MARITIME REVIEW

A Publication of The Maritime League

Issue No. 20-1 Jan-Feb 2020

FAREWELL TO PEACE?

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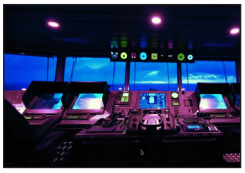
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About the Cover:
The absence of peace would create misery, destruction and instability, as witnessed during the numerous human conflicts worldwide in the 20th century.

MARITIME EVENTS CALENDAR

JANUARY '20

10-12	NAFE WINTER CONFERENCE 2019(LA JOLLA MARRIOTT, SAN DIEGO, CA, USA)
16-19	KREUZFAHRT & SCHIFFSREISEN (MESSE STUTTGART, STUTTGART, GERMANY)
19	NEWCASTLES LARGEST HOLIDAY & CRUISE EXPO (NEX, NEWCASTLE, AUSTRALIA)
24	**MARITIME FORUM #153 (DEPARTMENT OF FOREIGN AFFAIRS (DFA))**
27-28	PORTS IN INDIA (ITC MARATHA, A LUXURY COLLECTION HOTEL, MUMBAI, MUMBAI, INDIA)
29-30	SHIP RECYCLING CONGRESS (AMSTERDAM, NETHERLANDS)
29-1 FEB	PALM BEACH MARINE FLEA MARKET AND SEAFOOD FESTIVAL (SOUTH FLORIDA FAIR, WEST PALM BEACH, USA)
29-3 FEB	K-LOVE CRUISE (MIAMI, FLORIDA, USA)

FEBRUARY '20

4	EUROPEAN DYNAMIC POSITIONING CONFERENCE (NOVOTEL LONDON WEST HOTEL, LONDON, UK)
20	**MARITIME FORUM #154 (CEBU PORTS AUTHORITY, CEBU)**
25-26	GREENTECH IN SHIPPING GLOBAL FORUM (HAMBURG, GERMANY)
29	PALM BEACH MARINE FLEA MARKET AND SEAFOOD FESTIVAL (SOUTH FLORIDA FAIR, WEST PALM BEACH, USA)

MARCH '20

4-6	SHIPPING, MARINE & PORTS WORLD EXPO (BOMBAY EXHIBITION CENTRE (BEC), MUMBAI, INDIA)
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11-12	ARCTIC SHIPPING SUMMIT (MONTREAL, CANADA)
11-13	IMABARI MARITIME FAIR (TEXPORT IMABARI, IMABARI, JAPAN)
16-18	DOHA INTERNATIONAL MARITIME DEFENCE EXHIBITION & CONFERENCE (QATAR NATIONAL CONVENTION CENTRE, AR-RAYYAN, QATAR)
18-19	LOGISTIC SUMMIT & EXPO (CENTRO CITIBANAMEX, MEXICO CITY, MEXICO)
18-20	ASIA PACIFIC MARITIME (SANDS EXPO AND CONVENTION CENTRE, SINGAPORE)
20	**MARITIME FORUM #155 (MARITIME ACADEMY OF ASIA AND THE PACIFIC, MARIVELES, BATAAN)**
20-22	OPEN SHIPPING DAYS (WAAGNATIE EXPO & EVENTS, ANTWERP, BELGIUM)
27-28	FERRY SHIPPING SUMMIT (DOUBLETREE BY HILTON AMSTERDAM CENTRAAL STATION, AMSTERDAM, NETHERLANDS)
30	ANNUAL INTERNATIONAL SHIPPING FORUM (NEW YORK, USA)
31-2 APR	INTERNATIONAL SHIPPING COMMUNITY CONFERENCE (HILTON STAMFORD HOTEL & EXECUTIVE MEETING CENTER, STAMFORD, USA)

APRIL '20

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15-16	INTERNATIONAL GREEN SHIPPING AND TECHNOLOGY SUMMIT (PALAIO FALIRO, GREECE)
16-17	CHEMLOGISTICS INDIA (BOMBAY EXHIBITION CENTRE (BEC), MUMBAI, INDIA)
16-18	DOHA INTERNATIONAL MARITIME DEFENCE EXHIBITION & CONFERENCE (AR-RAYYAN, QATAR)
17	**MARITIME FORUM #156 (MARITIME INDUSTRY AUTHORITY, BONIFACIO DRIVE, PORT AREA, MANILA)**
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23-24	GLOBAL PORTS FORUM (OCBC CENTRE, SINGAPORE)

MAY '20

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13-14	DANISH MARITIME FAIR (BELLA CENTER, COPENHAGEN, DENMARK)
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24-26	BLACK SEA PORTS AND SHIPPING (THE MARMARA TAKSIM, BEYOĞLU BELEDIYESI, TURKEY)

JUNE '20

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2-4	FUTURE SURFACE FLEET (PORTSMOUTH MARRIOTT HOTEL, PORTSMOUTH, UK)
16-18	**7TH PHILMARINE 2020 / SHIPUILD PHILIPPINES 2020 / OFFSHORE PHILIPPINES 2020 (SMX CONVENTION CENTER MANILA, PASAY CITY)**
19	**MARITIME FORUM #158 (PHILIPPINE COAST GUARD, PORT AREA, MANILA)**
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25-26	INTERNATIONAL CONFERENCE ON SMART & GREEN TECHNOLOGY FOR SHIPPING AND MARITIME INDUSTRIES (JURYS INN GLASGOW, GLASGOW, UK)

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AUGUST '20

14	**MARITIME FORUM #160 (PHILIPPINE PORTS AUTHORITY, BONIFACIO DRIVE, PORT AREA, MANILA)**

SEPTEMBER '20

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)
23-25	CHINA (SHENZHEN) INTERNATIONAL LOGISTICS SUPPLY CHAIN FAIR (SHENZHEN, CHINA)
25	**MARITIME FORUM #161 (NATIONAL DEFENSE COLLEGE OF THE PHILIPPINES, CAMP GEN. EMILIO AGUINALDO, QUEZON CITY)**
29-30	SHIPPING TECHNICS LOGISTICS KALKAR (MESSE KALKAR, KALKAR, GERMANY)

OCTOBER '20

13-14	AFRICAN PORTS AND RAIL EVOLUTION (DURBAN ICC, DURBAN, SOUTH AFRICA)
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FAREWELL TO PEACE?

by VAdm Emilio C Marayag Jr AFP (Ret)

With high spirit the nation greeted the year 2020 with fresh hope that life would be much better and that the world would be more peaceful than the past year. That hope did not last long as renewed human conflict in the Middle East ensued three days after New Year with the killing of a top Iranian general accused of planning and committing terroristic acts. The Americans conducted the drone missile attack outside an Iraqi airport. Similarly, a simmering conflict hovers in South China Sea with several countries posturing to protect their own maritime interest from further exploitation by China.

While situated thousand of miles apart, these two incidents could disrupt the world's economic activities. The Middle East countries produce most of the world's energy supply while the South China Sea provides an expeditious and safe route to a significant number of the world's merchant fleet engaged in trade. The South China Sea also contains large quantities of fishery and energy resources that littoral states aim to exploit based on either historical or legal claim.

Advocates have defined peace as the absence of violence and the absence of fear of violence. These advocates advance de-escalation, disarmament and cessation of human conflict through the conduct and publication of peace studies. They believe that economic interdependence where everyone benefits makes war unnecessary and pointless, and to attain such interdependence no single nation or group of nations should exercise dominance that it can "lay down the law to the rest" of the less powerful states. The 2017 Global Peace Index classified **Iceland** as the most peaceful country while it named **Syria** as the least peaceful.

Some historians argue that in the past 3,400 years only 268 years, roughly 8% of total, are considered peaceful times when there were no active conflicts (war) that claimed more than 1,000 lives. In the 20th century alone approximately 108 million people died, representing 10-20% of fatalities caused by war in the entire history of mankind. At the beginning of 2003, there were 30 wars worldwide mostly in Africa and Asia including China, India, Indonesia, and the Philippines.

Other writers contend that there were also long periods of peace during Pax Romana (200 years), Pax Khazarica in southern Turkey (250 years), Pax Britannica (99 years) and Pax Americana/ Pax Europaea/Pax Atomica (1950s onwards). When the USSR crumbled in 1990s, ending the bipolar inclinations between the East and the West, many small wars emerged and continue to come out. The world peace appears to be holding but the technological advances in weaponry could threaten specific target population as well as the whole human race.

On the domestic front, the continuing peace process remains the principal mechanism to lessen the effects of local wars. The recent creation of the Bangsamoro Autonomous Region in Muslim Mindanao (BARMM) hopes to establish a peaceful community that would uplift the lives of the population through efficient and effective governance of their chosen leaders. The BARMM replaced the Autonomous Region of Muslim Mindanao (ARMM) established 23 years earlier.

The Philippine Government's offer to the local communist group to create a lasting peaceful solution to the latter's satisfaction is another matter. Whereas the Muslims sought self-governance within defined territorial boundaries, the communist groups have no clear goals of their own. The US government even tags them as terrorists, along with other international terrorist organizations, for their violent actions against individuals and communities. Numerous literature have dissected communist insurgency and made it very clear that a communist movement's ultimate aim is to overthrow a popularly elected government and replace it with a one-party system. Mao Zedong's protracted war strategy remains the blueprint of any communist insurgency. China's more than half-century maritime campaign in South China Sea and its new belt road initiative are clear examples of how that strategy works.

The latest peace making approach is to involve the local government units for better coordination, and the neutralization of the armed partisans is highly commendable. In one forum, a retired senior officer wondered why the reconstituted communist movement, with lesser numerical strength than it was 30 years ago, has not been wiped out after 50 years in existence making the country one of the longest insurgency-stricken nations. He did not receive a clear answer except that "military solution alone will not eradicate the communists."

Indeed, the defense forces have limited capability to address the basic causes of insurgency –poverty, injustice, disease, and ignorance– because their mandate is to confront the armed opponent. The executive agencies, both local and national, should develop and implement plans to address these roots of insurgency including the occurrence of graft and corruption in their rank and file. Similarly, the courts must reengineer their systems and procedures to hasten the delivery of justice to address the frustrations and grievances of the affected parties, and live up to the expectations of the general public.

The armed forces, on the other hand, should examine their fighting power in relation to the adversary with emphasis on **conceptual processes** (principles of war, doctrines, and thinking processes), **leadership** (organizational, operational, and people), and **motivation** (common good, love of country, self-actualization, and compensation). When comparing the physical resources of the armed forces with that of the communists, the former shows far more superior equipment and manpower, better sustainability system, and much higher operational readiness profile than the local communists and their supporters.

The Philippines is one of the first republics in Asia, and many nations have witnessed the political upheavals it went through in times of war and peace. But its economic development is not as impressive as its neighboring nations precisely due to peace and order concerns. Peace studies find that peace and development are directly correlated. **UN report Transforming Our World: 2030 Agenda for Sustainable Development** states, *"There can be no sustainable development without peace, and no peace without sustainable development."* The sooner every Filipino understands and appreciates this relationship, the better for the nation. Failing to do so could mean farewell to peace, progress, and stability. ⚓

WE NEED TO ADDRESS FOREST FIRES

by Commo Carlos L Agustin AFP (Ret)

Deforestation is a serious challenge for the whole world

Forests cover about 30% of the planet's land mass but humans are cutting them down, clearing these essential habitats on a massive scale. Intentional clearing of forests is one thing (not recommended, for sure) but deforestation likewise includes a major problem whose causes are mostly natural and accidental.

Wild fires is a major issue

When we talk of forest fires, the case of the Amazon rainforest is the top issue. Simply put, as Justine Calma on The Verge (28-August-2019) stated, *"Everyone on the planet benefits from the health of the Amazon. As its trees take in carbon dioxide and release oxygen, the Amazon plays a huge role in pulling planet-warming greenhouse gases out of the atmosphere. Without it, climate change speeds up. But as the world's largest rainforest is eaten away by logging, mining, and agribusiness, it may not be able to provide the same buffer."*

Calma said this because that month more than 80,000 fires raged in the Amazon Basin.

Furthermore, the Amazon is crucial to the world's climatic condition. Calma explains it this way: "Scientists warn that the rainforest could reach a tipping point, turning into something more like a savanna when it can no longer sustain itself as a rainforest. That would mean it's not able to soak up nearly as much carbon as it does now. And if the Amazon as we know it dies, it wouldn't go quietly. As the trees and plants perish, they would release billions of tons of carbon that has been stored for decades — making it nearly impossible to escape a climate catastrophe."

Two neighboring countries south of the Philippines have seen lots of problems with nature in the past several years. Directly south is Indonesia, that had last year and a few other years before seen the destruction of hundreds of thousands of hectares of forests in Borneo, some caused by intentional burning to clear them for developing palm and rubber tree plantations, often getting out of hand and destroying jungles and virgin forests, together with some put it: wildlife.

I recall it similarly happening in Sumatra after attending a meeting in the port city of Medan (largest city in Sumatra) in 1997. I remember one week after we flew out of Medan, the exact same flight we took crashed because its engines conked out due to oxygen depletion of the atmosphere it traversed as a result of the forest fire. The smoke affected areas as far as Singapore. The one from Borneo in 2019 slightly affected some parts of the Central Visayas.

Indonesia annually encounters serious fire in its forests in Sulawesi, Borneo and Sumatra. The September 2019 fire actually burned more area (close to 900,000 ha) than the whole year of 2018 (530,000 ha) but there was more damage in 2015, when trees in 2.8 million ha of forest were burned.

Indonesia's southern neighbor has encountered more problems these past years, and the current one is perhaps the worst ever, as CNN reported a senior firefighter describing it on 5-January.

The 6-January-2020 CNN report further added:

> *About 30 kilometers (19 miles) south, blood-red skies loomed over the town of Eden. There, hundreds of residents were seeking shelter on the beach on police advice, one Eden resident told CNN. Many houses have been destroyed in the area, and officials said they feared there would be fatalities.*
>
> *A total of 146 fires are burning across the state, with 65 uncontained, according to the NSW Rural Fire Service (NSWRFS). About 2,700 firefighters were tackling the blazes on Sunday.*

"Conditions have eased today and firefighters have gained the upper hand on several dangerous fires. There are no total fire bans in place for Monday," the NSWRFS posted on Twitter.

Earlier, NSWRFS Commissioner Shane Fitzsimmons told a news conference that Saturday was "one of our worst days ever on record."

A "considerable number" of properties were lost across NSW on Saturday, Fitzsimmons said, adding that a 47-year-old man had died from cardiac arrest while fighting a fire threatening his friend's home in Batlow. The man is the 24th person to die nationwide this fire season.

Separately, four firefighters in NSW were hospitalized due to smoke inhalation, heat exhaustion and hand burns. They have since been released.

"Australia's flag carrier Qantas canceled all flights to and from the country's capital, Canberra, on Sunday (5-January) due to smoke and hazardous weather conditions," per the CNN report.

This is a grim reminder of that time I attended the 11th meeting of ARF Heads of Defense Universities Forum at Canberra on 8-12-October-2007. We observed how serious it could be as forests within visible distance from the Australian Defence University were burning.

The fire season in Australia has mostly natural causes. The dry weather and the summer heat, with heavy winds make a strong combination that enhances the summer phenomenon. There are also occurrences of arson, as experienced in November last year where a young volunteer was charged by the New South Wales Rural Fire Service.

As CNN,com reported on 6-January-2020,

"Fire season in Australia is always dangerous – the 2009 Black Saturday fires killed 173 people in Victoria, making it the deadliest bushfire disaster on record. But conditions have been unusually severe this year, fanning the flames and making firefighting conditions particularly difficult.

Australia is experiencing one of its worst droughts in decades - the country's Bureau of Meteorology said in December that last spring was the driest on record. Meanwhile, a heatwave in December broke the record for highest nationwide average temperature, with some places sweltering under temperatures well above 40o Celsius (or about 113-120oF).

xxxx

Experts say climate change has worsened the scope and impact of natural disasters like fires and floods –weather conditions are growing more extreme, and for years, the fires have been starting earlier in the season and spreading with greater intensity.

Several high-ranking emergency service officials, including the former commissioner of the NSW Fire and Rescue Department, sent letters to Prime Minister Scott Morrison in 2019 warning of the impact of the climate crisis on Australia.

In response, Morrison emphasized a commitment to reduce carbon emissions -but also said he would stick to "sensible" policies, and that there wasn't "a single policy, be it climate or otherwise," that can completely protect against the fires."

Here are some remarkable characteristics on the current Australia case from media reports:

- Entire towns in the most populous state, New South Wales have been burned, losing more than 2,000 homes;
- Close to 8 million ha have been burned in six states, with NSW damaged the most with about 5 million hectares burned;
- The CNN report shows the comparative damage to other large fires on the other side of the world in 2019: California 100,000 ha, the Amazon rainforest 7,000,000 ha;
- 24 people have died to date, including some firefighters;
- The loss of wildlife (birds, kangaroos, koalas, deer, wild fowl, ostriches, etc.) is staggering, with millions likely dead, and close to 500,000,000 affected in varying degrees, which could double after more fires develop (the figures do not include insects, bats, and frogs);
- The fire season will still peak by end of January to February, and expected relief is more than 2 months away;
- Record heat broke an 80-year record in Canberra, reaching 44o Celsius, and close to 50o Celsius in a Sydney suburb, a record high.

While it is quite alarming to note the damage to the environment that these wildfires cause, at this point we should learn from the experience of many countries, including the United States especially in California's case, which is smaller in comparison but whose case has been much addressed by US institutions.

Here are some very informative references that all of us must try to learn, and more so LGUs and players in the Disaster and Risk Reduction sector should really develop awareness on (much of this, no doubt already being accomplished by those concerned)

Forest Fire Prevention: Forest fires are dangerous, and we should all take special precautions year-round to make sure fires are not carelessly ignited. Forest fires threaten people unnecessarily, decimate wildlife and destroy forests that provide a livelihood and recreation for millions of people all over the world.

Forest fires - overview

Fire prediction & analysis

Fire suppression

How to prevent forest fires-American Red Cross.

https://www.redcross.org/get-help/how-to-prepare-for-emergencies/types-of-emergencies/wildfire/how-to-prevent-wildfires.html

Preventing forest fires with tree power. This is "out of the box" and is a sophisticated advancement.

https://phys.org/news/2008-09-forest-tree-power-sensor-electricity.html

Sensor system runs on electricity generated by trees.

http://news.mit.edu/2008/trees-0923

California Tests New Strategies to Prevent Deadly Wildfires.

https://www.scientificamerican.com/article/california-tests-new-strategies-to-prevent-deadly-wildfires/

The Link Between Power Lines and Wildfires.

https://www.ecmag.com/section/systems/link-between-power-lines-and-wildfires

Need to remove dead trees.

https://www.readyforwildfire.org/forest-health/dead-tree-removal/

How will California prevent more mega-wildfire disasters?

https://www.nationalgeographic.com/science/2019/12/how-will-california-prevent-more-mega-wildfire-disasters/

Use of the military. The AFP should consider developing Forest Battalions or engage in Forest conservation and management, together with its security mission in the mountains. Brazil has troops dedicated to forest firefighting missions.

With continuing increases in forest fires over the past years, should we wait for the tipping point?

Preventing forest fires is everyone's concern. ⚓

PERSONALITY SKETCH: VADM ROBERT ARUGAY EMPEDRAD AFP, 37TH FLAG OFFICER IN COMMAND, PHILIPPINE NAVY

By: LTJG Christian R Chua PN(Res)

The path to becoming the 37th Flag Officer in Command was one set upon by VADM Robert A Empedrad AFP without full intention. In fact, several times in the course of his long career, his plan had not God's plan.

"It's not my intention to join the PMA. Gusto ko talaga maging (I really wanted to be) an electronic engineer," said Vice Admiral Robert Arugay Empedrad AFP. He wistfully recounted enjoyment of tinkering with electronic equipment as a young boy. But then his father enrolled him to civil engineering in Saint Louis University, Baguio City. Unable to fully commit himself to the course, he opted to go into the Philippine Military Academy instead, where he dreamt of joining the Philippine Constabulary (PC). When cadets were placed into the major services through lottery, the young Empedrad pulled out a pingpong ball that said "Navy". Disappointed but undaunted, he made a deal with another equally famous classmate – Ronald "Bato" dela Rosa, who was then an aspiring marine but whose pingpong ball would lead him to the PC. Clearly, the Navy was not his first love.

"I'll think about it first," was his classmate's response, giving Cadet Empedrad time to consult his own family. There was a one in ten chance that a cadet would be placed in the PN. "Why switch? That must be God's will for you" they said adamantly. That night, when Cadet dela Rosa came knocking to his barracks room to exchange pingpong balls, it was the young Empedrad who had seconds thoughts. Foregoing his desires and trusting God's will, he set off to become an officer of the Philippine Navy. "He became the Chief PNP, and I became the Chief of the Navy. And the rest is history."

Yet, being at the helm of the PN was far from VADM Empedrad's career plans. Before being called upon as Navy Chief, he was the Deputy Chief of Staff for Reservist and Retirees Affairs, J9. His projection was to retire as J9, and thus proceeded to plan 15 strategic initiatives to empower the reserve force, which would be implemented in the last years of his service. His high regard for reservists is practical and logical. VADM Empedrad recognized challenges of the dynamic traditional and non-traditional security environment, and that the current strength of the Armed Forces of the Philippines (AFP) cannot possibly serve more than 100 million Filipinos. Reservists are force multipliers of the organization. "The reserve force is our hope," he emphasized. The statement summarizes why VADM Empedrad has turned into one of the most active champions for AFP reservists.

His stint as J9 was not meant to last, however. On December 19, 2017, his plans were once again thrown off center and he was called to serve as the 37th Flag Officer in Command of the Philippine Navy.

Value-Driven Leadership

"To become the Chief of the Navy is a privilege and honor that is given to few people... I am the 37th Flag Officer

in Command in the more than hundred and twenty years of existence of the Navy," VADM Empedrad says emphatically. He reciprocates the privilege and honor of the position not only by serving competently, but by adhering and upholding the values of the organization. VADM Empedrad, even as a young officer, is steadfast in these values. His career is marked by his unyielding commitment to battle and win against corruption, in an organization that is vulnerable to it. He recounted a time that, as a junior officer aboard ship, he was ordered to sell excess fuel. He refused, despite knowing that his life would be made miserable for declining to comply. "Three different commanders asked me to sell our savings in fuel. Three times, I said no. You cannot do that as long as I'm your engineering officer… The challenge is, against the usual trend, *"how do you say no."*

The opportunities to put personal gain over the mission were numerous. "There was even a time in Mindanao when smugglers were giving money to the ships so they will not patrol and they can come in. Binigyan kami ng pera, yung ship ko (My ship was given money). They give money every week. We returned the money and said, "I don't care, we will catch you." It would have been easy to just accept the bribe; PN ships then were mostly old, slow, and rusty, fueled only by the steely resolve of its commanders and crew.

He remains uncompromising when it comes to his war on corruption. "JO palang ako sa barko pag mali I say no. Ganun na ako e. Ganun na ang naging buhay ko. Ngayon pa kaya na FOIC ako (When I was still a junior officer aboard ship, if something is wrong, I say no. That is how I am. That is how I live my life. What more now that I am FOIC?)." Being FOIC meant being tempted with millions of pesos worth of bribes, all of which he turned down. Even his sharp focus on modernizing the legacy navy cannot sway him from his values. "I'd like the Navy to modernize with the right values."

Behind the Uniform

The personality behind the position is fuel to the vast and intricate mechanism of the position of FOIC and, indeed, behind any leadership position in a complex organization such as the PN. Robert Empedrad is a man of God and a man of the family, whose love for his wife and son is comparable to his concern and regard for PN personnel under his care.

He recounted how his values were shaped by his family. His father, an executive in the Bureau of Forestry, turned down a request made by a powerful individual to allow illegal loggers conduct illicit business. The repercussion was harsh: his father was not given a position he was vying for, despite being the most qualified man for the job. The consequences of doing good was made clear to the young Empedrad, but he nevertheless chose to imbibe those values. Despite this, he maintains that upbringing was not enough. "I became a Christian in 1988. I became a different person altogether." His entire life shifted to doing the right thing based on the Bible. His commitment to his faith has even prompted him to become a teacher of the Word of the Lord.

"I only have one son. Habang bata sya, lumalaki sya, hindi ko sya nakikita (While he was young, he was growing up, I did not get to see him)… at that time wala pa ngang (there was not even a) cellphone … You can't even say hi to your family, say I love you." The way he values his family extends to how he manages his people. Despite being an organization that must be ready to sacrifice everything for the country, he reminds PN personnel that the primary reason one works is to help their own families. The "no weekend work" guidance has become a staple for his staff.

Dream for 2028

"How can you protect a coastline that is twice longer than that of the United States? How can you protect the vast water that is seven times larger than your land mass with old ships?" His experience in operations as well as the perspectives he gained in his schooling and engagement with naval counterparts abroad propelled his desire to see the PN as strong, capable, and modern.

His focus on modernization and capability building provided the much-needed thrust to expedite the modernization of the PN. The PN's strongest warship, BRP Conrado Yap, which boasts a comprehensive range of weapons system arrived during his term. It was also the first time the PN is able to utilize the ship-borne surface-to-surface Strike ER missile system. The PN is also ahead in building capability for cybersecurity, being the first major service to develop a Field of Specialization for the cyberwarriors of the organization. Through the FOIC, PN, the defense organization invested on the training of PN personnel who will one day command and man submarine capabilities. The way forward to a modern PN is slowly becoming a reality.VADM Empedrad, however, still believes that the PN has a long way to go towards becoming a much stronger naval force, citing the need to be able to manufacture, maintain, and repair organic assets, thus highlighting the lack of ship building facilities of the PN.

With much to be done, VADM Empedrad's work sets the stage for succeeding PN leaders who will commandeer the organization towards its next developmental waypoint. And this work embodies his dream: to see the PN close the capability gap between the organization and its foreign counterparts.

VADM Robert A Empedrad retires from service in February 2020. While his accomplishments have clearly benefited the organization's development towards strength and credibility, it is the personality behind the uniform that will imprint upon his legacy as the PN's Chief. Truly, the man can be described in three phrases: unyielding in his values and principle, father and provider, and servant-leader to both nation and God. ⚓

BEING AMONGST LIVING HEROES

by LTJG Christian R. Chua PN (Res)

I am often lost for words to truly describe my experience spending precious time with my classmates in Naval Command and Staff Course Class 86. All my life I wanted to be a soldier, but the Almighty God did not give me an answer to such calling, and the reason why is very much obvious to me. Simply because I know I am not fit to be one, I do not have what it takes, can't do all the sacrifices it demands, and the selflessness, tenacity and courage one should possess. Not to mention that my whole family was against it, when I told them of my dream of becoming a soldier after my intermediate school. That was the end of my military dream… so I thought.

The irony to my strong passion to soldiery is that the majority of Filipinos nowadays do not even realize the price of freedom that our veteran soldiers had paid for, neither the blood, sweat and tears that our soldiers of today are paying to keep our country safe and secured. Making matters worse, many would just like to brush off our patriotic duty of learning how to defend our country, maybe much more when the time really calls for it; I surely hope I am wrong.

After almost two decades, I got in to the Naval Reserve Command as a Naval Reservist Officer of Northern Luzon. Few years after, I was qualified and was recommended by our Naval Reserve Center to join the Naval Command and Staff Course Class 86, from March to September 2019. This was the time I got deeply immersed and had more insightful understanding of vocation of soldiery. This had sparked again my dream, but this time, with great appreciation and greater love for the military service. I also have to admit, that every time I am have conversations with any of my classmates, there is this feeling of envy of their experiences and learnings while performing their duties in the vocation I never had the chance to pursue.

Looking back, though, I realized that it was not envy that I felt towards my classmates but profound admiration, respect and appreciation of their service, honor and sacrifice, including of their families, so I and the rest of our countrymen can live in peace. They perform their mandate with the highest standards of professionalism and discipline, to the extent of sacrificing precious time for their family or other lucrative opportunities, living a simple and humble life, at times making ends meet financially, and for the women, the ultimate duty of being a mother to their children.

Many times, I have heard, and from many people, civilians and military alike, that if one chooses to join the service, then you will have to endure all the responsibilities that goes with it. Yes, I believe it is true, but only a few can answer to such calling, and I am proud that my classmates did, all in the Navy did, all in the AFP did.

I also cannot help but to admire their mentoring and support to Naval Reserve Officers, despite our lapses and mistakes, nobody made us feel we are different, instead had strongly supported us to finish the course with them, side by side, as a brother, as a comrade.

I remember during one of our classroom discussion, I was given a chance to talk before the class, I first though of thanking them not merely as my classmate but as living heroes to us and to every Filipino. I am truly grateful and honored to have them as part of my journey towards realizing my dream of serving our country in my Navy Uniform.

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Gratitude to:

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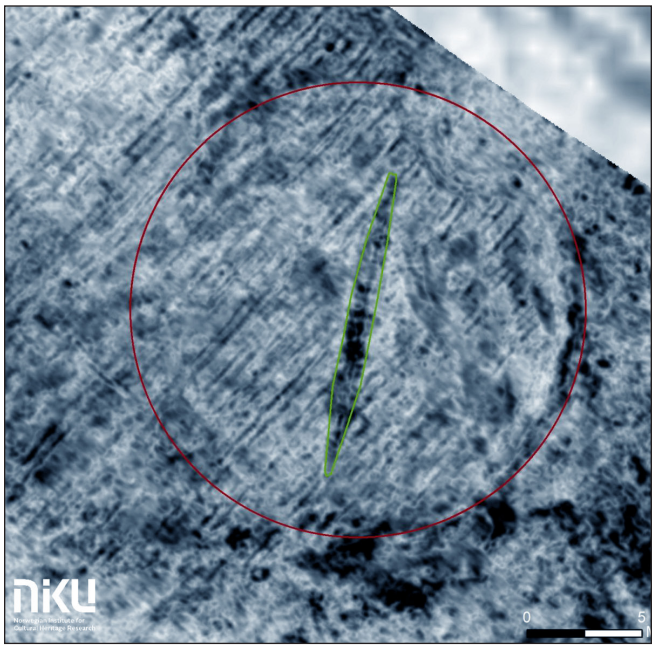
- *COL RICARDO PETROLA PN(M)*
- *CAPT NORMAN R BIOLA PN(MNSA)(RES)*
- *CAPT ROGER P VIDUYA GSC*
- *CAPT CONSTANCIO ARTHUR M REYES JR (PN) (GSC)*
- *LCDR ADONIE L AROMIN (PN)*
- *NOSC, NETDC*

NORWEGIAN RESEARCHERS FIND VIKING BOAT BURIAL SITE

by Vicky Viray Mendoza

Archaeologists of the **Norwegian Institute for Cultural Heritage Research (NIKU)** have discovered a new ship burial site –by sheer luck- using new **georadar** technology that dates the find back to the Viking or Merovingian eras.

The remains of the ship are located just below the surface within what was once a burial mound, making the ship most likely a Viking funeral ship buried under Norwegian farmland, on the island of Edøya, in Møre, western Norway, just yards from a medieval Edøy church. Based on radar imaging, the mound appears as a circle about 18.29 meters (60 feet) wide. At the center of the mound, archaeologists detected a 13-meter (43-feet) long-keel, traces of the sterns at both ends of the vessel, and the first few strakes or lines of planking.



The ship-like structure was detected under the surface of a Norwegian paddock. Photo Credit: Manuel Gabler, NIKU

The archaeological survey used large-scale, high-resolution georadar scans with technology developed by LBI ArchPro, NIKU, and Guideline Geo. The archeologists had been conducting a survey in Smøla, a small coastal island outside Trondheim. They decided to explore further and found traces of the buried ship in a field outside of the planned study area. *"We had actually finished the agreed-upon area, but we had time to spare and decided to do a quick survey over another field. It turned out to be a good decision,"* Dr. Manuel Gabler said in an **NIKU** statement.

Dr. Knut Paasche, Head, Department of Digital Archaeology, NIKU said, *"Again, it's the technology that helps us find yet another ship. As the technology is making leaps forward, we are learning more and more about our past. We only know of three well-preserved Viking ship burials in Norway, and these were excavated a long time ago. This new ship will certainly be of great historical significance."*

According to **NIKU** Head Dr. Paasche, the length of the keel indicates that the ship may have been up to 16.76 meters (55 feet) long, as there may have been some damage caused by farming activities. While more investigation and examination with non-invasive methods will be required to determine its exact age, Dr. Paasche believes that based on current evidence, it may be from either the Merovingian or Viking Period, thus, could be more than 1,000 years old. Despite the shallowness of the burial mound, making the ship vulnerable to human-activity damage, the ship appears to be relatively well-preserved.

The ship would have likely been dragged onshore from the nearby Oslo fjord. At some point during the Viking Age, it was the final resting place of someone powerful. It is believed that the larger the ship and mound, the more important the burial. *"Ships like this functioned as a coffin,"* said Dr. Paasche. *"There was one king or queen or local chieftain on board."*

The 2019 discovery is similar to the 2018 discovery, where a 20-meter long (65.62 feet) ship was found 50 centimeters (1.64 feet) underground in Viksletta, Norway right next to a busy freeway.

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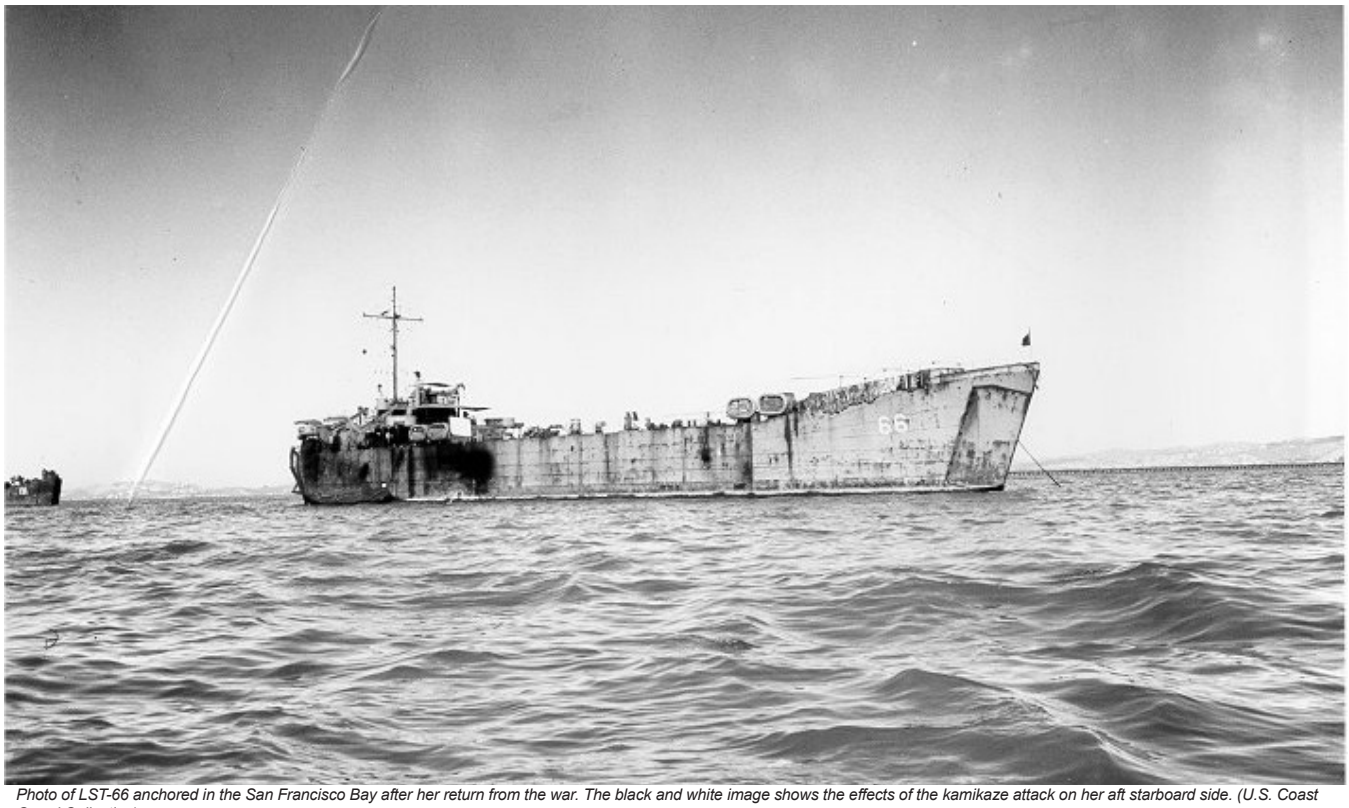

Photo of LST-66 anchored in the San Francisco Bay after her return from the war. The black and white image shows the effects of the kamikaze attack on her aft starboard side. (U.S. Coast Guard Collection)

THE LONG BLUE LINE: LEYTE LIBERATION—MERRY CHRISTMAS FROM THE GENERAL AND THE DEAD OF LST-66

by William H. Thiesen | US Coast Guard Compass

People of the Philippines: I have returned. By the grace of Almighty God our forces stand again on Philippine soil—soil consecrated in the blood or our two peoples. We have come dedicated and committed to the task of destroying every vestige of enemy control over your daily lives, and of restoring upon a foundation of indestructible strength, the liberties of your people.

General Douglas MacArthur
U.S. Army, 20-October-1944

75 years ago, on 25-December-1944, after a 6-week campaign to liberate the Philippine island of Leyte, Allied forces under General Douglas Macarthur were mopping up the last vestiges of Japanese resistance. The invasion of the Philippines was one of the last major land battles of the Pacific War leading up to the surrender of Japan. By 26-December, MacArthur announced the end of organized resistance on Leyte. It was a fitting Christmas gift to the Philippine people, and MacArthur's forces would pursue the enemy back to the island nation's capital in Manila.

LST-66 (second from left) & other LSTs debarking troops and supplies on Leyte Island, Philippines. (U.S. Coast Guard Collection)

Coast Guard manned ships, such as LST-66, ensured a steady stream of troops, equipment and supplies to Allied offensives like the Battle for Leyte Island. At 328 feet in length, the LST (Landing Ship, Tank) was a product of British and American engineering genius, and the Allies' desperate need for amphibious ships in the European and Pacific theaters. The largest of the Allies' purpose-built landing ships, the LST carried 2,100 tons of troops, tanks, trucks, supplies and ammunition. A crew of 110 Coast Guard officers and enlisted men called LST-66 their home.

In the fall of 1944, the Allies launched one of the most strategically important amphibious operations of the war, a campaign to liberate the Philippines from Japanese occupation. In so doing, MacArthur would redeem his pledge made in 1942, before the surrender of the islands, to return and free them. More importantly, Allied control would cut-off the Japanese homeland from vital raw materials, such as the oil reserves located in the Dutch East Indies and Malaya, and isolated Japanese military units holding out as far south as Borneo.

Japanese Zero fighters were used in the Philippines as kamikaze aircraft. (Commemorative Air Force/American Airpower Heritage Flying Museum)

Japanese military leaders knew all too well the strategic importance of the Philippines. Its loss would initiate the final chapter of a retreat to the home islands that had begun in mid-1942 with the Allied "island-hopping" campaign. To hold onto the Philippines, the Japanese military resorted to desperate measures. These included sending the last major units of the Imperial Japanese Navy on a suicide mission to destroy the Allied invasion forces, and a new aviation tactic termed "Kamikaze" or "Divine Wind." Japanese kamikaze pilots flew one-way missions to crash-dive their fighters and fighter-bombers into Allied ships.

American military leaders decided on Leyte Island as the target of their first Philippine landings. One of the largest amphibious operations of World War II, the Leyte invasion included nearly 430 amphibious vessels supported by aircraft carriers and warships of the Navy's 3rd and 7th fleets. On Friday, 20-October-1944, the LST-66 helped land the first of the invasion's nearly 200,000 troops.

At Leyte, enemy resistance met Allied forces on land, in the air, and at sea. Entrenched Japanese troops fought U.S. Army units in the jungle while kamikazes crashed into Allied ships and Japanese fleets attacked the Allied armada in world history, Allied warships repulsed Japanese naval forces leaving most of the enemy's warships damaged or destroyed.

U.S. Army Air Corps employed the P-38 "Lightning" pursuit fighters in the Pacific theater of operations. (Courtesy of U.S. Air Force)

On Sunday, November 12, LST-66 returned to Leyte to land more troops and supplies. At 8:30 a.m., the LST-66 ran ashore on the grey sandy beaches near the town of Dulag, opened its protective bow doors and dropped its landing ramp. The shoreline had been cleared of enemy defenses, so the LST's doors remained open for the day to deposit cargo and embark exhausted American troops from the invasion's first wave. Members of the LST's crew even had a chance to observe the anniversary of Armistice Day (now known as Veterans Day), a day late at the growing Allied military cemetery located not far from the beach. Little did these shipmates know that several of their number would soon lie in that hallowed ground.

In the afternoon, the LST-66 embarked men of the 75thJoint Assault Signal Company. Prior to the initial October landings, this joint Army-Navy reconnaissance unit had been inserted on the Leyte coast to identify Japanese defenses and communicate their location back to the invasion planners. After weeks of living in the jungle on C-rations, the recon men were happy to board a friendly vessel with bunk beds and hot chow. The weary troops made their way to the relative safety of the LST's stern, out of range of enemy snipers. A lieutenant with the unit brought aboard a cockatoo perched on his shoulder, which drew a crowd of curious 66 crewmembers.

Throughout November 12, Japanese "Zero" fighter aircraft had made suicide attacks against the landing ships, so the U.S. Army Air Corps sent up P-38 fighters to protect the vessels. Fast and deadly, the fighter's manufacturer named the P-38 the "Lightning," but the Japanese called it "two planes with one pilot" because of its unique twin-fuselage and center cockpit design. At about 5:00 p.m., with two P-38s hot on its tail, a Zero appeared from behind the mountains on Leyte. The Lightnings hit the Zero with machine gun fire, suddenly broke off their pursuit, and rocketed skyward. A 66-crew member who saw the dogfight from the forward deck, recounted:

> *"Over the high area forward I saw two P-38 fighters zooming straight up as if to avoid our ship from being gunned down by us. At that very instance [sic], I saw and heard this roaring Japanese kamikaze plane with the meatball markings almost 15 feet directly overhead that is forever imprinted in my brain."*

General Douglas Macarthur returning to the Philippines on the beaches of Leyte Island in October 1944. (U.S. National Archives)

What happened next was a brutal shock to everyone. The wounded *Zero* zoomed straight for the Army and Coast Guard men gathered on the starboard side of the LST's stern. In milliseconds, the enemy fighter impacted the LST's deck, careened across the ship's aft quarterdeck, sprayed aviation fuel over everything, exploded, and obliterated men and machines. The Zero left a swath of carnage and wreckage in its wake before crashing into the water. The lieutenant and one of his men were killed instantly with another seven Army men severely wounded.

The crash took a greater toll on the ship's crew, with 4 Coast Guardsmen killed and 7 wounded. All that remained of the parrot were white feathers sprinkled over the twisted metal and mangled bodies strewn about the quarterdeck. In the aftermath, Pharmacist's Mate 2nd class Robert Goldman swung into action treating the wounded and dying in spite of his own burns and shrapnel wounds. He was honored with the Bronze Star and Purple Heart medals, and will be honored as a Fast Response Cutter namesake next year.

Early photo of LST-66 hero Robert Goldman in his Coast Guard uniform. Goldman will be the namesake for a new Fast Response Cutter. (The Goldman family)

LST-66's dead were tagged for identification and sent ashore for burial in the same military cemetery that several of them had visited earlier that day. Like the fallen of LST-66, thousands of other Coast Guardsmen serving on the high seas never returned home. They made the ultimate sacrifice and remain part of the Coast Guard's long blue line of brave men and women who go in harm's way to defend the freedoms we hold dear.

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About the author: William H. Thiesen is a Historian for the U.S. Coast Guard Atlantic Area.

MARINE ENVIRONMENTAL PROTECTION IN THE SOUTH CHINA SEA:

REFRAMING THE NARRATIVE FROM ONE OF CONTESTATION TO CONSENSUS-BUILDING AND COOPERATION

by Analiza Rebuelta-Teh

(A presentation made by (DENR) Department of Environment and Natural Resources, Undersecretary Analiza Rebuelta-Teh during the Roundtable Discussion on West Philippine Sea/South China Sea organized by the Philippine Council for Foreign Relations (PCFR) and Chinese People's Institute of Foreign Affairs (CPIFA) held on 9-October-2019 at the Philippine International Convention Center (PICC)

CURRENT STATE OF THE MARINE ENVIRONMENT AND RESOURCES IN SOUTH CHINA SEA

With an estimated total reef area of 600-100 km2 (Aliño and Quibilan, 2003), the South China (SCS) hosts a rich diversity of coral reef organisms. Reef fish species diversity in the SCS ranks second among the six marine bio-geographic regions with at least 484 species (Nañola et al. 2011). This same biodiversity also has a significant contribution to food security and livelihood of coastal communities. Coral reef fisheries contribute to around 20-25% of the total marine fish production in the country (Alcala and Russ 2002). Using estimates of reef fisheries production and the aggregate area of coral reefs in the country, Campos (2000) estimated the apparent yield from the country's reefs to about 5-10 tons/ km2, depending on the reef area used (Licuanan and Gomez, 2000). Besides reef fisheries, about 20% of the annual commercial fisheries production in the country is reported to come from the West Philippine Sea (Aliño and Quibilan, 2003).

Based on the expedition conducted by DENR-BMB-UP-MSI last 28-April to 19-May-2017, it has been observed that SCS, in general, supports a stable, productive and resilient fish population. The initial findings of the expedition revealed that here is high reef fish species richness (species richness: number of different fish species) for all sites in the Kalayaan Island Group (KIG).

However, the South China Sea faces serious environmental challenges:

- **Poor Coral Cover**

Poor coral cover in the KIG reefs is an indication that without any significant intervention and with continued unregulated fishing, the high fisheries potential of the area may not be sustained.

Giant clam harvesting, dredging, and artificial island building in recent years severely damaged or destroyed over 160 square kilometers, or about 40,000 acres, of coral reefs, which were already declining by 16% per decade.

- **Declining Fish Stocks**

Total fish stocks in the South China Sea have been depleted by 70-95% since the 1950s and catch rates have declined by 66-75% over the last 20 years.

A $32 million project to reverse environmental degradation in the South China Sea and Gulf of Thailand, funded by the Global Environment Facility (GEF) through the United Nations Environment Program (UNEP) was implemented by the Governments of Cambodia, China, Indonesia, Malaysia, Philippines, Thailand and Vietnam.

An analysis of the state of the marine environment, prepared by the Governments which participated in the said project, in collaboration with UNEP, reveals that over 80% of the region's coral reefs are at risk from climate change, coastal development, pollution, over-exploitation and cyanide and dynamite fishing.

Only a third of its mangrove forests remain, with around 65% lost to settlements, industrial areas or tourist resorts, chopped for woodchips or firewood, or converted into shrimp farms. And the flow-on effects of increased sedimentation and nutrients, plus destructive fishing practices, are also being felt in the region's other major habitat – seagrass communities – of which 20% to 50% are thought to be degraded. Two thirds of the major fish species and several of the region's most important fishing areas are fully or over-exploited. Many nursery areas and breeding grounds are being degraded.

UNITED NATIONS CONVENTION ON THE LAWS OF THE SEAS (UNCLOS) AND MARINE ENVIRONMENTAL PROTECTION

To ensure Marine Environmental Protection, the United Nations Convention on the Laws of the Seas (UNCLOS) provides for (1) conservation of the Living Resources; (2) duty of States to adopt with respect to their nationals measures for the conservation of the living resources of the high seas; (3) cooperation of States bordering enclosed or semi-enclosed seas.

Countries who are signatories to UNCLOS shall ensure through proper conservation and management measures that the maintenance of the living resources in the exclusive economic zone (EEZ) is not endangered by overexploitation. According to UNCLOS, such measures shall also be designed to maintain or restore populations of harvested species at levels, which can produce the maximum sustainable yield, as qualified by relevant environmental and economic factors, including the economic needs of coastal fishing communiti es and the special requirements of developing States, and taking into account

fishing patterns, the interdependence of stocks and any generally recommended international minimum standards, whether sub-regional, regional or global.

Further, UNCLOS provides that the States shall endeavor, directly or through an appropriate regional organization, to:

- coordinate the management, conservation, exploration and exploitation of the living resources of the sea;
- coordinate the implementation of their rights and duties with respect to the protection and preservation of the marine environment;
- coordinate their scientific research policies and undertake where appropriate joint programs of scientific research in the area;
- invite, as appropriate, other interested States or international organizations to cooperate with them in furtherance of the provisions of this article.

The Permanent Court Arbitral Ruling on the South China Sea and UNCLOS.

In 2016, the application of the provisions on Marine Environmental Protection was made when the Permanent Court of Arbitration in The Hague issued its ruling regarding the Philippines' complaint against China.

On the harm to the marine environment, the Arbitral Tribunal ruled that China violated its obligation under UNCLOS to *"protect and preserve the marine environment"* when China:

- Dredged and built islands on 7 reefs;
- Failed to prevent its fishermen from harvesting endangered species like sea turtles, corals, and giant clams in the Spratlys and Scarborough Shoal.

According to the Ruling, China failed to notify other coastal states regarding the massive reclamations on 7 geologic features in South China Sea. Article 123 of UNCLOS requires coastal states in semi-enclosed seas to "cooperate with each other in the exercise of their rights, and in the performance of their duties under this Convention ... with respect to the protection and preservation of the marine environment."

The Arbitral Tribunal also ruled that China "caused permanent and irreparable harm to the coral reef ecosystem."

China reclaimed on all the seven atoll reefs it occupies in the Spratlys. China also dredged 10 other reefs for filling materials for the 7 reefs it reclaimed.

It could take as long as 30 million years for the reefs of an atoll to form. The coral reefs in the Spratlys are where fish spawn, serving as the breeding ground of fish in the South China Sea. The coral reefs in the South China Sea comprise 34% of the world's total coral reefs, despite the South China Sea occupying only 2.5% of world's total ocean and sea surface. Coral reefs are the single most valuable ecosystem — a hectare (about 2.5 acres) of reef can produce a potential value of about US$350,000 a year.

From 2014-2016, China deployed dozens of dredgers in the Spratlys. The rotating cutters of these dredgers pulverize the coral reef and the hard sediment on the seabed. The pulverized materials are sucked through a nozzle and siphoned through a pipe into the ship. The pulverized materials are then pushed by pressure through a floating pipe and deposited on the rim of the reef. This kills all the coral reefs in the atoll.

According to Dr. John McManus, a marine biologist who has studied the marine life in the Spratlys, China's reclamations are the "most rapid permanent loss of coral reef in human history. It's a terrible, terrible thing to do this."

Accordingly, China's clam harvesting destroyed more coral reefs than China's dredging to build the 7 artificial islands.

CLIMATE CHANGE IN SOUTH CHINA SEA

According to the Intergovernmental Panel on Climate Change (IPCC), the ocean is a carbon sink that absorbs 30% of the anthropogenic carbon dioxide emitted into the atmosphere. The IPCC has highlighted in its Fifth Assessment Report that climate change negatively impacts ocean health in terms of ocean warming, acidification, sea-level rise and de-oxygenation putting marine ecosystems, marine biodiversity and fisheries at risk.

Under a business-as-usual scenario, University of British Columbia researchers predict that the ocean species in the SCS will decrease by up to 59% by 2045 due to climate change. In the last three decades, fish stock has decreased by a third, while coral reefs declined at a staggering rate of 16% in the last 10 years.

China's State Oceanic Administration Report from the First Oceanic Research Institution noted that because of ocean warming, acidification and overfishing, coral reef systems in the SCS are degrading rapidly.

The SCS is an unavoidably a hotspot for climate change and a major concern for the international climate change regime.

The default international legal instrument to address the overlapping claims in the SCS is the UN Convention on the Law of the Sea (UNCLOS). UNCLOS incorporates environmental protection clauses for the marine environment. However, climate change is not originally within the contemplation of the said legal instrument. Hence, this is an area that Philippines and China can discuss further to address impact of climate change in the SCS.

To address the issue on Climate Change and take a pro-active approach, Philippines and China with the concerned countries in SCS can pursue collaboration through the Ocean Pathway Initiative. The Ocean Pathway Initiative supports the goals of the Paris Agreement by increasing the role of ocean considerations in the UN negotiations and by incubating and accelerating climate action involving the ocean.

Considering that all ASEAN member states and China are committed to achieving international climate policy goals, there is considerable opportunity to pursue joint regional climate policy formulation and action in the SCS. Notably, ASEAN has been instrumental in promoting cooperation and integration among its member countries on climate policy.

Since 2007, ASEAN Summits have repeatedly identified climate change as a priority concern that can be tackled through regional cooperation. Established in 2009, the ASEAN Working Group on Climate Change recognizes the need for cross-sectoral coordination and a global partnership to address climate change.

EXISTING MECHANISMS FOR COOPERATION BETWEEN THE PHILIPPINES AND THE PEOPLE'S REPUBLIC OF CHINA

- **Code of Conduct (COC) in South China Sea**

As early as 1992, ASEAN officially committed to addressing the SCS problem with the ASEAN Declaration on the SCS. It took another decade to reach a non-binding Declaration on the Conduct of Parties in the SCS with China in 2002. This laid the groundwork for further consultations on a Code of Conduct in the SCS, which gained momentum after the arbitration ruling in favor of the Philippines in 2016.

The COC is a set of rules outlining the norms, rules, responsibilities or proper practices of ASEAN countries and China in the South China Sea. ASEAN member states committed to "exercise self-restraint" in the conduct of activities in the disputed waters and to avoid actions that may further complicate the situation. Both parties agree to continue discussions on confidence-building measures to increase mutual trust and confidence and to exercise self-restraint in the conduct of activities in the South China Sea that would complicate or escalate disputes and affect peace and stability.

- **Bilateral Consultation Mechanism (BCM)**

A BCM was also agreed upon between Philippines and China wherein they will meet regularly on current and other issues of concern to either side on the South China Sea. Both sides also agree to explore other areas of cooperation.

As agreed by both Philippines and China, the First Meeting of the Philippines-China Bilateral Consultation Mechanism (BCM) on the South China Sea (BCM) was held in Guiyang, Guizhou Province, China on 19-May-2017. During the meeting, it was agreed that the BCM should be a platform for confidence-building measures and for promoting maritime cooperation and maritime security. The BCM is comprised of equivalent officials from the respective foreign ministries and relevant maritime affairs agencies, and will meet alternately in the Philippines and China once every six months.

Both sides reviewed their experiences on the South China Sea issue. They exchanged views on current and other issues of concern to either side, and agreed to further discuss mutually acceptable approaches. They also held discussions on issues including promotion of next-step practical maritime cooperation and possible establishment of relevant technical working groups.

Cooperation for Marine Environmental Protection between Philippines and China, that is genuine and serious is the most significant and critical step towards sustainable development of the marine ecosystem and resources in South China Sea.

AREAS OF COOPERATION ON MARINE ENVIRONMENTAL PROTECTION

The alarming state of the environment in SCS indicates the urgency for enhancing cooperation among countries concerned. Effective governance of the marine environment, which is being shared by countries, is beyond the capacity of any individual country. Areas of collaboration pursuant to both the UN Sustainable Development Goals and UNCLOS include protection of marine environment and biodiversity and sustainable use of marine resources and collective response to threats to the seas.

- **Framework for Cooperation**

Philippines and China Cooperation on Marine Environmental Protection should aim to:

- Establish policies to manage a more productive coastal and marine environment for the benefit of both countries;
- Identify areas with different priorities for sustainable use;
- Manage and regulate destructive and pollutive activities; and
- Establish as haven for migratory species, locally and nationally important marine species.

- **Areas of Cooperation**

The Philippines and the People's Republic of China should build consensus on:

- Effective protection and conservation of the critical coastal and marine habitats;
- Improvement of fish biomass through Sustainable Fishery Program that is eco-system based;
- Reduction of threat and risks on coastal and marine habitat from marine pollution through implementation of Port Safety, Health and Environmental Management System (PSHEMS) in key ports and increasing compliance to the International Convention for the Prevention of Pollution from Ships (MARPOL 73/78);
- Establishment of strong and sustainable sensitive sealane areas to decrease chances of destruction of critical habitats from maritime accidents.

- **Protocol on Marine Environmental Protection**

Philippines and China should endeavor to develop the Protocol on Marine Environmental Protection, which may include the following:

- Environmental Impact Assessment (in accordance to China's EIA Law and Philippines' PD 1586;
- Conservation of SCS Flora and Fauna;
- Waste Disposal and Waste Management;
- Marine Pollution;
- Establishment of Marine Protected Area and Network of MPAs.

NETWORK OF MARINE PROTECTED AREAS (MPAs)

Individual MPAs may not be enough to sufficiently protect species, especially with large natural ranges or territories, and critical habitats because of their size, design or even management effectiveness.

- **Why MPA?**

Establishing Marine Managed Areas / Marine Protected Areas in the SCS will help in the conservation of biodiversity, protection of its ecological function and integrity which contributes to the following:

- Conservation and protection of critical habitats of threatened species;
- Protection of attractive species and habitats for sustainable tourism;
- Increase in productivity of fisheries;
- Contribute to increased knowledge of marine and environmental sciences;

- Protection of genetic diversity of heavily exploited populations; and
- Protection of cultural diversity.

Main objective of establishing an MPA is to protect the existing biodiversity and the integrity of the marine ecosystem in the area.

Creating a marine park should be explored by both countries to allow what is left of the coral reefs and the marine species to slowly recuperate, and for the endangered species to have a fighting chance against extinction. This will help to ecologically preserve the area and sustainably benefit from the fisheries and other aquatic resources in the area.

- **Need for Synergy and Convergence via Network of MPAs.**

By establishing a Network of MPAs, collaboration among the concerned countries will be enhanced to address common challenges and trans-boundary environmental issues. Such will demonstrate that acting in a coordinated manner can lead to synergies and improved efficiency.

Philippines and China can also explore formulating clear, effective and efficient working arrangements and operational protocols to deliver clear benefits to both countries, such as on following activities:

- Building effective functional networks of all stakeholders on various MPAs in the countries and enhancing coordination through regular/periodic monitoring, reporting and feedback/communication mechanism;
- Capacitation on MPA and MPA Network management: assessment, information management, analysis, monitoring and reporting;
- Bio-physical and socio-economic assessments;
- Promotion of effective enforcement of existing fisheries and environmental laws and policies.

WAY FORWARD

Beyond claims of sovereignty, territory and maritime entitlements, the SCS faces serious sustainability challenges, particularly from the threats of climate and ocean change. Undeniably, the SCS narrative is not just about contestation. Philippines and China and other concerned countries can help reframe the SCS narrative from one of contestation to consensus-building and cooperation.

A possible way of managing the marine environment of the South China Sea cannot be based primarily on the overlapping territorial and maritime claims to which the aquatic organisms pay no attention. Instead it must be built around the entire marine ecosystem, particularly the reef systems on which much marine life depends.

Cooperation for Marine Environmental Protection between Philippines and China, that is genuine and serious is the most significant and critical step towards sustainable development of the marine ecosystem and resources in South China Sea.

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INDIA JOINS THE HONG KONG CONVENTION

by Safety4Sea

Alang ship-breaking. Photo Credit: Anil C. Patel

The Indian Union Cabinet approved the proposal of entering to the **Hong Kong International Convention for Safe and Environmentally Sound Recycling of Ships**, being the 14th country to join the convention, following the most recent member, Germany.

India is a leader of the global ship recycling industry, with a share of more than 30% of the market.

The industry being largely concentrated in South Asia, India remains the leading market for ship-wrecking globally, with the ship-breaking alone of Alang-Sosiya Shipyard in Gujarat handling around 450 ships every year.

By entering the Convention, the Indian Government ensured that from the micro-end perspective, the industry will continue keeping the workers safe and healthy, whereas in the macro-end, a growing number of ship owners seeking Statement of Compliance (SoC) based green-recycling options can be certain that the authorities have added another layer of security for their incoming vessels, **Anil Sharma**, CEO of cash buyer GMS, stated.

Therefore, this bill eases the restrictions on non-EU shipyards that have been imposed by the EUSRR.

Dr. Nikos Mikelis, non-executive director of GMS added, *"It now only remains for the Parliament's both houses to review and pass the new bill before India's President signs India's accession to the Hong Kong Convention."*

The 14 countries that have already accepted the Hong Kong Convention are: Belgium, Denmark, France, Italy, Netherlands, Norway, Panama, Congo Rep, St Kitts & Nevis, Japan, Serbia, Turkey, Malta, Germany, and India, the newest member. ⚓

STANDARD FOR INTERNATIONAL LAW OF NAVAL WARFARE IS SET FOR AN UPDATE

by US Navy Live

In mid-December, the U.S. **Naval War College** gathered experts in naval operations and maritime law for a conference on an upcoming revision to the **San Remo Manual**, the principal legal document regarding armed conflicts at sea.

*"The **San Remo Manual** is one of the most respected compilations of the law of naval warfare, and we are so proud to engage in the exploratory discussions to update it. Rapid advancements in naval technology and the ways in which modern navies fight warrant a close review of the manual to ensure that it remains as accurate and relevant as it was when it was originally published 25 years ago,"* U.S. **Rear Admiral Shoshana S. Chatfield**, President, **Naval War College**, said.

Adopted in 1994, the **San Remo Manual** was a then-contemporary restatement of international law regarding armed conflicts at sea and the first major document of its kind since 1913. Now, work is beginning to revise the manual with an eye toward the modern nature of warfighting. An international group of experts from around the world is expected to meet in the next two years for official deliberations.

James Kraska, chairman of the college's **Stockton Center for International Law** and one of two U.S. representatives to the international experts group, said that advancements in unmanned, autonomous and other warfighting techniques have changed how navies act, and the law needs to respond. **"We have to ensure the San Remo Manual remains relevant to today's warfighters preparing to deter or, if necessary, win naval conflict at sea," Kraska** said. The other U.S. representative is **Raul "Pete" Pedrozo**, a retired U.S. Navy captain and former Stockton Center professor who currently is the principal deputy staff judge advocate at U.S. Indo-Pacific Command in Hawaii.

Tom Culora, Dean of the college's Center for **Naval Warfare Studies**, is a retired U.S. Navy aviator who commanded the amphibious assault ship USS Boxer (LHD 4) while he was in uniform. **Culora** told the attendees that, in his experience in the fleet, the issues being discussed are vital. *"As a former consumer of the San Reno Manual, I know how important that is for the warfighters. And while the document itself is incredibly critical, I think the dialogue that will happen over the next two years is equally as critical. It peels back the foundations of why different nations feel the way they do, what they think about these critical issues,"* **Culora** said.

Looking ahead, **Kraska** and **Pedrozo** will participate in deliberations of the international group of experts in Australia in June, and in Denmark in October. ⚓

SOUTH KOREA'S FISHERIES LAWS IMPROVE, BUT VIGILANCE IS NEEDED

by Environmental Justice Foundation

South Korea's revision of its **Distant Water Fisheries Development Act** is crucial progress in tackling illegal fishing, as it allows deterrent sanctions to be applied quickly and efficiently, say a group of international and Korean NGOs.

However, they also raise concerns about the new head of a key agency that certifies seafood legality. The official was in post when serious errors were made in a recent case where Korea failed to sanction vessels found fishing illegally, instead allowing the owner to sell the catch on the global market.

Last month, the USA placed South Korea on a preliminary list of countries engaged in illegal fishing. A key reason for the listing was illegal fishing by two Korean distant water fishing vessels in 2017 that violated conservation measures of the Commission for the **Conservation of Antarctic Marine Living Resources (CCAMLR**), an international body established to conserve Antarctic marine life.

The Korean government reacted quickly by addressing flaws in the **Distant Water Fisheries Development Act** that had made it difficult to sanction illegal vessels. The government is now able to take action quickly and effectively when they find a vessel has fished illegally.

The **Environmental Justice Foundation, the Citizens' Institute for Environmental Studies**, and the **Korean Federation for Environmental Movement** praised the amendment, which was informed by recommendations from NGOs.

However, they also called for the government to ensure greater transparency in fisheries governance. The publication of key information on vessels, such as license lists, would be a first step, along with full disclosure of any sanctions issued.

Strong leadership of ¬the agency responsible for certifying the legality of seafood – the **National Fishery Products Quality Management Service (NFQS)** – is also needed, say the NGOs. But they have raised serious concerns about the appointment of the former Director General of Overseas Fisheries, to run the **NFQS**, as he was the official responsible during the **CCAMLR** case.

Hyunjung Kim, Senior Campaigner at the **Environmental Justice Foundation** said: *"We are strongly encouraged by recent progress in Korea, and it is clear the Minister of Oceans and Fisheries and his team are taking decisive action to update Korean legislation. However, strong leadership is needed in all areas of the Korean government responsible for combatting **illegal fishing**, and it is important that international seafood buyers have complete confidence in how the **NFQS** is run."*

Korea has a distant water fishing fleet of 221 licensed vessels with an annual export of approximately 200,000

tons. Korea signed a joint statement with the EU in fight against **illegal, unreported and unregulated (IUU) fishing** in October 2018. Korea is the first country the EU signed a joint statement with on IUU fishing among the countries that were previously issued the EU yellow card warning. In April 2015, the yellow card against Korea was lifted as it improved efforts in combating IUU fishing.

Korea joined the **CCALMR** convention in 1985. In 2018-2019, Korea has the largest number of vessels (9 vessels) allowed to fish in **CCAMLR** convention areas, compared to any other country. Korea is currently chairing the **Standing Committee on Implementation and Compliance (SCIC)** in **CCAMLR**.

The **Citizens' Institute for Environmental Studies** is a civic group founded to support a systematic and scientifically-based, professional environmental movement. CIES researches environmental issues and focuses on Antarctic Ocean protection as a key priority.

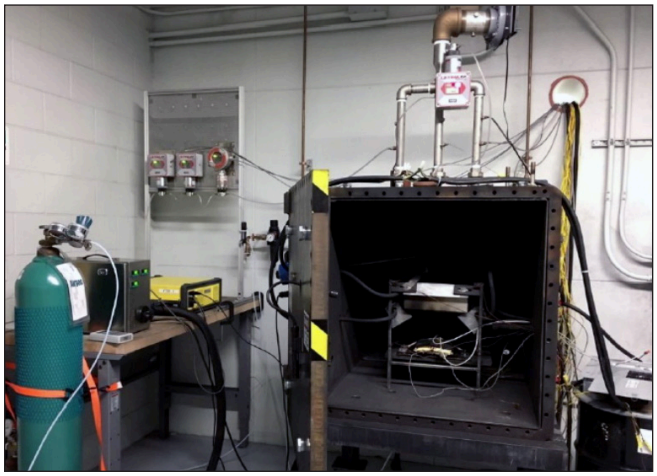
The **Environmental Justice Foundation** is an international non-governmental organization working to protect the environment and defend human rights. The EJF is a charity registered in England and Wales. Read more of EJF publications at *www.ejfoundation.org*

The **Korean Federation for Environmental Movement** is a civic environmental organization that takes progressive actions to support core values of life, peace, ecology, and bottom-up participation in harmony with Nature. ⚓

NEW DNV GL JOINT INDUSTRY REPORT OFFERS RECOMMENDATIONS FOR ENHANCED BATTERY SAFETY ON VESSELS

by Hellenic Shipping News

In collaboration with the Norwegian, Danish and US maritime authorities, battery manufacturers, system integrators, suppliers of fire extinguishing systems, shipyards and shipowners, **DNV GL** has released a new report on battery safety in ships, titled ***"Technical Reference for Li-ion Battery Explosion Risk and Fire Suppression"*** dated 11-November-2019. The report assesses explosion and fire risks in maritime battery installations and the effectiveness of fire extinguishing systems in the event of a battery fire.



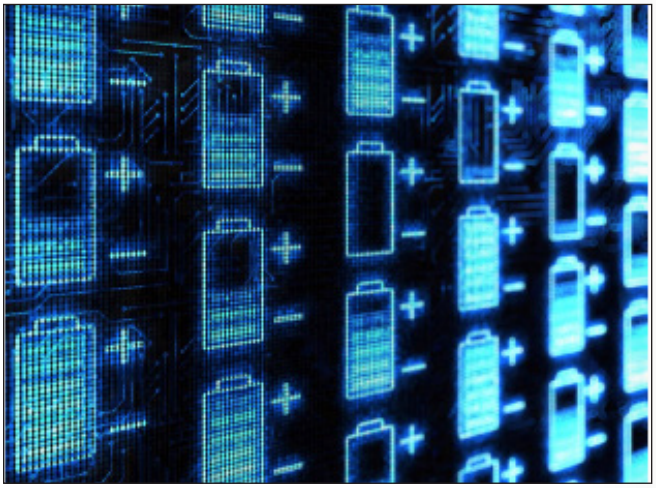
"Batteries onboard ships are both environmentally friendly and cost-effective solutions that we wish to see more of in the future. This project has been important in learning the risks of these systems and using the new insight to improve safety requirements," says **Lars Alvestad**, Acting Director, **Norwegian Maritime Authority**.

A battery fire can produce very hot fires, as well as the risk of explosion due to gases produced by the battery. DNV GL's new report presents the results of research on what happens during a fire in a battery compartment, the release of gases, and the usefulness of various extinguishing systems in combatting the fire and preventing explosions. One of the most important findings concerns ventilation systems, which are critical to avoiding an accumulation of explosive gas. The report concludes that ventilation alone will not adequately mitigate gas accumulation if a significant portion of the battery system ignites.

"In addition to fire suppression and ventilation, the battery design must have preventative safety barriers so that the fire and gas emissions are limited to as small a part of the battery system as possible," says **Henrik Helgesen**, Project Manager for the research project and Senior Consultant, **DNV GL**.

The report provides new recommendations on ventilation systems, based on a newly created model, which identifies the appropriate size and type of ventilation system based on a vessel's battery installation. Early fire and gas detection are also essential, meaning that the gas sensor should be located as close to the battery as possible.

Launched in 2017, the research project draws on the experience of a wide range of maritime stakeholders. *"It is very important for us to work closely with all parts of the industry and understand the full picture as we work to promote safety in our regulatory development work,"* says **Denis Cederholm-Larsen**, Senior Ship Surveyor, **Danish Maritime Authority**.



The following partners have contributed to the joint research project, ***"Maritime Battery Safety Joint Development project."***

- The Norwegian Maritime Authority
- The Danish Maritime Authority
- The Maritime Administration (MARAD)
- Norwegian Defence Research Establishment (FFI)
- Corvus Energy, supplier of maritime battery systems
- FIFI4MARINE, supplier of Lithium-ion fire extinguishing systems
- Nexceris, developer of technology for battery gas sensors
- Kongsberg Maritime (former Rolls Royce Marine AS), supplier of propulsion technology
- ABB, supplier of propulsion technology
- Stena, ship owner and ferry operator
- Scandlines, ship owner and ferry operator
- Damen, shipyard
- Marioff, supplier of fire extinguishing systems
- Leclanche, supplier of battery systems
- Super-B, supplier of battery systems
- DNV GL

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The report may be viewed and downloaded from: https://www.hellenicshippingnews.com/new-dnv-gl-joint-industry-report-offers-recommendations-for-enhanced-battery-safety-on-vessels/

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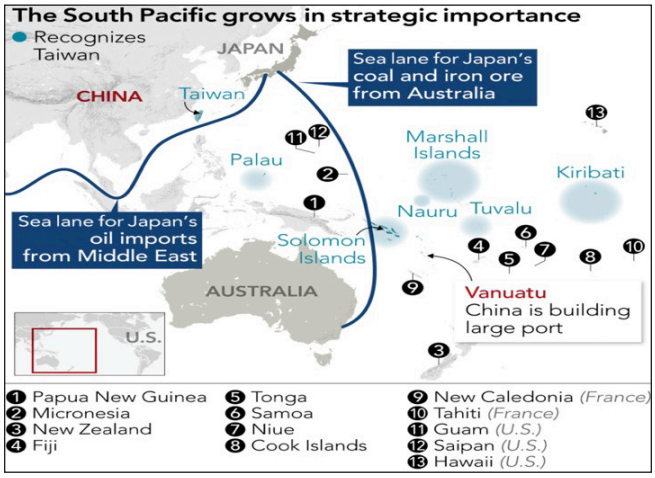
GLOBAL EXPANSION EFFORTS BY CHINA FROM MY PERSPECTIVE

by Timothy Muelder

My past research efforts have been mostly directed to Philippine environmental issues, maritime encroachment in Philippine waters as well as maritime safety issues as they impact the Philippines in both the West Philippine Sea as well as the China Sea to the north.

I have since broadened my research to not only maritime issues –from the West Philippine Sea to the Malacca Strait and surrounding waters– but also looking through a much wider view to include the North and South Pacific Oceans, Coral Sea, Philippine Sea, in consideration of the constant expansion efforts of China in this region, and elsewhere.



What is alarming is that China's efforts are not being published on a wider global news scale. What I found were investigative reports through the Australian news and other sources. Chinese influence is expanding, trying to encompass portions of the Pacific Ocean, extending from south of Japan and Taiwan to the Island Nations East of Australia.

As reported by Australian news 60 Minutes, this is a summary of what I have found from their news broadcasts, and others.

Due to Chinese financial influence, the Solomon Islands have agreed to change their allegiance from Taiwan to China. Tulagi Island in the Solomons, with a deep water port, has been in its entirety leased by China. This action was ruled "unlawful" by a local court. Local residents say the lease signer has not been seen. Nothing has been done since the report was made public.

Chuuk Island is just over 2000 miles East of Manila and is set to vote for independent sovereignty early in 2020. Chuuk Island -- one of the four states that make up the Federated States of Micronesia very close to Philippine Islands. Chuuk discussed a secession vote last year but punted to early 2020. If the island does end up seceding, it would break the U.S.-Micronesia COFA agreement and allow China to deal one-on-one with Chuuk, which has a deep-sea lagoon ideal for military operations.

A ban on Chinese tourists to the tiny Pacific nation of Palau has left hotels empty, an airline in limbo, and shown the power China has over its vacationing middle class. Key-points: Palau is one of Taiwan's 17 remaining allies in the world; China reportedly circulated a memo saying that tours to Palau would be punished; Palau Pacific Airways says it's been forced to suspend operations because it can't fill seats.

The Island nation of Kiribati has also changed allegiance from Taiwan to China.

The Island of Bougainville (soon to gain independence) east of Papua New Guinea has leased its huge copper and gold mine to China for restoration and re-activation with a long-term lease.

The Island of Vanuatu allowed China to construct a large deep water port –large enough to accommodate an aircraft carrier– to allow Chinese vessels safe port in the region. This is a bit curious as the Island actually does not need a facility of this magnitude.

On Namotu Island in Fiji, a Chinese construction company has illegally cut through a pristine virgin coral reef system to get deep water access for the leased property. This property was intended for constructing a hotel/casino complex, but was conducted without permit, and resulted in the destruction of a huge section of the reef. Coral debris was used to construct a road through another owner's property with impunity, and likewise without permission. They cut down many palm trees, cleared tropical forests, and destroyed a portion of the mangrove forest. Multiple government official orders to "cease operations" have been ignored. Destroyed too was a pristine beach in front of "Cloud-Break," one of the world's Top 10 surfing destinations.

One doesn't have to look hard to find Chinese financial influence on a global level. Their efforts are visible in mining rare-earth minerals in Africa, to constructing a new maritime shipping canal cutting through Thailand to bypass the Malacca Strait.

In El Salvador Chinese influence through financial support for its agriculture industry is quite concerning given El Salvador's close proximity to the Panama Canal.

In the Philippines, Chinese influence is clearly visible through the casino/hotel/on-line gaming expansion; unrelenting coastline and riverbank dredging and hauling of sand; major deforestation to conduct mining in various highland areas, as well as incursions and ship "collisions" with Philippine vessels in its surrounding islands within its territorial waters, EEZ, or further out.

In my opinion, Chinese expansion is insidious with China's focus on controlling regional sea-lanes, coupled with its aspirations towards attaining global domination. Should China succeed with their expansion efforts, they would have effectively surrounded the Philippine Islands as well as have great influence and leverage over many nations in this region. I believe a multi-country summit should be held to address the ongoing Chinese disregard and disrespect of other countries' sovereignty, borders, and laws. More importantly, multi-country action should be taken to curb this aggression.

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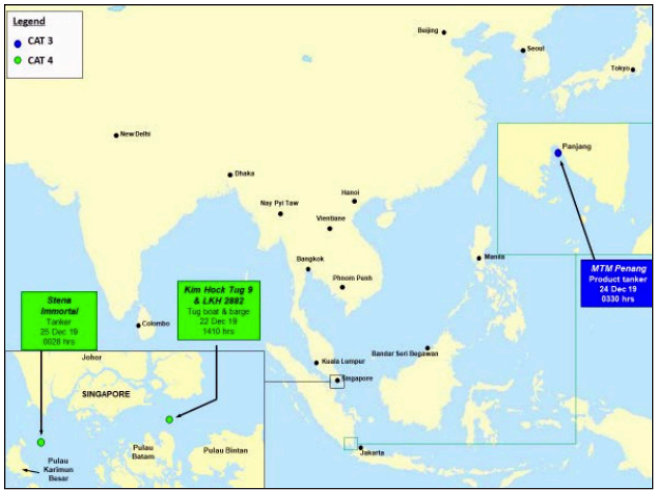
About the author: Timothy Muelder is a retired Facilities Manager of the U.S. Department of State.

RECAAP ISC INCIDENCE ALERTS ON SINGAPORE STRAIT (SEPTEMBER-DECEMBER)

by Vicky Viray Mendoza

In the **ReCAAP Information Sharing Centre** weekly report for 24-30 December, it informed of 3 actual incidents of armed robbery against ships in Asia. Of these, 1 incident occurred while a ship anchored at Panjang Customary Anchorage, Indonesia; and 2 occurred to ships while underway in the Eastbound lane of the **Traffic Separation Scheme (TSS)** in the Singapore Strait.



Three armed robberies against ships in Asia reported in the last week of December 2019

The incident on 22-December-2019 was classified as CAT 4, and involved the Singaporean-flagged tugboat Kim Hock Tug 9 while underway at the Eastbound lane of the TSS in the Singapore Strait. Two sampans with unknown number of perpetrators came alongside barge LKH 2882 towed by Kim Hock Tug 9. They boarded and stole some scrap metal onboard.

The master reported the incident to Singapore Vessel Traffic Information System (VTIS) and sailed into Singapore Territorial Waters (STW). The Singapore Police Coast Guard and the Singapore Navy chased away the sampans. The crew was safe.

The incident on 24-December-2019 involved the Singaporean-flagged tanker MTM Penang anchored at Panjang Customary Anchorage, Lampung, Sumatra, Indonesia. While the 3rd engineer was doing a safety round at the engine room, 3 perpetrators armed with knives boarded the ship and attempted to attack the duty oiler. The 3rd engineer ran to the engine control room and raised the general alarm. The perpetrators escaped starboard side by a rope attached to the ship's railings.

A search was conducted onboard the ship. The master reported the incident to **Panjang Vessel Traffic System** (VTS) through VHF Channel 16/10 and to the Company Security Officer (CSO). The crew was not injured, and nothing was stolen.

The incident on 25-December-2019 involved the British-flagged tanker Stena Immortal, plying 4.6 nm east of Pulau Karimun Kecil, Indonesia, in the Eastbound lane of the TSS in the Singapore Strait. The chief engineer sighted 6 unarmed perpetrators in the engine room. The master was alerted and the ship's alarm system was activated. The perpetrators escaped empty-handed at the stern in a small boat.

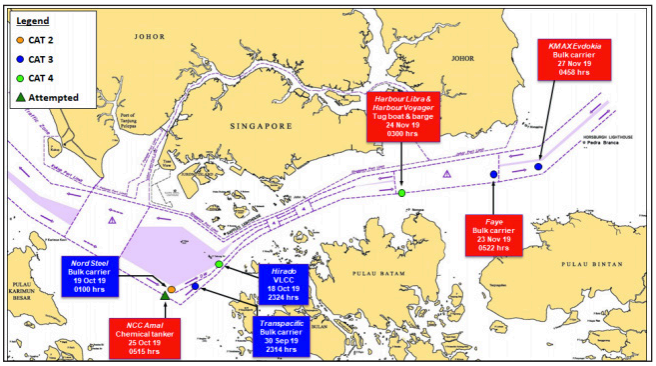
The master reported the incident to VTIS. Upon the ship's arrival at Singapore anchorage, the Singapore Police Coast Guard boarded the ship to investigate. The crew was safe.

Singapore Strait has been a key area of concern for maritime security this year, with a total of 30 incidents reported for 2019.

*The **ReCAAP ISC** urges ship master and crew to report all incidents of piracy and armed robbery against ships to the nearest coastal State and flag State, exercise vigilance and adopt relevant preventive measures taking reference from the Regional Guide to Counter Piracy and Armed Robbery Against Ships in Asia.*

The **ReCAAP ISC** had issued 5 Alerts on incidents that occurred to ships while underway in the Eastbound lane of TSS in the Singapore Strait on 23-October-2019, 29-November-2019, 21-December-2019, 23-December-2019, and 30-December-2019, showing a total of 10 incidents from September to 25-December.

The weekly report includes an incident outside Asia as well, involving the Singaporean-flagged bulk carrier *Drogba*, 20 nm southwest of Okrowi Oil Production Terminal, Gulf of Guinea, Nigeria. The Company Security Officer (CSO) reported that as the ship was underway to Port Harcourt, a pirate skiff pursued it. The master and crew went to the citadel except for the chief engineer who remained in his cabin. As the skiff drew nearer, an exchange of gunfire between the 7 Nigerian armed guards and the pirates onboard the skiff transpired. The pirates eventually aborted pursuit and fled. The ship resumed operation and proceeded to Bonny, Nigeria with all its 21 crew and 7 armed guards.



Map 1 - Approximate location of the incidents in the eastbound lane of the Singapore Strait (September - December 2019)

The map shows the approximate location of the 4 incidents (in red) of which 3 incidents occurred within a five-day period from 23 to 27-November-2019, as well as the 3 previous incidents reported on 23-October-2019 (in blue), for a total of 7 incidents during the period of September to November 2019.

The 4 victim vessels in November were 2 bulk carriers, 1 tugboat & barge, and one chemical tanker. Of the 4 incidents, 3 occurred onboard ships in the Eastbound lane of TSS in the eastern sector of the Singapore Strait; and 1 occurred onboard in the Eastbound lane of TSS in the **western** sector of the Strait.

The 3 victim vessels in September to October were two bulk carriers and one chemical tanker. All three incidents took place in the Eastbound lane in the **western** sector of the Strait.

There was an attempt against a chemical tanker on 5-November that occurred in the Westbound lane of TSS in the western sector of the Strait, when the tanker was on its way to the Eastbound lane. There was a previous attempt against a chemical tanker, *NCC Amal*, on 25-October that occurred in the western sector of the Strait.

Weapons used on deck were long knives or jungle knives, but included a gun in the previous incidents. No items of value were stolen, but in the previous incidents, engine spare parts (including piston rings, oil rings, valve seats, valve spindles, crankpin bearing shell, twist locks, and ropes) were taken, and the perpetrators escaped through the steering room.

On 27 November, at about 0458 hours, in the incident involving the bulk carrier, *Kmax Evdokia*, while transiting the Eastbound lane of the TSS in the Singapore Strait, the perpetrators grabbed the duty oiler and pointed a knife at him.

On 19 October at about 0100 hours, while the bulk carrier, *Nord Steel*, was underway in the Eastbound lane of the TSS in the western sector of the Strait, the duty oiler sighted 5 perpetrators armed with a gun and jungle knife on deck. The perpetrators threatened the duty oiler and tied his hands. The duty oiler informed the master who then raised the general alarm and reported the incident to Singapore VTIS.

Worth noting is that in these incidents, there were 5 perpetrators in actual attacks on the larger ships; incidents took place within a few days apart; occurrence in locations of close proximity to each other in the Singapore Strait; attack times were during hours of darkness between 2300 and 0522 hours; and large vessels were most vulnerable on or heading towards the Eastbound lane of the TSS in the Singapore Strait.

With the occurrence of 7 incidents that took place from September to November 2019 in the Eastbound lane of the TSS in the Singapore Strait, in both western and eastern sectors, the **ReCAAP ISC** advices all ships to exercise enhanced vigilance, adopt extra precautionary measures and report all incidents immediately to the nearest coastal State.

The **ReCAAP ISC** recommends to the law enforcement agencies of the littoral States to step up surveillance, increase patrols and enhance cooperation and coordination among them in order to respond promptly to incidents.

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References:

- *RECAAP ISC*
- *Safety4Sea*

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.

WINDEUROPE REPORT "OUR ENERGY, OUR FUTURE" – HOW OFFSHORE WIND WILL HELP EUROPE GO CARBON-NEUTRAL

by Vicky Viray Mendoza

E.U.'s offshore wind goals are achievable. The E.U. Commission's goals for attaining 230GW-450GW of offshore wind by 2050 are achievable provided the right investments in electricity grids, and the European Governments take the right approach to maritime spatial planning. Such is the conclusion of the **WindEurope** report, ***Our energy, our future***. The goal of 450GW offshore wind is part of a European Commission scenario to meet 30% of Europe's electricity demand in 2050, which would have grown 50% compared to 2015 due to electrification. To deliver climate neutrality by 2050, Europe needs a visionary approach to deploy volumes of additional clean energy.

The report indicates where 450GW offshore wind could be deployed most cost-effectively around Europe. At present, there is only 20GW. About 212GW could possibly be deployed in the **North Sea**; 85GW in the **Atlantic Ocean** and the Irish Sea; 83GW in the **Baltic Sea**; and 70GW in the **Mediterranean** and Southern European waters. This shows the relative wind resources, proximity to energy demand, and location of the supply chain.

The report breaks down how much offshore wind each country would need to deploy optimally. About 380GW would be deployed by **Northern European** waters. About 70GW would be covered by Mediterranean countries, Spain and Portugal. Most of the installations would be concentrated in the **North Seas**.

However, in at least 60% of the **North Seas**, it is not possible to build offshore wind farms at present. These exclusion zones exist either for environmental reasons or because space had been set aside for fishing, shipping, and military activities. The report states that multiple use, such as allowing certain types of fishing in offshore wind farms would help facilitate offshore wind development and keep expenses down.

Building 450GW offshore wind by 2050 would require Europe to install over 20GW per year by 2030, compared to only 3GW at present. The wind industry is certainly gearing up, but the various European Governments must generate volumes and create revenue schemes for the long-term confidence needed for the necessary investments in the coming years.

The report states, *"Offshore wind energy is at the core of how Europe can go carbon-neutral. Europe sits on one of the world's best offshore wind resources. The 20GW installed covers an average 1.5% of Europe's annual electricity demand."*

Governments should table a significant growth in offshore wind in their planning for both offshore and onshore grid connections considering the 10-year lead-time for planning and building the grids needed for offshore wind development. Offshore grid investments will need to increase from about €2 billion in 2020 to about €8 billion per year by 2030. Europe would need to provide a regulatory framework for offshore wind farms that have grid connections to more than one country.

Capital expenditure on offshore wind including grids would need to increase from about €6 billion a year in 2020 to about €23 billion by 2030, and thereafter, up to about €45 billion.

WindEurope CEO Giles Dickson said, *"The International Energy Agency believes offshore wind could become the no. 1 source of power generation in Europe in the early 2040s. The report shows that it is doable and affordable. But three things need to happen: (1) the offshore wind supply chain keeps growing; (2) we build the grid connections; and (3) we get the maritime spatial planning right."*

The breakdown by country of 450GW goal of offshore wind at present would be as follows ideally:

Country/Area	Capacity (GW)
UK	80
Netherlands	60
France (excl. Mediterranean)	40
Germany	36
Denmark	35
Norway	30
Poland	28
Ireland	22
Sweden	20
Finland	15
Belgium	6
Lithuania	4
Latvia	3
Estonia	1
Rest of Mediterranean	31
France (Mediterranean)	17
Spain	13
Portugal	9
Total	**450**

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The full report is available at: https://windeurope.org/wpcontent/uploads/files/about-wind/reports/WindEurope-Our-Energy-Our-Future.pdf











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MARLINK UNVEILS BRIDGELINK DIGITAL ENABLEMENT PLATFORM

by Vicky Viray Mendoza

Marlink has unveiled **BridgeLink**, a technology agnostic solutions portfolio designed to interconnect onboard Operational Technology (OT) within a standardized data structure.

BridgeLink addresses compatibility and interfacing challenges by providing an open, technology agnostic platform for unifying onboard equipment and sensors with network infrastructure and satellite IP connectivity, so that data from any system can be accessed, collected and shared in a single interface at sea or ashore.

Providing access to data from OT such as radar, automation, power and propulsion systems, BridgeLink enables Marlink customers to use scalable remote ship management and smart maintenance systems to further enhance and improve vessel efficiency using secure data collection for specialized analysis and applications.

The solution is fully customizable to fit any specific technical needs and creates the link between onboard systems and sensors, and how critical data they generate is used to optimize operations. This includes reducing fuel consumption and thus remaining compliant with **IMO** regulations, extending equipment lifecycle, and improving 'first time fix' success rates.

BridgeLink is the next stage in the **Marlink**'s maritime digital enablement strategy. Currently, the strategy already provides a platform for data-driven safety and efficiency improvements on thousands of ships worldwide, through unified smart global connectivity, cyber security services, and IT network management solutions.

Through the secure collection of data from onboard systems as a maritime industrial IoT service and data analysis for i.e., predictive maintenance purposes, **Marlink** subsidiary **Telemar** will leverage BridgeLink to introduce a unique smart maintenance service, ensuring that shipowners can secure more availability of their assets at sea.

*"We created **BridgeLink** to make remote ship management and maintenance processes more straightforward, streamlined, agnostic and secure than ever before,"* said **Tore Morten Olsen**, President Maritime, **Marlink**.

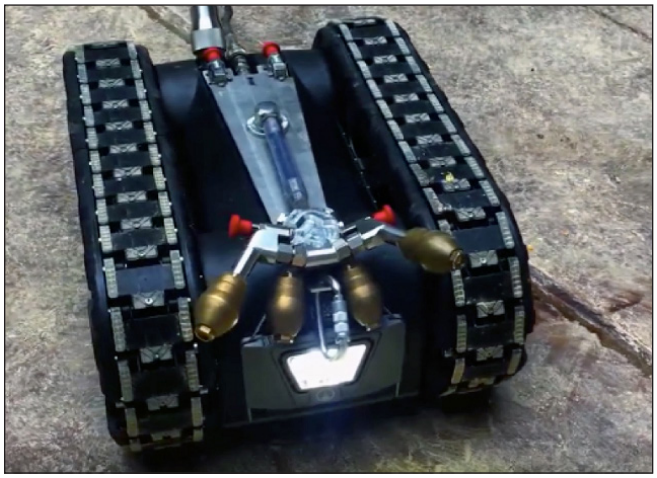
*"With its capacity to integrate, analyze and clearly present any data from any vessel in any back-end system, it introduces the same flexibility and choice that our customers already experience with **Marlink**'s Smart Connectivity, **CyberGuard** and **ITLink** portfolios,"* added Mr. Olsen. ⚓

SHIPOWNERS SAVE TIME AND MONEY USING CLIIN CARGO HOLD ROBOT

By CLIIN News

The dry bulk industry could greatly reduce the risk of cargo contamination, surveyor non-compliance hold-ups, and charter party disputes while substantially reducing cargo hold cleaning costs, according to **CLIIN**, the safe and environmentally-friendly robot technology revolutionizing ship cargo hold cleaning.

CLIIN, which has so far deployed robots to shipowners' **Ultrabulk**, **Norden, J. Lauritzen**, and **Oldendorff**, claims its technology also means that the dry bulk sector could prevent the dissemination of as much as 300,000 tons of chemicals being released into the world's oceans when cleaning cargo holds. For decades, the same methods have been used to clean dry-bulk cargo holds – with crew members using strong alkaline and acidic chemicals, scrubbing equipment, and brushes, often while suspended from rigging systems while holding high-powered pressure hoses.



The **CLIIN** robot system represents a departure from this outdated approach. Combining cutting-edge robot technology, its scales cargo holds while simultaneously controlling a high-pressure water cleaning system and requiring only one or two crew members –creating a raft of benefits compared to traditional methods of cleaning dry-bulk cargo holds.

Thomas Jørgensen, co-founder and director of **CLIIN**, commented, *"For too long the dry-bulk industry has been rigidly fixed to traditional and outdated cargo hold cleaning methods that are not only time-consuming, but pose a risk to crew welfare, and expose our oceans to unnecessary exposure to millions of liters of chemicals. In securing pioneering shipowners like **Ultrabulk, Norden, J. Lauritzen**, and **Oldendorff**, and getting their positive feedback, we are very hopeful that the rest of the dry-bulk industry will see this as an opportunity to save costs, time and improve safety, while having a positive environmental impact. **CLIIN**'s robot brings a seismic change in cleaning techniques and is a win-win for all parties – not only is it safer and cleaner, but also saves a lots of time and financial savings."*

Jonas Warming, Senior Optimization Manager, **NORDEN A/S**, added, *"We are positive about the opportunities the hold cleaning robot from **CLIIN** offers to **NORDEN**. Not only is the robot able to reach high areas, which are difficult for the crew to reach, but test results also show that the quality of the cleaning is improved. The water heater that is part of the robot equipment should also assist in providing a more environmentally friendly cleaning by reducing the amount of chemicals and water used. Our cooperation with CLIIN has been excellent and the feedback from our crew and port captains has been taken into account by **CLIIN** for robot upgrades and modifications."*

P. Martin Kondrup, Technical Manager at Lauritzen Bulkers, commented, *"We are convinced of the key safety and environmental benefits of **CLIIN's** cargo hold cleaning robots; also of their commercial benefits of reducing turnaround and lay time for our vessels. That's why we chose to become directly involved in their development right from the very beginning. We already have robots installed on our vessels, and will increase the usage of the robots in the time to come."*

Anders Wulff, General Manager, **Ultrabulk A/S** said, *"Using the CLIIN robots, we will succeed in reducing the amount of chemicals beneficial for the crew's working environment. At the same time we expect improvement of the preservation of paint in the cargo holds – and not a least less impact on the marine environment. We are looking forward to a continued good and close corporation with CLIIN developing this concept to even wider areas onboard the vessels."*

Dexter Jeremiah, Managing Director Operations,

Oldendorff Carriers added, "*In the pursuit of an environmentally friendly and safer option to clean cargo holds, we have partnered with CLIIN to provide an efficient and viable solution for cleaning and maintaining cargo holds of our large bulk fleet."*

Cost Benefits. Typically, operators have to purchase

thousands of liters of strong cleaning chemicals, while several crewmembers, dressed in protective material and setting up rigging and support harnesses for hard-to-reach areas will clean and scrub the hull.

The **CLIIN** robot system uses its innovative design to access 80%-100% of the hold –with no need for the use of dangerous chemicals and using only a few crew members, each requiring only minimal physical effort and training. The lack of need to buy chemicals, quicker cleaning time and reduced crew involvement means that there's a return on investment with every clean completed with incremental returns as more cleanings are done.

Time Benefits and Reduced Delay Benefits. The **CLIIN** robot can take between four to eight hours to clean a hold depending on ships size and regardless of the condition and cargo carried, reduce cleaning time by up to 50%, compared to traditional cleaning methods. Critically, this process also requires far fewer crewmembers; reducing total work hours. When transporting exceptionally dirty cargo such as coal, concentrates or coke, timesavings are even more substantial.

The **CLIIN** robot reduces the risk of costly consequences that can result from poorly cleaned cargo holds. The **CLIIN** robot greatly reduces the risk of cargo contamination, which can lead to cargo damage claims from receivers. This in turn reduces the risk of a cargo hold being rejected by inspectors and triggering delays and charter party disputes.

Safety and Environmental Benefits. Safety of crew has always been a number one concern for ship owners, operators and managers, while the shipping industry is being increasingly concerned with reducing its environmental impact.

The **CLIIN** robot represents a safer and more environmentally friendly approach to cleaning cargo holds. As the **CLIIN** robot almost eliminates the need for strong chemicals, it means fewer crewmembers being exposed to these toxic substances. Furthermore, it can mean that millions of liters of harmful chemicals will no longer be emptied into the ocean, potentially doing significant harm to the marine ecosystem.

The risk to crewmembers being injured is also greatly reduced due to fact that there is no need to suspend crewmembers on harnesses from the hatch coaming. **Furthermore**, there is no need for costly and burdensome chemical safety suits when using the **CLIIN** robot.

CLIIN is a global innovative technology company serving the international maritime sector, and the owners of a revolutionary ship cargo hold robot-cleaning technology. As well as its presence in Denmark, **CLIIN**, with 20 employees globally, has operations in the key maritime markets of Greece and Singapore.

Headquartered in Denmark, **CLIIN's** robot cargo hold cleaning technology has been successfully deployed to four of the world's leading shipowners: **Lauritzen, Norden, Oldendorff,** and **Ultrabulk**. Founded in 2016, **CLIIN** has invested over €4 million in R&D, and has long terms goals of diversifying its product range.

CLIIN's technology solutions are developed to resolve issues and challenges facing the shipping sector that have not been adapted and improved for many years or have been over-looked. **CLIIN** cares passionately about safety and the environment, and strives to develop technologies that improve the industry's safety record and environmental impact – as well as delivering a strong commercial rationale. ⚓

TIMOR-LESTE GOVERNMENT CHOOSES DAMEN FOR ROPAX DELIVERY

by DAMEN News

Recently, the Republic of Timor-Leste and **Damen Shipyards Group** signed a contract agreeing provision of a new **RoPax Ferry 6716**. The vessel will operate a route between the Timor-Leste capital Dili, the Oecusse enclave, and the island of Ataúro, providing regular transportation of passengers, vehicles and goods on the north coast of the island.

The contract was signed at the Kay Rala Xanana Gusmão Hall of the Ministry of Finance, Díli, by the Minister of Transport and Communications, José Agustinho da Silva, and by the regional director of **Damen Shipyards**, Gysbert Boersma.

With an ageing vessel currently in operation, the Port Authority of Timor-Leste IP (**APORTIL**) recognizes the need to maintain the safety and reliability of its fleet, hence the investment in a new ship. In a project co-financed by Timor-Leste and the Government of Germany, the **RoPax Ferry 6716** is scheduled to begin operations in 2021, and will lower operation costs, increase reliability of the service, and improve employment opportunities due to the improvement in transportation networks. In preparation for the ferry's arrival, **APORTIL** will undertake work to improve and build support infrastructures.

The extension of these maritime passenger connections will initially include a connection between Dili and Com, in addition to those already in place between Díli, Ataúro and Oecusse, with the aim of improving the quality of life in these areas.

In a speech delivered at the contract signing, Timor-Leste Minister of Transport and Communications José Agustinho da Silva said, *"This new ferry will help to connect Dili with other ports on the south and east coasts of Timor-Leste and improve access to market, education and institutions in Dili and provide other important services to Timor-Leste."*

The Minister went on to say, *"This new ferry will increase job opportunities to our seafarers and give direct and long-term employment opportunities to our Timorese seafarers."*

The **RoPax Ferry 6716** has a width of 16 meters, a draft of 3.3 meters, a length of 67.3 meters, and its deck with a 27-ton axle load will reach 4.8 meters in height. The vessel is capable of a maximum speed of 10 knots with a carrying capacity of 380 pax.

Damen's design and proposal engineer on the project, Gökçe Koc, explains why the vessel is ideal for Timor-Leste, "The vessel's two **Yanmar** engines, delivering 837 kilowatts of power to a 1.6 meter fixed pitch propeller, give it the power to maneuver safely when docking as well as on the open water. It's a remarkably stable vessel and combines high levels of comfort for the passengers along with high performance for the operator. APORTIL couldn't have made a better choice."

Damen will **conduct** the design and management of the project at its Netherlands head office, and construction of the vessel will take place at **Damen's** Yichang Shipyard in China. Upon completion of its construction, the vessel will be delivered to Dili.

Gysbert **addressed** the assembled representatives saying, *"I hope this project will be the start of a long-lasting cooperation between the Republic of Timor-Leste and the Damen Shipyards Group. It is a privilege to contribute to the improved mobility of the Timor East people. With this ferry, in 19 months, Timor-Leste will receive a high quality vessel that will last for a generation."*

Since the introduction of the modular shipbuilding concept, **Damen** has delivered more than 6,000 vessels. Today, **Damen Shipyards Group** operates in many shipbuilding sectors and has gained a prominent and trusted standing throughout the world. With a global workforce of more than 9,000, **Damen** builds a wide variety of standard hulls for stock at dedicated shipyards in strategic locations. Production capacity is up to 180 vessels per year. Damen does more than build ships – it also has an international network of lifecycle support services that includes maintenance and repair, as well as conversion facilities.

10 TIPS TO IMPROVE SHIP RECYCLING

by Safety4Sea

Bureau Veritas Solutions Marine & Offshore urged the shipping industry to adopt higher standards in ship recycling. Thus, **BVS** provides insight into meeting ship recycling requirements, as well as 10 tips to achieve compliance.

The NGO Shipbreaking Platform issued its Q3 2019 results noting there were 122 ships broken, of which 73 were sold to the beaches of South Asia for dirty and dangerous breaking. The NGO's report for Q2 revealed that 193 ships were dismantled and the 146 of these were sold to South Asian scrapping beaches.

According to the report, between July and August, 11 workers lost their lives, while 20 were severely injured when breaking ships in Bangladesh and India. To-date, the NGO has recorded 19 deaths and 30 severe injuries in South Asia.

At a **Bureau Veritas** briefing at the London International Shipping Week, **BVS** shared insights into the challenges of compliance with **IHM** (Inventory of Hazardous Materials) and ship recycling requirements, as well as the benefits of a transparent approach to meet obligations and support best practice.

Paul Shrieve, President, **Bureau Veritas Solutions**, said: *"Ten years since the HK Convention, we have seen improvements in standards at recycling shipyards across the world, even ahead of its entry in force. The EU Ship Recycling Regulation has accelerated welcome improvements. Yet, these are not straightforward pieces of legislation. The requirement for EU flagged newbuilds and, from 31-December-2020, existing vessels, to have **IHM** and a Statement of Compliance, bring challenges that are now pressing, with Port State Control enforcing **IHM** and end-of-life requirements."*

Considering these challenges, and in order to help the shipping industry address them, **BVS** created 10 best tips in order to ensure that companies follow proper **IHM** and recycling policies:

1. Fleet-wide planning: understand the timetable for your ships;
2. Fleet-wide planning: understand implications for your ships;
3. Understand the **IHM**: what is it and what does it require?
4. Understand the Inventory of Hazardous Materials: difference between requirements for EU and non-EU flagged ships;
5. Budget for sampling: can you prove what you have on board?
6. Develop and maintain the **IHM** during operations: use **BV Solution's Praxis** software tool;
7. Recycling decisions: understand benefits and risks;
8. Recycling decisions: follow industry best practice;
9. Develop and publish your ship recycling policy;
10. Seek expert advice. ⚓

THE CEBU PORT AUTHORITY

by Vicky Viray Menoza

The **Cebu Port Authority (CPA)** was created through the enactment of Republic Act No. 7621 signed on 26-June-1992 to specifically administer all ports located in Cebu Province, thus, effectively separating these ports from the **Philippine Ports Authority (PPA)**. On 01-January-1996, **CPA** began operations and officially took over all Cebu ports.

The territorial jurisdiction of the **CPA** includes all ports, seas, lakes, rivers and all other navigable inland waterways within the province of Cebu, the City of Cebu, and all other highly urbanized cities that may be created after the enactment of R.A. 7621.

The Cebu City Baseport is located along the Mactan Channel, a narrow strait between Cebu and Mactan Islands.

The **Cebu International Port** covers a 14-hectare area, consisting of 512 meters (1,680 ft) of berthing space with 1,953 TEU ground slots, 204 refrigerated container plugs, and a bulk handling terminal.

The **Cebu Domestic Port** covers a 21-hectare area, with 3,838 meters (12,593 ft) of berthing space, 3 piers, 3 passenger terminals for inter-island trips, and 2 ferry terminals for Cebu City–Mactan ferry boats.

Its 2,688 sqm (28,930 sq ft) Passenger Terminal started regular operations on 21-November-2014. It is fully air–conditioned, with a spacious lobby that houses the Port Management Office, a send-off area, canteen, and Wi-Fi internet connection.

The new General Manager of **CPA** is **Leonilo E. Miole**. He replaced the late **Angelo Verdan** who passed away on 5-June-2019. The Cebu Port Commission (CPC), the governing body of the **CPA**, elected **Miole** as the new GM of **CPA**. **Miole** took his oath of office on 18-July-2019. Concurrently, **Miole** sits as Vice Chairman of the CPC. Prior to joining **CPA**, **Miole** had been with the Philippine Ports Authority as Port Manager of Davao.

During the previous GM **Angelo Verdan**'s time in office, he said a new Cebu container port would be built and ready by 2022. The Philippines and South Korea had signed a US$172.64M loan agreement with EXIM's Economic Development Cooperation Fund to construct an international port in Cebu to free up cargo traffic in the Cebu City seaport, the largest domestic port in the Philippines. In so doing, the new international port would provide a more efficient and reliable port infrastructure in the Visayas. The Philippines would provide a counterpart funding of $26.09M.

The new port would be built on a 25-hectare reclaimed land in the town of Consolation, Cebu. The project includes a berthing facility with a 500-meter long quay that can accommodate two 2,000 TEU vessels; operating facilities such as freight station, inspection shed; access road and bridge; dredge waterway; a turning basin; as well as cargo handling equipment.

Last year, the **CPA** had to expand berths 7 and 8 of the Cebu City Baseport to allow the use of quay cranes in the domestic containerized cargo operations in an effort to help reduce the chronic congestion problem on the domestic side of its port operations. ⚓

PPA PMO MISOR/CDO SHARES CHRISTMAS CHEERS TO STRANDED PASSENGERS, FIRE VICTIMS

by Mike Baños

Some 280 passengers stranded at the **Cagayan de Oro Port** in Barangay Macabalan due to inclement weather brought about by **Typhoon Ursula** (International name: Phanfone) were fortunate they have a sympathetic port management office quick to react to the plight of the stranded passengers. Instead of proceeding to their intended destinations in Cebu and Bohol, the affected passengers had to spend Christmas Eve at the **Cagayan de Oro Port** due to Coast Guard travel advisories restricting further travel due to the typhoon.

However, they did not miss the traditional *Noche Buena* as the **Port Management Office (PMO)** of **Misamis Oriental/ Cagayan de Oro (PMO MisOr/CDO)** quickly organized an impromptu *Fellowship on Christmas Eve* activity for them. And besides providing free meals to the stranded passengers starting with lunch on 24 December, the PMO, with the assistance of the **Cagayan de Oro Police Office (COCPO) Precinct 5**, and other generous donors, prepared a *"Noche Buena"* for all. A short program was also instantly organized, which included games, and dance numbers from youngsters from among the passengers.

In continuing the promotion of the **PPA's Serbisyo at Malasakit**, pouches containing foldable pans, hand towels, and other necessary toiletries were distributed to the senior citizens. Children also received loot bags full of candies and goodies. Port Manager **Isidro V. Butaslac** Jr, Port Police Superintendent **Bernardo A. Gartalia**, and **PNP Precinct 5** officials led the distribution of the pouches and loot bags. Breakfast meals were also served the following morning of Christmas Day. As of 11:00 AM on 25-December-2019, the suspension of trips to Bohol, Cebu, and other areas in Visayas was lifted.

A few months earlier, **PMO MisOr/CDO** also distributed to some forty (40) families who were victims of the fire last August 2019 in partnership with the local chapter of the *Pambansang Tinig at Lakas sa Pantalan, PPA Employees' Union; Sunrise Multi-Purpose Cooperative;* and, Rotary Club of Cagayan de Oro (Mother Club) on 21-December-2019. Although some of the families had already re-built their homes in the same area, most were still living under makeshift tents along the road proximate to the PMO's Gate 5. Each household received a container loaded with rice and other goods, while their children received toys and treats. Since it was early in the morning, the PMO personnel and members of the Rotary Club provided meals to all individuals including the little children.

After the gift-giving and meals, PMO personnel extended their time to bond with the children who in return, showcased their talents in dancing and cheering. They also enthusiastically participated in various games organized by the PMO.

Following the fire last August, which occurred as the new **Passenger Terminal Building (PTB)** was being inaugurated, the PMO immediately responded to the needs of the affected families by preparing and distributing breakfast meals, and consolidating in-kind donations for the displaced families.

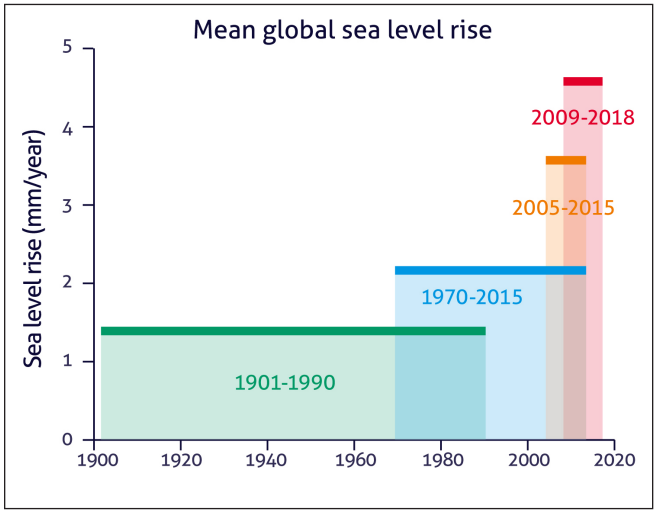
The PPA Employee's Union *"Pambansang Lakas at Tinig ng Pantalan (PANTALAN) Misamis Oriental / Cagayan de Oro Chapter,"* also distributed early Christmas gifts to the affected families during PANTALAN's 32nd anniversary last September. — (with **IMR Lam**).

TEN NEW INSIGHTS IN CLIMATE SCIENCE 2019

by Future Earth

The world continues to emit greenhouse gases while our planet's climate is changing faster than ever. The 10 New Insights in Climate Science 2019 report intends to take up the latest and most essential scientific findings published in an extraordinary year –the climate science year in review.

1. The world is not on track
- Greenhouse gas emissions continue increasing; gap between current trends and agreed climate targets has widened.
- Existing fossil-based infrastructure will, if operated during its full lifecycle, take the world above 1.5°C global warming.
- The use of coal has slowed down and is declining in many countries but oil and natural gas is still growing.
- Carbon Dioxide Reduction in some form is likely needed but shouldn't be viewed as a substitute for mitigation.

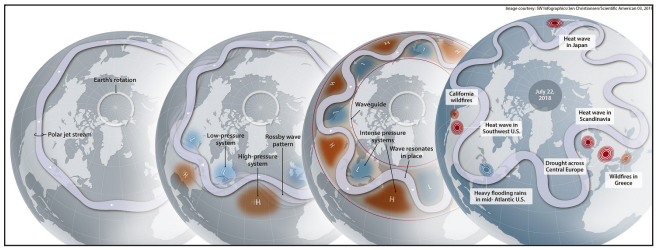


2. Climate change is faster and stronger than expected
- Observations show signs of continuing warming, while sea level rise is accelerating.
- Greenland and parts of Antarctic ice sheets are showing signs of destabilizing much sooner than expected.
- Further impacts on ice sheets and sea level rise have probably been underestimated in the latest IPCC Assessment Report.
- High sea-level events that used to happen every 100 years could be experienced every year in megacities around the world by 2050.

3. Climate change leaves no mountain summit behind
- Glaciers are on average estimated to have lost about half a meter in thickness per year in 2006-2015.
- Changes to glaciers, snow and ice in mountains will likely influence water availability for over a billion people downstream by mid-century.
- Climate change irreversibly affects mountain ecosystems and their biodiversity, reducing the area of biodiversity hotspots and causing species to go extinct.
- Adaptation to climate change is possible but its effectiveness is severely constrained if high emissions continue.

4. Forests are under threat, with global consequences

- The World's forests are a major CO2 sink, absorbing about 30% of anthropogenic CO2 emissions forest fires driven by human land-use alternation has been reducing major CO2 "sinks."
- Climate change globally amplifies wild forest fires.
- "CO2 fertilization" increases forest photosynthesis capacity, but is increasingly offset by temperature increases that cause tree mortality.
- Fighting deforestation and encouraging reforestation, along with sustainable forest management and other natural climate solutions are important and cost-effective options for reduced net emissions.



5. Weather Extremes – a "new normal" in 2019

- Some extreme weather continues to become more likely and more severe.
- Extreme events increase but impacts are region specific.
- Europe has seen particularly strong increase in heat extremes.
- Extreme weather is anticipated to increase in a 2°C world.
- Synchronous extremes are risky in a globally connected world.
- Societies often don't have time to fully recover from extreme events before another one hits.
- Ambitious mitigation can curb risks, but with 1.5°C warming regionally dangerous levels will be reached.

6. BIODIVERSITY – THREATENED GUARDIAN OF EARTH'S RESILIENCE

- 14% of local land species could be lost already at 1°-2°C warming –more than 1/3 in a business-as-usual scenario.
- With 2°C warming at least 99% of coral reefs will disappear due to ocean acidification, heat-waves and other pressures.
- In freshwater, fish die-offs may double by 2050 due to extreme summer temperatures.
- Natural Climate Solutions are essential contributions to mitigation, but not near enough to ensure climate stability.

7. CLIMATE CHANGE THREATENS FOOD SECURITY AND THE HEALTH OF HUNDREDS OF MILLIONS

- Under-nutrition will be the greatest health risk of climate change with declining agricultural productivity.
- Increasing concentrations of carbon dioxide will reduce the nutritional quality of most cereal crops, affecting hundreds of millions of people.
- Climate change and the rise in carbon dioxide concentrations are projected to result in a 20% reduction in the global availability of protein by 2050.
- Global fish stocks are set to further decline with climate change, with an additional 10% of the global population facing micronutrient deficiencies as a result.

8. VULNERABLE & POOR HARDEST HIT BY CLIMATE CHANGE

- Vulnerability to climate change impacts is high in countries and parts of the population with low incomes.
- Failure to address and adapt to climate change will have disastrous consequences for hundreds of millions of people and will hinder development in developing countries.
- Failure to mitigate and adapt could push 100 million people below the poverty line by 2030.
- Climate change 'hotspots' will push tens to hundreds of millions to migrate, mainly within borders by 2050.

9. EQUITY AND EQUALITY PIVOTAL TO SUCCESSFUL CLIMATE CHANGE MITIGATION AND ADAPTATION

- Success and failure of climate policies highlight importance of addressing social issues.
- Social justice is an important factor for societal resilience in the face of climate change, vital for both local and global cooperation to facilitate mitigation and adaptation.

10. TIME MAY HAVE COME FOR SOCIAL TIPPING POINTS ON CLIMATE ACTION

- "Time is running out."
- An increasing number of citizens in various countries are seriously concerned about climate change.
- History shows 21-25% of a population would need to change their behavior to enact significant system-level changes.
- Deep, long-term transformations driven by a great diversity of actors are needed to meet the Paris Agreement and the SDGs.
- Recent massive civil protests are getting close to the thresholds where we could expect "tipping" of some socio-economic systems.

The full report can be viewed and downloaded from: *https://futureearth.org/wp-content/uploads/2019/12/10-New-Insights-in-Climate-Science-2019.pdf*

ANALYSIS OF STORM SURGES IN MANILA BAY

by Cdr Carter Luma-ang, NAMRIA (MNSA)

Background

The **National Oceanic and Atmospheric Administration (NOAA)** defines storm surge as the abnormal rise in seawater level during a storm, measured as the height of the water above the normal predicted astronomical tide. The surge is caused primarily by storm winds pushing water onshore (NOAA, 2019). The amplitude of a storm surge is attributed to several factors including the orientation of the coastline with respect to the storm track, strength of the storm, local bathymetry, and coastline shape.

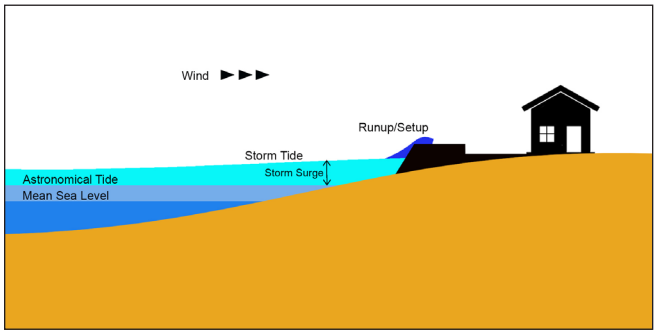


Figure 1. Illustration of Sea Level, Astronomical Tide, and Storm Tide.

Based on the ranking made by NOAA using their International Best Track Archive for Climate Stewardship (IBTrACS) database (NOAA, 2018), the Philippines ranks third in terms of the total number of tropical cyclone hits by country, and ranks second when it comes to the ranking of tropical cyclone hits by country since 1970. Despite the damage received by the Philippines from tropical cyclones yearly, the effects of storm surge have not been given much attention by the Filipino public until **Typhoon Haiyan**, known as **Super Typhoon Yolanda** in the Philippines, that occurred in 2013.

Manila Bay is the biggest bay in Luzon Island and is also home to the biggest port in the country. Should a calamity impact the whole country, Manila is in danger of having the highest casualties and largest damage to properties because of its population and location of its infrastructure network.

It is important that the historical storm surge and tide in Manila Bay be studied to understand the behavior of the water movements within the Bay during tropical cyclones. This information is essential for the effective design of reclamation areas including the ground elevation above the sea level, the height of sea walls and the size of breakwaters.

The period of 2016-2017 is used in this study as it was the only period where there were three operational tide stations inside the Bay that could provide sufficient records to analyze the effects of cyclone activity in generating storm surges.

National Hydrographic Offices such as the **Hydrography Branch of the National Mapping and Resource Information Authority (NAMRIA)** primarily measure tide heights to establish and update the vertical datum for navigational charts. However, hydrographic data are increasingly being used in other research fields besides charting purposes. In storm surge analysis, tidal height measurements by hydrographic offices are not just a convenient source of data but are also the most reliable form of its measurement.

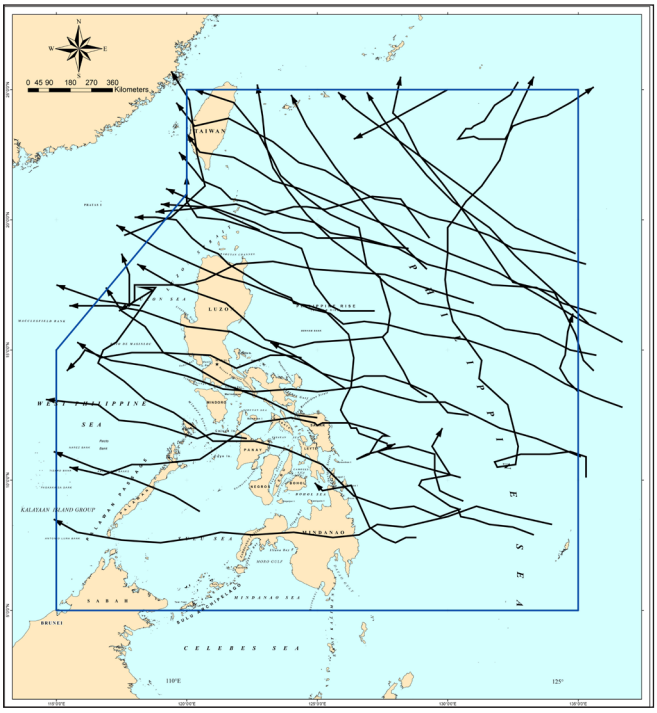


Figure 2. Paths of Tropical Cyclones that passed through the Philippine Area of Responsibility (PAR) in 2016 and 2017.

The height of the storm surge was determined as the residual by subtracting the observed water level from the predicted water level. The Manila South Harbor Tide Station is located in an area where it is sheltered from waves and is able to measure still water. Wave run-up and set-up were already eliminated from the recorded data.

Results

The observed and predicted water level values closely match with each other when there is no weather disturbance. The analysis also showed that there are tropical cyclones that have no obvious impact on water level when passing through the PAR. Tropical cyclones that did not make landfall in Luzon were generally too far away to create significant rise in the water level in Manila Bay.

Out of the 34 tropical cyclones with recorded tide height data in 2016-2017, there were only four (**Super Typhoon Lawin, Typhoon Paolo, Tropical Storm Karen, Typhoon Odette**) that caused a storm surge of 30 centimeters.

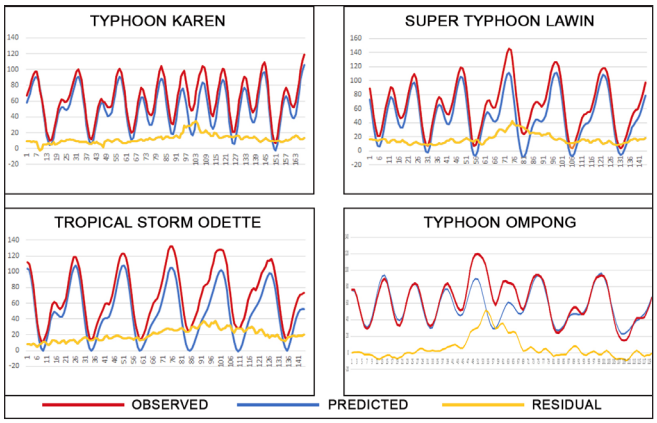


Figure 3. Water level at MSH Station during Tropical Cyclones Karen, Lawin, Odette, and Ompong landfall.

The cyclone that produced the highest storm surge from 2016 t0 2017 was **Super Typhoon (STY) Lawin** with a highest wind speed of 270 KPH. The other two were **Typhoons** (**TY Paolo** and **TY Odette**) and the last was a **Tropical Storm** (**TS Karen**). All made landfall in Luzon and north of Manila Bay except for **TY Paolo**, which entered the PAR at the same time as **TY Odette** was exiting the PAR. TY Odette may still have influenced the wind in Manila Bay even though it was outside of the PAR. In comparison, **TY Ompong** created 50 centimeters of storm surge in 2018, despite having a similar path to the three tropical cyclones that generated storm surges.

The data analysis suggests that the magnitude of a storm surge in Manila Bay can depend on the combination of a tropical cyclone's sustained winds, distance from Manila Bay, and path. The highest rise in water level was created by tropical cyclones passing and making landfall north of Manila Bay. Tropical cyclones passing north of Manila produce onshore winds when it makes landfall in Luzon, thereby pushing the water towards the coastal area of Manila.

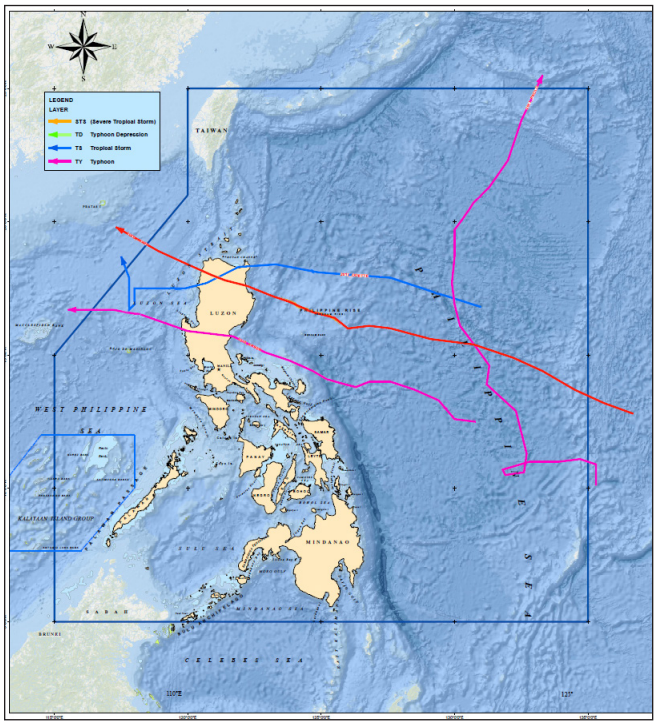


Figure 4. Path of the four Tropical Cyclones that produced the highest storm surge from January 2016 to December 2017.

The observed residuals from the tropical cyclones in the study period are generally smaller than the predicted heights from modeling studies. No tropical cyclone, including the strongest super typhoon, produced more than one meter of residual. TY Ompong produced only 50 centimeters of storm surge. TY Ompong had the ideal wind direction, strength and path to produce a large storm surge. However, it did not create the expected storm surge in Manila Bay compared to the storm surge that TY Haiyan produced in San Pedro Bay.

The shape of Manila Bay may help to prevent the development of large storm surges. In comparison, San Pedro Bay is funnel shaped, is located at the east side of the archipelago and faces the Pacific Ocean. Tropical cyclones normally develop in the east side of the Philippines and travel westward towards mainland Asia. Manila Bay is semi-enclosed and located on the west side of the country. The location and configuration of Manila Bay likely reduces the movement of water that can create larger storm surges.

The study data indicated that floods that occur during tropical cyclones are not caused by storm surge. Seawalls along Manila Bay are generally higher than the recorded storm tide levels. Flooding has been caused by wave run-up and set-up because water was thrown to the other side of the seawall by breaking waves. Floods did not occur because the water level was above the seawalls, rather it was due to the water from breaking waves exceeding the tops of the barriers. It is therefore important to differentiate storm surge, which is sustained over a long period of time from waves, which are generated within short periods.

Conclusions

Understanding storm surge is important in an archipelagic country such as the Philippines frequented by tropical cyclones. It is even more critical in coastal, highly urbanized cities where damage and potential loss-of-life can be severe due to the population density and complex infrastructures.

The results of the study highlighted that there is no single characteristic that is responsible for producing the largest storm surges in Manila Bay. Tropical cyclones rarely follow the same path nor have the same strength. Thus, the amplitude of storm surge varies from storm to storm. If a tropical cyclone changes its course sharply and deviates from the usual path such as Typhoon Chanchu in 2006, it may generate larger storm surge than what was measured in this study.

It is recommended that further studies be made to evaluate the contribution of other factors such as central pressure of tropical cyclones and characteristic of bathymetry for better understanding of storm surge generation and its impact in the country.

The generated storm surge may increase when the configuration of Manila Bay is changed through land reclamation for example. Other factors that may increase the Bay's water height level during a storm include the discharge from the Pasig River, atmospheric pressure and the tide phase. When the storm produces a large volume of rain and increases the discharge from the Pasig River into the Manila Bay and this coincides with the highest tide of the cycle, the water level may go higher than previously recorded storm surge levels. Tropical cyclones also differ in characteristics. If a Super Typhoon moves very slowly from east to west passing through Manila, water may accumulate inside Manila Bay to produce higher than normal storm surge tide levels.

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Note: The article is an abridged version of the paper of the same title published in the International Hydrographic Review. For the complete paper and list of references, see https://www.iho.int/mtg_docs/IHReview/2019/IHR_May2019.pdf.

AGUSAN MARSH

by Josephine M Viray

The **Agusan Marsh**, located in the province of **Agusan del Sur**, Northeastern Mindanao, was declared a protected area by Presidential Proclamation no. 913 dated 31-October-1996. Total protected area is 19,196.56 hectares (14,835.99 hectares core zone; and 4,360.57 hectares buffer zone). **Agusan Marsh** controls the flooding in the Agusan River by sponging the high level of water, thus preventing flooding in the lower portions of the river.

Jonathan Mayuga, **Business Mirror**, 9-April-2016, "Unique Ecosystem," commented: *"During the wet season, **Agusan Marsh** is a large single swamp or a single lake. During the dry season it turns into a series of interconnected rivers and isolated swamps and lakes with Agusan River flowing through the Center. Eight river tributaries namely: Gibong, Simulao, Manat, Baobo, Logum, Ihaoan, Umayan, and Adgaoan drain into the Agusan Marsh."*

Agusan River also houses one-of-a-kind habitation like the sago and peat swamp forests. Jonathan Mayuga, Business Mirror, 6-April-2016, elaborated: *"Agusan Marsh is known to have large peatlands, which are wetlands formed by plant fossils over thousands of years. They provide a host of important ecosystem services,"* DENR Director Theresa Mundita-Lim, Biodiversity Management Bureau, said. *"Peatland ecosystems are the most important carbon sink, more important than forests, due to its carbon-absorption capacity."*

During the heavy rains and floods, these peatlands can absorb huge volumes of water, preventing potentially destructive and deadly floods. *"Peatlands are carbon storage. Destroying peatlands may release carbon into the atmosphere. It is important that these peatlands in the **Agusan Marsh** are preserved,"* Director Lim said. Protected Area Superintendent, **Agusan Marsh Wildlife Sanctuary (AMWS)**, Emmelie T. Ibonia, said *"There are only two peatlands within the AMWS: the 5,325-hectare Campugan Peatland in San Francisco Town, and the 2,000-hectare Tala Goon Peatland in Talacogon Town. These peatlands are being protected along with important ecosystems and wildlife as part of our Biodiversity Monitoring Activities."*

Jonathan Mayuga further elaborated that the swamp forest is a source of fuelwood and exotic fruits like Kamandiis (*Garcinia rubra*), Lambug (Tambis) (*Eugenia calubcub*), wild Lanzones (*Lancium domesticum*), Durian (*Durio zibethinus*), and Marang (Rambutan) (*Arthocarpus odoratissima*).

The economic importance of the **AMWS** is highlighted during the summer months, when the dry areas of the Marsh are used to plant rice and corn. During the rainy season, **Agusan Marsh** is transformed into a big lake with fishermen casting their nets to catch Mudfish, Carp, Tilapia, Catfish, and Gourami. It is home to the fresh water soft shell Turtle (*Trionyx*) and the golden-crowned Flying Fox (*Acerdon jubatus*), both endangered.

112 species of flora and 127 species of fauna have made Agusan Marsh their home. Of 127 fauna species, 31 species are endemic, and 10 species are endangered. Water Hyacinths, Lotus, and Water Lilies abound. The critically endangered freshwater crocodile (*Crocodylus mindorensis*) and saltwater crocodile (*Crocodylus porosus*) are present in Agusan Marsh. "Lolong," once the world's largest 22-foot saltwater crocodile, was taken into captivity after being captured in the Marsh in 2011. **AMWS** was declared a ***Ramsar Wetland Site***, and was awarded a certificate of recognition on 12-November-1999 for being a haven for food and shelter of foreign migratory wild birds seeking temporary shelter from the cold winter months of Siberia, Russia, China, and Japan.

A small group of ethnic Manobo tribal families have made their permanent homes deep within the Marsh living on floating homes made of bamboo and nipa lashed to hardwood logs that rise or fall with the level of the Marsh. The Marsh provides for the Manobos' basic needs, except safe potable water.

Former President Fidel V. Ramos declared **Agusan Marsh** a wildlife sanctuary in 1996. Let us support the long-time efforts of **DENR** to establish an ecotourism package to deter illegal fishing and timber poaching. The ecotourism package features tourist-oriented activities like bird and crocodile watching, kayaking, or simply appreciating the marshland's beautiful and colorful flora and fauna of which many are now endangered species. ⚓

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

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Our Curricula

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

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