



MARITIME REVIEW

A PUBLICATION OF THE MARITIME LEAGUE

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THE MAN AT THE HELM OF THE MARITIME LEAGUE

Also Inside:

- ▶ On Military Alliances
- ▶ Environmental Impact of lockdowns in Luzon
- ▶ PN's 38th FOIC
- ▶ PCG's 27th Commandant
- ▶ Aiding the Nation Against the COVID-19 Pandemic

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About the Cover:

Retired Vice Admiral Eduardo Ma. R. Santos, former PN Flag Officer In Command, assumed as President of The Maritime League last June 17, 2020 bringing along with him a life-long experience in public service and private enterprise management. He succeeded Commodore Carlos L Agustin AFP(Ret), the Founding President.



MARITIME EVENTS CALENDAR

JULY '20

- 14** **MARITIME FORUM #159 (NATIONAL COAST WATCH COUNCIL, MALACAÑAN PALACE, MANILA)**
- 28-29 FLOATING PRODUCTION SYSTEMS 2020 FORECASTS & ANALYSIS (VIRTUAL CONFERENCE)

AUGUST '20

- 3-4 BREAKBULK ASIA (SHANGHAI, CHINA)
- 3-5 CLEAN WATERWAYS (JW MARIOTT, INDIANAPOLIS, IN, USA)
- 11-14 OCEANS 2020 SINGAPORE (SINGAPORE)
- 17-19 OTC ASIA (CENTRE KUALA LUMPUR, MALAYSIA)
- 26** **MARITIME FORUM #159 (PHILIPPINE PORTS AUTHORITY, BONIFACIO DRIVE, PORT AREA, MANILA / VIRTUAL)**
- 24-28 MARITIME WEEK AMERICAS (PANAMA CITY, PANAMA)
- 25 5TH INDONESIA MARINE & OFFSHORE EXPO (IMOEX) 2020 (RIAU ISLANDS, INDONESIA)
- 26 10TH INDONESIA INTERNATIONAL SHIPBUILDING, OFFSHORE, MARINE EQUIPMENT, MACHINERY & SERVICES EXHIBITION & FORUM (INAMARINE) 2020 (JAKARTA, INDONESIA)
- 31-3 SEP OFFSHORE NORTHERN SEAS (STAVANGER, NORWAY)

SEPTEMBER '20

- 1-2 MEGARUST NAVAL CORROSION CONFERENCE (VIRTUAL CONFERENCE)
- 2-3 CRUISE SHIP INTERIORS EXPO AMERICA (MIAMI, FL, USA)
- 8 GASTECH EXHIBITION & CONFERENCE 2020 (SINGAPORE)
- 8-11 THE INTERNATIONAL CONFERENCE ON MARITIME SECURITY AND DEFENCE (HAMBURG MESSE UND CONGRESS GMBH, HAMBURG, GERMANY)
- 8-11 MARITIME FUTURE SUMMIT (HAMBURG MESSE UND CONGRESS GMBH, HAMBURG, GERMANY)
- 13-15 THE MARITIME GIFT SHOW (MGS) (HALIFAX EXHIBITION CENTRE, GOODWOOD, CANADA)
- 15-18 PORTS CONFERENCE (WYNDHAM GRAND PITTSBURGH DOWNTOWN, PITTSBURGH, USA)
- 22-24 MODERN DAY MARINE MILITARY EXPO (QUANTICO STATION, VIRGINIA, USA)
- 23** **MARITIME FORUM #160 (NATIONAL DEFENSE COLLEGE OF THE PHILIPPINES, CAMP GEN. EMILIO AGUINALDO, QUEZON CITY)**
- 23-25 CHINA (SHENZHEN) INTERNATIONAL LOGISTICS SUPPLY CHAIN FAIR (SHENZHEN, CHINA)
- 28-2 OCT SNAME MARITIME CONVENTION (SMC) 2020 (VIRTUAL CONFERENCE)
- 29-30 SHIPPING TECHNICS LOGISTICS KALKAR (MESSE KALKAR, KALKAR, GERMANY)
- 29-1 OCT BREAKBULK EUROPE (BREMEN, GERMANY)
- 29-1 OCT INLAND MARINE EXPO (IMX 2020) (VIRTUAL CONFERENCE)
- 30 ASIA PACIFIC MARITIME (APM) 2020 (SINGAPORE)
- 30-1 OCT INTERNATIONAL GREEN & SMART SHIPPING SUMMIT (ROTTERDAM, NETHERLANDS)

OCTOBER '20

- 5-8 AUVIS Xponential (VIRTUAL CONFERENCE)
- 7-9 NAVEXPO INTERNATIONAL 2020 (PORT OF LORIENT, SOUTH BRITTANY, FRANCE)
- 7-9 CONTRACT MANAGEMENT FOR SHIP CONSTRUCTION, REPAIR AND DESIGN COURSE (THE ROYAL INSTITUTE OF NAVAL ARCHITECTS, LONDON, UK)
- 10-12 INTERNATIONAL CONFERENCE ON MARITIME TRANSPORT (DIPARTAMENTO DI INGEGNERIA CIVILE, EDILE E AMBIENTALE, ROME ITALY)
- 13-14 AFRICAN PORTS AND RAIL EVOLUTION (DURBAN ICC, DURBAN, SOUTH AFRICA)

OCTOBER '20

- 13-15 SHIPPING INSIGHT (STAMFORD, CT, USA)
- 14-16 INTERNATIONAL SHIPPING AND COMMUNITY CONFERENCE (HILTON STAMFORD HOTEL & EXECUTIVE MEETING CENTER, STAMFORD, USA)
- 15 3RD BANGLADESH INTERNATIONAL MARINE & OFFSHORE EXPO (BIMOX) 2020 (DHAKA, BANGLADESH)
- 16** **MARITIME FORUM #161 (DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES, DILIMAN, QUEZON CITY)**
- 19-22 GLOBAL OCEANS CONFERENCE & EXPO 2020 (VIRTUAL CONFERENCE)
- 20-21 ENVIROTECH FOR SHIPPING FORUM (ROTTERDAM, NETHERLANDS)
- 21-23 OIL & GAS VIETNAM (PULLMAN VUNG TAU, VUNG TAU, VIETNAM)
- 23 COMMERCIAL MARINE EXPO (PROVIDENCE, RI, USA)
- 24-28 INTERFERRY (HOBART, AUSTRALIA)
- 26-30 POSIDONIA (ATHENS, GREECE)
- 26-28 SEATRADE MARITIME MIDDLE EAST (DUBAI, UAE)
- 27-29 DANISH MARITIME DAYS (COPPENHAGEN, NETHERLANDS)
- 27-29 TOC AMERICAS (VIRTUAL CONFERENCE)
- 28-31 CLEAN GULF CONFERENCE & EXHIBITION (NEW ORLEANS, LA, USA)

NOVEMBER '20

- 2-6 OFFSHORE TECHNOLOGY CONFERENCE (OTC) ASIA 2020 (VIRTUAL CONFERENCE)
- 9 ABU DHABI INTERNATIONAL PETROLEUM EXHIBITION & CONFERENCE (ADIPEC) (ABU DHABI, UNITED ARAB EMIRATES)
- 9-11 MARITIME AIR SYSTEMS & TECHNOLOGIES (MAST JAPAN DEFENSE) (TOKYO, JAPAN)
- 9-13 INTERNATIONAL BUSINESS HOUSE (IBH) TRADING AND SHIPPING WORKING TOGETHER TRAINING COURSE (AMSTERDAM, NETHERLANDS)
- 11-13 KOREA OCEAN EXPO (SONGDO CONVENIA, INCHEON, SOUTH KOREA)
- 17-18 ASIAN LOGISTICS AND MARITIME CONFERENCE (HONG KONG CONVENTION AND EXHIBITION CENTRE, HONG KONG)
- 20** **MARITIME FORUM #162 (DEPARTMENT OF TRANSPORTATION, TBD)**

DECEMBER '20

- 1-3 OCEANOLOGY INTERNATIONAL (OI) 2020 (LONDON, UK)
- 1-3 PACIFIC MARINE EXPO 2020 (CENTURYLINK FIELD EVENTS CENTER, SEATTLE, WA, USA)
- 7-9 SEATRADE MARITIME MIDDLE EAST (DUBAI EXHIBITION CENTRE, DUBAI, UNITED ARAB EMIRATES)
- 8-10 UNDERSEA DEFENSE TECHNOLOGY (UDT) (ROTTERDAM, NETHERLANDS)
- 9** **MARITIME FORUM #163 (UP INSTITUTE OF MARITIME AFFAIRS AND LAW OF THE SEA (IMLOS), TBD)**
- 15-16 INTERNATIONAL GREEN SHIPPING AND TECHNOLOGY (GST) SUMMIT (METROPOLITAN HOTEL ATHENS, PALAIO FALIRO, GREECE)
- 15-17 INTERNATIONAL WORKBOAT SHOW (ERNEST N MORIAL CONVENTION CENTER, NEW ORLEANS, USA)
- 20-22 SHIPPING & LOGISTICS INDIA (CHENNAI TRADE CENTRE, CHENNAI, INDIA)

JANUARY '21

- 17 NEWCASTLE LARGEST HOLIDAY CRUISE AND EXPO (NEWCASTLE AUSTRALIA)
- 21** **MARITIME FORUM #164 (DEPARTMENT OF FOREIGN AFFAIRS, MANILA)**
- 30-4 FEB K-LOVE CRUISE (FORT LAUDERDALE, USA)

THE MAN AT THE HELM OF THE MARITIME LEAGUE

VICE ADMIRAL EDUARDO MARIO RAMIREZ SANTOS AFP (RET)

by CDR Mark R Condono PCG (Res)

More than a score ago, when he took the helm of the **Philippine Navy** as its **23RD Flag Officer in Command (FOIC)**, VADM Eduardo Mario Ramirez Santos had set his eyes on the future. The 21st Century was then beginning, the dawn of a new era and a myriad of challenges to the **Philippine Navy**.

From the disputed Islands in the South China Sea, Maritime Disasters and Piracy were confronting challenges of that period in which the **Philippine Navy** would play a pivotal role. As he took the conn of the service, he gladly accepted the difficult task that lay ahead and plotted the course towards the future armed with a passion for technology. Along with the training of personnel, establishment of Fields of Specialization, development of Naval Operating Bases, and the acquisition of modern naval vessels, he put emphasis on technology.

Born in Manila on 16-October-1943, VADM Santos spent his early childhood in Marikina and San Jose, Antique. His family later moved to Manila where he attended the **Ateneo De Manila High School**. He entered the **Philippine Military Academy (PMA)** in 1962, and graduated with the Class of 1966. After completing his Naval Officer's Qualification Course (NOQC), his initial billets were aboard various PN ships beginning with RPS Tarlac (PG11), a Patrol Gunboat Minesweeper. He served afloat from 16-September-1966 to November 1971. He had a distinguished career in the **Naval Intelligence and Security Force (NISF)** which he would later take command of in 1993.

From 16-September-1980 to 01-March-1986, he was detailed as **Port Manager** of the Port of Manila, which covered the North and South Harbors, the International Container Terminal, Pasig River and Bataan Ports. Then he returned to the **Philippine Fleet** and skippered various ships including the Corvette BRP Rizal (PS-74) and the Frigate BRP Rajah Humabon (PF11). He commanded ashore the 5th Coast Guard District in Southern

Luzon, and served as the Chief of Staff of Philippine Fleet. His PN Headquarters appointments included **Assistant Chief of Naval Staff for Intelligence (N-2)** and Chief of Naval Staff (CNS). Prior to his appointment as FOIC PN, he was at the **Naval Forces Central Philippines** at HQ Cebu City.

On 12-January-1999, he was concurrently designated as Vice Chief of Staff, Armed Forces of the Philippines (VCSAFP). It was during his tenure that the Philippine Navy Modernization Program began coinciding with the country's drive toward Peace and Progress as Southeast Asia's new economic tiger.

His brand of leadership revolved on four pillars:

- ♦ **Accomplishment of the Mission** showed early on when as Skipper of a Patrol Ship, his vessel was diverted to assist in search and retrieval operations of MV Dona Paz which had met a tragic incident in December 1987.
- ♦ The Welfare of his Men and Women and their Families as exemplified by various housing projects during his term as FOIC PN, such as off-base housing projects in Cavite and 9-door Enlisted Personnel Apartments in Naval Base Cavite.
- ♦ His proficient Managerial Capabilities honed the various units of the Philippine Navy into an effective multi-role force as a flexible and versatile organization.
- ♦ Lastly, Modernization during his tenure marked a significant boost in the acquisition of new vessels notably the three former Royal Navy Peacock Class

Patrol Vessels now known locally as the Emilio Jacinto Class Patrol Corvettes. The Patrol Gunboat BRP Antonio Luna (PG-141) built at the Naval Shipyard was commissioned on 26-May-1999. Five 78-footer Jose Andrada Class Patrol Gunboats were commissioned during his term as FOIC PN. Additionally, the first in-country production of the US-made PCF was initiated.

He earned a M.S. Computer Systems Management at USN Postgraduate School in Monterey, California, USA; attended the Naval Command Course at US Naval War College, Newport,



Rhode Island in 1993; and the General Staff Course (GSC) at AFP Command and General Staff College, Fort Bonifacio.

After serving his country for 33 years, VADM Santos retired on 16-October-1999. Yet his love for the sea never ceased. He became the First President of the Maritime Academy of Asia and the Pacific (MAAP), a position he still holds to this day. The Academy, which is patterned after the United States Merchant Marine Academy in King's Point, New York is located in a 122-hectare campus in Bataan. MAAP is a world class learning institution developing fulltime scholars in becoming the best Merchant Marine Officers for the International Fleet. He is also Executive Vice President of Associated Marine Officers and Seamen's Union of the Philippines (AMOSUP), Asia's largest Seamen's Union.

Currently, he is President of the UK-based Nautical Institute (NI) Philippine Chapter, President of the Institute of Marine Engineering, Science and Technology (IMAREST) Philippine Chapter, President of the Bagong Bayani Foundation for OFWs, Chairman of the Philippine Navy Board of Advisers, and President of the Citizens' Support Your Navy Foundation (CSYNF). He is the newly designated President of The Maritime League (ML)

As the new Maritime League President, he aims to heighten maritime awareness among the Filipinos considering the country's configuration and geographical location. He made courtesy calls on the leaders of numerous government agencies to build relationships essential in supporting his vision. He requested for regular article contributions affecting their organization to the League's Maritime Review magazine. In view of the new normal, he will convene the ML meetings and Maritime Forums via webinars.

In the international scene, he is Vice Chairman of Global Maritime Education and Training (GlobalMET), Chair of Finance Committee of the International Association of Maritime Universities (IAMU), and a Member of the ITF's Ships' Automation Working Group. His public service earned him 2 Legion of Honor Awards, 5 Distinguished Service Stars, an Outstanding Achievement Medal, 2 Distinguished Navy Crosses, and 14 Military Merit Medals. He earned 3 PMA Cavalier Awards. In 2019, he was accorded the LIFETIME ACHIEVEMENT AWARD at Crew Connect, the Philippines' largest ship manning event, for lifelong contributions to the country's maritime and shipping Industry. He is a licensed Fixed-Wing Pilot and certified Scuba Diver, with a passion for golf and practical shooting.

VADM Santos or Edd as he is fondly called by his friends is married to Lilia Amurao Santos and blessed with two daughters, Christine Therese and Analiese Joy.



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U.S. Marines help displaced Philippine nationals from the back of a KC-130J Super Hercules at Vilamor Air Base, Manila, Philippines on 11-November-2013. Super Typhoon Haiyan has impacted more than 4.2 million people across 36 provinces in the Philippines, according to the Philippine National Disaster Risk Reduction and Management Council. The U.S. initially contributed US\$20 million of aid in food and relief goods, which later were increased to US\$37 million. The official military relief efforts became known as Operation Damayan. Photo Credit: Lance Cpl. Caleb Hoover

ON MILITARY ALLIANCES

by VAdm Emilio C Marayag Jr AFP (Ret)

In his last article in the Maritime Review magazine (March-April 2020 issue) **Commodore Carlos L Agustin** AFP (Ret), Founding President of The Maritime League, related some interesting points that led to the administrative control of two large U.S. bases in the Philippines in the late 1970s. The designation of Filipino base commanders, with U.S. facilities inside, allowed the Philippine flag to fly singly in those major installations. This new set-up emanated from the **1966 Ramos-Rusk Agreement** that shortened the US stay in Philippine soil by 54 years up until 1992, instead of 99 years under the 1947 Military Bases Agreement. While the **1951 Philippines-U.S. Mutual Defense Treaty** remains effective even after the Americans left in 1992, it no longer has a mechanism to implement the pact.

The departure of the Americans troops coincided with their global drawdown resulting from the dissolution of the **Warsaw Pact** a year earlier that changed the bipolar world order to multi-polar. This event led to the reduction of US **Economic Support Fund** and the frequency of RP-US military-to-military interactions starting 1993, but opened up the acquisition of **Excess Defense Articles (EDA)** by the Philippines, and the signing of the **Mutual Logistics Support Agreement (MLSA)** the following year.

Not long after, many ethnic, religious, and territorial conflicts

re-emerged worldwide prompting the U.S. to recalibrate its strategy to deal with the new global security landscape. Its defense-in-depth strategy called for establishing bases and stations to deter potential adversaries from attacking continental U.S., supporting its mobile forces anywhere in the world, and responding to contingencies far from the American shores.

Realizing the lack of protection when **Mischief Reef (Panganiban Reef)** was suddenly occupied by China three years earlier, newly installed Philippine President Joseph Estrada convinced Congress to ink the **Visiting Forces Agreement (VFA)** with the U.S. in 1998 to operationalize the defense treaty. US Defense Secretary William Cohen and his Philippine counterpart Secretary Orlando Mercado formalized the reopening of security cooperation activities including setting the guidelines for the conduct and protection of American troops visiting the Philippines, joint training exercises, and other defense-related activities. One of these was the conduct of the **Defense Experts Exchange** in 1999. The Philippines sent a 5-man delegation to the Pentagon, consisting of DND Undersecretaries **Feliciano Gacis** and **Esteban Conejos**, Army **Colonel Victor Corpuz**, Air Force **Colonel Roberto Nuqui** and Navy **Captain Emilio Marayag** to discuss the manner by which to enhance the capability of the Armed Forces of the Philippines. Accordingly,

the first task was to conduct a **PH-US joint defense assessment (JDA)** and work on priority areas that would form part of the projected **Philippine Defense Reform** agenda to be led by Undersecretary **Ernesto Carolina**.

In 2006, due to the continuing global war on terror and other non-traditional threats, the two countries created the **Security Engagement Board (SEB)**. Together with the **PH-US Mutual Defense Board (MDB)** the **SEB** coordinates security cooperation activities to address terrorism, maritime security, cyber security, humanitarian assistance and disaster relief. These two Boards annually, and alternately, meet in Hawaii and Manila.

To bolster the military alliance and in line with the new U.S. policy to "Pivot to Asia," both countries agreed to "preposition and store defense materiel, equipment, and supplies" in selected military bases in the Philippines. However, under the Philippine Constitution, the U.S. is forbidden to establish permanent facilities in those locations or station troops beyond a specified rotation period. Thus, the implementing mechanism would be the **Enhanced Defense Cooperation Agreement (EDCA)**.

Generally, a military alliance is an international agreement that combines military and economic resources of two or more states to achieve a political objective. They come in various forms – defense pact or treaty, non-aggression pacts, and ententes. Many political scientists have defined the term with some variations but one of them advanced this definition: "an explicit agreement among states in the realm of national security in which the partners promise mutual assistance in the form of a substantial contribution of resources in the case of a certain contingency the arising of which is uncertain." He further listed the elements; namely: (1) states; (2) explicit agreement; (3) certain behavior for future contingency; (4) event for which specified behavior is declared; (5) promise; (6) assistance; (7) mutuality; and (8) realm of national security. The **PH-US MDT** evidently contains all these elements of a military alliance.

One of the greatest ancient Greek historians, **Thucydides**, wrote that alliances have been an enduring attribute of human conflict for thousands of years. In World War II, citing experience in support of the grand alliance of Great Britain, U.S. and the Soviet Union, British Prime Minister **Winston Churchill** quipped, "There is only one thing worse than fighting with allies, and that is fighting without them."

Timothy Muelder in his article "**Philippines VFA: Significant Change in the Horizon**" cited four advantages of the agreement: (1) ensures operability of other PH-US defense arrangements and modalities of cooperation like **SEB**, **EDCA** and **MLSA**; (2) allows the U.S. to provide a total package approach on defense articles that would be compatible with existing weapons systems; (3) promotes interoperability through the conduct of Exercise Balikatan, Exercise Cooperation Afloat Readiness and Training, law enforcement, and Coast Guard safety training; and (4) allows for continued support to address non-traditional security threats such as terrorism and natural disasters.

Some criticisms on the **VFA** include possible entanglements with potential U.S. adversaries in the Asia-Pacific region; "outdated weapons" transfer; and inadequate support to upgrade the nation's military capability. On the risk of getting involved in a conflict that the Philippines does not want, the basic premise of survival stands. Unless the nation increases its economic and military capabilities that could deter a hegemon from advancing an authoritarian regime that curtails our human freedom and individual liberty, the Philippines may have to

continue its alliance with a world-class military power that professes many shared values with the Filipino people.

On the notion that the Philippine military and selected law enforcement units receive "outdated weapons" this simply is not true. Under the US foreign military financing scheme, the purchaser has the choice to buy what it wants subject to some factors like costs, technological capacity, and nature of threat.

On the criticism regarding the U.S. level of support, the mutuality principle of the **MDT** applies. In many countries where U.S. troops are "accommodated," burden sharing is now the norm. The recent U.S. legislation, the **Asian Reassurance Initiative Act** of 2018, that fully recognizes its numerous executive agreements, including the Philippines' **MDT**, **VFA** and **EDCA**, with many other Asian nations would hopefully reduce the number of skeptics on the validity and importance of a military alliance with the U.S.



One of the best models of a military alliance is the **North Atlantic Treaty Organization (NATO)** with the US as the key proponent. NATO is probably one of the longest and largest international military alliances since the 1494 **Treaty of Westphalia**. Signed in April 1949, the North Atlantic Treaty creating the NATO is one agreement that fully adheres to the lofty ideals of the UN Charter.

Its Article 2 mandates all the parties to "contribute toward the further development of peaceful and friendly international relations by strengthening their free institutions, by bringing about a better understanding of the principles upon which these institutions are founded, and by promoting conditions of stability and well-being. They will seek to eliminate conflict in their international economic policies and will encourage economic collaboration between any or all of them." By all indications, NATO members have been compliant with this provision and continue to promote peace, stability, and progress in Europe and other nearby areas.

As in the past, alliances will continue to exist if a particular nation develops immense material power capabilities over other nations, manifests a clear ambition to expand its borders in contravention of the UN Charter and where the neighboring states are not in a position to deal with that nation individually, whether economically, militarily, or both. The words of **Sun Tzu** on alliances appear to be quite relevant during the present time:

Be the first to seize intersecting ground, that is, ground in which lies the intersections of borders or intersections of main thoroughfares of commerce and travel. Your occupation of it gives you access to all who border it and all who would covet it. On intersecting ground, if you establish alliances, you are safe; if you lose alliances, you are in peril. 📍



CONGRATULATIONS!



VADM GIOVANNI CARLO J BACORDO
38th CHIEF OF THE NAVY

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VICE ADMIRAL, PHILIPPINE NAVY

VICE ADMIRAL GIOVANNI CARLO J BACORDO PN

38TH FLAG OFFICER IN COMMAND, PHILIPPINE NAVY

VADM GIOVANNI CARLO J BACORDO AFP is the **38th Chief of Navy (CON)**, Philippine Navy (PN), sworn in on 03-February-2020 by President Rodrigo R Duterte. The CON has operational control and is responsible for overall operations of the Navy, including the Marine Corps, and the Philippine Coast Guard (in wartime), and directly reports to the Chief of Staff of the Armed Forces of the Philippines (AFP).

As the new **CON**, VADM Bacordo will lead the drafting of a new **Sail Plan** as the Navy sets about acquiring new warships and other assets as part of the AFP Modernization Program. The Navy will be the focus of the AFP's upgrades in the next several years as the Philippines faces surmounting challenges of securing its maritime borders from extremists entering the south through the Sulu Sea, and Chinese vessels occupying the West Philippine Sea.

VADM Bacordo outlined his plans to modernize the Philippine Navy, saying how some new equipment given to the Navy just a few years ago are now unusable; port facilities in all

naval bases and stations are unable to accommodate strategic vessels; and vessels are docked in commercial ports instead. *"In view of these observations, I will implement programs that will ensure these new defense capabilities will remain capable through time,"* and *"doing so would continue to make the Navy strong and credible."* Bacordo pursued three priority programs: (1) a sustainment suite for new platforms, weapons and sensors; (2) strict implementation of specialization for officers; and (3) modernizing the mindset of sailors and marines. *"Without a modern mindset, the modern assets of the Navy will go to waste,"* he said.

Bacordo was promoted to Vice Admiral in April, 2020 for excellence in planning, programming, and prompt repair requirements of PN assets, weapons, and electronic and communications systems. As **Commander, Naval Sea Systems Command** in 2019, his leadership strength was proven. He also served as the **Commander, Philippine Fleet** where he acquired various surface and naval air warfare mission critical equipment while laying the groundwork for phasing-out

the legacy ships. He ensured the **Philippine Fleet** would be able to provide required mission-ready surface, air, and special operations through a more systematic Deploy, Sustain, Repair and Train Cycle in developing and sustaining the major Naval assets.

He assumed key positions such as **Commander of Joint Task Force Kingfisher** and the **Naval Forces Southern Luzon** of the **AFP Southern Luzon Command** where he led the unit in promptly responding to disaster-stricken communities in Bicol and Quezon provinces; **Commander, Naval Task Force ZAMBASULTA**; and **Commander, Naval Task Force 61, AFP Western Mindanao Command** in conducting maritime and internal security operations to ensure regional peace and progress. He served as Deputy Commander for Fleet Operations, **Naval Forces Western Mindanao Command** in 2014.

As **Assistant Chief of Naval Staff for Operations, N3** in 2013-2014, he formulated policies geared towards improving resource administration, programming, and implementation as enabling factors in transforming the Navy into a modern and responsive naval force. He ensured the rationalized deployment of PN surface, air and marine units to the operational areas particularly during the Sabah Crisis, Ayungin and Scarborough Shoal Crisis, MV St Thomas Aquinas sinking, Zamboanga Siege, Typhoon Yolanda, and the transport of MNLF detainees to Manila.

As **Commander, Naval Task Force 41, AFP Western Command** in 2011, he endeavored to institute strategic sovereignty patrol in the West Philippine Sea, and the systematic rotation and re-provisioning of the Navy men and women protecting the Philippine-occupied islands and islets in the Kalayaan Island Group (KIG). As the first **Director of the Center for Naval Leadership and Excellence**, he spearheaded the crafting of the **Navy's Strategic Sail Plan 2020** in November 2006. There he demonstrated exceptional knowledge and expertise on the different aspects of naval operations.

Upon graduation from PMA, he completed his tour of duties as **Commanding Officer** of four PN ships – BRP Rajah Humabon (PS-11), BRP Miguel Malvar (PS-19) BRP Rafael Pargas (PC-379) and BRP Juan Magluyan (PC-392) that earned him numerous recognition and awards from various stakeholders. VADM Bacordo is a multi-awarded Naval officer having been the recipient of Distinguished Service Stars, Silver Wing Medals, Distinguished Navy Cross, Bronze Cross Medals, Military Merit Medals, Military Commendation Medals, Gawad sa Kaunlaran Medals, Luzon-Visayas-Mindanao Campaign Medals, Chief of Navy Command Badge, Fleet Command Badge, Surface Warfare Badge, Combat Commander Badge, Naval War College Badge, among many other medals and badges.

He earned a Masters of Management in Defense Studies and completed the Australian Command and Staff Course at the **Australian Defence College** in Canberra; Masters of Science in Economics in **De La Salle University, Manila**; completed the Civil Military Approaches to Maritime Security Course at **USN Postgraduate School** in Monterey, California; and took courses at the **Naval War College** in Newport, Rhode Island. He graduated Magna Cum Laude from the **Philippine Military Academy (PMA)** "Hinirang" Class of 1987.

VADM Bacordo was born and raised in La Paz, Iloilo City. He is happily married to the former Ms Rachel Cruz and blessed with five beautiful children: Charles Niccolo, Giovanni Carlo Jr., Sophia Louise, Stephanie Angela, and Giana Danielle.



Contributors: Vicky Viray Mendoza and Capt Juario C Marayag

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.



VADM Ursabia (Right) led the Task Force Bayanhan meeting about the current status of the OFW repatriation process, as well as other initiatives to further speed up the repatriation, without sacrificing the health and safety of the OFWs and their families amid COVID-19 pandemic. Photo courtesy of PCG Facebook Page.

VICE ADMIRAL GEORGE VILLAREAL URSABIA JR PCG

27TH COMMANDANT OF THE PHILIPPINE COAST GUARD

Born on 8-September-1965 in Polomok, South Cotabato, the 27th Commandant of the Philippine Coast Guard, **VICE ADMIRAL GEORGE VILLAREAL URSABIA JR PCG** was raised by his parents – the late George Kiamco Ursabia Sr and Guia Villareal-Ursabia to be a person with discipline, perseverance, and a hard worker in pursuing greater heights.

He internalized these values, which lead him to finish his education with outstanding marks. He finished his basic education at Dole Philippines School with honors. Right after, he was admitted to the **Philippine Military Academy** where he earned a Bachelor of Science degree, graduating in 1987 as the Top 23 out of 149. His focus on learning pushed him to pursue a Master of Science in Maritime Safety and Environmental Protection, with an A-grade at the **World Maritime University** in Malmo, Sweden as a scholar of Sasakawa Foundation, Japan.

After over 37 years of active service, he held major positions in the **Philippine Navy** and the **Philippine Coast Guard (PCG)** with competence and professionalism. In his early years, he received

intelligence assignments and became a **Field Station Commander for Intelligence in Davao, Zamboanga, Cebu, and Manila**.

Ursabia Jr possessed a deep commitment to fulfill his role as a **Security and Intelligence Specialist**, which lead to the apprehension of a significant 30 Million worth high-grade cocaine in Davao Port in 1993; the arrest of gunrunners and supporters of ASG in Zamboanga Port in 1994; and the arrest of pirates who attacked a passenger motorized launch while enroute from Cebu City to Bohol in 1995.

As a middle grade officer, Ursabia Jr commanded CGS Sarangani and CGS General Santos. Amid the security threats, he remained steadfast in implementing a holistic approach to deter terrorism. He engaged the maritime stakeholders and LGUs in collaboration with the AFP and PNP, and instituted security measures in the coastal areas to protect high-value installations, particularly the seaport of General Santos City.

Under his watch, not a single bomb exploded in his area of responsibility. He uncovered illegal entrants and apprehended 11 Indian nationals, who disguised themselves as fishermen and entered the waters off General Santos City in 2002.

After his intelligence assignments, the level of responsibilities entrusted to him was more advanced. As one of the big thinkers and strategists of the PCG, he spearheaded the implementation of International Ships and Port Security (ISPS) Code being the **Head of the National Headquarters for Maritime Safety Services** (CG-8). His dedication to such commendable endeavors greatly affected the country's economic trade, as the non-compliance of our seaports to the ISPS Code would hinder the entry of ships engaged in international trade.

It is worth noting that while Ursabia Jr invested his time, energy and knowledge in such pursuits, he concurrently served as the **Head Secretariat of the Liaison Office for Legislative Affairs (LOLA)**, which was responsible for the crafting of the PCG Bill that led to the birth of RA 9993 or the Philippine Coast Guard Law of 2009.

With 7 years of experience as a seasoned mariner, his sea duty tour includes the following: junior billets onboard a lighthouse tender, BRP Badjao (AE-59); **Executive Officer** onboard a search and rescue vessel, BRP Besang Pass (AU-75); duty onboard BFAR 30-meter patrol boats to include MCS-3008, MCS-3001, and MCS-3002; **Commanding Officer (CO) of CG SAR** vessels to include BRP Romblon (SARV-3503), BRP Davao Del Norte (SARV-3504), and BRP Pampanga (SARV-003), the last ship where he eventually completed his billets.

Even after completion of his command at sea, Ursabia skipped BRP Corregidor (AE-891), participating in the Maritime Pollution Exercise in Balikpapan, Indonesia.

In 2006, he captured 13 Hainanese fishermen who were poaching sharks and pawikans off the Coast of Mangsee Island, Palawan. This accomplishment earned him recognition both in national and international scope, specifically from the **Conservation International**. Further, as **Commanding Officer**, he rescued and recovered 28 missing fishermen in Kalayaan Group of Islands (KGI) immediately after the onslaught of Tropical Storm "Lando" in 2007.

Ursabia Jr underwent extensive military and Coast Guard training both here and abroad. Nippon Foundation sponsored two Port State Control Officer's Courses in Yokohama, Japan in 1995 and in 2002, both of which fostered his expertise in inspecting foreign flagged vessels. Two courses sharpened his competence as Crisis Manager: the Maritime Policy Seminar in South Korea in 2008, and the Crisis Management Course in Hawaii in 2010.

Ursabia Jr graduated Top 2 in Naval Intelligence Officer's Course; Top 3 in Coast Guard Command and Staff Course; and Top 1 in Coast Guard Station Commander's Course, and Command at Sea Course – consistently in the Top 3 of the class.

His representations as head or member of Philippine delegations in local and foreign affairs spurred opportunities for our country. In 2019, he attended the 31st Session of the IMO Assembly, where the Philippines was re-elected in the IMO Council under Category C for 2020-2021.

Prior to his assumption to the highest post as **PCG Commandant**, VADM Ursabia Jr was designated as **Commander of Coast Guard Marine Environmental Protection Command (MEPCOM)**. He commanded four (4) Coast Guard Districts (CGD) namely CGD Central Visayas, CGD Palawan, CGD Southern Mindanao, and CGD Northern Luzon. He was also **Commander of Coast Guard Ready Force**, where notably, under his watch, all of the Coast Guard floating assets were 97% Ready-for-Sea status.

On top of his countless recognitions, he is a recipient of two Coast Guard Legion of Honor awards (Degree of Maginoo); nine Distinguished Service Medals; four Coast Guard Outstanding Achievement Medals; two Coast Guard Bronze Cross Medals; one Military Bronze Cross Medal; 15 Coast Guard Merit Medals; and seven Military Merit Medals, among others.

In 2013, the Office of the Civil Defense awarded him the "Bakas Parangal ng Kadakilaan" for PCG's efforts during the onslaught of Tropical Storm "PABLO" in 2012 to include the search and rescue operations off Davao Oriental for the missing fishermen. Another civic recognition was directly given by Archbishop Romulo G. Valles, D.D. for his responsive efforts in transporting relief goods for the earthquake victims in Bohol.

As a recognized educator, VADM Ursabia Jr is known as the "Father" of the Coast Guard Officer's Course (CGOC) and the Coast Guardsman's Course (CGMC).



Vice Admiral George V Ursabia Jr challenged the men and women of the Coast Guard Aviation Force (CGAF) to ensure the efficient utilization of its newest asset – H145 twin engine helicopter with tail number CGH-1452 – in supporting the nationwide battle for public health and safety amid COVID-19 pandemic. Photo courtesy of PCG Facebook Page.

Moreover, in the recent fight against COVID-19, he was designated as **Commander of Task Group Laban COVID-19** (Water Cluster) under the Joint Task Force COVID Shield of the PNP, AFP, and PCG. Applying the whole-of-nation approach in the fight against COVID-19, he reorganized and renamed the task groups as **PCG Task Force Bayanihan Returning Overseas Filipinos** and sustained the ongoing operations by ensuring people-first values as directed by President Duterte.

As PCG Commandant, his four major platforms are: (1) continued distribution of relief efforts and SAP benefits; (2) sustained spearheading and coordination of all Maritime Sector efforts; (3) improved Port State Control, Littoral and Coastwatch System, and Maritime Security Measures; and (4) continued performance of all PCG functions with focus on capability enhancement of personnel, recruitment of specialized people, quality training; upgrade of equipment to include a RADAR system, and acquisition of air and floating assets including ROROs for HADR.

VADM George Ursabia Jr is married to former Miss Agnes Chamos of La Trinidad, Benguet. Their union is blessed with two (2) children: Germaine Angela, a graduate of the College of Medicine at University of the Philippines-Manila and is now a licensed Physician taking her 4-yr OB-Gyne residency program at UP-PGH; and Gerard Andrew, who after receiving his BS Math degree at UP-Baguio in 2012, also received a BS degree in Computer Engineering at UP-Diliman, is now employed at M-TEC Japan in Nagasaki, Japan.

VADM GEORGE VILLAREAL URSABIA JR PCG is an officer and a gentleman, leader, manager, environmentalist, maritime rescuer, maritime law enforcer, maritime safety expert, security and intelligence specialist, mariner, educator, crisis manager, strategist, visionary leader, family man, firmly principled yet compassionate, and above all, a God-fearing man who offers his life in the service of the Filipino people. The **Philippine Coast Guard** is indeed blessed and fortunate to have him at the helm. 🙏

ENVIRONMENTAL IMPACTS OF LOCKDOWNS IN LUZON

by Vicky Viray Mendoza

The lockdown of the whole of Luzon, which includes Metro Manila, was announced on 16-March-2020. It was to control the movement of over 60 million people in the North of the Philippines to stop or hinder the spread of the deadly CoVID-19 pandemic. In all of January and February, the Philippine had a total of 3 infections and 1 death, all of them Chinese nationals who arrived in the Philippines, together with POGO staff, before the lockdown. By mid-March, the numbers jumped exponentially and President Duterte had no choice but to declare a lockdown.

Being on Enhanced Community Quarantine (ECQ) lockdown meant that people had to stay home, wear facemasks if they walk out of their homes, frequently wash hands with soap and water, and constantly disinfect surfaces. No one was allowed to leave their “Barangay” or town zone. All public vehicles were ordered to stop operations. This included buses, cabs, jeepneys, tricycles, ships, and airplanes. Motorcyclists were not allowed to have a back-rider in observance of the “safe distancing” rule. It was extremely difficult for people to even get to the grocery if they did not own a car. And, hard as it is, only one person from each household was allowed to leave their premises. That person would need an identification card authorized by the Barangay. This ID requirement was to be the only ID accepted and checked by the police and military checkpoints. But how to get an ID from the Barangay Hall without a car was a catch-22 for many.

Even within the first week of just lazing around in the house, I felt more anxious about the duration of the lockdown because I was sure the virus would neither be quashed within the first 2-weeks of lockdown, nor the whole 3 months of lockdown for that matter. Even one year later, by 16-March-2021, without a working vaccine, it means it would still be dangerous to go out.

But mother nature has a way of rebounding with a little help. As a direct positive impact of the lockdowns in Luzon, with almost all the roads empty, including EDSA, which is notorious for having the worst traffic congestion, the ghostly streets translate to reduced pollution from car emissions resulting in better air quality for the human lungs. With the dwindling of road traffic and air traffic, the skylines of city buildings became clearer, and distant mountains like the Sierra Madre suddenly became visible to city dwellers. Significant reductions in air pollution and greenhouse gas emissions (GHG) occurred. Air pollution dropped by 180% due to the lockdown imposed in Metro-Manila, according to the Environmental Pollution Studies Laboratory of The Institute of Environmental Science and Meteorology.

How could we make air quality improvements permanent? We could phase out old models of transport and replace them with electric-powered: cars, motorcycles, jeepneys, tricycles, buses, and trains. This move alone would eliminate tail pipe emissions such as NO₂. Transportation vehicles running on fossil fuel or diesel could also be replaced with electric cars or cars running on renewable energy or low carbon fuel like LNG and CNG. Emissions mostly come from road transport and power plants that exacerbate respiratory illnesses like asthma, and make symptoms worse for those already with existing lung or heart conditions. Thus, the need to shift to low carbon fuel to counter the huge number fossil fueled-cars on the roads.

It is ironic that by locking down Luzon, the virus has helped reduce a respiratory health crisis since the virus attacks specifically

the lungs first. The lockdown has shown us how clean air looks and feels with less air pollution. The virus has shown that pollution lowers resistance to disease. More exposure to car traffic fumes of Carbon Monoxide means weaker lungs and a greater risk of catching the deadly virus.

The World Health Organization estimates (a) about 3 million people world-wide die each year from ailments caused by air pollution, and (b) more than 80% of people living in urban areas are exposed to air quality levels that exceed safe limits. The situation is worse in low-income countries, where 98% of cities fail to meet WHO air quality standards.

I hope that our government and private sector would consider finding ways in making this air quality improvement a permanent feature, and build on top of this temporary public good that we achieved during the lockdown.



Not all environmental impacts of the lockdowns have been positive, particularly in the waste management sector. Volumes of unrecyclable waste have risen as consumers increased orders of take-away food delivered with single-use packaging and plastic utensils. All these garbage, particularly disposable facemasks and gloves, have managed to show up and pollute our rivers and oceans. As we focused on protecting ourselves against the virus, we forgot to protect our rivers, seas, and oceans.

In the maritime sector, natural ecosystems in marine conservation zones have been put at risk when staffs were required to stay home during lockdown, leaving these areas unmonitored. Their absence has resulted in the rise of IUU Fishing. Maritime transport emissions account for 2.5% of global emissions. Nevertheless, GHG emissions from vessels surely have plunged due to idle shipping operations, as a result of factory shutdowns during the CoVID-19 lockdowns worldwide.

Let us push for a focus on the greening of cars, ships, jobs and the lower carbon fuel sources for cleaner air and water. If there is no political pressure on the government, the country will go back to business-as-usual levels of congestion in our main roads, side roads, and waterways, rather than transcend to a cleaner and healthier way of life for the Philippine populace and the next generations to savor. 📍



THE NEW PCG COMMANDANT CHARTS THE FUTURE STRATEGIC DIRECTION OF THE PHILIPPINE COAST GUARD

The recently installed **Commandant of the Philippine Coast Guard, VICE ADMIRAL GEORGE URSABIA PCG** is leading the charge towards the future direction of the organization. He is revitalizing the formulation of strategic plans that ensures PCG operations, organizational and capability development are in support of the ends of higher-level national policies, fulfill its five (5) primary mandates, and provide an authoritative foundation for the future transformation of the Coast Guard.



Alignment of PCG Strategic Planning with the 27th C, PCG Guidance. During his assumption as the 27th Commandant of the Philippine Coast Guard on 02-June-2020, VICE ADMIRAL GEORGE V URSABIA JR outlined his guidance for the organization. He emphasized the need to improve the performance of the service's mandate on maritime law enforcement, maritime security, maritime safety, maritime search and rescue, and marine environment protection by recruiting specialized personnel, and by training its men and women on the utilization of the latest equipment to counter maritime terrorism, piracy, kidnap-for-ransom, smuggling, and other threats to security, most especially in the ZamBaSulTa (Zamboanga, Basilan, Sulu, and Tawi-Tawi) region. He also called for the procurement of necessary assets to improve the PCG's humanitarian assistance and disaster response operations to include passenger ships and roll-on / roll-off (RORO) vessels.

To implement the guidance of the CPGC, it is worth examining how the PCG strategic plans align in relation to the former.

The PCG Maritime Strategy (MS) is critically important for the realization of C, PCG's guidance in two aspects: first, it serves as a "bridge" that links all Coast Guard activities towards attainment of national policy goals and objectives; second, it provides a coherent framework that links operations with organizational and capability development.

From the perspective of **Ends-Ways-Means**, the **PCG MS** is broad and versatile enough to provide an ideal fit to the Commandant's guidance. Its **Ends** or objectives directly address the five operational mandates of the PCG. An important **Way** or strategy that addresses the operational mandates calls for joint, rapid, multidimensional response that are strategically positioned with robust C3I. For the **Means**, the **PCG MS** advances a Balanced Force which creates the ideal balance between capabilities, bases and support systems and above all, acquiring and

developing the human resources of the highest levels of professionalism to be able to operate them. In addition, the Means provides a vision of what a modern Coast Guard would be like.

The **Strategic Development Plan (SDP)** is a detailed organizational development plan that provides specific programs along PCG functional concerns. Since C, PCG laid the stress on human resource development through recruitment and proper training of personnel, it would be interesting to note how this relates to the current HRD initiative. Examining the Coast Guard's SDP, Strategic Objective 7 calls for a competent and well equipped work force. In response, on human resource development, the Office of the Assistant Chief of Coast Guard Staff for Personnel, CG-1 came up with the Strategic Initiative, Integrated Human Resource Management Program. Their main elements seek to improve recruitment (both in quantity and quality), career development, merit-based promotion, professional education and training, retirement policy and quality of life. All these elements actually contribute to the successful realization of the C, PCG's intent as their end state would be creating excellent professional and long-service Coast Guard men and women.

On C, PCG's guidance on capability development thrusts, under the Acquisition Plan, the PCG intends to develop an integrated force structure in which capability is linked to mission needs. This will be achieved by acquiring a balanced multi-role response force comprising a fleet of vessels supported by complementary air assets which will fulfill patrol, support and response functions across the entire area of responsibility. The main assets in the Plan that conform to and support the C, PCG's intent include Ocean Patrol Multi-Role Response Vessels (MRRV), Off-Shore Patrol Vessels, smaller MRRVs, Fast Patrol Boats and Strategic Sealift Vessels. It goes without saying that the Acquisition Plan also provides for a host of smaller patrol craft as support systems. Overall, its implementation would capacitate the PCG to realize the Commandant's guidance.

Current Thrusts. The most important and immediate task is the formulation of the **Philippine Coast Guard Maritime Strategy (PCG MS)**. This strategic document provides the overarching framework and strategic intent that guides all actions of the PCG organization to fulfill its mandates. It serves as a blueprint that will link strategic concepts; and forces design and operational capabilities to meet strategic objectives toward enhancing its core functions. In addition, it serves as the PCG's inputs to higher-level national policies and strategies. Likewise, the **PCG MS** functions as a strategic foundation to achieve the future PCG organizational structure.

This strategy is anchored on the concept called **Unified Whole of Maritime Nation Approach** on the following principles: 1) The Philippines is a maritime nation whose everyday life and future is tied to the protection and preservation of the sea; 2) Unity of action and cooperative engagements with all maritime stakeholders shall be the hallmark of PCG operations and other activities in the fulfillment of its mandate; 3) As a lead maritime agency, the PCG will constantly and systematically pursue capacity building not only in material capabilities but more importantly in human resources to successfully meet current challenges and properly equip the organization for the future.

The importance of the **PCG MS** cannot be underemphasized as its crafting will equip the organization with the proper bridge between its mandates and subordinate plans such as the **PCG Modernization Plan, PCG Strategic Development Plan, Acquisition Plan, and the Strategic Basing Plan.**

The **PCG Modernization Plan** for its part is the blueprint for

the determination, acquisition and integration of new capabilities that will fuel the organization's future in the areas of Capability, Materiel and Technology; Human Resource; Bases and Support Systems; Force Restructuring and Organization; and Doctrines Development. The **Strategic Development Plan** is the broad organizational transformation roadmap that would ensure the attainment of the **PCG vision of a world class guardian of the sea committed to save lives, ensure safe maritime transport, cleaner seas, and secure maritime jurisdiction by 2028.** The **Acquisition Plan** provides the development framework to upgrade current assets and capabilities to meet the mandates of the PCG and at the same time extend their utility to cope with future challenges. To maximize operational utilization, efficiency and serviceability of current and future capabilities, the **Strategic Basing Plan** serves as the blueprint for the selection of new and development of current bases to ensure complete facilities and support systems.

Mapping the Future Philippine Coast Guard. Guided by the **PCG MS**, as the end results of its subordinate plans and as the realization of the Philippine Coast Guard Vision, it is also formulating the concept of the future organization. This Philippine Coast Guard of Tomorrow is a force with the following attributes: *Comprehensive Maritime Domain Awareness; Network Centric; Joint, Rapid, Persistent and Scalable; and, Balanced Organization.*

Given that the Philippine maritime area of responsibility has dramatically increased by several orders of magnitude with also a corresponding increase in the numbers and scale of security challenges, the PCG needs first and foremost to improve its domain awareness. *Comprehensive Maritime Domain Awareness* will equip the PCG with a real-time operational picture of the Philippine maritime area of responsibility, especially challenges to safety, the environment, peace and order and security.

The critical requirement for Comprehensive Maritime Domain Awareness is a *Network Centric Organization*. A network centric PCG possesses two characteristics that would bring it to transformative levels of effectiveness. The first is a comprehensive common operational picture where sensors will be linked with headquarters and vessels (surface and air), creating a shared real-time picture of the maritime domain, thereby enhancing situational awareness and interoperability. The second is a rapid sensor to responder interface where response units would be able to quickly transition between each phase of the Observe-Orient-Decide-Act (OODA) Cycle.

A *Joint, Rapid, Persistent and Scalable Organization* will equip the future PCG with a versatile air and surface capabilities. The air capabilities will provide the rapid response element while the surface capabilities will provide the persistent element. As these are network centric with a common operational picture, they can properly tailor and calibrate their response to the severity of the challenge, thereby making them scalable and efficient.

Last but not the least, the future PCG will be a *Balanced Organization*. A balanced Coast Guard is the sum of the right mix of capabilities, organization, operational capacity and strategic depth. Operational balance is the outcome of shaping a force structure to develop particular capabilities that are mutually complementing. Organizational balance based on the principle of operational pull, right size and right skill while having enough capacity for future expansion. Strategic depth for its part acknowledges the importance of bases and support systems to enable the generation, employment and sustainment of PCG operations.

With the new Commandant of the Philippine Coast Guard leading the way, the prospects for the Philippine Coast Guard's strategy development are indeed exhilarating and optimistic. 🚢



SMALL & MEDIUM ENTERPRISES IN THE PHILIPPINES: A SHORT LOOK AT EXPANSION & GROWTH

by Timothy Muelder

I was watching CNN Philippines recently when a short mention of Philippine Innovation was highlighted. It showed a small business owner had developed a process to collect, restore, and possibly reselling antique bicycles. It highlighted the fact that there are thousands of abandoned bicycles that could supply his shop. The owner also had a couple of younger employees on apprenticeship with him.

Many years ago, I also worked for a small single-owner bicycle shop as a mechanic although we were focused on servicing the racing bicycles instead of antiques. I do, currently, still own a restored first run Raleigh (aluminum framed) mountain bike. It must be 40+ years old now and still looking and riding great.

This prompted me to explore Small & Medium Enterprises (SMEs) in the Philippines, and see how they fit into the national economy. There is much information available online. What I found was very encouraging.

The Philippines is now at 54th place among 129 countries in the 2019 Global Innovation Index (GII). The Department of Trade and Industry says in year 2018 the Philippines placed 73rd place and this is just a start. In 2018, SMEs made up 99.6% of all registered businesses in the Philippines and employed over 70% of the working population according to Bob Wai Fong, *Philippine Daily Inquirer*, 18-May-2018.

However, they face a host of growth challenges—including lack of technical capacity, difficulty in accessing regional markets

in Asean and, notably, a lack of access to finance—leaving them accounting for just 35% of GDP.

So what can be done to help this sector realize its full growth potential? SMEs often lack resources and are buffeted by unpredictable events. But their very smallness means they can also be nimble. And it's this flexibility—both in redeploying resources and changing goals—which can drive innovation and success.

A number of ideas and examples were found.

- 1. Recombining resources.** The most skillful entrepreneurs recombine their resources to solve new problems and are able to imagine new possibilities for what they already have. For example, the founder of a remittance company, who could not afford to hire more workers, created a mobile app for customers to wire money without queuing at the shop, thereby eliminating the endless queues and chaos during peak periods.
- 2. Exploiting contingencies.** Contingencies—events that are unpredictable and somewhat random—are often part-and-parcel of what entrepreneurs have to deal with. Innovative entrepreneurs turn lemons into lemonade by converting challenges into new opportunities.

For example, an SME was developing an easy-to-use home machine with limited features for older diabetic patients to monitor

the condition of their blood vessels. But when the team talked to the patients and nurses at the dialysis center, they realized that patients were not interested in monitoring their own blood vessels. On the other hand, nurses who were in charge of monitoring the dialysis process were keen on a monitoring device that could alert them of any abnormalities. The team quickly changed their target product and market from a simple home device for dialysis patients to a more professional device with a range of features for nurses.

3. **Willingness to cannibalize existing investments.** If an idea or project proves to be out of reach, entrepreneurs can change their direction combining resources towards a different focus.
4. **Generating options.** While researching ideas, entrepreneurs may develop ones that are not immediately useful, but might be worth considering in the future. For example, an equipment repair company explored the idea of developing software to monitor the conditions of customers' equipment, to facilitate equipment maintenance. However, the cost of developing this software was prohibitive. Nevertheless, he continued to cultivate this option by sending his staff for training in the related domain. When he felt that the technology was sufficiently mature, his company became one of the first to market with such a software. So while the Philippine government moves to support future credit growth and stronger connections to regional and international supply chains, there is a more immediate opportunity to boost SME growth through the exploitation of their key defining feature: nimbleness.
5. **Providing innovative solutions to simple problems.** Need a car but don't want the hassle of driving through traffic yourself? Take a look at "Grab." Navigating your way through the city in a rush? Use Waze. These apps help improve the way of life. It provides businesses a chance to think out of the box and introduce flexible ways to do everyday tasks, and gives consumers more options to do the same.
6. **Creating more buzz on social media.** There are around 2 billion people on Social Media. On Facebook, Twitter, and Instagram, a business can utilize to share photos, videos, or simple statements that can reach millions, or billions of potential customers. Want to go island hopping from the North to the South via fast ferry? Search Facebook and other social media. You will find various ferry companies, travel schedules, travel advisories, with tons of pictures and suggestions about what places you shouldn't miss.

Department of Trade and Industry Secretary Ramon

Lopez recently said: *"We expect further improvements in our ranking as we intensify our efforts to build our country's innovation and entrepreneurship ecosystem, accelerate and globalize our startups, and better prepare our MSMEs and industries for the Fourth Industrial Revolution".*

There are many additional programs in the Government and Private sectors to help Entrepreneurs for Start-up and management of Small & Medium Business opportunities. What I've cited are only a few examples that I've found. Have a look around. The Philippine Economy is getting stronger every year due to the vision, innovation, and focus of the Filipino Entrepreneurs.



About the author: Timothy Muelder is a retired Facilities Manager of the U.S.

PHILIPPINE COAST GUARD TO GET ITS BIGGEST PATROL SHIPS

by Naval Today

Japanese shipbuilder **Mitsubishi Shipbuilding**, part of **Mitsubishi Heavy Industries (MHI)** Group, has concluded an agreement with the Republic of the Philippines to construct 2 multi-role response vessels (MRRVs).



Photo Credit: Philippine Coast Guard

These vessels will be built at **Shimonoseki Shipyard & Machinery Works**, and are scheduled for delivery to the **Philippine Coast Guard** in 2022.

With a length of about 94 meters, the MRRVs will have a maximum speed of not less than 24 knots and an endurance of not less than 4,000 nautical miles.

Both vessels will be equipped with secured communication systems for Exclusive Economic Zone (EEZ) surveillance, helideck and a hangar for helicopter operations, an underwater remotely operated vehicle for subsurface search and survey, and high-speed rubber boats. They are expected to contribute significantly to enhancing the speed of response to maritime accidents or crimes on the high seas.

The newly agreed MRRVs will be provided as a project financed by the Japanese government. The program corresponds to Phase II of the Maritime Safety Capability Improvement Project concluded between the Republic of the Philippines and the Japanese government in October 2016.

"The modernization of the Philippine Coast Guard has been going fast and quick and very meaningful. In fact, in this effort to make it quick, fast, and very meaningful, the government of Japan has contributed very much," Department of Transportation (DOTR) Secretary Arthur Tugade said on the occasion of contract signing.

*"We are making a milestone, not just for the **Department of Transportation and Philippine Coast Guard**, but also for the Philippines – acquiring the first-ever biggest ship for the Coast Guard,"* PCG Commandant Admiral Joel Garcia added.



Source: <https://navaltoday.com/2020/03/10/philippine-coast-guard-to-get-its-biggest-patrol-ships/>

AIDING THE NATION AGAINST THE COVID-19 PANDEMIC: WE HEAL AS ONE WITH THE PHILIPPINE COAST GUARD

The Coronavirus Disease (COVID-19) has stricken a lot of countries globally including the Philippines, affecting people's welfare, socio-economic condition of the country, and government resilience and thinking on ways to respond to the interconnecting issues brought by this pandemic. This pandemic has led the world to enter into a 'new normal' set up under adherence of strict health awareness and hygiene, and physical social distancing. As early as March 2020, President Rodrigo Duterte immediately ordered the security sector composed of **AFP**, **PNP**, and **PCG** to assist the health sector in slowing down the community transmission of the virus through deployments of checkpoints targeting all potential entry and exit points of barangays, and to the borders of the country across all domains (land, sea, and air) under a series of community quarantine classifications.



Maritime domain is seen as one of the vulnerable points of entry for the potential spread of the virus in the country through transport and mobility of people, and goods and services. As in land, seaports also need strict security screening in order to deter any people-to-people and people-to-material infections. In response to the call of the nation to curb the spread of COVID-19, The **Philippine Coast Guard (PCG)** immediately activated its **PCG Task Force Laban COVID-19** supporting all screening efforts of the government, not just in maritime but across all domains. This Task Force is composed of 13 Task Groups from all its Coast Guard Districts to prevent the spread of the increasing cases of individuals infected by COVID-19 in various areas in the country. To instill effective implementation of government strategies, the Task Force employed interagency cooperation with the

participation of the **Philippine National Police - Maritime Group (PNP-MG)**, **Joint Task Force - Armed Forces of the Philippines (JTF-AFP)** and the **Philippine Navy (PN)** to man the Water Cluster. The main goal of the PCG Task Force is to ensure that all areas with a declared "No Sail Policy" for all passenger vessels and other water conveyances carrying passengers are strictly implemented.



To supplement and augment the operational efforts of the PCG as a Task Force, the PCG deployed its ships and other floating assets to support the transporting of Personal Protective Equipment (PPEs), face masks, gloves and other medical supplies following the declaration of the Enhanced Community Quarantine (ECQ), in Luzon area from 14-March-2020 up to the extension of community quarantine as of 06-June-2020. During the start of ECQ in Luzon and provinces nationwide until the community quarantine was lightened on 06-June-2020, the PCG conducted 10,001 Seaborne Patrol Operations, and 38,387 Coastal Security and Quarantine Protocols to help prevent the spread of COVID-19. This was part of its task in the **Water Cluster of National Task Force Laban COVID-19**. Further, as part of the compliance to Republic Act No. 11469 "**Bayanihan to Heal as One Act**," the PCG led and exerted the following interagency efforts nationwide, both in the health and social relief aspects:

- ◆ Transported 3,297 frontliners/health workers from 18 March to 06-June-2020 as augmentation through the DOTr's "Libreng Sakay" initiative;
- ◆ Assisted 121 patients from 24 March to 06-June-2020;
- ◆ Assisted in the distribution of relief goods nationwide from 03 April to 06-June-2020 aiding 64,448 beneficiaries;

- ◆ Inspected 127,600 vessels from 24 March to 06-June-2020;
- ◆ Provided augmentation of personnel for the repacking of relief goods of DSWD and security assistance to DSWD during the distribution of cash assistance in selected areas;
- ◆ Distributed Ready to Use Supplemental Food (RUSF) and vitamins to fishermen and residents to coastal areas;
- ◆ Delivered medical supplies to its units valued at PhP 14,798,236 from 03 April to 06-June-2020;
- ◆ Conducted 47,646 seaborne patrol operations at waters off the thirteen (13) Districts;
- ◆ Coordinated with Shipping Companies for the accommodation of foreign nationals stranded as well as transport of PPEs and medical supplies to selected areas around the country.

Proactive efforts have been set and implemented by the PCG to ensure that COVID-19 would be contained and eradicated at the soonest possible time, through the cooperation of public and private sectors, as well as the general public.

Through the initiative of the PCG Command, a recall of all nurses and medical technologists of the armed service was launched to compose the creation of 100 **Deployable Response Units** where eight-man teams would be deployed to different areas in Luzon. As a result, the PCG performed medical screening of 565,929 vessel crewmembers and fishermen from 30 March to 06-June-2020; conducted blood screening tests for 6,239 PCG personnel for antibody levels (IgM & IgG) from 31 March to 06-June-2020 (said number was also reported to the STG for the Repatriation of OFWs); and rendered screening of 227,882 truck drivers/helpers entering ports from 08 April to 06-June-2020.



The PCG also utilized its 47 PCG vessels, along with MMOV and MCS vessels from the **Bureau of Fisheries and Aquatic Resources (BFAR)** manned by PCG; and hundreds of PCG watercrafts and mobility with more than 2,220 personnel deployed to 622 seaports across the country. These augmentation efforts assisted other agencies in manning the 283 Quarantine Control Points within the Area of Responsibility (AOR) of its 13 PCG Districts for the strict implementation of Enhanced Community Quarantine (ECQ) in Luzon and other provinces within the country, as well as provided logistical support to other government agencies and LGUs.

Not just on its materiel augmentation, the PCG is and has been the country's frontline to national emergencies, together with the **Joint Task Force, Armed Forces of the**

Philippines (JTF-AFP), Philippine National Police-Maritime Group (PNP-MG) and Philippine Navy (PN) comprising the Task Force to prevent the drastic spread of the COVID 19 in the Water Cluster. Aside from floating assets, the PCG also added the deployment of its aerial assets to include PCG Islander 151 and PCG Helicopter CGH-1452 assisting the NDRRMC, the Office of the President, and other public and private institutions to lift various PPEs and other medical supplies to selected areas nationwide. In addition to its tasks for the prevention of COVID-19, the PCG deployed five (5) PCG and MCS vessels to ensure strict Implementation of the Philippine-Malaysia border lockdown to prevent entry of people (unauthorized or not allowed) from Sabah to the ZamBaSuLTa (Zamboanga-Basilan-Sulu-Tawi-Tawi) areas. The PCG Task Force LABAN COVID-19 through its 13 Task Groups from its Coast Guard Districts inspected and documented the vessels and watercrafts in different ports and waterways, and conducted health protocols for all the ship and watercraft crew to prevent the spread of COVID-19 disease. Moreover, same efforts from 13 CG Districts conducted 47,646 seaborne



patrol operations within Philippine waters.

While Filipinos in the country have felt the unconventional magnitude of COVID-19's impact on their daily lives under this new normal time, a higher impetus has stricken the welfare of our modern heroes -our Overseas Filipino Workers (OFWs), especially their dreams for their families. The trans-border impact of the pandemic has displaced OFWs around the world toward unemployment and uncertainty, which led them to fly back to their motherland. In order to cater to the influx of returning OFWs and Filipinos, the PCG was tasked by the DOTr, which activated the **Task Group Bayanihan OFW**, to commit its maximum manpower and resources and actively provide the workforce of the Sub-Task Group (STG) for the Repatriation of OFWs and to ensure the strict implementation of the mandatory 14-days facility quarantine for all returning/repatriated OFWs, whether sea-based or land-based. This initiative was launched in close coordination with other member agencies of the STG to ensure these returning OFWs are not carriers of the COVID-19 virus, considering the majority of OFWs were coming from countries that suffered from the virus. This is one

of the Philippine government's adoptions of safety measures to protect its communities and populace from possible contagion of the COVID 19 coming from overseas.

Due to the development of policies as recommended by the Philippine Government's Inter-Agency Task Force for the Management of Emerging Infectious Diseases (IATF-EID), protocols were changed from 14-day mandatory quarantine to the conduct of **Reverse Transcription Polymerase Chain Reaction (RT-PCR)** test to ensure that OFWs would indeed and accurately be negative from COVID-19 contamination and with reduced agony from having to stay at quarantine facilities for a long period of time so as to return to their respective homes as soon as they are cleared from the virus.



With the new development, the chairmanship of STG for the Repatriation of OFWs from the DOTr was then delegated to the PCG with the Overseas Workers Welfare Administration (OWWA) as the co-chair in cooperation and collaboration with the Department of Transportation (DOTr), Maritime Industry Authority (MARINA), Philippine Ports Authority (PPA), Bureau of Quarantine (BOQ), Department Interior and Local Government (DILG), Department of Tourism (DOT), Department of Foreign Affairs (DFA), and other government agencies. The coordination with the respective manning agencies, facilitated the



repatriation of OFWs by conducting swab test/ RT-PCR test, assisting and providing transport vehicles for our OFWs from airport or seaports to temporary quarantine facilities/hotels, until they return to their respective homes after being declared virus-free. As of 06-June-2020, an overall 46,729 RT-PCR tests were conducted where 42,414 of these were repatriated OFWs and the remaining 4,315 involved Non-OFWs, PCG personnel, and other government agencies.

Lastly, also as part of its augmentation efforts, in coordination with **2GO Shipping Company**, PCG led the repatriation of Filipino seafarers to ensure their security and safety after they were sheltered at the two (2) quarantine ships, **M/V St. John Paul II** and **M/V St. Anthony de Padua** that docked at Pier 15, Port Area, Manila. The PCG provided support and security personnel onboard the two ships to assist the crewmembers in enforcing quarantine measures to OFWs. The vessels could cater to 1,500 patients each. The two 2GO vessels catered to 686 patients until 01-June-2020 before both vessels resumed operations to transport OFWs who were declared negative from COVID-19. These two (2) ships were part of the Detect-and-Isolate Policy where the first quarantine ship dedicated to and utilized by persons under investigation (PUI) or Suspected cases, while the second ship was utilized as a temporary facility for persons under monitoring (PUM) or the Probable case of individuals who have traveled to COVID-19 affected countries, and/or those who show symptoms, but have no history of exposure. Moreover, the PCG was also tasked to oversee the regular disinfection of ships, as well as the sufficient delivery of provisions such as medical supplies, personal protective equipment (PPE), medicines, food, and other necessities.

Added to the operationalization of the **Detect-and-Isolate Policy**, the PCG has supervised the operations of the constructed COVID-19 Treatment Facility at Pier 15, Port Area, Manila in coordination and collaboration with the Department of Health (DOH), Maritime Industry Authority (MARINA), and Philippine Ports Authority (PPA) and Bureau of Quarantine (BOQ). This facility accommodates 357 OFWs as of 06-June-2020, and has 211 cubicles distributed in different zones to accommodate patients with mild, advance, and severe infections for which hospital beds, potable toilets, cargo containers for showers, and open-air dining facilities were likewise provided.

The treatment facility was made possible in cooperation with the **2GO**, **Asian Terminals Inc (ATI)**, and the **Lopez Group of Companies** which donated Php100 million in funding support. In addition, the PCG assisted the DOTr, OWWA, PNP, LGUs, and other concerned government agencies on the transport of **Locally Stranded Individuals (LSIs)** returning to their respective provinces. As of 06-June-2020, the PCG assisted 6,959 LSIs in different Coast Guard Districts as well as supported the government in transporting LSIs through its newest and largest ship, the BRP GABRIELA SILANG (OPV-8301) along with its other 44-meter **Multi Role Response Vessels (MRRVs)**.

While the world is still enveloped in uncertainty brought to our shores by the COVID-19 pandemic, it is important to instill the spirit of compassion and cooperation that will serve as safeguard for the country's welfare against degradation and fear. With the PCG and its capabilities in action, the organization assures the nation of its full commitment to ensure the safety of every Filipino while fighting together hand-in-hand, and healing as one nation. ⚓

PHILIPPINE WATERS DIVIDED INTO 12 FISHERIES MANAGEMENT AREAS FOR EFFECTIVE CONSERVATION AND MANAGEMENT

FISHERIES MANAGEMENT AREAS (FMA)

The Fisheries Administrative Order (FAO) No. 263 or the Establishment of **Fisheries Management Areas (FMA)** for the Conservation and Management of Fisheries in Philippine Waters took effect on 9-February-2019. The objective of the policy is to establish **FMA** and provide a science-based, participatory and transparent governance framework and mechanism to sustainably manage fisheries.

Under FAO 263, the Philippine Waters are delineated into 12 **FMAs**, based on considerations of stocks distribution, structure of fisheries and administrative divisions. To ensure transparency and stakeholders' participation in the decision and policy making, each FMA will be managed by a Management Body (with the **DA-BFAR** Regional Office as chair and co-chaired by LCE representatives) composed of representatives from sectors within fisheries (LGUs, municipal and commercial fisheries, aquaculture, processors and traders, academe, NGOs, Indigenous People, and other national government agencies like **DENR, Philippine Coast Guard, PNP Maritime**, among others).

Decision making within the **FMA** is based on ecological and economic indicators to establish pre-agreed rules and harvest control measures. In short, policies will be based on the status and capacity of the stocks within the **FMA**, taking into consideration the impact on the economic well-being of the fisherfolk.

EAFM PRINCIPLES TO GUIDE IMPLEMENTATION OF FMA

A new era of fisheries governance has come. One of the key policies endorsed by the **National Fisheries and Aquatic Resources Management Council (NFARMC)** and signed by former Agriculture Secretary Emmanuel Piñol is the Fisheries Administrative Order 263 series of 2019, known as the Establishment of **FMA** for the Conservation and Management of Fisheries in Philippine Waters.

The new policy brings into play a science-based, participatory and transparent governance framework and mechanism to sustainably manage our fisheries resources.

One of the key elements of the new policy is the spatial delineation of Philippine fishing grounds into 12 **FMAs**. The rationale for this is to manage our fisheries resources using an ecosystem-based approach.

Ecosystem-Based Approach to Fisheries Management

The main tool for the implementation of the **FMAs** is the **Ecosystem-Based Approach to Fisheries Management (EAFM)** which is meant to implement the said policy at the

ecosystem scale, bearing in mind the relation of various interconnected ecological domains from the 'ridge' or upland to the 'reefs' or coastal areas.

In the newly amended Fisheries Code (RA 10654), the ecosystem-based approach to fisheries management is defined as:

"An approach to fisheries that strives to balance diverse societal objectives or needs by taking account of the knowledge and uncertainties about biotic, abiotic, and human components of ecosystems and their interaction; and applying in an integrated approach to fisheries management within ecologically meaningful boundaries. It may be synonymously used with ecosystem approach to fisheries management."

In order to find a balance between enhancing human well-being and sustainably protecting ecological well-being, good governance must be put in place to ensure that the fisheries resources in an **FMA** will be sufficient and available for future generations.

Under the **EAFM** framework, fisheries management will use the best available science to approximate the fish stocks and the distribution of various species in a fishing ground. This information will be used to create a plan that will put in place harvest control rules and other conservation measures while taking into account the long term and short term effect on the livelihood of its immediate users. That is why the delineation of the 12 major **FMA** factors in stocks boundary, range, distribution and structure of fisheries while also taking into account administrative and geographic divisions. All these science-based efforts will be undertaken in consultation with fisheries stakeholders in each **FMA**.

Seven Principles of EAFM

In order to fully implement the EAFM to the sustainable management of the FMA, there are seven governing principles that must be put in place: (1) good governance, (2) appropriate scale, (3) increased participation, (4) multiple objectives, (5) cooperation and coordination, (6) adaptive management, and (7) precautionary approach.

• Good Governance

Fisheries managers under the **EAFM** framework are urged to implement good governance in the implementation of the **FMA** plan in their respective management areas. Good governance involves consensus-oriented approach to fisheries management that encourages participation among its stakeholders. It is transparent, accountable, and responsive. Also, it effectively and efficiently implements the rule of law to promote a policy that is equitable and inclusive.

• **Appropriate Scale**

EAFM managers are encouraged to view their respective management policies in reference to an appropriate scale. In taking into account the appropriate scale, four dimensions must be considered namely, (i) ecological (single species management versus large marine ecosystem), (ii) governance (single versus multiple jurisdiction), (iii) socio-economic (single village versus rural and urban coastline); and (iv) temporal (short term measure versus long term measure). It must be noted that in reality, no scale can be absolutely correct. Hence, the challenge is to find the 'right' or appropriate scale and pursue the most practical and necessary measures in managing our respective **FMAF**.

• **Increased Participation**

The implementation of **EAFM** puts increased participation among fisheries stakeholders as central to its process. It must be consultative, taking into account stakeholders' involvement in the crafting of the plan of action that is inclusive and equitable.

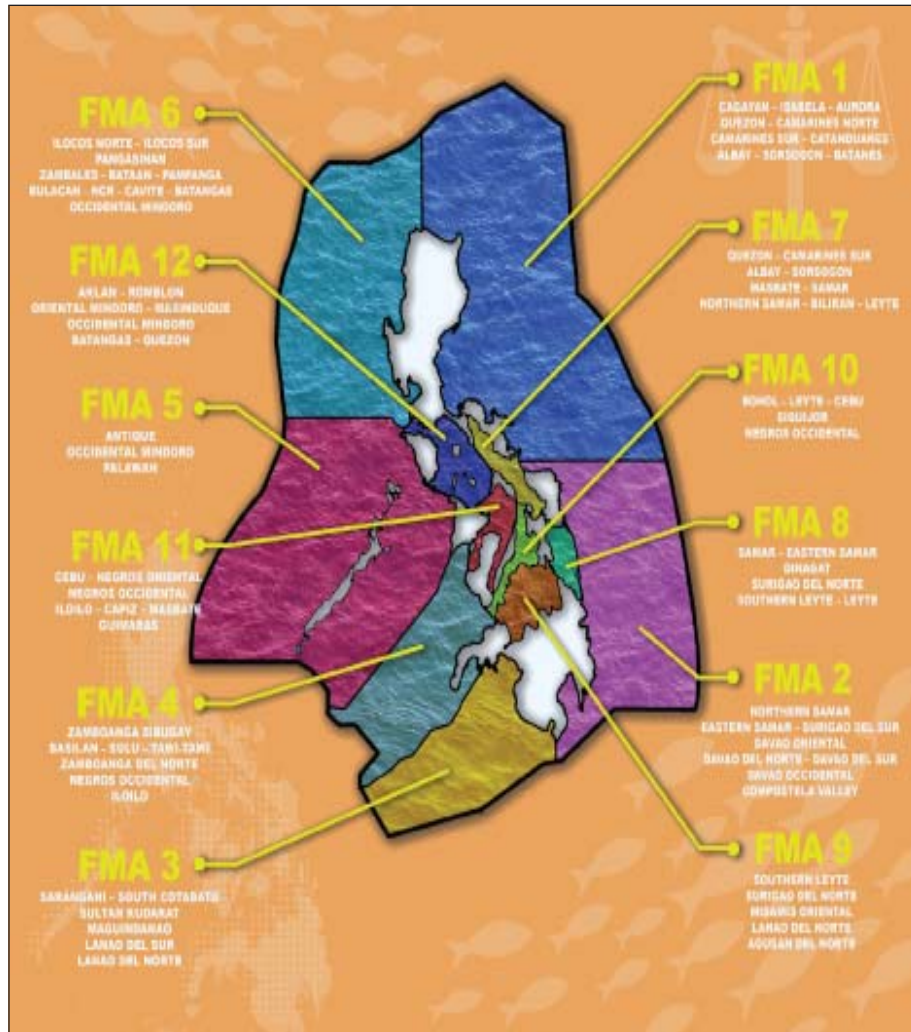
• **Multiple Objectives**

An **EAFM** framework of policy implementation must also involve the principle of engaging multiple stakeholders. Fisheries stakeholders are not the only stakeholder at play in the **EAFM** process. The government as well as external agents such as the academe, NGOs, and the scientific community are also part of the process.

Since the **EAFM** process to **FMA** involves multiple stakeholders, with each having their corresponding objectives, the process of policy making and implementation must involve harmonizing multiple objectives to reduce conflicting interests among stakeholders. The **EAFM** process, like many multi-sectoral approach to resource management, is consultative and must be inclusive of all concerns of its multiple stakeholders.

• **Cooperation and Coordination**

For the **EAFM** to be successfully adapted in the policy formulation and implementation of the **FMA**, the principle of cooperation and coordination must be in place. The sustainable management of a fisheries management area has cross-cutting effects. Thus, effective and efficient cooperation and coordination among agencies and institutions is necessary to achieve its multiple objectives.



• **Adaptive Management**

An **EAFM** Plan for an **FMA** involves the principle of adaptive management which is basically a "learning while doing" approach. An **EAFM** Plan for an **FMA** is not a one time, big time implementation strategy. Rather, during its implementation, a particular plan may undergo several revision and refinement, in order to fine tune and improve its design. **FMA** managers are urged to regularly evaluate, improve, or discard action points that may not be appropriate anymore to an existing **FMA**. This corrective cyclical process aims to lessen the uncertainty in predicting the outcomes and in mitigating the effects of a management action.

• **Precautionary Approach.**

One of the key principles of an **EAFM** is the principle of precautionary approach which says that *lack of information should not be a reason for lack of action*. Adopting a precautionary approach necessarily means that **FMA** managers must exercise proactive and well-tempered management actions that factors in the potential risks.

In due time, the full implementation of **FMA** policy using the **EAFM** process will bear fruit and will lead to a new era of fisheries management –one that is participatory and inclusive, science-based, and one that strikes the balance between socio-economic well-being and ecological well-being through good governance.

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FROM KANG WON TO INCHEON: A BRIEF HISTORY OF THE PHILIPPINE-SOUTH KOREAN NAVAL CONNECTION

by CDR Mark R Condeno PCG (Res)

INTRODUCTION: THE TIES THAT BIND. In August 1947, a naval mission was organized by the U.S. Navy in Subic Bay Naval Base to bring in former Auxiliary Motor Minesweepers (AM) of the U.S. Navy and Royal Navy to form the nucleus of the Korean Naval Defense Corps being activated under the supervision of the U.S. Coast Guard. The Korean Naval Defense Corp's later became the Republic of Korea Navy (ROKN).



LT Ramon A Alcaraz PN

The vital task was entrusted to the Philippine Naval Patrol (PNP) where Filipino Naval Officers skippered the ship's to the Ports of Jinhae, Pusan and Seoul. The task force was led by LTSG RAMON ALCARAZ. The other Skippers of the Minesweepers were ENSIGNS Leovigildo Gantioqui, Marcelino Calinawan, Jose Vasquez, Dioscoro Papa, Antonio S Calingo, Federico M Martir, and Godiardo G Nonato.

Make no mistake, these Filipino Naval Officers were all veterans of World War II. Upon setting foot on Korea, a foreboding scenario engulfed them that the country would soon be at war based on the security issues at that time. Their assumption was correct; the peninsula went in flames while North Korean troops crossed the border and invaded Seoul on 25-June-1950.

COMBAT SERVICE SUPPORT (CSS) and ESCORT

OPERATIONS: As the First Southeast Asian nation and the Third United Nations member to deploy troops to Korea unknown to many, the Philippine Navy played a pivotal role in ferrying to and from Korea four of the five Philippine Expeditionary Force to Korea (PEFTOK) Battalion Combat Teams beginning in 1951. The Philippine Navy of that era possessed five Landing Ship Tanks (LST's) in the Service Squadron now under Commander **RAMON ALCARAZ PN**.

These vessels, namely: RPS Cotabato (LT-36- LCDR FLORENTINO BUENAVENTURA PN), RPS Pampanga (LT-37- CDR TOMAS ROBENIUL PN), RPS Bulacan (LT-38- CDR TANDKO CENTI PN- First Filipino Muslim Naval Officer), RPS Albay (LT-39- LT JOSE ORDONEZ PN) and RPS Misamis Oriental (LT-40- LTJG PABLO PASCUA and later, LT DOMINADOR SANTOS) performed herculean tasks in Combat Service Support Operations to the Filipino Soldiers in the theater.

In 1953, an important but gloomy task was undertaken by RPS Cotabato (LT-36) under LT **VICTOR JOSE PN** in bringing home bodies of the PEFTOK Soldiers who were killed in action during the war. ENS **ALFREDO DIVINO PN** was also aboard the LT-36 vessel during its initial CSS mission.

The 16 Submarine Chasers of the Philippine Fleet provided an impressive escort mission to the departing PN LST's and U.S. Transport Ships carrying Filipino troops to and from Korea with RPS Capiz (PS-27). She and her sister ship RPS Negros Occidental (PS-26) escorted USNS SGT Sylvester J Antolak (T-AP-197) from

Corregidor Island to the outskirts of South China Sea in September 1950.

PHILIPPINE LIAISON GROUP-UN COMMAND LIAISON OFFICE, TOKYO, JAPAN: The Korean War was the First Armed Forces of the Philippines (AFP) Joint Overseas Mission. Embedded within the 10th BCT is then LCDR **EMILIO S LIWANAG PN** who served as their Gunnery and Logistical officer. He commanded a battery of six-105mm howitzers during the defining battle between Filipino and Chinese forces at the Battle of Yultong on 22-23 April 1951.



LTJG VICTOR O JOSE PN was the Skipper of RPS Cotabato (LST-75/LT-36) (Photograph Courtesy of Buddy Jose, son of the late Commodore Victor O Jose AFP).

Early on, LCDR Liwanag was responsible for securing from an American Depot in Pusan a squadron of 7 US-made M24 Chafee light tanks and Heavy Weapons for the 10th BCT.

After his stint with the 10th BCT, now CDR Liwanag would serve as the Deputy Commander of the Philippine Liaison Group to UNC in Tokyo, Japan with CDR **SANTIAGO C NUVAL PN** (a future PN Flag Officer In Command) as head of the mission.

CDR Liwanag was also the Senior Naval Advisor to the

Philippine Diplomatic Mission in Korea where he earned the US Legion of Merit for valuable logistical assistance to Filipino and allied troops in the Korean conflict.

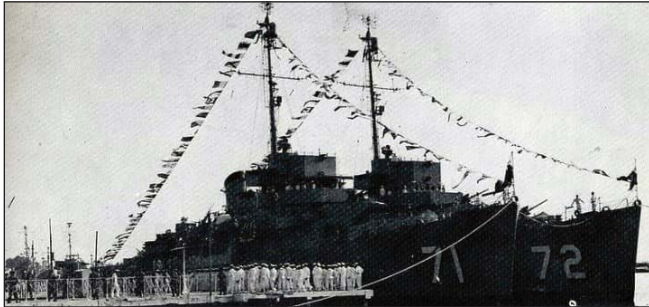
POSTWAR PHILIPPINE-KOREAN NAVAL RELATIONS.

The postwar diplomatic and defense cooperation between the two countries were at an all-time high with the exchange and visits of officers and personnel as well as fleet units beginning with the visit of the Frigate ROKS Imjin (PF-66) to Manila in 1953.

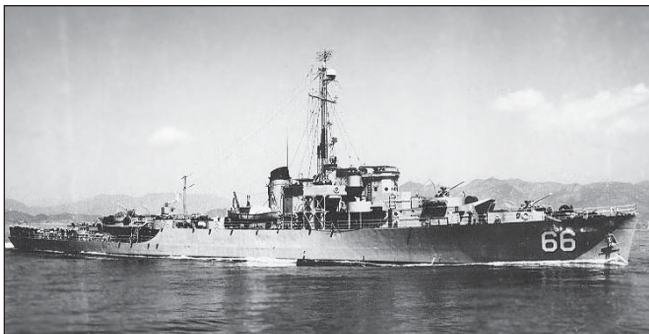


LCDR Emilio S Liwanag PN. (Photograph courtesy of Marylou Liwanag-Fuentespina, daughter of the late Capt Emilio S Liwanag PN.)

Twenty-four years after the conflict in 1977, marked the largest naval vessel allocation in terms of size and tonnage from the Republic of Korea Navy to the Philippine Navy with the turn-over of ROKS Kyong Ki (DE-71) and ROKS Kang Won (DE-72) in 1977. The former was the ex-USS Sutton (DE-771) while the latter was the ex-USS Muir (DE-770). The ships were of the Cannon Class Destroyer Escort Type, which the Philippine Navy had three in its inventory. Regrettably, the Kyong Ki and Kang Won were never commissioned but rather utilized as spare parts source for our three active units.



ROKS Kyong-Ki (DE-71) and ROKS Kang Won (DE-72) were former Cannon Class Destroyer Escorts of the Republic of Korea Navy transferred to the Philippine Navy in 1977. (Photograph courtesy of the ROK Ministry of Defense)



ROKS IMCHIN (PF-66) – A Tacoma Class Frigate of the Republic of Korea Navy. She was the First Korean Warship to visit the Philippines in 1953. (Photo source: https://en.wikipedia.org/wiki/List_of_ships_of_the_Republic_of_Korea_Navy#/media/File:ROKS_Imchin.jpg, accessed 07-June-2020.

THE SCHOOLBOY and THE KILLER. Almost a score later, another milestone in Philippine-Korea Naval relations as 12 Haksang (Sea Dolphin/Schoolboy) and Chamsuri (Sea Hawk/Patrol Killer Medium) class Patrol Gunboats were sold to the Philippine Navy. Twelve of the Haksang and eight of the Chamsuri's were transferred during those years and through recommendation from the Philippine Navy to President Fidel V Ramos, himself a Korean War veteran, all ships were named after Filipino Korean War heroes.

"In the early 1990s, when the U.S. troops pulled out from Subic Bay and Clark Air Force Base, ROK made an offer to help the Philippines by selling more than a dozen used but well-maintained 84-footer and 105-footer fast attack patrol boats at \$100 each. COMMODORE Plaridel C Garcia led a 3-man team with CDR Petronilo Magno and LCDR Emilio Marayag Jr to ROK Defense Ministry to negotiate the arrangements. A few months later, CDR Emilio Marayag Jr, LCDR Tomas Bains and LCDR Zyril Carlos conducted a month-long ocular inspection at the Chinhae Naval Base near Pusan. These boats augmented the Philippine Navy's littoral patrols all around the archipelago," **VADM Emilio C Marayag Jr** recalls.

These two classes of Patrol gunboats would be known as the

Conrado Yap and Tomas Batilo class. As of the present, 3 Tomas Batilo Class Gunboats remain in service, while the last Conrado Yap Fast Attack Craft Patrol bowed out of service this year.

THE PRESENT AND THE FUTURE. Thirteen years after the transfer of BRP Emilio Liwanag (PC-118) the handover and commissioning of the Pohang Class Corvette Ex-ROKS Chung-Ju, now the BRP Conrado Yap (PS-39) marked another milestone in the naval relations between the two countries. These transfers including a former Mulgae Class Landing Craft Utility (LCU-78) was further cemented when Hyundai Heavy Industries was selected by the Philippine Government for the building of two Incheon Class Guided Missile Frigates now known as BRP Jose Rizal (FF-150) which has recently arrived last 23-May-2020. Its sister ship, the BRP Antonio Luna (FF-151), is to join the Philippine Fleet by 2021. The Incheon Class will be known in Philippine Naval Service as the Jose Rizal Class.

CONCLUSION. The naval connection between the Republic of the Philippines and the Republic of Korea dates way back, before the official establishment of relations between the two countries in 1949 that significantly strengthened a deeper bond of friendship paved on the battlefields of war and admired in the years of peace.



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REEMERGENCE OF FLOATING STORAGE TANKERS

by Vicky Viray Mendoza

Amidst the global economic standstill due to the pandemic, a tremendous glut in crude oil supply resulted, and consequently, oil prices plunged. This boded well for the oil tanker industry. But effective May 1, oil producing countries have begun to lower output to reduce the over supply of crude oil. As a result, the price of crude oil has doubled, although still quite low. You might think that floating storage no longer floats. Rethink that.

The number of floating storage tankers has been increasing daily, which will help the shipping sector recover. Globally, surplus oil—both commercial and strategic petroleum reserves—is now rapidly flowing into onshore storage facilities. With worldwide conventional oil storage that could hold 3.4 billion barrels expected to run out of space by end-May, and thereafter would need to flow into floating oil tanker storage, an increase in floating storage became the inevitable solution, Drewry Financial Research Services Ltd reports.

London-based Gibson Shipbrokers stated that by mid-April, oil held in floating storage tankers reached 160 million barrels. 70 laden very large crude carriers (VLCCs) remained stationary for at least 4 weeks before May 11, proving that “contango” was in play. Traders were buying relatively cheap oil, chartering a ship, storing the oil in the ship, and hedging themselves on paper. A contango trade takes place when a commodity’s future price is higher than the commodity’s spot price today.

Offshore floating storage is not a new phenomenon. They

are vessels laden and stationary for at least four weeks. A storage flotilla between mid-2009 and early 2010, storing both crude and refined products, looked so impressive. The number of floating Panamax and VLCC storage peaked at 131 units with a high of 56 VLCCs. Then during 2015-16, there were 50 VLCCs used as crude floating storage due to contango, and Iranian sanctions.

There is an increase in the number of laden VLCCs being stationary but much less than a full 4-weeks. AIS data shows 20 VLCCs in early May, double early April levels. Tankers can have unexpected discharge delays due to quarantine measures and forced storage for an extended period most likely because of ullage delay, the amount of empty space in a cargo ship’s hull or in an oil terminal tank—think of the space at the top of a wine bottle that could have been filled. Yet, ullage delay is positive for charters as it pads on to voyage time.

Apart from forced storage is the prospect for contango. The major increase in time charters supports this view, when the contango widened significantly in March and April. “About 80 VLCC time charters were reported, compared to 13 in the same period last year. A 3-month spread in Brent futures peaked on 21 April at \$9.75/bbl, sustaining a 3-month storage at \$204,000/day on a VLCC before accounting for any profit margin for the trader,” Gibson Shipbrokers reports.

Oil industry players are primarily signing up 6-month charters. Traders want to hedge but are lacking the space to store the oil. Hence the need to rent large oil tankers. Floating

storage contracts are not only made for VLCCs, which are tankers that can hold 2 million barrels of crude oil, but also Suezmaxes, which are tankers that can hold 1 million barrels of crude oil.

There is also high demand for floating storage for refined products. International Seaways CEO Lois Zabrocky predicts there will be new building of VLCCs and Suezmaxes for storage. He said all refineries worldwide and all oil producing countries are calibrating with demand. When refineries run too high, excess refined products go into storage.

Euronav conservatively estimates 14 million barrels/day will go into storage in May, and 2 million barrels/day in June. If Euronav's estimates prove true, "You could see twice as many VLCCs and twice as many Suezmaxes being taken before the end of June, which would have a positive impact for the ships that are still trading because there's still a lot of demand for transporting oil, and the spot market should reflect the diminishing supply of the world fleet," said Euronav CEO Hugo De Stoop. Drewry conservatively estimates nearly 7 VLCCs/day will be required to store 20 million barrels/day of surplus oil, even after the oil production cut of 9.7 million barrels/day by OPEC+.

De Stoop explained that the drawdown of storage starts with the consumer of refined products. Upon drawdown of gasoline, diesel and jet fuel stored on land and at sea, refinery demand for crude inputs increases. And when more crude oil is needed, the first to be processed is land-based storage near refining facilities, before offshore-based storage is touched. When demand is high enough to unload crude oil from floating storage, there is either a quick drawdown or a slow drawdown.

More likely, a slow drawdown would happen since the last contango in 2015-16 took a year for storage tankers to return fully to the trading fleet. If all the stored oil flowed back to the market, oil price would be a negatively impacted. A contango curve would be created, as the price would be positively higher in the forward contract. More shipowners will play the game and store oil, De Stoop said. The rise in floating storage will lessen the vessels for active trade resulting in higher vessel day rates, Drewry reports.

Esben Poulsson, Chairman, International Chamber of Shipping, estimates that 1/3 of VLCCs, which are about 300,000 DWT tons, are being used for storage purposes. Aurian de La Noue of Wood Mackenzie says these VLCCs are floating idly where oil demand is expected to rise, e.g., U.S. west coast, China and East Asian coasts, and Singapore. When demand for crude inches up, these VLCCs are in the best coasts to offload. But once crude prices are back to normal, the contango play will no longer work. Tanker stocks will rise, making storage tankers rapidly unload and return to tanker shipping again.



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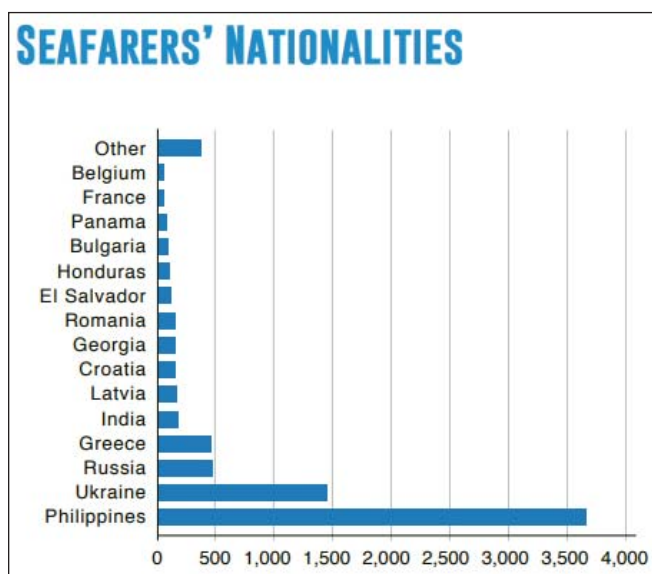
THE MARITIME LEAGUE

THREE REASONS WHY FILIPINO SEAFARERS ARE THE HAPPIEST CREW

by SAFETY4SEA

Seafarers from the Philippines are the most satisfied seafarer group by nationality serving onboard ships, as shown by the **SAFETY4SEA Crew Wellness survey**. The difference with the other nationalities was actually so wide that it could lead us to assume that there is a correlation between nationality and happiness onboard.

The **SAFETY4SEA** survey took place in Q4 2019, gathering responses from an unprecedented 9,768 seafarers, serving onboard 1,072 ships.



Among the key findings, the stats show that Filipino seafarers are by far the largest nationality serving onboard cargo ships and have several years of experience. In the same context, the majority of participants were by far seafarers from Philippines representing more than half of the sample. Others with high participation of their seafarers were Ukraine, Greece and Russia

A glance of statistics. It is a fact that Filipinos account for a great deal of seamen workforce worldwide.

According to ICS figures, the worldwide population of seafarers serving on internationally trading merchant ships is estimated at **1,647,500 seafarers**, of which 774,000 were officers and 873,500 were ratings.

The five largest seafarer supplier countries are: China, Philippines, Indonesia, Russian Federation, and Ukraine.

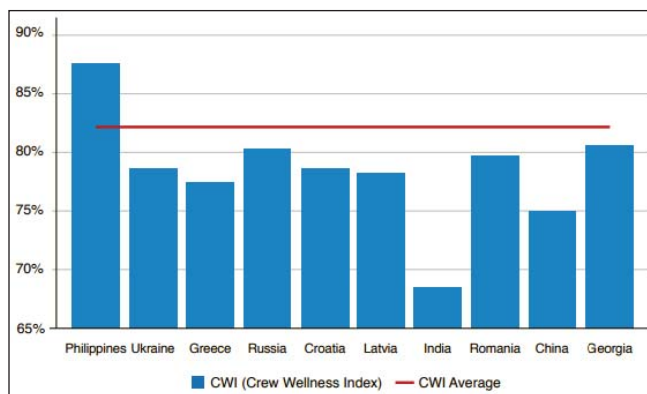
The Philippines is the biggest supplier of ratings, followed by China, Indonesia, the Russian Federation, and Ukraine.

Meanwhile, latest figures by Philippine Overseas Employment Administration's (POEA) reveal a **dropping trend** in the deployment of Filipino seafarers in 2018 compared to 2017, from 449,463 to 337,502. This means the number of Filipino seafarers was reduced by more than 110,000, which comes in addition to 64,748 Filipino seamen who lost their jobs from 2016 to 2017.

This can be attributed to the increasing legal cost of employing Filipino crew, compared to other Eastern countries. According to data

by Manila Times, Filipino rates are estimated to cost \$1,000 each per month, compared with \$600 to \$800 per month in Indonesia.

Why are Filipinos happier? As shown in the figure below, the seafarers' nation with the top level of satisfaction is Philippines, with an 87.4% score, while the nation, which seems to have the most unsatisfied seafarers is India, with 68.2%. Meanwhile, all the other nationalities are below average in crew satisfaction.



Based on the survey figures, we can assume that nationality has an impact to satisfaction onboard and we attempted to explain why Filipino seafarers are more satisfied than other nationalities:

- ♦ **National tradition:** The Philippines is traditionally a maritime nation. As shown in the figures above, the country accounts for one fifth of the world's seagoing personnel and is considered the top source for quality seafarers. Philippines is the base of numerous high-quality maritime training centers, encouraging Filipinos since childhood to opt for maritime careers. This makes the ship a friendlier environment for Filipinos, while making the latter in-demand by high-profile maritime companies.
- ♦ **Predisposition:** Although ranking wellbeing by nationality may seem a misconception, there is a general sentiment that Filipinos are among the happiest and resilient nationality groups on Earth. In 2018, the Philippines was named the 3rd happiest country in the world by Gallup International, hitting a "+84" score and climbing 3rd after Fiji and Colombia. Filipinos also ranked 5th in the economic optimism index, as 42% of them believed that 2018 would be a year of economic improvement for their home.
- ♦ **Salary:** According to Salary Explorer, the minimum monthly wage of a Filipino worker in 2020 is USD\$136.26 (6,840 Philippine pesos), at a time when the ILO recommended minimum wage for an AB seaman is USD\$618 (applicable from 1-July-2019). For officers, the minimum wage exceeds the USD\$1,000. This makes seafaring an easier option for Filipinos, considering that conditions onshore push them away from shore-based careers.

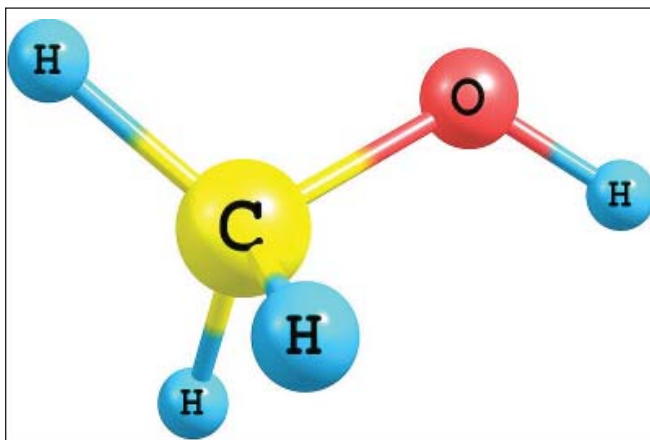


Source: <https://safety4sea.com/cm-three-reasons-why-filipino-seafarers-are-the-happiest-crew/>

TRANSFORMING CARBON DIOXIDE INTO FUEL MORE EFFICIENTLY WITH A WATER-CONDUCTING MEMBRANE

by RENSSELAER POLYTECHNIC INSTITUTE

Summary. **Methanol** is a versatile and efficient chemical used as fuel in the production of countless products. Carbon dioxide (CO₂), on the other hand, is a greenhouse gas, the unwanted byproduct of many industrial processes. Converting CO₂ to **Methanol** is one way to put CO₂ to good use. Separation membranes could vastly improve multiple chemical processes.



Artist's concept. Chemical engineers from CBIS-Rensselaer demonstrated how to make the conversion process from CO₂ to Methanol more efficiently by using a highly effective separation membrane they produced.

In research paper published in *Science*, chemical engineers from the U.S. **Rensselaer Polytechnic Institute** demonstrated how to make that conversion process from CO₂ to **Methanol** more efficiently by using a highly effective separation membrane they produced.

This breakthrough, the researchers said, could improve a number of industry processes that depend on chemical reactions where water is a byproduct. For example, the chemical reaction responsible for the transformation of CO₂ into Methanol also produces water, which severely restricts the continued reaction.

The **Rensselaer** team set out to find a way to filter out the water as the reaction is happening, without losing other essential gas molecules. The researchers assembled a membrane made



Prof. Miao Yu, Rensselaer Polytechnic Institute

up of sodium ions and zeolite crystals that was able to carefully and quickly permeate water through small pores—known as water-conduction nano channels—without losing gas molecules.

"The sodium can actually regulate, or tune, gas permeation," said **Miao Yu**, an endowed Chair Professor of chemical and biological engineering and a member of the **Center for Biotechnology and Interdisciplinary Studies (CBIS)** at **Rensselaer**, who led this research. "It's like the sodium ions are standing at the gate and only allow water to go through. When the inert gas comes in, the ions will block the gas."

In the past, **Prof. Yu** said, this type of membrane was susceptible to defects that would allow other gas molecules to leak out. His team developed a new strategy to optimize the assembly of the crystals, which eliminated those defects. When water was effectively removed from the process, **Prof. Yu** said, the team found that the chemical reaction was able to happen very quickly.

"When we can remove the water, the equilibrium shifts, which means more CO₂ will be converted and more **Methanol** will be produced," said **Huazheng Li**, a Postdoctoral Researcher at **Rensselaer** and first author on the paper.

"This research is a prime example of the significant contributions **Prof. Yu** and his team are making to address interdisciplinary challenges in the area of water, energy, and the environment," **Deepak Vashishth**, Director, **CBIS** said. "Development and deployment of such tailored membranes by Prof. Yu's group promise to be highly effective and practical."

The team is now working to develop a scalable process and a startup company that would allow this membrane to be used commercially to produce high purity **Methanol**. **Prof. Yu** said this membrane could also be used to improve a number of other reactions.

"In industry there are so many reactions limited by water. This is the only membrane that can work highly efficiently under the harsh reaction conditions," **Prof. Yu** said.



Story Source: Materials provided by Rensselaer Polytechnic Institute. Originally written by Torie Wells.

- Journal Reference: Huazheng Li, Chenglong Qiu, Shoujie Ren, Qiaobei Dong, Shenxiang Zhang, Fanglei Zhou, Xinhua Liang, Jianguo Wang, Shiguang Li, Miao Yu. "Na⁺-gated water-conducting Nanochannels for Boosting CO₂ Conversion to Liquid Fuels." *Science*, 2020 DOI: 10.1126/science.aaz6053
- Source: Rensselaer Polytechnic Institute. (2020, February). "Water-conducting membrane allows carbon dioxide to transform into fuel more efficiently: Separation membrane could vastly improve multiple chemical processes." *Science Daily* www.sciencedaily.com/releases/2020/02/202006144820.htm



ANALYZING FUTURE MARINE FUELS

by Vicky Viray Mendoza

According to **CAI International**, “Since the 1960’s, Heavy Fuel Oil (HFO) has been the king of shipping fuels. A byproduct of crude oil, HFO expels 35,000 ppm into the environment and accounts for 8% of the sulfuric dioxide in the air. The arrival of the IMO 2020 fuel regulation in 2019 signaled a formal move toward alternatives to HFO like biodiesel, hydrogen, methanol, and even battery-powered ships. While each of these has been pursued incrementally in the past, the breadth and urgency of a regulated shift is changing the dynamic. Domestic shippers, such as retailers and raw material manufacturers, are tending towards low-sulfur diesel oil alternatives, whereas ocean liner companies are embracing exhaust-cleaning systems known as scrubbers. Even during times of lower fuel demand, we can anticipate ongoing forward motion in alternative fuel adoption.” (HFO: End of an Era,” **Hellenic Shipping News**, 6-June-2020)

Almost 60% of the respondents in an ABS Survey said they consider Hydrogen and Ammonia as the most attractive fuel choices in the long-term. The survey also reveals that nearly 2/3 of shipowners have no decarbonization strategy. 70% of the respondents selected fuels in the light gas pathway, which includes **LNG** in the short term, and Hydrogen as a future solution, as the most likely to be adopted. “It is clear that the industry views both Hydrogen and Ammonia as the long-term destination but sees **LNG** as having a big role to play in addressing the regulatory challenge immediately in front of us,” stated **Georgios Plevrakis**, Director, **ABS Global Sustainability**.

A new paper highlights two potential low-emission fuels for long distance international shipping: Hydrogen (H₂) and Ammonia (NH₃). The January 2020 paper by McKinlay, Turnock, and Hudson titled, “A Comparison of Hydrogen and Ammonia for Future Long Distance Shipping Fuels,” showed findings based on **LNG** tanker data that Hydrogen and Ammonia are potential future marine fuels for consideration. Using 3-year data, estimates were made for energy requirements based on delivered power, with the maximum consumption for a single voyage at 9270 MWh. Calculations were made for the required volume, mass, and variable cost for several types of fuel such as: LNG, Diesel (HFO), Hydrogen gas, Hydrogen liquid, Metal Hydride, Ammonia, Methanol, and Lithium-ion Batteries.

Hydrogen has significantly higher gravitational energy density than the other fuel options, requiring lesser fuel. The major criticism against Hydrogen as a fuel is the low volumetric energy density. Hydrogen price is also considerably higher than the other fuel options. However, since a vessel will purchase a large quantity of Hydrogen, the commercial price will be lower. **Electrolysers** can reverse fuel cells and produce clean Hydrogen using only water and electricity. The cost of Hydrogen production is the electricity price. Projections show the cost of electrolysis will fall to 57.6 p/kg by 2025. The energy required to produce 1 kg of Hydrogen will fall from 51 kWh to 44.7 kWh by 2025. Therefore, to produce a delivered power of 9270 MWh, assuming 60% efficiency, about 464000 kg of Hydrogen is required. This equates to a fixed cost of £267,200 plus electricity cost.

Ammonia has several desirable attributes. Its volumetric

energy density is similar to **LNG**, and theoretically increasing the fuel oil tank to 119% with Ammonia could power the tanker for any journey. Ammonia is carbon free, and Ammonia's price, despite being 3-4 times higher than currently used fuels, is significantly more competitive than Hydrogen and Lithium-ion Batteries. However, the weight of Ammonia is a concern. Powering a tanker from pure Ammonia increases the vessel's total mass by 2.74% compared to LNG when refueling. Its excess weight increases the overall ship mass by 0.3%-3.7%, decreasing ship performance at sea.

Lithium-ion Batteries require significantly added space and weight considerations. As to cost, the initial capital cost for a battery capacity of 9758 MWh is estimated at £3.9 billion (502 \$/kWh). Due to a significant increase in global Lithium-ion production, projections show Battery price will drop between 140-620 \$/kWh by 2030. However, this lower value would still result in a high cost of £1.04 billion, higher than the alternatives. Recharging time is a big concern. Tesla supercharger's power rating is 240 kW, therefore, it would take 1000 superchargers 40.7 hours to recharge 9758 MWh, and the local distribution network may struggle to meet this demand. Test results show that using Lithium-ion Batteries to provide the primary power supply for long distance shipping operations is not a viable option. The Batteries would rather be useful for short distance small ferries, or as part of a hybrid power management system, with fuel cells.

CONCLUSIONS. It appears that the shipping industry has no choice but to move away from oil and gas based fuels mainly due to environmental pressures. Decarbonization of the shipping industry is a necessary step to greatly reduce vessel emissions.

Hydrogen (H_2) has a low volumetric energy density and this is cited as a major barrier to becoming a mainstream fuel source. "However, the study suggests that volume requirements of either

pressurized gas or liquid Hydrogen are not sufficiently high to be considered infeasible." Hydrogen is high-priced but due to the advancement of electrolysis technology and the decreasing cost of renewable power, it is projected that clean Hydrogen could be competitively priced by 2025. Hydrogen also has significantly high gravitational energy density, and thus requires less fuel.

Metal Hydride requires significantly less volume than other Hydrogen storage methods, and the study concluded that Metal Hydride is not a viable option for transportation application.

Ammonia (NH_3) has advantages over Hydrogen, such as less space required for the same energy content, and more competitive current market prices. However, Ammonia has relatively low gravitational energy density and thus requires relatively more fuel. An increase in the vessel's weight has a detrimental effect on a ship's performance. Therefore, more energy would be required to complete the same distance.

Methanol (CH_3OH) shares similar attributes with Ammonia since their combustion can still produce NOx and carbon emissions, but Methanol is considered the less desirable option.

Lithium-ion Batteries are unlikely to meet the size, weight, and price requirements for long distance shipping. Batteries are bulky, heavy, and costly for long distance international shipping.

Overall, the study finds that **Hydrogen** and **Ammonia** show more promising attributes than the other fuel sources, but have significant engineering challenges to meet for viability as clean marine fuels in the foreseeable future for long haul shipping.

That said, it is therefore likely that in the near and medium-term, most green shipowners will choose **LNG** until Hydrogen, Ammonia, and Methanol have hurdled the engineering tests and become clean marine fuel for long-haul shipping in the future. ⚓



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PHILIPPINES MAKES MOVE INTO OFFSHORE WIND ENERGY

by Spanish Reve

The Philippines has taken first steps into the offshore wind power sector with plans to develop 1.2 GW, according to an international consortium that said it has been given the go-ahead to advance wind farm projects there.

Triconti ECC, an alliance between Swiss, German and local players, claimed the Philippines **Department of Energy (DOE)** gave it “exclusive rights to studying and developing” two wind turbines projects, **Aparri Bay** in the north of the country and **Guimaras Strait** in central Philippines.

“*Guimaras Strait and Aparri Bay showcase excellent, consistent wind speeds and are very accessible from the foreshore in terms of grid connectivity and maintenance,*” said **Triconti ECC**.

No further details were given about the wind farm projects, the government concessions or a potential timescale.

The joint venture is already advancing 500 MW of onshore wind power projects and plans to bring the first wind farm online by 2022.

The Philippines – which has a population of more than 100 million, and currently leans heavily on fossil fuels for its energy supplies – was last year named by the World Bank as one of a group of emerging economies where offshore wind energy could be crucial to helping meet rapidly growing power demand.

If the projects do advance, it would join a fast-growing Asian and Asia-Pacific offshore wind energy market that already includes China, Taiwan, Japan, South Korea, Australia and India.

That trend has already seen the balance of offshore wind activity tilt from Europe to Asia, with total investment running at almost double in the latter last year.



Source: <https://www.evwind.es/2020/03/30/philippines-makes-move-into-offshore-wind-energy/74224>



LNG AS MARINE FUEL: ABS ISSUES GUIDANCE

by American Bureau of Shipping (ABS)

The adoption of the 'Initial **International Maritime Organization (IMO)** Strategy on Reduction of Greenhouse Gas (GHG) Emissions from Ships' by **IMO** Resolution MEPC.304(72) in April 2018 demonstrates **IMO's** commitment to support the Paris Agreement. The **IMO** strategy includes initial targets to reduce as compared to 2008 levels the average CO₂ emissions per 'transport work' by at least 40% by 2030, aiming to pursue 70% reduction by 2050; and an ambition to reduce the total annual GHG emissions from shipping by at least 50% by 2050.

Technical approaches, operational approaches and alternative fuels may be used to achieve these goals. The near-term regulatory changes and the future impact of the **IMO's** GHG targets for 2030 and 2050 should be considered when making the long-term decision on fuel selection. **Liquefied Natural Gas (LNG)** is a relatively mature low-carbon fuel, comprised primarily of methane. Its carbon to hydrogen (C/H) ratio offers a reduction in carbon dioxide (CO₂) emissions of up to 20% compared to baseline heavy fuel oil. In combination with latest technological improvements and/or operational measures, **LNG** may be a viable option to meet the 2030 emission reduction goals.

The June 2020 **Sustainability Whitepaper: LNG as a Marine Fuel** focuses on selected practical considerations for **LNG** as

a marine fuel and summarizes the relevant vessel design and operational aspects with reference also made to relevant technological advancements. The information provided can support the decision-making process for future ship designs, propulsion systems, and fueling strategies. It is an overview of the key aspects considered for **LNG** as fuel, addressing bunkering, vessel arrangements, fuel containment, fuel gas supply systems, single gas and dual fuel main engines. The adaptation of **LNG** as fuel depends on case-specific requirements and therefore the information provided in this paper concentrates on the areas that apply broadly to **LNG** as fuel installations. This document provides practical pointers in the use of **LNG** as marine fuel and is intended to supplement the **ABS Advisory on Gas and Other Low Flashpoint Fuels**.

Information provided in this Whitepaper is generic in nature. For specific guidance on **LNG** as marine fuel, the local **ABS** office may be contacted. The list of **ABS** offices worldwide and contact numbers are in the last page of the Whitepaper.



Sustainability Whitepaper: LNG as Marine Fuel – Download PDF
Source: <https://ww2.eagle.org/en.html>

FROM GALE TO GREEN SHIPPING

by Sea Machines Robotics

ShippingLab has announced its support for a new project that will convert power from the Wind turbines at the **Port of Hvide Sande** to hydrogen for use in a fuel cell intended to power a vessel. The vessel powered by the fuel cell will be used to keep the Danish port entrance free of sand.

The companies involved in the project are **Hvide Sande Shipyard**, **Ballard Power Systems**, and **Odense Maritime Technology**, and are now investigating how present experience with hydrogen fuel cells can be applied onboard ships.

While many buses and trucks run on hydrogen now, the special conditions onboard a ship make very different requirements, said **Kristina F Juelsgaard**, Business Development Director at **Ballard Power Systems Europe**, a fuel cell specialist.

*"There is a huge difference between running a bus on hydrogen through town and bringing the same power system onboard a vessel affected by waves and current. There is the weather and the effect of water and salt, and at the same time the system must be able to handle both the propulsion of the vessel and increased workload when the vessel is lying still dredging. We have developed a good solution for this, and the cooperation in **ShippingLab** with the maritime experts is absolutely crucial to having the solutions tested in real life and finding out what actually works best at sea. Not all types of green fuel will be suitable for all kinds of vessels, so we are looking forward to having a good, shared experience with hydrogen," said **Kristina F Juelsgaard**.*

Carl Erik Kristensen, CEO of **Hvide Sande Shipyard** is pleased that a local need for a larger, stronger and more modern dredger can form the basis for a possibly unprecedented green project. The overall common project is zero emission. It will be found out if hydrogen is the right thing to put our faith in, but there is a general agreement that it has a large potential.

*"Hydrogen works very well in other connections, so if all goes well, it can also be used here. We are happy to be a part of this project because we as a shipyard want to be in the forefront of the development of new solutions, which can make shipping far more sustainable in the future. It will also please us very much if locally produced power can provide both sufficient hydrogen to the project and also send extra heat to district heating customers – and no matter what, we will learn a lot from the project," **Carl Erik Kristensen** said.*

In practice, the design of the new vessel will be based on a well-known design for a tug and supply vessel. But with hydrogen on board, it must also be considered how it can be stored and loaded safely as hydrogen is a flammable gas that

must be handled safely. Solutions must be found to ensure ventilation, possible fire extinction, monitoring, etc.

Consequently, the approval process and risk assessment will be quite comprehensible, and the project will – in cooperation with authorities – contribute to determining the requirements for use of hydrogen on board ships. But the parties involved in the project believe that all this can be solved.

The real criterion for the success of the project is if it can be made commercially viable. But the parties are optimistic, and at Odense Maritime Technology, Chief Commercial Officer Thomas Eefsen believes there is a large business potential in the project.

"A part of it is the local perspective of converting the power from the wind turbines to be applicable in the local shipping. At the same

*time, we see a large potential in the use of hydrogen in terms of reducing the climate impact, especially from operations close to shore," **Eefsen** said.*

*"Our interest in the project is to demonstrate and assess the potential of "green" hydrogen all the way from production, storage and bunkering and to application as fuel for propulsion. When we have, hopefully, succeeded in this, the use of hydrogen can be important in making the local shipping greener, and when shipping becomes more climate friendly, we hope to see a much larger amount of cargo transported on ships, thereby increasing the turnover in the shipping business. So there are many interesting aspects in this project," **Eefsen** continued.*

During the next two years, the business case will be developed, and the possibilities will be tested in practice, and **Kjeld Dittmann**, Chairman of **ShippingLab**, is happy that another interesting project has been added to the by now extensive cooperation in **ShippingLab**.

*"Shipping is facing large challenges in terms of converting operation from traditional fuels to more environmentally friendly solutions, and for short sea shipping, fuel cells seem to be a promising alternative. At the same time, this particular project is interesting to **ShippingLab** because it could be possible to create a local ecosystem around the hydrogen which will provide important knowledge about problems and solutions in relation to production, distribution and application of hydrogen as a means of propulsion for short sea shipping," **Kjeld Dittmann** said.*

Apart from the contribution from **ShippingLab**, the project is now seeking further funding.



Source: <https://vpoglobal.com/2020/06/12/from-gale-to-green-shipping/>





JOTUN AND KONGSBERG MARITIME JOIN FORCES IN DEVELOPING HULL-CLEANING ROBOT

by Vicky Viray Mendoza

Two industry leaders, **Jotun** and **Kongsberg Maritime**, partnered to develop a robotic hull-cleaning device called the **Jotun HullSkater** designed to be carried onboard trips, and deployed regularly to scrub early-stage fouling. The **HullSkater** removes bacteria and biofilm from the hull before **macro-fouling** (e.g., barnacles) can take hold. **Biofouling** is a major contributor to fuel consumption and operating cost, and thus removing it early and often using **HullSkater** will save shipowners and operators money. This is a new lean and green cleaning machine, the first solution developed for proactive **biofouling** control on ships. It has the potential to reduce fuel costs by about US\$3.6 million, and CO₂ emissions by 12.5% annually, on a typical vessel.

Kongsberg Maritime, the market's leading marine robotics manufacturer, is responsible for the industrialization and manufacturing of **HullSkater**, which will take place in Horten, Norway. **HullSkater** will be supported by extended performance and service level guarantees, with global technical support from Jotun and **Kongsberg Maritime**.

Since 2015, **Kongsberg Maritime** has contributed to the technology and know-how including development of secure remote-control, cloud-based data storage, battery technology, acoustics, and composite materials as Jotun's partner on the **HullSkater** project. **HullSkater** uses **Kongsberg's** global communications infrastructure and Kognifai cloud ecosystem that contribute towards eliminating significant performance losses caused by biofouling, and cancels out waste collection.

"We believe this is a landmark development for shipowners worldwide," said Geir Axel Oftedahl, Business Development Director, Jotun. "Vessels are often faced with unpredictable operations, erratic idling periods, and varied operational profiles that make selection of antifouling problematic, even for the best coatings. And once fouling grows, the impacts are immediate and damaging, with poor hull and propeller performance accounting for around one tenth of the world fleet's energy consumption. This can make a massive impact on any owner's bottom line."

The **HullSkater** can stay on the hull using magnetic wheels, each with electric motors for propulsion and steering. It has several cameras and sensors, supporting the operator with data for navigation, and documenting fouling of the ship's hull. Its motorized brush keeps the hull free from fouling without causing erosion or damage to the hull's coating. Inspection and a proactive cleaning of a hull would normally take 2-8 hours, depending on vessel size and hull condition. It can stay onboard as a "permanent member of the crew," and is connected to the operator's control center through an umbilical cord. It can be operated remotely anywhere in the world with 4G coverage.

Jotun developed a hull coating specifically intended for the use of the **HullSkater**. Proactive cleaning involves cleaning the hull regularly before hard growth burrows into the hull, and prior to changing geographical bio-environment. Proactive cleaning is less aggressive, causing less damage to both the hull's coating and the local environment, while helping the vessel reduce fuel

consumption. It also reduces the risk of transporting invasive species from one bio-environment to another.

With regard to pollutants and biosecurity risks, the traditional cleaning process leads to damage of the hull coating. There is also the issue of the effect on the environment since the cleaning process usually results in the removed debris sinking to the seabed, or left drifting in the water. Either way has a detrimental effect on local ecosystems.

Traditionally, teams of divers would do the hull cleaning, and this is still being done, but increasingly under scrutiny. Diving teams may be good at clearing the hull's biofouling but there are problems. It is labor intensive, costly, and subject to diver availability. Thus, many ports do not allow cleaning by divers. And, due to pollutants and biosecurity risks, many complainants are seeking more controls or complete bans. That makes adhering to IMO's biofouling guidelines more difficult. However, current solutions in the market do not offer the operational flexibility of "anywhere, anytime" cleaning and inspection.

In contrast, the HullSkater can inspect a 10,000m² hull in about 2 hours. As a permanent member of crew, it is always onboard, ready to clean all fouling at the hull, which if left to accumulate, causes increased drag, leading to extra fuel consumption and emissions to the atmosphere (GHG and CO₂).

Alfie Ong, VP, Jotun Marine Coatings, said, "Kongsberg Maritime's expertise in subsea robotics, remote

communications and data management, allied with their dedication to sustainability, made them a perfect fit to partner with us in the development of HullSkater. Together, we have devised a truly innovative solution, which we believe will revolutionize the shipping industry, moving away from traditional, reactive methods of managing fouling, to a proactive approach that will ensure vessels are always operating efficiently and sustainably."

"We are delighted to offer our 70 years of underwater technology experience as partner with Jotun to develop a solution that can help customers make their businesses safer, more sustainable and more efficient. Conserving our ocean environment and enabling sustainable marine operations is a priority for Kongsberg, and HullSkater offers a uniquely proactive way to solve the difficult problem of fouling growth," said Egil Haugsdal, President, Kongsberg Maritime.

Simply put, the HullSkater keeps a ship's hull clean to minimize performance loss with no debris or wastage, giving vessels a low environmental footprint, and operational flexibility.



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BMW JOINS UECC AND GOODSHIPPING BIOFUEL TRIALS ON RORO CAR CARRIERS FOR CO₂ REDUCTION

By Wärtsilä News

After having announced their three-month biofuel trial, leading short-sea shipowner **United European Car Carriers (UECC)** and the **GoodShipping** Program have now partnered with premium car manufacturer **BMW** Group to continue to test marine **Bio Fuel Oil (BFO)** on UECC's "roll on, roll off" (RORO) car carrying vessels. BMW Group joins UECC and the **GoodShipping** Program in the previously announced trial, where BFO is being tested on UECC's 140m, 2,080-vehicle carrier *M/V Autosky*.



By covering the fuel premium for a biofuel volume corresponding to **BMW** Group's freight that will be shipped on the *Autosky* during the trial period, **BMW** Group will be able to claim a CO₂ emission reduction of 80 to 90% for these shipments, totaling more than 400 tons of carbon.

This is a significant and important step towards achieving a carbon-neutral supply chain for **BMW**, and is the core aim of the **GoodShipping Program**, which enables cargo owners to reduce their environmental footprint.

BMW Group's participation in the project marks yet another significant step in the advancement of marine biofuel and climate friendly vehicle transportation, and contributes to enabling the continuation of biofuel deliveries to **UECC** after the trial period.

The first volume of biofuel was delivered to *M/V Autosky* on 16-March-2020 in the **Port of Rotterdam**. The trial will see subsequent further refueling operations between March and July 2020. *M/V Autosky* is currently testing BFO on the route between Zeebrugge, Belgium and Santander, Spain.

The BFO – based on cooking oil – being used for this trial was supplied by the leading biofuel company **GoodFuels**. The marine biofuel 'drops in' to normal fuel tanks is virtually sulfur oxide (SO_x) free and delivers 80% to 90% well-to-exhaust CO₂ reduction versus fossil equivalents. The joint trial proves that the means to reduce the carbon footprint of transporting goods and vehicles around the world already exist on the market and that second-generation

advanced biofuels can be scaled to meet this demand.

With this scalability, marine biofuel effectively allows shipowners and operators to comply with both new legislation around sulphur content for marine fuels, as well as future regulations on carbon reduction by 2030 and 2050. Thus, the announcement marks an important milestone towards the decarbonization of ocean freight.

Sea transportation and logistics play an important role for the **BMW** Group, which has production sites and vehicle distribution processes worldwide. When considering the carbon impact across the entire value chain of a car, the participation in this three-month trial is a meaningful and immediate means to reduce the CO₂ footprint of **BMW** Group's transport logistics processes.

Daniel Gent, Energy and Sustainability Manager, **UECC**, said: "At **UECC**, we want to support our customers and enable them to make proactive, conscious choices about their cargo transportation. **BMW** Group's participation to continue our trial on our RORO vessel *M/V Autosky* should therefore signal to the automotive sector that the means to decarbonize are readily available and that our vessels are equipped to meet this most important of challenges for the shipping industry."

Anniek Sluis, Growth Captain, The **GoodShipping** Program, added: "We are delighted to have **BMW** Group join us for continuing this pioneering trial of marine biofuel within the RORO segment. Transportation logistics have a huge carbon impact, so the leadership shown by **BMW** Group to proactively take steps to decarbonize – and recognize that solutions are available – should act as a call for others in the sector to join us on this journey."

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

The calculation of the original CO₂ footprint and the expected Scope Three emission reductions for **BMW** Group were made in line with the GLEC Framework, a universal method for calculating logistics emissions developed by the non-profit Smart Freight Centre. In the following months, further options for continuing marine biofuel uptake within the RORO segment will be pursued.

UECC is a leading short-sea operator and logistics provider for the transportation of cars, vans and high & heavy cargo in Europe. UECC is owned by Nippon Yusen Kabushiki Kaisha (NYK), one of the world's largest shipping companies, and by Wallenius Lines of Stockholm, Sweden's foremost shipping enterprise.

The **GoodShipping** Program is the first sustainable shipping initiative in the world that offers companies – worldwide and of all sizes – the opportunity to make container shipments less polluting by offering a way to substitute fossil fuels with clean, climate-neutral and truly sustainable fuels. ⚓



FIRST CREWLESS MARITIME AUTONOMOUS SURFACE SHIP TO COMMENCE TRIALS IN 2021

by SAFETY4SEA

Many companies are taking part in **Designing the Future of Full Autonomous Ship Project (DFFAS Project)**, which aims to realize a domestic coastal shipping business supported by crewless maritime autonomous surface ships.

Accordingly, the project will move towards the standardization of technology and the establishment of systems and infrastructure as well and plans to carry out a long-distance demonstration trial within 2021 in congested waters using a domestic coastal containership to realize the world's first crewless maritime autonomous surface ship.

Within the scope of creating the future of crewless maritime autonomous surface, the project includes open collaboration among 22 domestic companies that are responsible for creating the future of the Japanese shipping industry, cooperating together with various domestic and foreign experts.

Also, development and demonstration of comprehensive system functions required for crewless maritime autonomous surface ships including remote operation in case of an

emergency, automation of berthing/unberthing, operations in accordance with the approved route plan and action plan, and the monitoring of support functions from the fleet operation center (including ship-shore data communication system).

The companies participating in the project are **Japan Marine Science Inc** as the **Project Leader**; MTI Co Ltd; IKOUS Corporation; BEMAC Corp; SKY Perfect JSAT Corp; TOKYO KEIKI INC; Nippon Telegraph and Telephone Corp; NTT DOCOMO INC, Japan Radio Co Ltd; NYK; FURUNO ELECTRIC CO LTD; EIZO Corp; Weathernews Inc; NTT Communications Corp; Japan Hamworthy Co Ltd; Japan Marine United Corp; Nabtesco Corp; Nippon Shipping Co Ltd; Pluszero Inc; Honda Heavy Industries Co Ltd; Yokogawa Denshikiki Co Ltd; and Mitsubishi Research Institute Inc.



SOURCE: <https://safety4sea.com/>

first-crewless-maritime-autonomous-surface-ship-to-commence-trials-in-2021

A SHIP'S HYDROSTATIC CURVES: PROJECTIONS OF STABILITY AND TRIM THRESHOLD OF A PROVEN SHIP DESIGN

NAVAL ARCHITECTURE AND MARINE ENGINEERING SERIES 1

by Capt Tomas D Baino PN (Ret)

A Naval Architect derives the hydrostatic curves of a ship from the lines drawing designs. The hydrostatic curve is a calculation of the underwater volume of the hull that supports buoyancy so the ship can float freely on the surface of the water.

The immersed underwater volume of the hull of the ship displaces a volume of water in cubic meters and the said displaced volume of water creates a buoyant force that pushes the underwater volume of the hull to float in a stable equilibrium.

The hydrostatic curve is a tool of ship officers to help with stability and trim management, especially stability prediction before loading, and identifying location and weight of cargoes pre-boarding. Cargo handling affects projections of stability and trim of the ship for the following reasons:

- ◆ Weight added or deducted from the ship.
- ◆ Location of the cargoes must be symmetrical for balance and to have a counter weight.
- ◆ Height of the location of cargoes from the keel
- ◆ Cargo weight movement, from one point to another, either in transverse or longitudinal position.
- ◆ Others.

The total ship characteristic, motion behavior, and ship response to internal and external forces of nature are manifested, and the effects can be predicted in the hydrostatic curves.

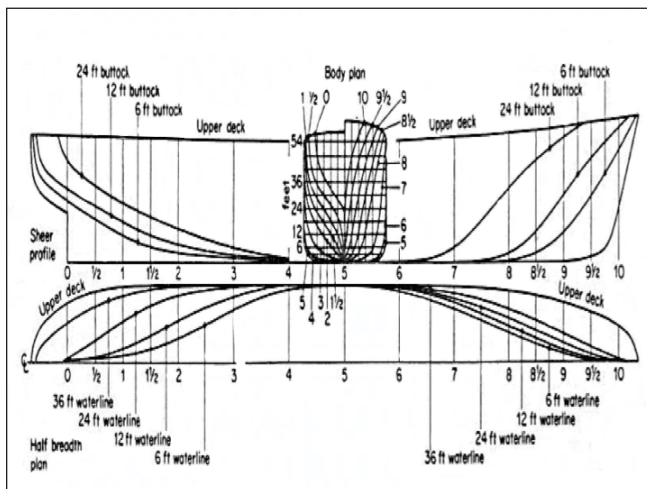


Fig. 1 Examples of Lines Drawing of a Ship's Hull

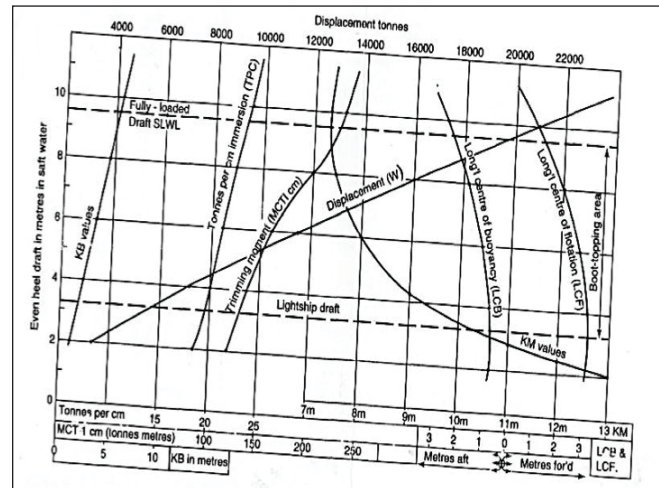


Fig. 2 Examples of The Hydrostatic Curves

The Characteristics of a vessel can be interpreted; while stability and trim of the Hull can be predicted by the following parameters.

- 1. Displacement (D)** – the volume of water occupied and displaced by the underwater hull envelope. Said displaced water has an equivalent force called buoyancy that pushes the hull of the ship upward. Both volume and density are presumed at 30oC more or less as explained in the theory and the principles of Archimedes. The principles state that any solid matter immersed in liquid is buoyed by a force of the immersed solid upward that then causes the solid matter to float in the liquid.
- 2. Center of Buoyancy (B)** – the centroid of the underwater volume of the ship immersed in the water and the point through which the total force of buoyancy can be assumed to concentrate. This is defined as:
- 3. Center of Gravity (G)** – the point located vertically and horizontally through which the total weight of the ship is assumed to concentrate. This is defined as:
- 4. Longitudinal Center of Floatation (LCF)** – the centroid of the area of the waterplane through which the center of floatation is concentrated.

5. **Tons per Centimeter (TPC)** of a waterplane – the weight required to effect change in the mean draft of the hull at the waterline by sinkage of 1cm.

$$\text{Area of waterplane (A)} \times 1/100 \times 1.025$$

Where A is the area of waterplane.

6. **Moment to Trim per 1 Cm (MCTC)** – the expression describes the moment that needs to be exerted on a given ship to change trim by 1cm. This is shown in the formula:

$$\text{MCT 1 cm} = \frac{7(\text{TPC})^2 \text{ tonnes meters}}{B}$$

7. **Metacentric Height (GM)** – the predicted location of GM is calculated through inclining experiment of a newly constructed or outfitted vessel in relation to metacenter KM or height of the location of M from the keel as shown in Fig. 3 below. The location of “G” results from inclining and the experiments must be always below “M”.

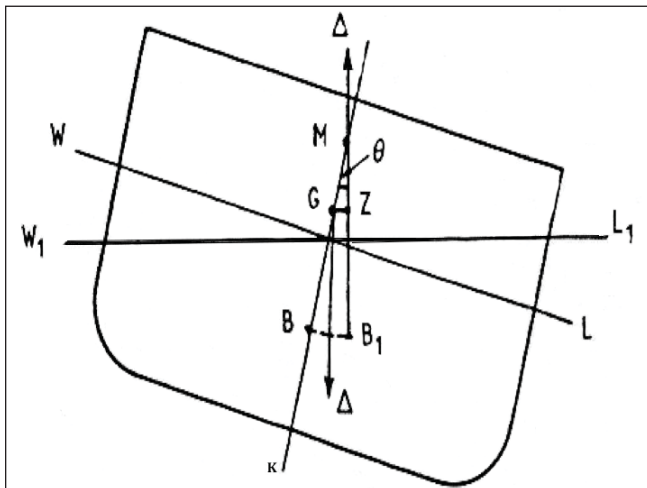


Fig. 3 Diagram of Metacenter

The analogy in ship stability is demonstrated in the diagram showing how the vessel behaves.

Conclusions

The calculation of trim and stability threshold of a vessel of the Navy, Coast Guard, Merchant Marine Ship, and others depend on the configuration of the lines drawing and hydrostatic curves.

The calculations made by the Naval Architects and Shipbuilders are just based on assumptions. The forces of nature interfering with the vessels at sea vary and are difficult to predict as weather and climate frequently change.

A “PROVEN DESIGN VESSEL” is a vessel that has been tested through the forces of nature at sea in various mission situations for long years of operational experience, that only the wisdom of our great GOD could provide us with evidence through the existence of several tested vessels built of the same class, having been proven seaworthy by the forces of nature. In this scenario, GOD is our mighty Naval Architect.



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WHAT IS THE BULBOUS BOW IS FOR?

by SAFETY4SEA

Ships are extraordinary designs, which even with just their size can amaze. But there is one specific element of a ship's design that stands out, and what is more, not many know what it does exactly. We are talking of course, about the **bulbous bow**. The **bulbous bow** is that strange protrusion at the ship's forward end, sticking out below the water. It serves a very important role for the ship, and in this article we are going to analyze it.

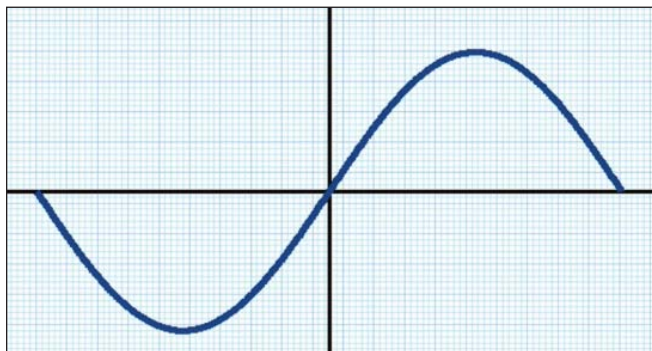


What is a bulbous bow? Without a doubt, at some point of your life, you have made the question, while looking at a ship: What is this metal in the front? Well, it is called the **bulbous bow**. The name origin is simple, as this structure generally resembles the shape of the bulb, and is always placed at the bow of the ship. Hence, **bulbous bow**, and it serves a very specific purpose.

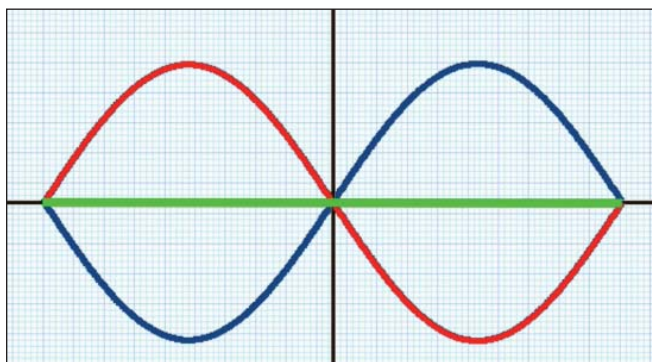
How does a bulbous bow work? First of all, it is important to remember that **bulbous bows** are all designed specifically for a certain ship, in which they are fitted. To understand its operations, let's consider a vessel without a bulb fitted: the Titanic. As the Titanic moves through the water, a pressure wave builds up at the front of the ship. This wave increases the height of the water, with the ship pushing it ahead. But that water has to go somewhere. What happens is, the water flows back down the side of the hull, and will keep flowing back down, creating a wave all the way along the hull. Of course, having a constant wave on the side of the hull is an issue, as it will increase the drag of the vessel. This happens as the Titanic is now in contact with a larger surface area of water, which is coming higher up the hull. The result? The ship is moving at an inconsistent speed, as it is going up

and down, as well as along. In addition, the inconsistent speed increases fuel consumption.

We need to find a way to mitigate this wave. This is where some math comes in. There is a certain mathematical model that explains the solution. The following graph resembles the move of the wave in a ship without a bulbous bow.



If we add another curve on the same graph, that is 180 degrees out of phase with the initial curve, they will actually cancel each other out.



If this model is applied on a ship, it could mitigate the initial wave that is causing all that drag. The addition of a bulb enables this model on shipping, as it will affect the way the water moves around the hull. Specifically, with the bulb the waves generated by the hull, and the waves generated by the **bulbous bow**, will cancel each other out, basically flattening out the waterline. What are the new results? Less drag, and less fuel consumption.

Designing the right bulbous bow. According to a 1978 paper by Alfred M Kracht, one of the most comprehensive studies on bulbous bows, a Computational Fluids Design (CFD) analysis is crucial. Such an analysis will optimize the bulb and ensure it is built in good shape.

However, the minimal scope when designing a bulbous bow should include at least two design cases: (1) Base case – An unmodified hull without the **bulbous bow**; (2) Addition of the bulbous bow. Both of them are crucial, as without the base case, the CFD may provide incorrect results, and the bulb will not actually help. It may even add to the fuel consumption.

Design of Bulbous Bows By Alfred M Kracht – Download PDF

The limits of bulbous bows. As we said above, **bulbous bows** are specifically designed for a certain ship,

and they only work when they are applied correctly. But the speed of the vessel also plays a key role in the efficiency of the bulb. Namely, the wavelength of the two wave systems we mentioned earlier, changes depending on the vessels' speed. What is important to keep in mind is that those two waves only line up at one speed. In fact, a difference of just 2 knots from the ship's design speed could harm the efficiency of the bulb.

For this reason, bulbs are recommended for ships that will spend the majority of their entire life at one specific speed. This is an issue with many extensions. For example, if fuel prices increase, slow steaming may become attractive. But in that case, it is possible that the bulb will not help as much.

However, despite these limitations, many ships that have **bulbous bows** will experience major fuel savings. But, this will only happen if the bulb is installed correctly. Investing in engineering is key if you are going to use a bulb.

Another area of concern is that **bulbous bows** are designed assuming calm water conditions. But such conditions are rare in the ocean.

However, the industry has discovered that for the majority of storm conditions, the bulb can still work properly. The limitation exists when especially large waves or small vessels come into the picture. In these cases, the bulb could not be able to create a steady wave system.

Therefore, it can be understood that fast ships, with low block coefficient, are not the best candidates for bulbous bows. As a matter of fact, they can drop in performance very quickly, even with normal sea state.

On the other hand, big, slow ships, with a high block coefficient, are good candidates. So, what ships are fit to be equipped with **bulbous bows**? These could be large freighters that are operating on a fixed schedule, such as: container ships, large bulk cargo carriers, oil carriers, and cruise ships as well.

Getting a 'nose job'. Much like people, ships can also get a nose job, and much like people, they do it for improvement. In the ship's case, improvement relates to fuel efficiency.

As we said, slow steaming can sometimes be an attractive choice, but a different speed could cancel out the efficiency of the bulbous bow. Enter 'nose jobs'. A 'nose job' for ships means the replacement of the bulbs to ensure better performance in slow steaming environments. A new bulbous bow could provide better fuel savings, while they could also contribute to **CO2 emissions reduction**.

Maersk is the leader in ship 'nose jobs', having carried out about 12. This operation has gained for the company fuel savings of around 5%. What is more, **NYK Group** has achieved 23% **reduction of CO2 emissions** over six months.

As anyone can understand, a properly researched and installed bulbous bow can enhance the fuel efficiency for ships. But the key word here is properly. If the study of the bulb provides wrong results, or if there is a mistake during installation, then the bulbous bow will be unable to provide its benefits.



Source: https://safety4sea.com/cm-do-you-know-what-the-bulbous-bow-is-/?utm_source=noonreport&utm_medium=email&utm_campaign=lookout

PPA MANILA SOUTH HARBOR RETROFITS TERMINAL INTO COVID-19 TREATMENT FACILITY

by Vicky Viray Mendoza

The Philippine Ports Authority (PPA) opened the South Harbor Coronavirus Disease 2019 (COVID-19) medical treatment facility on April 21, earlier than expected.

PPA fast-tracked the completion of the facility in its bid to boost the medical treatment capacity of the National Capital Region as well as its nearby cities and provinces, which has been lacking due to the increasing number of COVID-19 infections.

PPA General Manager Jay Daniel R. Santiago said the South Harbor medical facility is expected to help address this medical capacity shortage. He said the round-the-clock construction had been ongoing since April 13 which sped-up completion.

“Almost all hospitals, public and private, are already saturated, which makes the early completion of the facility all the more important in order to plug the holes that these hospitals can no longer accommodate,” GM Santiago stressed.

The treatment facility is inside Pier 15, set-up at the Eva Macapagal Super Terminal

and houses 211 cubicles divided into different levels of infections: mild, advance, and severe. The facility has 4 color zones: green, orange, violet, and blue –where green is for mild symptomatic COVID-19 patients, and blue is for more advanced cases of COVID-19. The facility is also fitted with airtight doors to prevent aerosols containing COVID-19 virus from spreading, aside from the provision of equipment needed to treat COVID-19 patients.

The Department of Health personnel as well as the health and safety personnel of the Philippine Coast Guard will render the necessary medical treatment to patients being brought to the facility while PPA will provide the additional support personnel that will be needed to run it.

“This is one of the many contributions of the Department of Transportation (DOTr), PPA, PCG, and the Maritime Industry Authority (MARINA) to help the country in its fight

against the COVID-19 pandemic boosted by the P100 million funding support from the Lopez Group of Companies to complete and operationalize the treatment facility,” GM Santiago said.

With the number of COVID-19 patients continuing to rise, the PPA together with the DOTr and the PCG, began retrofitting the South Harbor passenger terminal building into a COVID-19 medical treatment facility.

Several top government officials led by Senator Bong Go, House Speaker Allan Peter Cayetano, Transportation Secretary

Arthur Tugade, Health Secretary Francisco Duque, Presidential Peace Adviser and Chief Implementer of the COVID-19 measures Sec. Carlito Galvez Jr, Philippine Coast Guard Commandant Joel Garcia, BCDA president and CEO Vivencio Dizon, and PPA General Manager Jay Daniel Santiago inspected the Terminal.

“This will go hand-in-hand with the Bayanihan Quarantine vessel, which has already started to accept Overseas Filipino

Workers (OFWs) and returning seafarers,” GM Santiago explained. The Lopez-funded medical facility is meant to house returning OFWs and seafarers, so they can serve their mandatory 14-day quarantine before returning to their homes. The facility will operate alongside 2 quarantine ships from 2GO, which were set up by 2GO to accommodate the repatriated workers.

The PPA has directed all its Port Management Offices (PMO) to install additional hand-washing stations in all PPA ports as an added line of defense against the continuing threat of the deadly virus. PMOs are also ordered to properly impose entry protocols and physical distancing to all people in any port facility to further prevent COVID-19 infection.

“The entire DOTr family led by Sec Arthur P Tugade continues to look for ways to help the country in flattening the curve and defeating the dreaded disease. This is DOTr Bayanihan at its finest,” GM Santiago said.





FUTURISTIC PORTS: PILOT SCHEMES EXPLORE USE OF 5G AND HYDROGEN FUEL TO DEVELOP PORTS OF TOMORROW

by Institute of Export and International Trade

The ports of tomorrow could be connected through 5G networks and fuelled by hydrogen if two new pilot schemes in Europe fulfill their promise. Research into the potential uses of 5G for connecting ports with transport and logistics industries is underway in Antwerp. At the same time, a new EU-funded “H2ports” project –which increases a terminal’s energy efficiency by using hydrogen as fuel– will arrive in Valencia by early 2021.

5G in Antwerp. The ‘5G Blueprint’ project brings port authorities, businesses, academics and government departments for transport and infrastructure in Antwerp together. They will investigate “*how transport and logistics can be made more efficient with the aid of remote control (tele-operation) technology,*” reports **World Cargo News**.

The research will look at the exchange of real-time data between vehicles, terminals and head offices using telecommunication technologies including 5G. The exploratory work could result in ports or head offices being able to remotely steer and support vehicles and vessels on the road or out at sea, with the technologies also used across borders.

Hydrogen power. H2Ports –which receives funding from the EU, Hydrogen Europe and Hydrogen Europe research– is looking at ways in which hydrogen power and fuel cell

technologies can be used to increase energy efficiency and decarbonization at port terminals.

According to the **Fuel Cell & Hydrogen Energy Association**, a fuel cell is “a device that generates electricity through an electrochemical reaction, not combustion” –in effect, it uses hydrogen and oxygen to generate electricity, heat and water. The technology is viewed as a potential alternative to fossil fuels in efforts to reduce emissions amid concerns about climate change.

H2Ports is piloting its use in port handling equipment in Europe.

Valencia pilot. H2Ports will pilot a new “Fuel Cell Reach Stacker” at MSC Terminal Valencia –one of three container terminals operating in the Port of Valencia.

Reach stackers are vehicles used for handling intermodal cargo containers in small or medium-sized ports. According to **H2Ports**, the new Reach Stacker fuel cell will be able to support “*continuous operations while providing zero emissions and achieving comparable full shift performance to a conventional Reach Stacker powered with a diesel engine.*”



Source: <https://www.export.org.uk/news/513939/Futuristic-ports-pilot-schemes-explore-use-of-5G-and-hydrogen-fuel-to-develop-ports-of-tomorrow.htm>



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AMOSUP - PTGWO - ITF



Welcome Aboard!



Courses Offered:

BSMT - Bachelor of Science in Marine Transportation

BSMarE - Bachelor of Science in Marine Engineering

BSMTE - Bachelor of Science in Marine Transportation and Engineering

Courses Offered:

Master of Science in Marine Transportation
(Marine Superintendent)

Master of Science in Marine Engineering
(Technical Superintendent)

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.

Testing Assessment Center of TESDA



Full Mission Bridge Simulator



Full Mission Engine Simulator



AMOSUP Seamen's Training Center



Full Mission Bridge Simulator on Motion Platform



Japanese Compact Ship Handling Simulator

Our Curricula

ONE STANDARD EVERYWHERE, EVERY TIME:



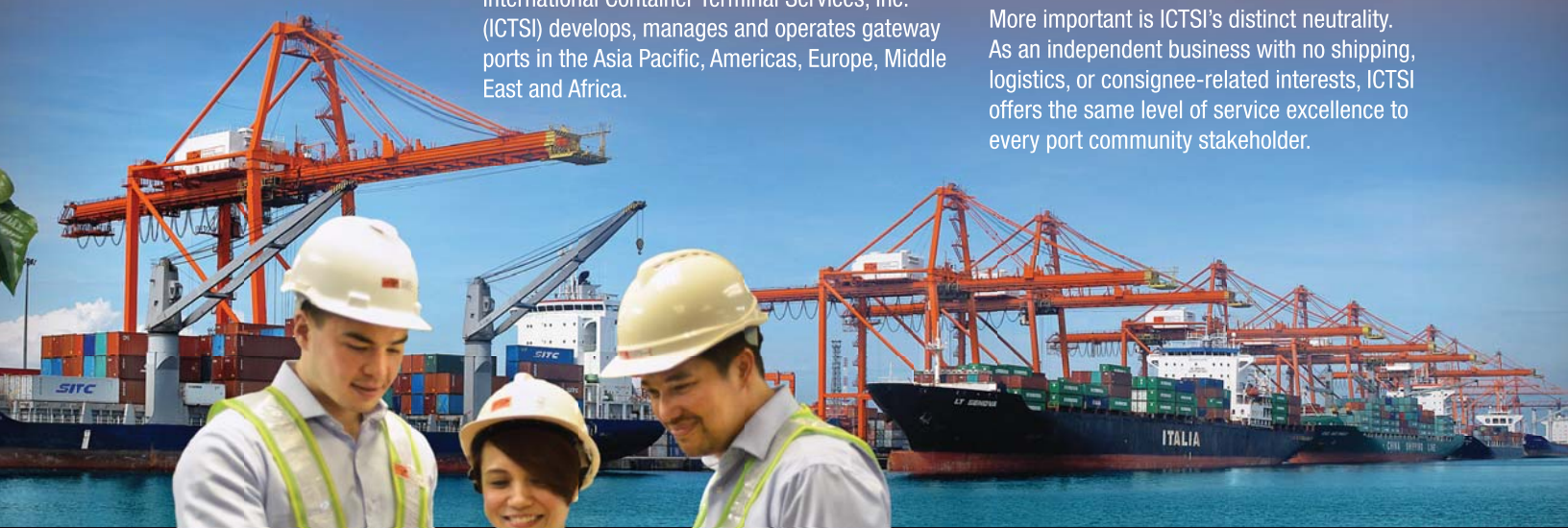
EXCELLENCE UNCONTAINED.

Established in 1988 in Manila, Philippines, International Container Terminal Services, Inc. (ICTSI) develops, manages and operates gateway ports in the Asia Pacific, Americas, Europe, Middle East and Africa.

Starting with the privatization of the Manila International Container Terminal, ICTSI's current diverse portfolio includes capacity expansion projects and greenfield investments in developed and emerging markets.

ICTSI is an acclaimed private sector partner of governments requiring high-performing, profitable ports.

More important is ICTSI's distinct neutrality. As an independent business with no shipping, logistics, or consignee-related interests, ICTSI offers the same level of service excellence to every port community stakeholder.



EXCELLENCE UNCONTAINED

HEAD OFFICE

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