulator Maritime Training (CSMART), discussed steps to create a safety environment in shipping. Among the most important things, he stressed, *"The Captain has the role of a leader instead of an operator, willing to delegate and coach officers. Combining voyage planning and Bridge Resource Management, and effective communication for timely intervention are vital."*

There is no fast track elevator to safety; you will have to take the stairs, step by step to increase your safety as we have successfully done in Carnival Corporation during last decade.

In 2008, we started with a traditional bridge organization, meaning that a master was giving out his orders, taking all the decisions, dismissing most of the time all technology on the ship and the bridge team as well. What we discovered was that resources were not optimally utilized. We realized that sometimes the bridge team might have thoughts like "I wouldn't have done it that way," or "He is the master so he must know something I don't, so I should not say anything." Even today, many incidents stem from this lack of intervention. This kind of bridge organization, with the master in front of the bridge team, tends to make officers passive by-standers. Therefore, we had to do something about this organization and our suggestion at that time was to move into an organizationally-based Safety Management System called *Role Based Bridge Organization*, where we co-ordinate teamwork.

The Role Based Bridge Organization is totally flexible. The Captain appoints who is doing what, and in this case, the navigator is the watch officer; he is responsible for driving the ship in accordance with a very detailed plan. He also communicates with the co-navigator. The role of the co-navigator is to support and cross-check that the navigator is actually following the plan or if there are any risks to the navigation and maneuvering of the ship. The communication between navigator and co-navigator is absolutely essential.

We have developed a specific communication technique called *"Thinking Aloud"* which translates to situations where the navigator is thinking aloud; he tells what his intention is, the reason for it and what the outcome should be. The navigator and co-navigator are always on the bridge. When risk increases, we add a third person, the operations director, a more senior person, who is either the staff captain or the captain. The operations director is to monitor, overview and supervise or coach the two persons in front of him. The operations director does not come up and intervene in the operation unless it is absolutely necessary. A fourth person added in the more complex maneuvers like port approach and departures. The fourth person is a junior officer who takes the role as administrator with the task to take away distractions from the bridge team. He answers phone calls, and looks after alarms in order to leave the bridge team undisturbed so it can focus on driving the ship. We also have a pilot on board when we enter or leave a port. On the latest ships, there is a specific place for the pilot, the monitoring station. The pilot might have either direct control of the navigation, or indirect control. The latter means that

the navigator continues to conn the ship and the pilot will take a more advisory role, similar to the operations director. In addition to this approach, we also changed the bridge lay-out with a human-centered design to maximize teamwork. The next step is to make a change in voyage planning combined with bridge resource management. Do not plan in single numbers, plan in intervals.

Critical areas for safety. In a nuclear plant, they have safe working temperatures, followed by abnormal temperatures that are risky, but still acceptable. They also have stated "no go areas" where they do not want to go. In our organization, we plan our track in a corridor representing the normal operational area. The ship can be anywhere in the corridor; we do not need to be exactly on the track. Between the track corridor and the "no go area," we have a fully navigable area called *safety margin*, which can be used in abnormal situations. This is crucial because the *safety margin* indicates when an officer should speak up if there is a deviation from the track corridor, like planned speed. If it is above or below the interval, the co-navigator must speak up. As those margins are critical for safety being triggers for intervention, they must be mentioned in the pre-departure briefing.

Escalating Outcome Based Intervention technique. Whenever the ship is leaving the corridor without intention, the co-navigator should start "probing" the navigator. He could ask *"what is your intention with regards to the corridor?"* This is called non-threatening probing. If that is not sufficient, go up to *"alerting."* He could verbally state: *"We are 30m outside the corridor."* If the navigator does not do anything about this situation, then a challenge with an outcome-based intervention is put in place: *"I recommend to alter course to port to bring her back into the corridor."*

We do not tell the navigator what to do. Rather, we tell what we would like to see as an outcome. If we tell what the navigator should do, we are taking over control of the vessel, which is not the purpose. We want the navigator to bring the vessel back into the safety corridor. In the unlikely event that no corrective action has been taken, an emergency step arises where you need to state *"If you do not alter course now we risk going aground."* In this escalated situation, you can now assert *"I take control"* if you are the captain or a higher rank.

Onboard follow-up and coaching by the fleet captains are used to ensure the training we have provided is put into use onboard. The fleet captains visit all vessels annually to safeguard and confirm that our officers and vessel operations function according to training. It is a very successful program, and the transition into a *Role Based Organization* has been made possible in a relatively short time due to the fleet captains coaching on-the-job. They consolidate training and assist captains to implement changes in order to verify that work is done properly, and mobilize commitment.



This is an edited version of Captain Hans Hederström's presentation during the last SAFETY4SEA Conference in Athens in October-2018



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MAN 175D: Robust, Dynamic and Economical.

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The MAN 175D combines all these strengths in a single compact engine. As a result, it is ideal for economical, cost-efficient operation in ferries, offshore service and supply vessels, workboats and tugs. With heavy-duty and medium-duty ratings, the MAN 175D covers the full spectrum of commercial diesel-mechanic and diesel-electric applications.

Technical Data

Output, Dimensions and Weight

MAN 12V175D

Weight – kg:	8,500
No. of cylinders:	12
Emission regulation:	IMO Tier II, IMO Tier III (with Selective Catalytic Reduction)

Type designation	Mechanical propulsion		Onboard power generation or diesel-electric drives		
	MAN 12V175D-MH	MAN 12V175D-MM	MAN 12V175D-MEM	MAN 12V175D-MEL	MAN 12V175D-MA
Rating	Marine Heavy Duty	Marine Medium Duty	Marine Diesel-Electric Medium Duty	Marine Diesel-Electric Light Duty	Marine Auxiliary
Power – kW (bhp)	1,740 (2,359)	2,220 (2,977)	1,440 1,800 (1,931) (2,412)	1,620 1,920 (2,172) (2,575)	1,620 1,920 (2,172) (2,575)
Speed – rpm	1,800	1,900	1,500 1,800	1,500 1,800	1,500 1,800
Average load	≤ 85%	≤ 65%	≤ 75%	≤ 50%	≤ 50%

For multi-engine arrangement only. Rated power output according to ISO 3046-1: ICFN for mechanical propulsion, ICFN for onboard power generation or diesel-electric drives. Fuel specification: MGO/DE4550.

Peacetime Records of Submarine Disaster other than Predicted Wartime Losses

by Captain Tomas D Baino PN (Ret) Naval Architect

INTRODUCTION

This Article is a product of the research work conducted by the author to highlight the list and circumstances behind various events of submarine losses that happened during peacetime from CY2000 to CY2017. During this period, it is noted that submarine disasters and accidents occurred to navies of countries that are considered to have seapower and long experience over several decades and centuries on the operation of submarine warfare capabilities. These countries would have almost perfected their submarine doctrines, crew proficiency training, sustainment and maintenance, operation, etc. with almost a complete support system in submarine naval sea systems. Yet, they suffered the unimaginable disaster, loss of life, and very expensive defense equipment due to accidents at sea as well as in the drydocking facilities while the submarine is undergoing repair of essential routine maintenance and systems preservation.

In the last 17 years, there have been about 22 submarine disasters and accidents, which in sum is illustrative proof of a history of repeated failures resulting from accidents. How much more during wartime situation? Submarine sea system failures could be attributed to poor submarine system design, lack of continuous crew proficiency training, outdated doctrine, safety procedures not being followed, and the crew becoming callous about safety and thus take it for granted. It is alarming that submarine operation and maintenance records of various navies with long operators of submarine operation show they have not improved much after all these years.

FOR A NAVY VENTURING ON SUBMARINE WARFARE CAPABILITY FOR THE FIRST TIME

For a navy venturing into submarine warfare capability with a severe lack of funds coupled with government budget cuts on defense spending, it must consider this a warning of

an eminent submarine disaster just waiting to happen. Disaster happens in peacetime, how much more during wartime and conflict? The series of unchecked accidents in submarine operation can instill fear and demoralization to the crew who are dedicated to offer their service for the country. A life lost to an accident at peacetime is very demoralizing and difficult for the crew to comprehend.

FACTS ABOUT RECENT SUBMARINE INCIDENTS

2000 - Kursk explosion In August 2000, the Russian Oscar II-class submarine (which was the world's largest class of cruise-missile submarines) sank in the Barents Sea when a leak of hydrogen peroxide in the forward torpedo room led to the detonation of a torpedo warhead, which in turn triggered the explosion of around half a dozen other warheads about two minutes later. The explosion and the flooding by high pressure seawater killed the majority



USS Greenville in drydock at Pearl Harbor on 21-February-2001 after hitting and sinking Ehime Maru.

of the Kursk submarine's 118 sailors. Twenty-three survived in the stern of the submarine, but despite an international rescue effort, they died several days later either from a flash fire or suffocation due to lack of oxygen.

2001 - Ehime Maru and USS Greenville collision On 9-February-2001, the American submarine USS Greenville accidentally struck and sank a Japanese high-school fisheries training ship, Ehime-Maru, killing nine of the 35 Japanese aboard, including four students, 10 miles (16 km) off the coast of Oahu. The collision occurred while members of the public were on board the submarine observing an emergency surface drill.

A naval inquiry found that the accident was the result of poorly executed sonar sweeps, an ineffective periscope search by the submarine's captain, Commander Scott Waddle, bad communication among the crew, and distractions caused by the presence of the 16 civilian guests aboard the submarine.

2002 - USS Dolphin major flooding and fire In May 2002, the U.S. Navy research submarine USS Dolphin experienced severe flooding and fires off the coast of San Diego, California. The crew, as well as the Navy civilian personnel who were rescued by nearby naval vessels, abandoned the ship. No one was seriously injured. Although severely damaged, the boat was towed back to San Diego for overhaul.

2002 - USS Oklahoma City collision with tanker Norman Lady On 13-November-2002, USS Oklahoma City collided with the Leif Hoegh liquefied natural gas tanker Norman Lady, east of the Strait of Gibraltar. No one on either vessel was hurt, and there were no leaks of oil from fuel tanks and no threat to the environment, but the submarine sustained damage to her periscope and sail area, and put into La Maddalena, Sardinia, for repairs. Her commanding officer, Commander Richard Voter, was relieved of his command on 30-November-2002. One other officer and two enlisted crewmembers were also disciplined for dereliction of duty.

2002 - HMS Trafalgar In November 2002, the Royal Navy's Trafalgar-class submarine, HMS Trafalgar ran aground close to Skye, causing £5 million worth of damage to her hull and injuring three sailors. It was travelling 50 meters (160 ft) below the surface at more than 14 knots (26 km/h) when Lieutenant-Commander Tim Green, a student in The Perisher course for new submarine commanders, ordered a course change that took her onto the rocks at Fladdachùain, a small but well-charted islet. A report issued in May 2008, stated that tracing paper (used to protect navigational charts) had obscured vital data during a training exercise. Furthermore, the officer in charge of the training exercise had not been tracking the submarine's position using all the available equipment. Commanders Robert Fancy and Ian McGhie were court martialled and reprimanded for the incident.

2003 - HMAS Dechaineux flooding On 12-February-2003, HMAS Dechaineux, a Collins-class submarine of the Royal Australian Navy (RAN) was operating near her maximum safe diving depth off the coast of Western Australia when a seawater pipe burst. The high-pressure seawater flooded the lower engine room before the hose was sealed off. It was estimated that if the inflow had continued for another twenty seconds, the weight of the water would have prevented Dechaineux from returning to the surface. The Navy recalled all of the Collins-class submarines to the submarine base HMAS Stirling after this potentially catastrophic event, and after naval engineers were unable to find any flaws in the pipes that could have caused the burst, they commanded that the maximum safe depth of these

submarines be reduced.

2003 - Ming 361 accident In May 2003, China announced that the entire ship's crew (70 people) was killed aboard the Ming-class submarine 361 due to a mechanical malfunction. The accident took place off the coast of Liaoning province in northeast China. The vessel was recovered and towed to an unidentified port. The cause of the accident was identified. When the battery was low the submarine surfaced with a vent opening for oxygen, which was consumed heavily by the charging diesel engines. At this point in time, a sea wave surged, and seawater started to gulf into the opening vent that automatically closed to prevent flooding. There was no single device on the submarine to detect low oxygen level and the crew suffocated due the diesel engines consuming all the oxygen present within the submarine. The floating submarine was found by fishermen and the navy did not even know one of their submarines was lost. They almost claimed it was a foreign submarine. Finally, all the navy commanders and fleet commanders were relieved from their duties because of the accident.

2003 - K-159 sinking In August 2003, the Russian November-class submarine K-159 sank in the Barents Sea. This submarine had been decommissioned, and she was being towed away for scrapping. Of her skeleton crew of ten sailors, nine were killed.

2003 - USS Hartford grounding On 25-October-2003, the American Los Angeles-class submarine USS Hartford ran aground in the harbor of La Maddalena, Sardinia, in the Mediterranean Sea. This grounding caused about \$9 million dollars worth of damage to Hartford.

2004 - Bugaled Breizh sinking On 15-January-2004, the fishing trawler Bugaled Breizh sank with all hands for unknown reasons. One of the possible scenarios is that an unidentified submarine got caught in its net during a NATO exercise.

2004 - HMCS Chicoutimi fire On 5-October-2004, the Canadian submarine HMCS Chicoutimi suffered from two fires after leaving Faslane Harbor for Halifax Harbor. One officer, Canadian Forces Navy Lieutenant Chris Saunders, died the following day while he was being flown via helicopter to a hospital in Ireland. Canadian Forces investigators concluded that poor insulation of some power cables caused the fires. The following board of enquiry found that the fire was caused by a series of events that caused electrical arcing at cable joints due to seawater penetration at the joints.

2005 - USS San Francisco collision with undersea terrain On 8-January-2005, the Los Angeles-class submarine USS San Francisco, while underway and submerged, collided with an undersea seamount about 350 miles (560 km) south of Guam in the Marianas Islands. One of her sailors, Machinist mate 2nd Class (MM2(SS)) Joseph Allen Ashley of Akron, Ohio died from the injuries he suffered in the collision. This happened while San Francisco was on a high-speed voyage to visit Brisbane, Australia.

An additional 97 more of her sailors were also injured in this accident, including two with dislocated shoulders. The collision with the seamount was so severe that San Francisco was nearly sunk. Accounts from the scene related a desperate struggle for positive buoyancy after her forward ballast tanks had been ruptured. Several news web sites stated that the boat had hit an "uncharted sea mount" at a high speed. The captain of the submarine, Commander Kevin Mooney, was later relieved of his command after an investigation revealed that he had been using inadequate methods of ocean voyage planning.

2005 - AS-28 emergency On **5-August-2005**, the Russian Priz-class deep-submergence rescue vehicle AS-28, while operating off the coast of the Kamchatka Peninsula, became entangled in a fishing net, or possibly by cables belonging to an underwater antenna assembly, at a depth of 190 meters (600 ft). Unable to free itself, the submarine was stuck with a depleting air supply.

After a multi-national effort, a Royal Navy team using a Scorpio ROV was able to free the submarine from the entanglement, allowing it to return to the surface. All seven crewmembers were rescued safely.

2005 - USS Philadelphia collision with MV Yasa Aysen On **5-September-2005**, USS Philadelphia was in the Persian Gulf about 30 nautical miles (60 km) northeast of Bahrain when she collided with the Turkish merchant ship MV Yasa Aysen. No injuries were reported on either vessel. The damage to the submarine was described as "superficial." The Turkish ship suffered minor damage to its hull just above her waterline, but the United States Coast Guard inspected the ship and found her to be still seaworthy. The commanding officer of Philadelphia, Commander Steve M. Oxholm, was relieved of his command following this collision.

2006 - Daniil Moskovsky fire On 6-September-2006, the Russian Victor III-class submarine Daniil Moskovsky suffered a fire, which resulted in the deaths of two crewmen (a warrant officer and a sailor). At the time of the incident, the submarine was anchored off the Rybachiy peninsula, on Russia's north coast near the border with Norway. The fire was extinguished with no damage to the reactor (which had been scrambled as a precaution) and the submarine was towed to a base at Vidyayev. The incident was reported as being caused by an electrical fire in the vessel's wiring.

2006 - USS Minneapolis-Saint Paul incident Four crewmembers were washed overboard from USS Minneapolis-Saint Paul by heavy waves on **29-December-2006** in Plymouth Sound, England. This resulted in the deaths of Senior Chief Thomas Higgins (chief of the boat) and Sonar Technician 2nd Class Michael Holtz. After the preliminary investigation, Commander Edwin Ruff received a punitive letter of reprimand, stating that the accident was avoidable, and was reassigned to a shore-based post in Norfolk, Virginia.

2007 - USS Newport News collision with tanker Mogamigawa On 8-January-2007, USS Newport News was transiting submerged in the Straits of Hormuz when she hit the Japanese tanker Mogamigawa. She had been operating as part of Carrier Strike Group 8 (CSG-8), organized around the aircraft carrier USS Dwight D. Eisenhower and dispatched to the Indian Ocean to help support operations in Somalia.

HMS Tireless On **21-March-2007** two crewmembers of the Royal Navy's Trafalgar class submarine, HMS Tireless were killed in an explosion caused by air-purification equipment in the forward section of the submarine. The submarine was in service in the Arctic Ocean and had to make an emergency surface through the pack ice. A third crewmember who suffered "non life-threatening" injuries was airlifted to a military hospital at Elmendorf Air Force Base near Anchorage, Alaska. According to the Royal Navy, the accident did not affect the ship's nuclear reactor, and the ship sustained only superficial damage.

2008 - HMS Superb On **26-May-2008**, the Royal Navy's Swiftsure-class submarine, HMS Superb hit an underwater rock pinnacle in the northern Red Sea, 80 miles (130 km) south of Suez, causing

damage to sonar equipment. The submarine was decommissioned slightly earlier than planned as a result of the damage.

Russian K-152 Nerpa gas leak On **8-November-2008**, at least 20 men died of asphyxiation from a gas leak aboard the Russian nuclear submarine K-152 Nerpa, during trials in the Sea of Japan. The submarine was leased to the Indian Navy in 2011 and formally commissioned into service as INS Chakra in 2012.

2009 - HMS Vanguard and Triumphant collision The nuclear submarines, the Royal Navy's HMS Vanguard and the French Navy's Triumphant, were involved in a collision in **February 2009**. They were operating in the Atlantic Ocean at the time. No injuries or radiation leaks were reported.

2009 - USS Hartford and USS New Orleans collision USS Hartford collided with USS New Orleans on **20-March-2009** in the Strait of Hormuz. In photo, USS Hartford in Bahrain a day after the collision.



USS Hartford collided with USS New Orleans on 20-March-2009 in the Strait of Hormuz. In photo, USS Hartford in Bahrain a day after the collision.

2010 - INS Sindhurakshak fire In **February 2010**, a faulty battery valve that leaked hydrogen gas resulted in a fire, which caused an explosion in INS Sindhurakshak's battery compartment, killing one and injuring two sailors.

2010 - INS Shankush incident On **30-August-2010**, INS Shankush, a Shishumar class submarine of the Indian Navy developed technical difficulties while on a planned exercise off Mumbai. While effecting repairs, the submarine's maintenance team was washed overboard due to rough seas. A 5-officer team and sailors led by the submarine's Executive Officer Lt Cdr Firdaus D Moghal, successfully recovered all members of the crew. However, the officer himself was washed overboard subsequently due to rough seas and sustained heavy injuries on his forehead. He was rescued by a helicopter dispatched from Naval Air Station INS Shikra but succumbed to injuries en route to shore.

2010 - HMS Astute grounding HMS Astute aground with the emergency tow vessel Anglian Prince. On **22-October-2010**, HMS Astute ran aground on a sand bank off the coast of the Isle of Skye in Scotland.



HMS Astute aground with the emergency tow vessel Anglian Prince

2011 - HMCS Corner Brook grounding HMCS Corner Brook ran aground in Nootka Sound off the coast of Vancouver Island on **4-June-2011**, while conducting SOCT. Minor injuries were sustained by two crewmembers and the submarine returned to CFB Esquimalt after the incident, without escort or further incident. A board of inquiry into the incident deemed commanding officer, Lieutenant Commander Paul Sutherland, had responsibility for safe navigation of the submarine and was relieved of his command.

2012 - USS Miami arson On **23-May-2012**, during a scheduled maintenance overhaul, USS Miami suffered extensive damage from fire, which was later determined to have been part of a series of fires started deliberately by a civilian shipyard worker who was seeking time off from work. The Navy determined it would be uneconomical to repair the submarine, and decommissioned and scrapped her instead.

2012 - USS Montpelier collision with USS San Jacinto USS Montpelier and the Aegis Florida cruiser USS San Jacinto collided off the coast of northeastern Florida on 13-October-2012 during an exercise while the submarine was submerged at periscope depth. There were no injuries aboard either ship. The initial assessment of damage was that there was a complete de-pressurization of the sonar dome aboard San Jacinto. The investigation revealed that the principal cause of the collision was human error, poor teamwork by Montpelier watch team, and the commanding officer's failure to follow established procedures for submarines operating at periscope depth. The investigation revealed contributing factors threaded among the various command and control headquarters that provide training and operational oversight within Fleet Forces Command.

2013 - INS Sindhurakshak explosion and sinking On **14-August 2013**, the Indian Navy's INS Sindhurakshak Kilo-class Type 877EKM submarine sank after explosions caused by a fire took place on board when the submarine was berthed at Mumbai. The fire, followed by a series of ordnance blasts on the armed submarine, occurred shortly after midnight. The fire was put out within two hours. Due to damage from the explosions, the submarine sank at its berth with only a portion visible above the water surface. Sailors on board reportedly jumped off to safety. The vessel was salvaged later and bodies of 18 dead personnel were recovered.

Due to the explosion, the front section of the submarine was twisted, bent and crumpled, and water had entered the

Forward compartment. And yet another submarine, INS Sindhuratna, also sustained minor damage when the fire on Sindhurakshak caused its torpedoes to explode. An enquiry into the incident found the cause of the incident to be violation of Standard Operating Procedures during torpedo loading. This resulted in the explosion of two torpedoes during the incident while the remaining 14 torpedoes disintegrated. Official sources said it was "highly unlikely" the submarine could be returned to service.

2013 - Russian K-150 Tomsk fire On 16-September-2013, fifteen seamen were hospitalized after a fire on the Oscar-class K-150 submarine. The fire started during welding activity, as the sub was being repaired at the Zvezda shipyard near Vladivostok on the Sea of Japan. The fire was put out after five hours. A federal Investigative Committee said the fire had "caused damage to the health of 15 servicemen" and they remained in hospital. It gave no details about their condition.

2013 - USS Jacksonville collision On **10-January-2013**, USS Jacksonville struck an unidentified vessel in the Persian Gulf and lost one of its periscopes. The ship's commanding and executive officers were relieved for cause following the incident.

2016 - HMS Ambush collision On **20-July-2016**, while surfacing on an exercise in the Strait of Gibraltar, HMS Ambush collided with a merchant ship, sustaining significant damage to the top of her conning tower. It was reported that no crewmembers were injured during the collision and that the submarine's nuclear reactor section remained completely undamaged.

2017 - UC3 Nautilus sinking On **11-August-2017**, the privately owned midget submarine UC3 Nautilus suddenly sank.

2017 - ARA San Juan On **16-November-2017** evening, the Argentine Navy submarine, ARA San Juan, and her crew of 44 were reported missing in the San Jorge Gulf region. Ships and long-range patrol aircraft from several nations, including Argentina, Brazil, Chile, Uruguay, Russia, the United Kingdom and the United States, were dispatched in a search and rescue mission. Rescue submersibles and parachute rescuers were deployed. On 30-November-2017, hopes of rescuing the crew alive were abandoned.

ORIGIN AND OCCASIONAL FAILURES OF SUBMARINE SUB SYSTEM

A submarine is constantly exposed to tremendous hydrostatic pressure that tends to compress the hull of the submarine with crushing forces at all angles of the submarine sea systems. It is operated with a combination of various units such as the hydraulics, mechanical, electronic system, etc., that needs the highest level of maintenance with zero defects. A slight failure of one part of the single system or sub system can lead to submarine disaster underwater. To avoid and prevent this problem, the navy operator of the submarine must have a complete and utterly perfect system to sustain a safe operational envelope of the submarine.

Shortage of funds and budget deficiency due to the high cost of life cycle submarine operation and maintenance can affect a navy with meager resources. Confronted with multiple problems in subsurface and air warfare capability, a navy maybe forced later on to abandon capabilities that create much problems.

NAVY ABANDON CAPABILITIES

A coastal navy with previous anti-submarine, mine warfare and SEAL team underwater delivery vehicle were abandoned because of obsolescence. Weapons, equipment, ordinance were shelved and training facilities were padlocked and decommissioned. Doctrine and training were also set aside and never discussed in school.

RECOMMENDATIONS

A navy should avoid hasty preparations in submarine warfare capabilities as a necessity for a green water navy. However, it should be "done right the first time" through a deliberate approach. Doctrines and trainings, culture of maintenance, operational safety, etc., must be at the forefront with long years of proficiency preparation to achieve the highest level of maturity.

A navy should start with an affordable training laboratory in sub surface warfare. Acquisition of shallow water midget attack submarine is a cost effective approach to develop skill since the level of risk in case of underwater accident can be managed safely because the submarine will operate in shallow waters (200 ft.). Both the Italian midget submarine (Cosmos) and the English midget submarine (Piranha Class) could be good training equipment as an introduction to undersea warfare.



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About the Researcher: CAPT TOMAS D BAINO PN (Ret) completed his post-graduate studies in Submarine Design at the Department of Naval Architecture, University College of London, United Kingdom of Great Britain, under the sponsorship grant of the UK Ministry of Defense. Capt Baino is an associate editor of the **Maritime Review** providing series of articles in Naval Ship Design,

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PCG Warns of Impending Kidnapping by ASG

by Vicky Viray Mendoza

On 30-October-2018, the **ReCAAP ISC** piracy reporting center warned that a faction of the **ASG** is preparing to launch another round of pirate attacks in the waters off Sabah. According to **ReCAAP**, the **PCG** believes that 10 ASG members are planning to conduct kidnappings in East Sabah "at any opportune time."

The ASG fighters do not have specific targets but are expected to target "businessmen or ship's crew of foreign vessels passing through these waters." The fighters are using an unmarked blue and white motorized launch of Malaysian design called a Jungkong.

ReCAAP reports **ASG** is heavily armed with pistols, rifles, and grenade launchers. Mariners are strongly advised to exercise vigilance when transiting those waters. At the Port of Zamboanga, the PCG is deploying security teams and K9 units to prevent "entry of lawless elements," according to LCDR Noriel Ramos. Zamboanga, a seaport, is home to the ASG. ⚓



Photo Credit: philippineslifestyle.com

Renaming of U.S Pacific Command to Indo-Pacific Command Makes Sense

by Samuel J. Marcelo NNSY/NAVSEA

Last May, Secretary of Defense **James Mattis** retitled **Pacific Command (PACOM)**, the largest of the six U.S. unified combatant command to **United States Indo-Pacific Command (USINDOPACOM)**. The area of responsibility remains unchanged for the former **PACOM**. The decision to retitle is in alignment with the increasing connectivity between the Indian and Pacific Oceans. Moreover, the retitling is fitting in the present geostrategic environment. China's reach has expanded all the way to Africa with its first overseas base. With China's naval vessels transiting the Indian Ocean routinely and a growing list of maritime infrastructure projects, its interests are no longer limited to the Pacific. They now span the Indian Ocean.

China's redefinition of the regional security environment, and shifting it toward the Indian Ocean would result to three Pacific "island chains." This should grow to include the Indian Ocean as well.

The island chain is a geographical security concept used to illustrate a defensive or offensive perimeter by linking islands and other larger landmasses together. Since American military planners in the 1940s identified the initial chain as a means to secure the Soviet Union's and the People's Republic of China's maritime approaches, the number of existing chains has now grown to three.

John Foster Dulles is attributed with designating the islands stretching from the Kurils (Japanese islands) and the Ryukyus to Taiwan, Philippines, and Indonesia as the "first island chain" in the 1950s. (VornDick, W. n.d.) The "second island chain" runs from Japan to Indonesia, while the "third island chain" extends from Severo-Kuril'sk islands of Sakhalin, Russia to New Zealand in the South Pacific.

Prospective fourth and fifth island chains in the Indian Ocean could be delineated in a multitude of ways, and the following methods are only illustrative, based on their alignment with existing U.S. military bases and Chinese interests. The "fourth island chain" commences in Gwadar, hugs the western coasts of India and Sri Lanka, and then passes southward from Hambantota, through the Indian Ocean, and passing the U.S. military base, Diego Garcia. The fourth chain signifies the People's Liberation Army (PLA) Navy's ability to not only challenge the American security interests at Diego Garcia, but also China's strategic competitor – India. (VornDick, W. n.d.)

Jutting out from the Gulf of Tadjoura in Djibouti, the "fifth island chain" passes through the Gulf of Aden, proceeds east as it outlines the Horn of Africa, and then south along the east coast of Africa. This reflects the importance of China's developing commitments and influence in Africa and the western Indian Ocean, signified by its base at Doraleh. (VornDick, W. n.d.)

Given the background above, **USINDOPACOM** will serve as deterrence and maintain stability in the region with the changing geostrategic status quo, now that China has gathered the experience, learned the requisite lessons, and gained enough know-how in its objective for a total hegemony. It is only a matter of time before more Chinese bases are built. Just as U.S. Planners retitled Indo-Pacific Command to reflect the current geostrategic realities, USINDOPACOM will strive along with allies and partners to enhance stability in the Indo-Asia-Pacific region by promoting

security cooperation, encouraging peaceful development, responding to contingencies, deterring aggression and, when necessary, fighting to win. This approach is based on partnership, presence and military readiness. It recognizes the global significance of the Indo-Asia-Pacific region and understands that challenges are best met together.

USINDOPACOM's Area of Responsibility (AOR) encompasses the Pacific Ocean from Antarctica at 92°W, north to 8°N, west to 112°W, northwest to 50°N/142°W, west to 170°E, north to 53°N, northeast to

62°30'N/175°W, north to 64°45'N/175°W, south along the Russian territorial waters to the People's Republic of China, Mongolia, the Democratic People's Republic of Korea, the Republic of Korea, and Japan; the countries of Southeast Asia and the southern Asian landmass to the western border of India; the Indian Ocean east and south of the line from the India/Pakistan coastal border west to 68°E, south along 68°E to Antarctica; Australia; New Zealand; Antarctica, and Hawaii. ("United States Indo-Pacific Command" n.d.)



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Passenger Ferry Launched in Davao to GenSan, Iloilo, and Manila

by DOTr, MARINA and PPA News

On 28-October-2018, the **Department of Transportation (DOTr)** together with the **Maritime Industry Authority (MARINA)** and the **Philippine Ports Authority (PPA)** will re-open the **Davao-General Santos-Iloilo Passenger Shipping Route**.

The re-establishment of ferry operations from Manila to Davao and vice versa is expected to address the lack of an accessible route that has been unavailable for a long time. It also aims to interconnect Luzon to Mindanao, bring people closer, give passengers more travel options, and lower the prices of goods and commodities with the accessibility of freight containers between Davao to Manila.

"Matagal na pong nawala ang Manila-Davao pero sa panahon ni Pangulong Duterte bubuksan po ulit natin 'yan. Currently, the easiest way to reach Davao from Manila is through flying and some of our people cannot afford that. We want Luzon to be interconnected with Mindanao to likewise increase economic activity," said **DOTr Secretary Arthur Tugade**.

2GO Group Inc. will be providing vessels to serve the route and bring back the access to affordable, safe, and fast travel to ordinary Filipinos.

President **Rodrigo Duterte** will lead the inauguration, along with Executive Secretary **Salvador Medialdea**, DOF Sec. **Carlos Dominguez**, DOTr Secretary **Arthur Tugade**, DPWH Sec. **Mark Villar**, DBM Sec. **Benjamin Diokno**, NEDA Sec. **Ernesto Pernia**, BCDA Pres. And CEO **Vince Dizon**, DOT Sec. **Bernadette Romulo-Puyat**, MinDA Sec. **Datu Abdul Khayr Dangcan Alonto** and Davao City Mayor **Sarah Duterte**. They will be joined by other key officials from the government and the private sector.

In addition, the PPA will also launch the new and improved **Passenger Terminal Building (PTB)** in **Sasa Wharf** in the **Port of Davao**.

The new **PTB** will house modern amenities such as a pre-departure waiting area, screening areas for passengers and baggage, boarding gates, and clean comfort rooms. It is now ready to provide a convenient and comfortable experience to port passengers. ⚓

Launching of the
DAVAO - GEN SAN - ILOILO - MANILA
PASSENGER SHIPPING ROUTE
 October 28, 2018 | 3 PM | Sasa Wharf at the Davao Port
 Celebrate with us as we open 2GO Travel routes to Davao and General Santos.

Photo Courtesy: 3.bp.blogspot.com

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PAL's Mabuhay Maritime Ferry Service to Kalibo-Boracay

by Vicky Viray Mendoza



MV Magalang. Photo Credit: Ma. Cristina Arayata/PNA

Philippine Airlines (PAL) is venturing into the maritime sector, and will soon launch a ferry service between Kalibo and Boracay. Tourists coming from Kalibo, Aklan will soon have a more plush and comfortable option of travel to the world-famous Boracay Island. The concept of the ferry service was disclosed to the media on October 23, just a few days before Boracay is to be reopened to the public on October 26. PAL has yet to announce a specific date for the start of its ferry operations. But **Jaime Bautista**, PAL President and COO, said the ferry service might be launched for operation sometime in December.

In particular, it is the **Mabuhay Maritime Express (MME)**, a subsidiary of the **Philippine Airlines (PAL)** that is launching the **Kalibo-Boracay** ferry service. Travel time of only 1.5 hours, down from the usual 2.5 hours by shuttle and boat, is expected to attract more travelers.

"This is the first time that PAL is venturing into maritime business," PAL president and COO, **Jaime Bautista**, told the **Philippine News Agency (PNA)**. **Bautista** said that **PAL** chose Kalibo because the **Kalibo International Airport** is where tourists from China, Japan, and Korea arrive and depart, compared to the smaller **Caticlan Airport** in Boracay.

The ferry service will complement existing PAL flights, in particular, the international flights, to **Kalibo International Airport**. *"We aim to offer travelers a seamless air to sea transfer, taking passengers to their favorite tourist destinations as fast and as comfortable as possible,"* Jaime Bautista added.

Currently, PAL has two catamaran vessels — the **MV Malaming** and **MV Magalang**. The **Lucio Tan Group** built a private **MME Jetty Port**, less than 10 minutes away from the **Kalibo International Airport**. The two 410-seater catamaran vessels will then ferry passengers to **Cagban Jetty Port in Boracay**.

The two catamaran vessels were designed by Netherlands-based **BV Scheepswerf Damen Gorinchem** and built by **Damen Shipyards**

in Singapore, and were delivered to PAL in April this year. PAL executives, including its chairman, **Lucio Tan**, tested the two catamarans.

If **PAL's** ferry service would be successful and "click" with the public, **PAL** may add other routes. *"We will think about the next routes, if there would be any, depending on the demand. Probably we'd have the next route in Cebu,"* **Bautista** told the **PNA**.

"It took about two years to plan the new offering," **Bautista** added. This is understandable because ferry service is a new sector for **PAL**.

The vessels have 3 seating sections – first class, premium class, and regular class. First class and premium class have reclining seats, while regular class lets passengers choose group seating arrangements.

There are also several wall outlets for premium and regular passengers to use, while first class seats have a special USB port-charging feature.

Aside from the ferry's modern facilities, **PAL** said quality service could be expected from the ferry attendants.

However, the ferry service does not come cheap. Round-trip fares cost as much as P2,500 for first class, P2,000 for premium class, and P1,500 for regular class seats. The fares exclude value-added tax and other government fees.



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Submarine Effectiveness and Sea Areas of Operations

Design series 3 of 12

by Captain Tomas D Baino PN (Ret), Naval Architect

INTRODUCTION

A submarine is a hunter killer for as long as she can maintain her stealth. However, when HER PRESENCE in the immediate vicinity of the sea area is detected, then she loses her invincibility and the effective use of her weapons is denied. The submarine becomes the hunted. The exact coordinates or location of the submarine in terms of position, depth, rate of motion, and closest point of approach once established, the submarine is then vulnerable to be neutralized/destroyed by anti-submarine torpedoes with a homing sensor target seeker.

SEA ENVIRONMENT FOR SUBMARINES

Generally, there are two (2) types of submarines, diesel-electric and nuclear, that can be deployed safely and effectively in specific sea areas where she can avoid detection and make use of the environment to evade detection or escape from destruction from anti-submarine weapons launched from aircraft, anti-submarine ship, or another submarine hunter.

- ♦ **Littoral Water Zone** – are coastal areas affected by: tidal water; shallow waters with variable depths; fluctuating density of sea water mixed with freshwater; maritime traffic; heavy noise; small hills; and corals absorbing a certain percentage of sonar sound propagation, which altogether make it difficult for the sonar to locate a submarine underwater and conclude deliberate underwater attack on the lurking

submarine hiding underwater between small hills and corals, because the sound echo propagation is scattered.

The main function of sonar is sound propagation and projection as well as picking-up returning echo. Sound travels faster underwater, affected by salinity, temperature and depth, all of which can be explained by the principles of physics. Any change of data due to environment factors affects the efficiency and accuracy of the SONAR.

The **Diesel-electric submarine** is a very quiet submarine that relies on her batteries (no moving parts) with all engine, propulsion, generators, and pumps shut off and thus can maintain ultra-quiet silence underwater with a negligible acoustic emission. She can maintain a stationary position at the bottom of the sea (50 meters below) in ambush position of target approaching her zone of influence and torpedo-range unnoticed within a 10 miles radius. The diesel-electric submarine is practically a hunter-killer submarine in extremely shallow water battle environment with a limited displacement. She relies on the target acoustic signature being picked-up by her Doppler (passive sonar) with the sound propagated from approaching submarine or surface vessel active sonar. Typically, the diesel-electric submarine is dedicated to destroy military targets and merchant marine vessels of high military value.

- ♦ **Blue Open Ocean** – a wide and vast area of open ocean, with deep waters of 1,800 meters or more. The **Nuclear submarine** is ideal to operate under-

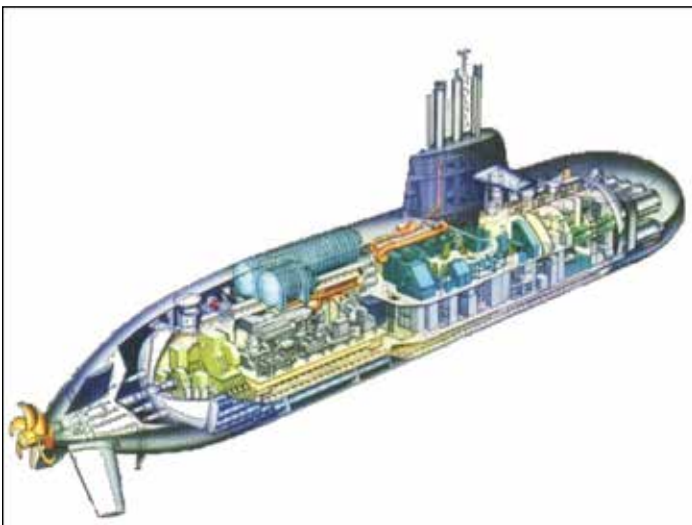


Figure 1. Geometry of Diesel-Electric Submarine with All-Deep blue ocean with unlimited diving depth up to 300 meters or more with safe underwater maneuvering space (dependent on the collapsed depth of the hull design). **Nuclear submarines** can operate underwater and at the surface for at least 25 years without refueling. Only human logistical needs and morale can limit its underwater endurance.

The **Nuclear submarine** is a noisy submarine because her seawater cooling system continuously operates without shutdown in order to provide a cooling system for the nuclear reactor to prevent a meltdown of the nuclear system. 70% of heat discharged by the seawater cooling system is released to the sea, which leaves a thermal scar at the surface of the sea, easily visible to forward looking infrared sensors. Noise continuously emanates from the pump and the steam can be detected by passive SONAR. Magnetic signature and pressure signature characteristics of the hull's large displacement are other vulnerabilities of this type of submarine.

The **Nuclear submarine** carries at least 16 units of ballistic missiles with nuclear warheads (weapons of mass destruction target aimed at the center of key cities). It can launch missiles at great distances away from the target 7,500 miles or more on other side of the ocean, with a pre-deter-

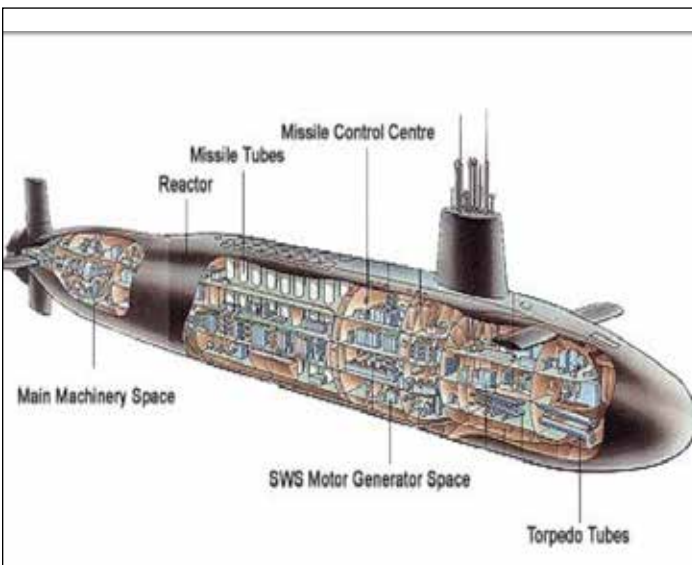


Figure 2. Geometry of Nuclear Submarine

mined target launch position. This means the nuclear submarine can be at the other side of the ocean to destroy a target. It is advantageous to keep the **Nuclear submarine** moving because it sucks up large quantities of

seawater activity for the nuclear reactor.

SONAR SOUND PROPAGATION AT SEA

Sound travels faster in water than in air. This has some profound effect on SONAR. Sound travels at 1,500 meters per second in water, in a straight path with transmission loss due to spreading and attenuation. Sound velocity increases with the increase in temperature, salinity, producing refraction; whenever sound passes from one velocity level to another, the sound ray path is bent as shown in the surface duct (with attenuation due to reflection loss with respect to limited weather range).

TWO TYPES OF SONAR

There are two types of Sound Echo Navigation And Ranging (SONAR) used in Navigation underwater and in target tracking iden-

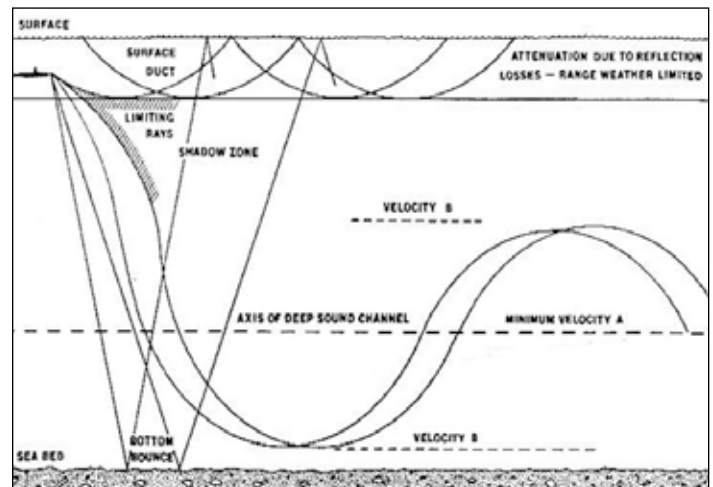


Figure 3. Submarine Surface Duct

tification. These are:

1. Active Sonar – transmits sound for navigation underwater and receives the returning echo. The rate of return, location and position are plotted and the position of the submarine underwater is pinpointed by making use of sound.
2. Passive Sonar – receives but is only dedicated to sound propagated from another sound source. This type of SONAR is called a Doppler.

SUBMARINE COUNTERMEASURES

Both diesel-electric and nuclear submarines have the following counter-measure in order to jam, decoy, noise make, providing signature to divert the path of the attacking torpedo sensor away from the location of the target submarine being hunted. The prime consideration on this aspect is that the stealth design of both submarines should be lesser than the signature being emitted by the counter-measure. If the signature or stealth of both submarines is prominently greater than the signal emitted by the counter-measure, it will result in positive attraction by the anti-submarine torpedoes to home into the target.

STEALTH CHARACTERISTICS

Diesel-Electric Submarine – silent, small displacement (250 to 4000 tons average) can remain in stationary position at the bottom of the sea between hills and blend with the corals in extremely shallow water. SONAR finds it difficult to detect, conclude detection, and commit deliberate attack on this type of submarine.

Nuclear Submarine – noisy, large displacement (17,000 tons average or more) with high magnetic, acoustic pressure, and infrared signature. Its means of evading the attacking ordnance are the tiles at the outer surface of the hull that absorb signals from attacking torpedoes, the speed of the submarine to evade being hit, and noise making and decoys to lure away the attacking ordnance.

RECOMMENDATIONS

The diesel electric submarine is a very quiet submarine that can maintain

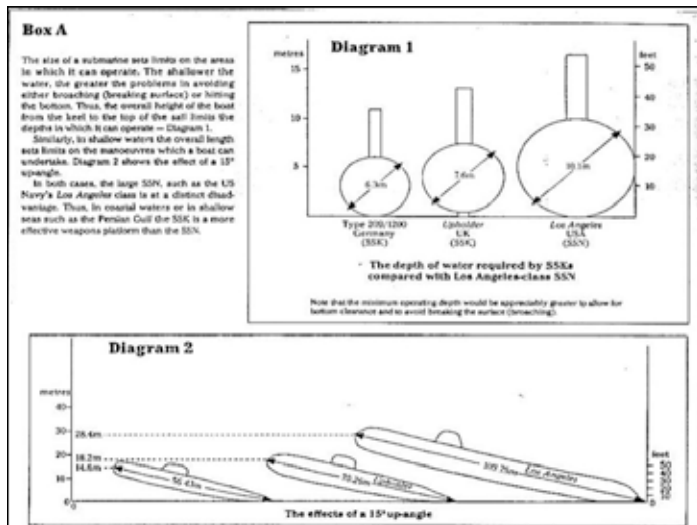


Figure 4. Vulnerabilities of Nuclear Submarine in Extremely Shallow Water Battle Environment

stealth in extremely shallow water especially in ambush position waiting for the target to come closer within the radius of influence. For a navy operating in green waters, the diesel electric submarine with AIP is truly a hunter killer in stationary position, capable to conduct search, identify, attack and neutralize targets in coastal waters intruding within her EEZ.



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MARITIME FORUM

The League organized the Maritime Breakfast Forum (MBF) series in 1995 as a venue for developing plans and programs to discuss and resolve issues in the maritime industry. The MBF is attended by stakeholders in the maritime sector and resource persons in the government and private agencies involved in maritime concerns. The MBF is regularly held, without fail, every month except December, hosted by different agencies and organizations in the maritime industry. Policies and projects presented during the forum are published in the Maritime Review for information and dissemination to the general public.





Photo credit: PMO Misamis/Cagayan de Oro.

The Port of Cagayan De Oro

by Vicky Viray Mendoza

The Port of Cagayan de Oro is situated in Cagayan de Oro City, the capital of Misamis Oriental and the regional center of Northern Mindanao. It is located in the Northern Coast of Mindanao within Macajalar Bay, near the mouth of the Cagayan de Oro River. It faces northwest and is protected to the east by a stretch of coast running almost due north for nearly 30 kilometers. A highway links Cagayan de Oro with Iligan, Butuan and Davao.

The **Port of Cagayan de Oro**, an international seaport in Mindanao, is the most modern outside Metro Manila. The seabed off the port is steep and reaches 1,000 meters deep at the entrance of the Macajalar Bay, which has a wide mouth. Anchorage is ideal for transnational vessels with a depth of 18 meters, and is approximately 400 meters from the shoreline. The depth of safe anchorage is 60 fathoms. It has 14 berthing areas with varying drafts from 8-13 meters, totaling 954 meters, 1 RORO ramp, two

50-ton weighbridges, 126 reefer outlets, 2 hectares of open storage areas, and a 5,500 sqm container freight station. The port serves 14 domestic and 4 foreign shipping lines.

The **Port Management Office (PMO) of Cagayan de Oro** has **3 Terminal Management Offices (TMO)**: TMO BALINGOAN; TMO CAMIGUIN; and TMO OPOL, all of which have RORO.

The **Internet-Based Port Operations and Receipting for Terminals Systems (iPORTS)**, a system developed to convert Non-computerized Ports (NCP) to computerized operations, was successfully rolled out at the **TMOs** under the **PMO** of Misamis Oriental/Cagayan de Oro (**MO/CDO**) in October 2018. The **iPORTS** will be rolled out in the Base Port in 2019.

There are **6 public ports** in Cagayan de Oro, namely: Balbagon, Guinsiliban, Medina, Molugan, Cugman, and Kimaya; and **9 private ports** in the PMO, namely: CDO Oil Co; Resin Inc.; San Miguel Corp.; Cagayan Corn Products Corp.; Pryce Gases Inc.;

Holcim Philippines; General Milling Corp.; Siddharta Holdings Co, Inc.; and Minergy Power Corp.

The Port of Cagayan de Oro is the busiest government port in Northern Mindanao in terms of cargo throughput. Dubbed as the **Global Gateway to Mindanao**, its strategic location makes it the entry and exit point of goods and passengers for the city of Cagayan de Oro and the provinces of Misamis Oriental, Camiguin, Agusan, Bukidnon, and Davao. In 2017, total cargo throughput reached 9.5M MT, of which breakbulk was 2.45M MT, dry bulk was 1.755M MT, liquid bulk was 1.648M MT, and containerized cargo was 3.647M MT.

The **Port of Cagayan de Oro** is classified as a Class A general cargo port that caters to practically all sorts of goods including agricultural products, industrial products, bottled products and canned goods, chemicals and petrochemicals. The Port is part of the Central Nautical Highway under the RORO (Roll-On Roll-Off) Transport System linking Mindanao to Cebu, Iloilo, Bacolod, Jagna and Tagbilaran in Visayas, and Manila and Batangas in Luzon.

The **Port of Cagayan de Oro** is an ISO 9001:2008 certified port as to the facilitation of vessel entrance and clearance processes. It is also recognized by the **Partnerships in Environmental Management for the Seas of East Asia (PEMSEA)** for its implementation of the **Port Safety, Health and Environmental Management System (PSHEMS)** which covers three standards: ISO 9001:2008 (Quality Management), ISO 14001:2004 (Environmental Management) and OHSAS 18001:2007 (Occupational Safety and Health). The Port is compliant with the **International Ship and Port Facility Security (ISPS)** Code.

Former President Gloria Macapagal-Arroyo issued Executive Order 769 on 19 November 2008 declaring and delineating the **Cagayan de Oro Port Zone** under the administrative jurisdiction of the **Philippine Ports Authority (PPA)**. The **Cagayan de Oro Port Zone** has a total area of 364 hectares, composed of a land area of about 25 hectares, and sea area of 340 hectares. The range of mountains protecting Macajalar Bay rises to 2,560 meters above mean sea level and to the south by the Kitanglad mountains up to 2,900 meters high. The Cagayan River flows down between the Kitanglad and Mapoto mountains in a steep-sided valley, disgoring into the south side of Macajalar Bay through a wide alluvial plain. The headland to the east of the river mouth, Macabalan Point, protects the smaller inner bay. **Cagayan de Oro** City is established on the east bank of the river.

Over the years, the **Port of Cagayan de Oro** has spurred the economic development of Northern Mindanao. Since 2010, the Philippines has enjoyed a satisfactory performance in terms of GDP, with a growth rate in 2017 of 6.7% (World Bank), while Northern Mindanao registered 5.9% (Philippine Information Agency). This economic upswing is projected to continually go up as more road networks and bridges now connect the Port of **Cagayan de Oro** to major cities in Mindanao, such as the coastal road which offers an alternate link to Bukidnon and Opol, Misamis Oriental.

The **Department of Transportation (DOTr)** announced in early September this year that the **Port of Cagayan de Oro's** new passenger terminal building is 79% complete. It is scheduled to open and be fully operational by December. The **Port of Cagayan de Oro** is set to be the biggest port passenger terminal building in the Philippines, and is expected to accommodate around 3,000 passengers daily. ⚓

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Sea Level Rise and The Philippine Beaches

by Cdr Carter Luma-Ang

The Philippines is endowed with thousands of beautiful beaches. Except for the Cordilleras, there are beach destinations in all regions. Coastal attractions can be found from the northernmost islands of Batanes to the southernmost parts of Tawi-Tawi.

The Philippines is one of the favorites of foreign tourists, and beaches still remain as their top destination. Statistics show that the lion's share of foreign tourists to the Philippines come from cold climate countries and regions such as China, Europe, North America and South Korea. Most of these foreigners visit the beaches than other parts of the country.

The University of Cambridge report *Climate Change: Implications for Tourism* stated that "Coastal tourism is the largest component of the global tourism industry, with more than 60% of Europeans opting for beach holidays, and the segment accounting for more than 80% of US tourism revenues."

While beaches attract more tourists than other places, they are also more vulnerable to degradation because they are easier subjected to erosion or submersion. Submersion can happen if the level of the sea rises. When sea level rises (SLR), the beach becomes narrower as shown in the comparison in Figures 1 and 2.

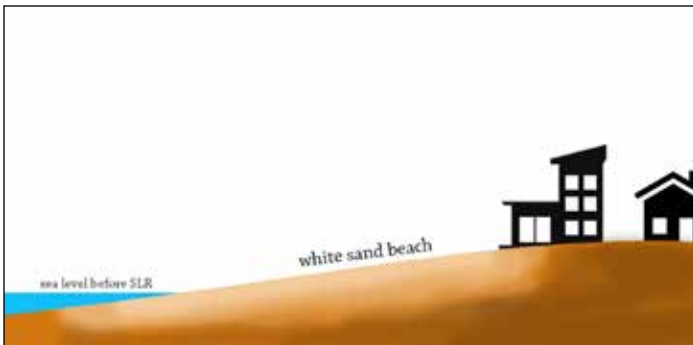


Figure 1. Current sea level



Figure 2. Level of water surface after the sea level rise.

Note. The beach area becomes narrower because part of the original beach has submerged.

The Intergovernmental Panel on Climate Change Report 2014 Synthesis Report projected that the sea level rise in 2046 may go as high as 0.38 meter and in 2100 may go as high 0.82 meters. With that amount of SLR, will there be Philippine beaches that will be submerged?

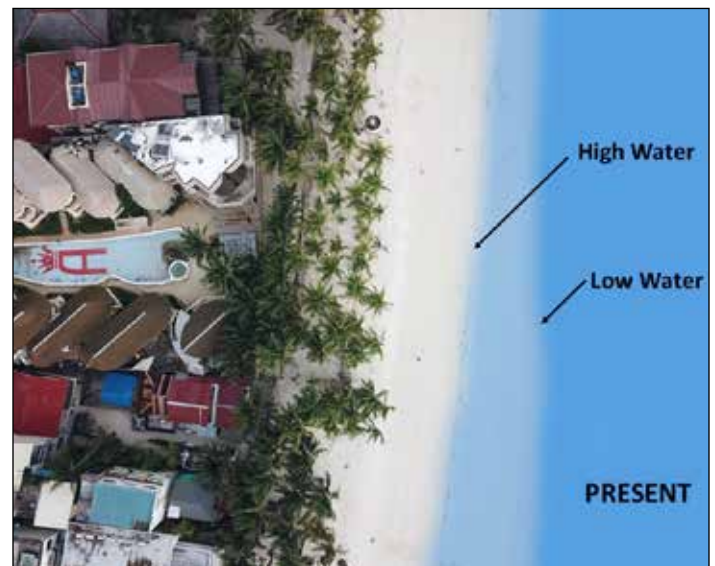


Figure 3. High water and low water lines of Boracay.

Note: The darker blue shows the low water and the lighter blue shows the high water.



Figure 4. High water and low water lines after SLR.

Figures 3 and 4 show the comparison of the high and low water lines in a portion of Boracay before and after SLR.

Beaches recede as the sea level rises but the slopes in the coasts will also vary. Thus, the amount of beach erosion is not constant. Long coasts with high elevation may still maintain a fairly wide area of beach after sea level rise. However, the coasts with low elevation might have narrower area of beach after sea level rise.

In the case of Boracay Island, there is a no build zone twenty-five (25) meters from the edge of the mean high-water mark measured inland and a setback distance of 5 meters from nearest edge of the structure. Structures are already allowed with some limitations beyond this 30-meter easement.

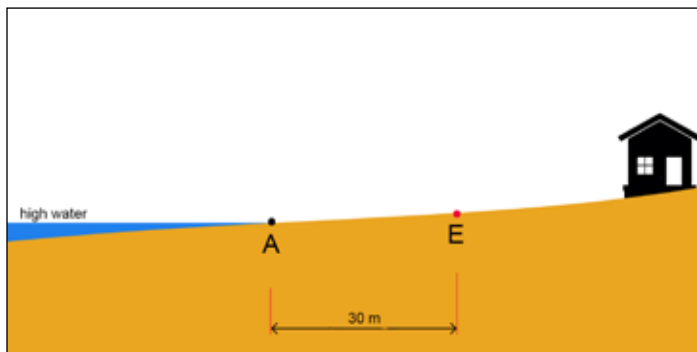


Figure 5. High water and the no build zone.

Note: Point A is the location of the high water and Point E is the 25+5 easement.

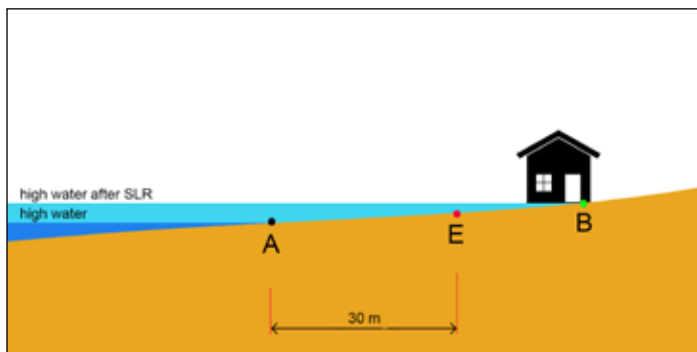


Figure 6. High water before and after SLR.

Note: Point B is the location of high water after SLR.

Figure 5 shows the 30-meter (25 + 5) distance from the high water where no structures can be built in Boracay. Figure 6 shows the situation after the SLR.

Figure 6 shows that even if the structure is built more than 30 meters from the existing mean high water line, it will be submerged if the location of the structure is below the high water after the SLR. The susceptibility of a point to submersion is not dependent on its distance from the high water line but on its elevation above the water. Thus, the 25 + 5 no build zone is only effective in maintaining a wide beach area if the outermost edge of the no build zone is above the high water after the SLR.

Foreign studies have shown that degraded beaches lessen the desirability of tourist spots. In Philippines, there is no sufficient study conducted on the location and number of beaches affected by SLR. However, if sea level rise happens, the impact is very high considering the billions of incomes generated from the beach destinations. The question is whether tourists would still flock to our coastal attractions like Boracay if the beaches will be narrow.

The Municipality of Malay, Aklan which covers the Boracay Island is ahead of other coastal municipalities for implementing a 25 + 5 easement thru their Municipal Ordinance No. 2000-131. However, not all coastal municipalities have similar ordinance. In many tourist spots, structures are already constructed near the high water lines without taking into consideration the effect of SLR.

"We should learn from the Korean experience and tackle the problems before they get worse. After addressing the pollution in Boracay, it might be high time that the Government also review the existing laws on easements in coastal areas."

Currently, pollution is the immediate concern of the Philippine Government as seen in its action in Boracay. SLR is not yet a major issue for beach tourism since it is slow. Although the rate of SLR is not abrupt, the effect is permanent. Unlike pollution, it is not reversible and cannot be solved by rehabilitation.

Boracay alone has attracted millions of foreign tourists. Considering there are hundreds of beach destinations, the Philippines attracts hundreds of thousands of foreigners. Boracay and many other coastal areas consider tourism as their lifeblood. What would happen if the white beaches of these destinations disappear because of SLR?

In South Korea, the most visited beach is Haeundae Beach located in Busan. The beach is roughly 1.5 km long with a 30-meter wide sand. Just like Boracay, people flock to Haeundae Beach every summer.

The Travel Weekly Asia (2017) reported that Busan is estimated to have drawn more than 10 million domestic visitors and 2 million international tourists in 2016, pulling in a combined 4.1 trillion won (US\$3.6 billion) in tourism revenue.

Between 1990 and 2013, a total of 53,000 cubic meters of sand has been dumped in the Haeundae beach, equal to 13,000 loads by an eight-ton truck.

If the beaches in the Philippines be subjected to submersion, is the government willing to spend millions, just like what the Korean Government did in Haeundae, to maintain the attractiveness of the beaches and sustain the income generated from tourists?

CONCLUSION

We should learn from the Korean experience and tackle the problems before they get worse. After addressing the pollution in Boracay, it might be high time that the Government also review the existing laws on easements in coastal areas. Coastal municipalities should review their ordinances on no-build zones and consider SLR in the drafting their provisions. No-build zones should not only be measured horizontally from the high water but the slope of the coast must also be taken into account.



About the Author. Commander Carter Luma-ang is currently the Chief of the Maritime Affairs Division of the Hydrography Branch of the National Mapping and Resource Information Authority (NAMRIA). He earned his Master in National Security Administration from the National Defense College of the Philippines (RC-51).

GoodShipping Program Achieves First Fossil-Free Ocean Freight Transport

by Maersk Press

In the **Netherlands**, the **GoodShipping Program** bunkered the first batch of **biofuels** into a container vessel that otherwise would have entirely run on fossil fuels. The first 5 pioneering cargo shippers to join the program are **Tony's Chocolonely, Dopper, Blygold, Magic Marine, and Mystic**. Altogether, they avoided over 40 tons of CO₂ emissions and significantly reduced local emissions like sulphur, soot and black carbon because the biofuels replaced the Heavy Fuel Oil (HFO) that was being used.



GoodShipping's first 5 cargo shippers to join the Program.
Photo Credit: GoodShipping.org

In collaboration with **GoodShipping's** partners, **GoodFuels Marine** and **Samskip**, the vegetable oil-bunker operation in September in the **Port of Rotterdam** was hailed a "great success." The **Samskip Endeavour** is a container vessel that carries over 800 containers and normally runs on a combination of fossil fuels like **HFO** and Marine Gas Oil (**MGO**). It was bunkered with 22,000 liters of **Hydro-treated Vegetable Oil (HVO)** made from used cooking oil (**UCO**).

This volume of fuel corresponds with the annual sea freight volume of **GoodShipping's** 5 cargo shippers. The voyage will offset all of their carbon emissions from shipping for one year, without requiring them to make special arrangements for each shipment. **GoodFuels Marine** supplies the biofuels, and will replace the equivalent volume of **HFO** in the cargo vessels.

Blygold, which provides **HVAC** services, said that this was a great way to reduce environmental impact without interfering with business operations. "For a company like Blygold, where we work with freight forwarders for shipping our sea freight, it has always been difficult to minimize the impact of that part of our supply chain.



Boxship Samskip Endeavour. Photo Credit: 247.com

GoodShipping makes this possible, with an easy and adaptable solution," said **Maarten van der Meer**, Managing Director, **Blygold International**.

The 5 cargo shippers could claim to have significantly reduced local emissions like Sulphur Oxide (SO_x), Nitrogen Oxide (NO_x), and Particulate Matter (PM). These emissions from vessels in port regions lead to over 60,000 premature deaths globally each year, according to researchers from the **University of Delaware**.

With this first **HVO** bunkering, **GoodShipping** shows that it is possible for cargo owners to influence the carbon footprint of the sea freight in their supply chain. Based on the principle of mass balance, any company can join the **GoodShipping Program** and have their sea freight shipped climate-neutral, and as well as significantly reduce local emissions. Following the program, **GoodShipping** is increasing demand and accelerating R&D in the field of **marine biofuels**.

The **GoodShipping Program** works on the premise that, as all CO₂ from container shipping is emitted into the atmosphere, the means of mitigating these emissions is equally impactful, regardless of which vessels adopt **biofuels** over traditional bunker fuels – or the amount of **biofuel** that is added to the fuel tank, so long as it offsets the CO₂ costs of transporting the participating shippers' cargo.

The **GoodShipping Program**, whose partners include **Social Enterprise NL, DHL** and **NGOs Carbon War Room** and **Naturr & Miliu**, is urging more companies to join the program ahead of the **IMO's** 0.50% global sulphur cap by 2020. ⚓



"In a matter of seconds, dynamite fishing can destroy a reef that took hundreds or thousands of years to grow." Allison Guy / OCEANA.org Photo Credit: Richard Whitcombe / Shutterstock

Global Coral Reefs are in Danger

by Timothy Muelder

Oceans cover 70% of the Earth's surface area, forming the largest habitat on the planet. Coastal and shallow-water areas contain some of the world's most diverse and productive ecosystems, including seagrass beds, mangroves, and coral reefs.

The 7000 islands of the Philippines are home to an enormous number of coral reef systems that not only contribute to global atmosphere health but also to the health of the global marine life eco-system as well.

Scientists agree that there's oxygen from ocean plants in every breath we take. Most of this oxygen comes from tiny ocean plants – called phytoplankton – that live near the water's surface and drift with the currents. Like all plants, they photosynthesize – that is, they use sunlight and carbon dioxide to make food. A byproduct of photosynthesis is oxygen.

Scientists also believe that phytoplankton contribute between 50%-85% of the oxygen in Earth's atmosphere. They aren't sure because it's a tough thing to calculate. In the lab, scientists can determine how much oxygen is produced by a single phytoplankton cell. The hard part is figuring out the total number of these microscopic plants throughout Earth's oceans. Phytoplankton wax and wane with the seasons. Phytoplankton blooms happen in spring when there's more available light and nutrients.

Coral reef polyps feed on phytoplankton, which is the bedrock of the oceans food chain. Damage to the coral reef causes a domino effect across the entire marine eco-system. Damage can come from a number of sources: dynamite fishing, dragging boat anchors, oil spills, global warming, other man-made catastrophes, natural disasters like typhoons, earthquakes, crown of thorns starfish attacks, and silt blankets from mountain water run-off after a rain storm.

The balance between all aspects of the oceans eco-system is a complex one that must be addressed carefully. Protection for the coral reef systems around the Philippines is an important focus especially in **Scarborough Shoal** and **Benham Rise**. The area around **Benham Rise** is the birthplace and nursery for **Pacific Bluefin Tuna** which population is endangered and possibly on the edge of extinction.

Unregulated encroachment from other nations in the **South China Sea** presents a hazard for our coral reefs and health of the marine fishing industry, as well as a security hazard for the Philippines as a sovereign nation.

Intervention from the highest levels of government will be required slow or stop the degradation of the Philippines coral reefs and marine eco-systems. ⚓



Photo credit: Marikina Public Information Office, 22-July-2018

Decongesting the Marikina River

by Josephine M Viray

Marikina City, the shoe capital of the Philippines, is located by the banks of the Marikina River and is thus regularly prone to flooding and is also at risk from sea level rise. Marikina River flows into the Pasig River, which ultimately flows out to Manila Bay. During the typhoon season between August and November, floodwaters overflow into the riverbanks of Marikina River. These floodwaters then disperse to the lowlands in the vicinity of Marikina River.

But it is just as important to note that the cause of flooding does not all emanate from the rising trend of floodwaters from Marikina alone. Floodwaters also travel downwards from the upper Marikina ridges such as **Montalban, San Mateo, Rizal** and from the **Sierra Madre Mountains, Rodriguez, Rizal**.

Marikina River suffers from toxins, not only on the surface but also down to the riverbed. It will be an impossible task to clean Marikina River without cleansing the waste and effluents from Montalban, San Mateo, Rizal and from the Sierra Madre mountains, Rodriguez, Rizal first before they flow down to the Marikina River, and add to the pollutants on the surface and bottom of the Marikina River brought about by the residents of surrounding LGUs.

During the rainy season, flooding from Marikina River can be avoided by taking pre-cautionary measures: Enlarging the river basin of Marikina River is one step. Building higher floodwalls is another. Cleaning up the riverbed by means of dredging its stored debris is a third step. Fourthly, making each and every town accountable for cleaning up the debris in their riverbank rather than pinpointing to other sources of debris. A fifth measure would be to install fines. The city needs to be charged if they don't clean up the debris along their riverbank. A sixth measure would be to involve the **Department of Transportation** that could provide the use of public ferries in both the Marikina River and Pasig River in lieu of adding to the heavy traffic in EDSA.

The building of public ferries, which if proven profitable, may entice the private sector to invest as well. The **Department of Transportation (DOTr)** could also suggest beautification efforts to both the public and private sectors such as transforming the Marikina and the Pasig riverbanks into a VENICE of the Philippines.

There are **6 major companies** operating by the banks of Marikina River. These are: The **Super-Ferry Shipping Company**, which owns and manages the ferries that ply the Marikina River and Pasig River; the **Marikina Shoe Gallery** that manufactures Marikina-made shoes; **Converse**, a leading manufacturer of rubber shoes; the **RDC Riverbanks Development Corporation**, which acquired 23 hectares of land on both sides of the Marikina River; the **Riverbanks Center**, noted for having the most number of name brand outlet stores, a 20,000-seater amphitheater, and the **Riverbend Hotel**; and last but not the least, the **Coats Manila Bay Inc.**, an international Marikina-based company in the textile business. These 6 major companies by the riverbanks could each be assigned to clean up the river on a 1:1 ratio, where 1 company cleans for 1 month in a year. The remaining 6 months could be split among the 6 LGUs along the riverbanks that directly affect the Marikina River such as: **Marikina, Pasig City, Pateros, Makati, Mandaluyong, and Old Manila**. This arrangement could hopefully free up some resources of the LGUs to purchase low cost sewage treatment plants for the sections populated by poor informal settlers.

Since the Marikina River and Laguna Bay flow into the Pasig River, it is important to note that according to Sciencing.com, human waste accounts for 65% of the pollution in Pasig River. Thus, it is of extreme importance and urgency to undertake the procurement of low cost sewage treatment plants in the identified LGUs affecting the Marikina River. ⚓

What is Ocean Noise?

by NOAA

Ocean noise refers to sounds made by human activities that can **interfere or obscure** the ability of marine animals to hear natural sounds in the ocean.

Many marine organisms rely on their ability to hear for their survival. Sound is the most efficient means of communication underwater and is the primary way that many marine species gather and understand information about their environment. Many aquatic animals use sound to find prey, locate mates and offspring, avoid predators, guide their navigation, locate habitat, and listen and communicate with each other. But over the last century, human activities such as shipping, recreational boating, and energy exploration have increased along coasts, offshore, and deep ocean environments.

What is the problem? Sound is a fundamental component of habitat that many ocean animals and ecosystems have evolved to rely on over millions of years. It is the most efficient means of communication over distance underwater. In the last 100 years, human activity has increased in more coasts, further offshore, and in deep ocean environments. Noise from this activity travels long distances underwater, leading to increases and changes in ocean noise levels.

Rising noise levels can negatively impact ocean animals and ecosystems in complex ways. Higher noise levels can reduce the ability of animals to communicate with potential mates, group members, offspring, or feeding partners. Noise can reduce an ocean animal's ability to hear environmental cues vital for survival, including those key to avoiding predators, finding food, and navigation to preferred habitats.

NOAA's approach to managing ocean noise aims to reduce negative physical and behavioral impacts to trust species, as well as conserve the quality of acoustic habitats. In 2010, NOAA committed to improving the tools used by the Agency to manage underwater noise impacts more comprehensively, including to better address cumulative impacts to whales, dolphins, and porpoises. This commitment led to two phases:

- Phase 1:** The **CetSound** phase develops two mapping tools, CetMap and SoundMap, which aim to improve our ability to visualize cetacean density and distribution, and man-made underwater noise, respectively.
- Phase 2:** The **Ocean Noise Strategy**, identified NOAA's long-term ocean noise management goals, and the science and policy mechanisms for NOAA to meet those goals. This continues through the development and implementation of plans to achieve program Strategy goals across the agency.

How far does sound travel in the ocean? The distance that sound travels in the ocean varies greatly, depending upon water temperature and pressure. Water temperature and pressure determine how far sound travels in the ocean.

While sound moves at a much faster speed in the water than in

air, the distance that sound waves travel is primarily dependant upon ocean temperature and pressure. While pressure continues to increase as ocean depth increases, the temperature of the ocean only decreases up to a certain point, after which it remains relatively stable. These factors have a curious effect on how sound waves travel, and how far.

Whales produce sound waves that move like ripples in the water. As the whale's sound waves travel through the water, their speed decreases with increasing depth as temperature drops, making **sound waves refract downward**.

Once the sound waves reach the bottom of what is known as the *thermocline* layer, the speed of sound reaches its minimum. The thermocline is a region characterized by rapid change in temperature and pressure, which occurs at different depths around the world. Below the thermocline "layer," the temperature remains constant, but pressure continues to increase. This causes the speed of sound to increase, making **sound waves refract upward**.



Humpback whales. Photo credit: Ed Lyman/NOAA

The area in the ocean where sound waves refract up and down is known as the "*sound channel*." The channeling of sound waves allows sound to travel thousands of miles without the signal losing considerable energy. In fact, hydrophones, or underwater microphones, if placed at proper depth, can pick up whale songs and manmade noises far away.

Unfortunately, according to **Alicia Gref**, in her article "[Ocean Noise is so loud, Humpback Whales Stop Singing](#)," although Humpback whales have become well-known for their beautiful songs, researchers have found that noise coming from ships is enough to make them shorten their songs, or stop singing altogether. Conservationists have addressed this issue at a summit held by the **International Maritime Organization**, where almost a dozen organizations called for slowing of ship speeds to reduce noise.

"Underwater noise from ships increases levels of stress-related hormones in whales, which can impact their ability to reproduce and impair their immune systems. Because whales and dolphins are highly dependent on sound to communicate, navigate, socialize, and locate prey, a noisy ocean is one in which their field of 'vision' shrinks, requiring whales to increase the amplitudes of their calls," **Regina Asmutis-Silvia**, Executive Director of **Whale and Dolphin Conservation** said.

Not only would slowing of ships speed make the ocean quieter for marine mammals and reduce their stress levels, it would have the added benefits of reducing the risk of ship strikes, and reducing greenhouse gas emissions as well.



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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 Norwegian Shipowners' Association, and the Japanese Shipowners' Association.

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

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 Commission 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 Kapitán 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 Kapitán Felix Oca and/or a shipping company sponsorship.



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