



# MARITIME REVIEW

A PUBLICATION OF THE MARITIME LEAGUE

Issue No. 18-4

July-August 2018

## NATIONAL MARINE POLICY REVIEW

- ▶ Can the Laguna Lake Spillway be done?
- ▶ FVR: National Security Policy 2017-2022
- ▶ Guerrero Supports New Maritime Safety Indicator





# Maritime Academy of Asia and the Pacific - Kamaya Point

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

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#### About the Cover:

Photo of the Department of Agriculture's Bureau of Fisheries and Aquatic Resources' multi-mission vessel MV DA-BFAR, whose primary mission is marine ecology protection.



# Maritime Events Calendar

## JULY '18

- 3-5 16TH ASEAN PORTS AND SHIPPING (RENAISSANCE JOHOR BAHRU HOTEL, JOHOR, MY)
- 3-5 SEAWORK 2018 (MAYFLOWER PARK, SOUTHAMPTON, UK)
- 3-31 INTERNATIONAL CONFERENCE ON COASTAL ENGINEERING (BALTIMORE MARRIOTT WATERFRONT, BALTIMORE, US)
- 25 INAMARINE 2018 (JIEXPO KEMAYORAN JAKARTA, JAKARTA, ID)
- 27 MARITIME BREAKFAST FORUM #135 (PHILIPPINE PORTS AUTHORITY (PPA), PORT AREA, MANILA)**

## AUGUST '18

- 1-3 INTERNATIONAL CONFERENCE ON COASTAL ENGINEERING (BALTIMORE MARRIOTT WATERFRONT, BALTIMORE, US)
- 14-16 MARINETEC SOUTH AMERICA (SULAMERICA CONVENTION CENTER, RIO DE JANEIRO, BR)
- 24 MARITIME BREAKFAST FORUM #136 (NATIONAL COAST WATCH COUNCIL (NCWC))**

## SEPTEMBER '18

- 4-7 SMM 2018 (HAMBURG MESSE, HAMBURG, DE)
- 14-16 PALM BEACH MARINE FLEA MARKET AND SEAFOOD FESTIVAL (SOUTH FLORIDA FAIR, WEST PALM BEACH, US)
- 17-20 GASTECH EXHIBITION & CONFERENCE 2018 (FIRA GRAN VIA, BARCELONA, ES)
- 20-22 MARITIME NATION INDIA (CIDCO EXHIBITION CENTRE, MUMBAI, IN)
- 25-27 MARINE SOUTH MILITARY EXPO (QUANTICO STATION, QUANTICO, US)
- 25-27 2ND BALTIC PORTS AND SHIPPING 2018 EXHIBITION & CONFERENCE (RADISSON BLU HOTEL LATVIA, RIGA, LV)
- 21 MARITIME BREAKFAST FORUM #137 (PHILIPPINE COAST GUARD (PCG))**

## OCTOBER '18

- 1-3 AFRICAN PORTS AND RAIL EVOLUTION (DURBAN ICC, DURBAN, ZA)
- 1-4 SINGAPORE INTERNATIONAL BUNKERING CONFERENCE AND EXHIBITION (SG)
- 2-5 SINGAPORE INTERNATIONAL BUNKERING CONFERENCE & EXHIBITION (RESORTS WORLD CONVENTION CENTRE, SG)
- 6-10 INTERFERRY 2018 (JW MARIOTT RESORT, CANCUN, MX)
- 9-11 TRANSTECH 2018 (LENEXPO EXHIBITION COMPLEX, ST PETERSBURGH, RU)
- 11-13 CHINA (SHENZHEN) INTERNATIONAL LOGISTICS & TRANSPORTATION (SHENZHEN CONVENTION & EXHIBITION CENTER, SHENZHEN, CN)
- 12-14 RESCUE 2018 (HARPA CONCERT BUILDING, REYKJAVIK, IS)
- 13-15 MARINE EQUIPMENT TRADE SHOW (RAI AMSTERDAM, AMSTERDAM, NL)
- 16-18 INTERNATIONAL CONFERENCE ON EL NINO SOUTHERN

OSCILLATION (ESCUELA SUPERIOR POLITÉCNICA DEL LITORAL (ESPOL), GUAYAQUIL, EC)

17-18 COMMERCIAL MARINE EXPO PROVIDENCE RI (HODE ISLAND CONVENTION CENTER, PROVIDENCE, US)

**19 MARITIME BREAKFAST FORUM #138 (DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES (DENR))**

22-23 PORT DEVELOPMENT MIDDLE EAST (SUNDUS ROTANA, MUSCAT, OM)

23-25 OIL & GAS VIETNAM (PULLMAN VUNG TAU, VŨNG TÀU, VN)

23-25 TRANS MIDDLE EAST (INTERCONTINENTAL AQABA (RESORT AQABA), AQABA, JO)

24-26 SHIPTEC CHINA (DALIAN WORLD EXPO CENTER, DALIAN, CN)

23-25 15TH TRANS MIDDLE EAST 2018 EXHIBITION & CONFERENCE (INTERCONTINENTAL AQABA RESORT, AQABA, JO)

29-31 SEATRADE MARITIME MIDDLE EAST (DUBAI WORLD TRADE CENTER, DUBAI, AE)

## NOVEMBER '18

5-8 IRANIMEX 2018 (KISH INTERNATIONAL EXHIBITION CENTER, HORMOZGAN, KISH, IR)

7-10 INDO MARINE EXPO & FORUM ( PRJ KEMAYORAN (GAMBIR EXPO), JAKARTA, ID)

18-20 PACIFIC MARINE EXPO (CENTURYLINK FIELD, SEATTLE, US)

21-23 EASTERN INDONESIA INTERNATIONAL SHIPBUILDING OFFSHORE MARINE EQUIPMENT MACHINERY AND SERVICE EXHIBITION (GRAND CITY MALL & CONVEX SURABAYA, SURABAYA, ID)

20-22 IRAN INTERNATIONAL MARITIME & OFFSHORE TECHNOLOGIES EXHIBITION (KISH INTERNATIONAL EXHIBITION CENTRE, KISH, IR)

22-23 LNG & LPG SHIPPING SHIP/SHORE INTERFACE CONFERENCE (ILEC CONFERENCE CENTRE, LONDON, GB)

**23 MARITIME BREAKFAST FORUM #139 (DEPARTMENT OF TRANSPORTATION (DOTR))**

27-29 20TH INTERMODAL AFRICA 2018 (MÖVENPICK AMBASSADOR HOTEL ACCRA, GH)

28-30 INTERNATIONAL WORKBOAT SHOW (MORIAL CONVENTION CENTER, NEW ORLEANS, LA, USA)

## DECEMBER '18

5-7 INMEX CHINA 2018 (POLY WORLD TRADE CENTER, HAIZHU DISTRICT, GUANGZHOU, CN)

13-15 SHIPPING & LOGISTICS INDIA (CHENNAI TRADE CENTRE, CHENNAI, IN)

## JANUARY '19

4 GUJARAT JUNCTION (RADISSON HOTEL KANDLA, GANDHIDHAM, IN)

17-20 KREUZFAHRT & SCHIFFSREISEN (MESSE STUTTGART, STUTTGART, DE)

**18 MARITIME BREAKFAST FORUM #140 (DEPARTMENT OF FOREIGN AFFAIRS (DFA))**

# National Marine Policy Review: Gains and Gaps

by VAdm Emilio C Marayag Jr AFP (Ret)

Recognizing the archipelagic and maritime nature of the country, then President Fidel V Ramos issued in 1994 the National Marine Policy (NMP) to guide various stakeholders in the maritime community, especially those in government, in managing the “blue economy.” The policy contains four key areas: Politics and Jurisdiction, Area Regulation and Enforcement, Area Development and Conservation, and Maritime Security. Although bereft of a legal mandate NMP is in consonance with the national interests.

With financial assistance from the National Coast Watch Council the University of the Philippines Center for Integrative and Development Studies reviewed the NMP in 2015-2016. One of the six objectives of the review was to “assess the accomplishments, gaps, issues, challenges, and opportunities in ocean governance, resource management, and the protection of the country’s territorial integrity.” Given the rising tensions in West Philippine Sea/South China Sea (WPS/SCS) and other significant developments in the maritime domain revisiting the NMP can provide valuable insights to understand the importance of subjecting a public policy to occasional review.

On politics and jurisdiction, the new Baselines Law of 2009 (RA9522) incorporating the areas defined by PD1596 (Kalayaan Island Group) and PD1599 (EEZ) established our national identity as an archipelagic state and defined our maritime boundaries in accordance with UN Convention of the Law of the Sea. Three years later the UN recognized the country’s extended continental shelf in the Philippine/Benham Rise area thereby expanding our maritime zone by some 30,000 square kilometers. In 2016, the government formed a National Task Force West Philippine Sea to coordinate policy on South China Sea. These gains in defining the extent of territory are threatened by the brewing WPS/SCS conflict, the continuing Sulu Sultanate claim, the absence of ASEAN Code of Conduct in WPS/SCS, and the impractical local maritime zone limits that consider only physical boundaries rather than economic resource management. These are some of the challenges that need more attention, and are worthy to deal with.

On maritime area regulation and enforcement, the focus is on the protection of marine ecology. The inter-agency and convergence actions in Palawan and the community-based initiatives in other localities to protect selected marine areas contribute a lot in regulating the utilization of marine resources. In Cebu, the local government organized a system to monitor water quality and set measurement parameters for chemicals to prevent pollution. The modest gains in this area may increase once the stakeholders address the issues of fragmented implementation, enhance legal and administrative procedures and hasten the transfer of knowledge, skills and resources. Integration and coordination are central in regulating and enforcing the various issuances as regards to the use of maritime zones and resources.

On area development and conservation, the main priority is the management of the marine economy and technology to balance

demands for utilization and conservation. This involves fisheries, seabed resources and ports and shipping. The concept of Integrated Coastal Zone Management has taken roots. DENR, PPA, PCG and MARINA are jointly working on abatement and control of marine pollution while other agencies continue to conduct research and assessment on marine resources to help in poverty alleviation and livelihood development. Authorities have established marine protected areas (MPAs), mandated seasonal fishing and crafted policies and strategies to mitigate the impact of climate change. BFAR and marine scientists have started to explore the fishery, aquatic and seabed resources in Philippine/Benham Rise for food, energy and income. The nautical highway initiated by PPA and MARINA some years back now links the island provinces with the major centers of the economy. MARINA’s development plans led to the country’s elevation to top 5 among world’s shipbuilding nations in terms of tonnage and in many ways improve coastal and maritime tourism. The several challenges

faced by this priority area to truly harness the potential of the country’s marine economy are: weak development planning that is predominantly landward looking, poverty in coastal communities, inadequate port facilities and shipyards, mismanaged MPAs and improper valuation of damaged marine resources like reefs and corals.

On maritime security, the recent acquisition of naval, air force and coast guard platforms strengthened the country’s ability to confront low-intensity conflicts in the maritime domain. BFAR also enhanced its capability to enforce fishery laws. But these government agencies and transiting

merchant ships are constrained by ill-defined sea-lanes, weak mapping of the EEZ and existence of lawless groups that prey on commercial vessels. The vastness of the sea areas enables illegal, unregulated and unreported fishing to proliferate. The number of patrol ships for maritime zone is short of the required to prevent, deter and suppress maritime violations. The protection of future marine-based energy sources will need a stronger navy, air force and coast guard.

The NMP reviewers also formulated strategies to address the gaps in the four policy areas and added a fifth: climate change and disaster risks. The country’s participation in the Framework Convention on Climate Change is a big step that is aligned with the NMP. The creation of the NDRRMC is also a welcome initiative to minimize the disastrous effect of natural and man-made calamities. The enactment of Human Security Act is another. The challenges in this area include: mangrove conversion to aquaculture ponds, storm surges, unsustainable fishing practices, contamination of food and water supplies, and disruption of transportation, communications and power lines.

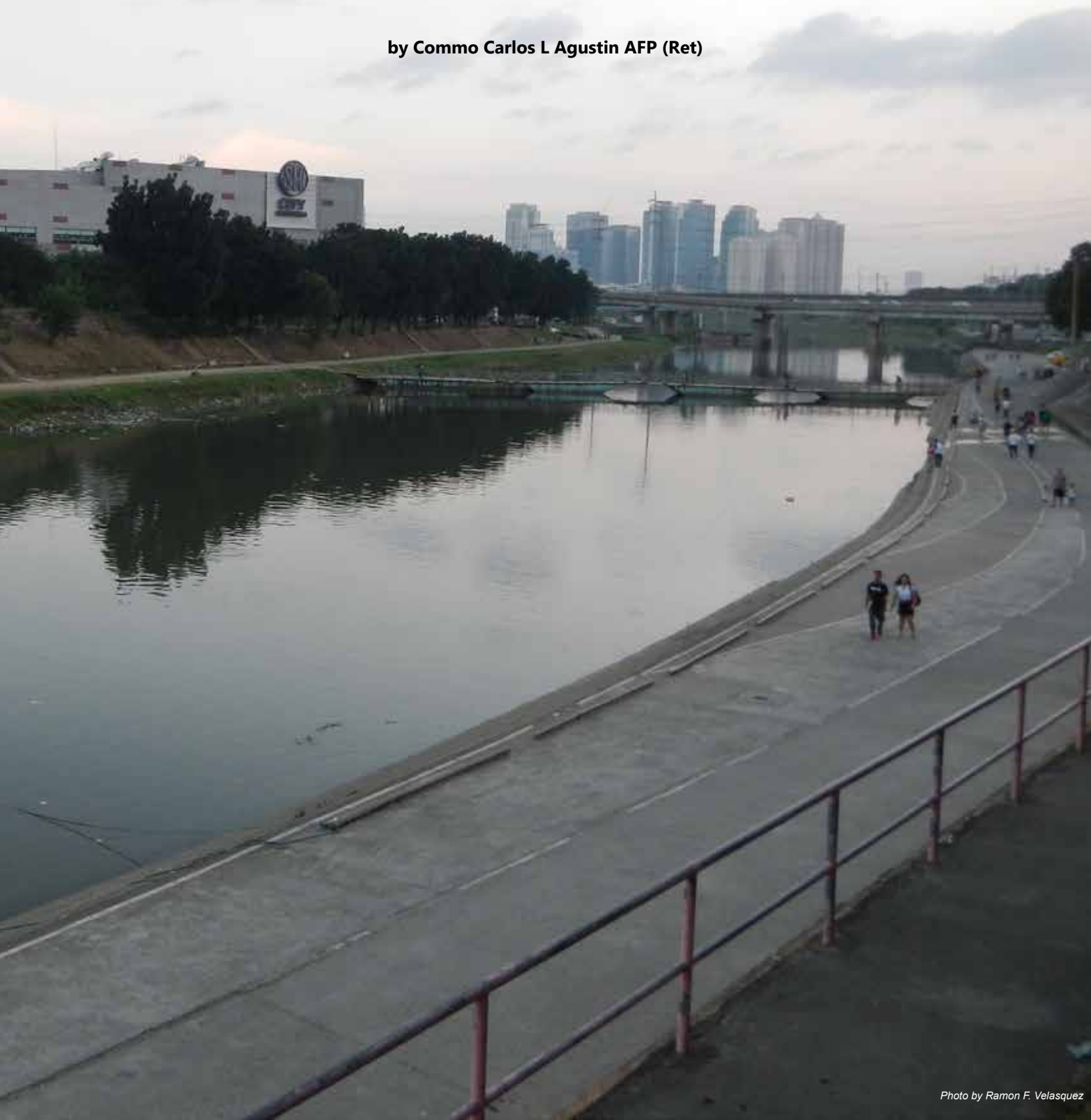
The National Marine Policy is one of the few government policies that underwent a review and we congratulate the prime movers. The maritime community looks forward to the next review to see whether the Policy, with newly crafted strategies, will redound to the integrated management of the country’s blue economy for the benefit of the entire Filipino people! 📍



MV DA-BFAR, Manny Piñol, Facebook page

# Can the Laguna Lake Spillway Be Done?

by Commo Carlos L Agustin AFP (Ret)



Very early on Wednesday, 18 July, while enroute from Dasmariñas City to my office in Makati, I was mentally debating what specific topic I would address for this issue of the Review. Three major issues our Advocates for National Interests (ANI) group would like to delve on initially are: (1) the Bangsamoro Basic Law (BBL), (2) the West Philippine Sea and China, and; (3) Criminality and Judicial Reform.

Constitutional Change is another issue, but that is somehow connected to the BBL case, since both President Rodrigo Duterte and his Constitutional Commission Chair **Reynato Puno** both consider Federalism as the solution to the Islamic rebellion issue. The irony is that now, both the **BBL** and **Charter Change** seem to be top priorities for the Administration. The bicameral hearing early this week brought out many flaws from various perspectives, so it will mostly have a rough sailing, I think.

By the way, these three issues were all mentioned during the launching of the ANI at a press conference conducted on Wednesday, 10 July at the Club Filipino at Greenhills, Mandaluyong City, which was incidentally one day before the second year anniversary of the favorable decision of the Arbitral Court to grant us our sovereign rights to our 200-mile EEZ on the South China Sea.

I had picked the BBL two days before as my topic, and had started on a critical note that would certainly displease its backers. Then I reached the Imus-Bacoor boundary on Aguinaldo Highway, and saw that it was the worse flood I have seen for the highway ever since I moved to Cavite in 1997. I slogged through it, and while doing so received various Viber and text messages showing flooding at EDSA, Manila, CAMANAVA, Quezon City, etc., and the Marikina River was showing shades of the Ondoy flooding. But I got through to my office, only to find out work was cancelled and guess who did not get the word?

That was when, being all alone, I got mentally active, and prepared a Viber text to Maritime League Trustee Ding Wenceslao, the Chairman of ASEANA:

*Ding: How about big players buying that 1 km swath of land from **Laguna Lake** to Baclaran centered around the longtime planned but abandoned LLDA-DPWH proposal for a drainage canal? When I convened an RTD at NDCP after Ondoy, this was presented but both LLDA and DPWH said it was "too expensive now." But the plan was only for a canal and did not include other development.*

My fascination with **Laguna Lake** came as early as 1969-70 when as PN NAVWEPS, I was designated as alternate to Capt **Jaime Francisco** (PN N-3) as PN representative to the National Committee on Marine Sciences (NCMS), and once was tasked to verify the reported oversilting of **Laguna Lake**. This I did with a team from the Small Craft Unit at Cavite on a Fast Patrol Craft (PCF), and found that the soundings on the BCGS Chart of Laguna Lake were quite accurate and silting was mostly around Pateros town and the Pasig River itself. But I did note the potential of **Laguna Lake** for tourism, food production and waterfront development, having seen the Great Lakes, Lake Tahoe and read the brochures on SOCAL's Lake Havasu (which later collapsed due to salination as a result of reduced fresh water input from the Colorado River that did not exceed the evaporation of water from the lake).

The overflowing of **Laguna Lake** was discussed in a forum organized by the Crisis Management Institute (CMI) of the National Defense College (NDCP), in partnership with the NDCP Education and Development Foundation (NDCP-EDFI) on 3-Dec-2009 at the NDCP at Camp Aguinaldo, QC. The forum aimed at looking into the current state of Laguna Lake to determine the reason and extent of the rise of its water level that caused massive flooding during Tropical Storm "Ondoy" for the purpose of formulating steps to address the problem of clogged waterways and flooding in the communities along the shore of the lake. It also aimed at discussing current urban planning and development activities in Metro Manila, and examine some flaws in its implementation.

The speakers and reactor during the workshop were Architect **Felino Palafox Jr.**, Principal Architect, Urban Planner, Founder and Managing Partner of Palafox and Associates; Ms. **Dolora Nepomuceno**, Assistant General Manager, Laguna Lake Development Authority (LLDA) and Professor **Alex Ramon Cabanilla** of the School of Urban and Regional Planning (SURP) at the U.P. and participants included representatives of the Governors of Rizal and Laguna, the Mayors of Taytay, San Mateo, Biñan, Sta Rosa, Marikina, Taguig and Pasig; and the Laguna Lake Development Authority (LLDA); the MMDA, DENR, the Office of Civil Defense, the NDCC, the DOH, the DILG, the DECS, DPWH, AFP, NIA, UP and the NWRB. The Philippine Institute of Environmental Planners also sent a representative.

That forum was covered in the Chairman's Page of the Maritime Review MR 10-1 (Jan-Feb 2010) issue. Ms. **Nepomuceno** gave a factual account on Flooding in the Laguna de Bay Region; Architect **Palafox**, discussed Metro Manila Transport, Land Use and Development Planning, and Professor **Cabanilla** of UP discussed his views relative to the issues at hand.

The Construction of that proposed Laguna Lake Paranaque spillway was strongly recommended by all. But how do we implement this when DPWH opined that the cost of acquiring the land now would make the project prohibitive? The answer is **PPP – Public-Private Partnership**, so I quote the second part of my message to **Ding Wenceslao**:

*Let's look at this: The canal could be a 300-meter canal with a tree-lined parkway on both sides and rows of very high-end townhomes, designed for sale and distribution as compensation to the displaced property owners. I suggest you task your people in ASEANA to do the math and let's sit down. We can get ALL, SUDECO, SMDC and other players, if necessary. This is for national development and security. We can make it navigable by widening it, if feasible. Your group's infra development ingenuity, PRRD's political will, and Buildx3 program can make this work.*

If this were China, all government has to do is provide the funds and just do it. Rich democratic countries just buy off the property owners; I lived in Fairfax County in Northern Virginia in the 80's. A few years later on a visit, I met a Filipino doctor who said with a big smile that his property was hit by the new Fairfax Country Parkway project running through the Springfield area, and he was happy. He got to upgrade to a better house.

With some effort, support from the government and ingenuous master-planning, our top developers can do this. I can think of two approaches:

1. Government initiative: Get government approval to implement the project. Under the strong-willed Duterte administration, just the nod of the President can cause all the government agencies to come together:
  - ♦ Agency tasked prepares Terms of Reference for the Project, for government approval. The TOR could ask consortiums of developers to offer to do the job (this was how BCDA did it, in a different way);
  - ♦ Bid out; and
  - ♦ Execute.
2. Unsolicited offers, subject to Swiss challenge (the new normal)

The development aspects related to this are as unlimited as the imagination that the players can provide. I have seen proposals for the **Laguna Lake** from **Green Square Properties** that includes damming the northern lobe as a future fresh water source, reclamation ideas, responses from the LLDA reclamation plan, and a lake connector highway idea from Hong Kong's Sir Gordon Wu, etc.

But the only one that can greatly help solve the perennial overflowing of the **Laguna Lake**, and flooding of Metro Manila is the century-old idea of a Paranaque spillway that can, additionally, provide added urban development for the area. ⚓

# National Security Policy 2017-2022

by former President Fidel V Ramos

Last April 2017, President **Rodrigo Roa Duterte** issued Executive Order No. 16, "Directing All Government Departments and Agencies, Including GOCCs and LGUs to adopt the **National Security Policy 2017-2022** in the Formulation and Implementation of Their National Security Related Plans and Programs" which stipulates thus:

*"Whereas, consistent with the President's vision of a more secure, peaceful and prosperous Filipino nation, the **National Security Policy (NSP) 2017-2022** was formulated, providing guidance and a comprehensive approach in addressing national security challenges;*

*"Whereas, **NSP 2017-2022** was formulated in coordination and consultation with key agencies and instrumentalities of the Government, and with the participation of various stakeholders, including the academe and non-Governmental organizations;*

*"Whereas, there is a need to harmonize the national security efforts of Government and ensure that it is responsive and complementary to the country's development goals and objectives as set forth in "AmBisyon Natin 2040"..."*

(Note: NEDA's "AmBisyon Natin 2040" is the result of a long-term visioning process that began in 2015. It represents the collective aspirations of the Filipino people for themselves and for the country in the next 25 years. It describes the kind of life that people want to live, and how the country will be by 2040. As such, it is an anchor for development planning across at least four administrations.)

## SIX-YEAR ROADMAP ON NATIONAL SECURITY

PRRD directed the formulation of **NSP 2017-2022** to "provide guidance as we face pressing national security challenges in the coming years." He added that **NSP 2017-2022** embodies our efforts to address all threats to our nation's survival and way of life. As a matter of policy, we will end all conflicts and lawlessness based on three distinct but interrelated realities.

First, economic prosperity is undeniably dependent on national security. Hence, aside from guarding against external threats, we will quell all existing secessionist and ideological rebellions and address their root causes.

Second, the formulation of a single **ASEAN** Economic Community

presents both risks and opportunities. We will therefore equip our people with the necessary tools and skills to adapt to the challenges of regional integration.

Third, national security must be viewed within the context of an expansive global community. Thus, we will pursue an independent foreign policy anchored on international law without compromising our unique culture and the enduring values that distinctly characterize us as a sovereign nation.

The **NSP 2017-2022's** Executive Summary asserts: *"The Government of the Republic of the Philippines envisages a Filipino nation that has an empowered people with dedicated and professional leaders, living in freedom, dignity and prosperity as one community, united in its vision of a peaceful, stable and prosperous country that is capable of ensuring the survival and promoting the well-being of its citizen.*

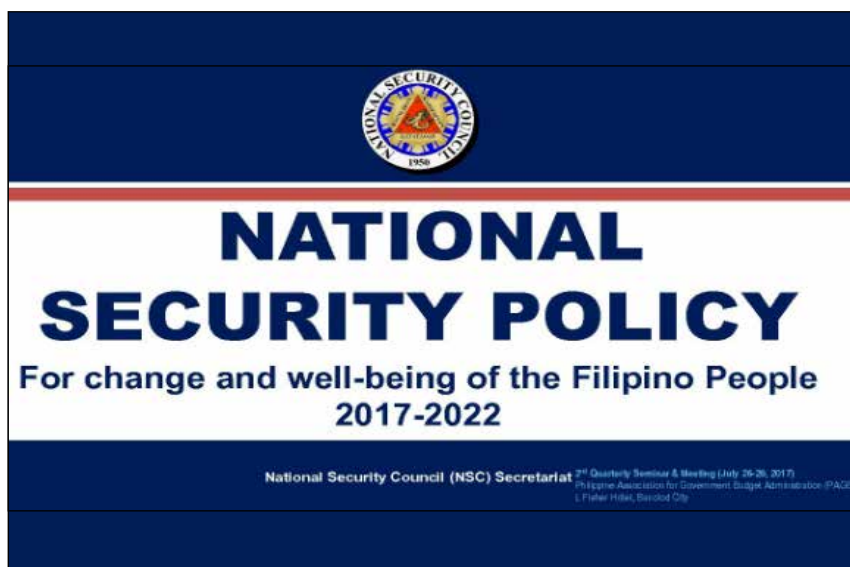
*"The primary objective of the NSP is to fulfill this national vision and safeguard the national interests which include, among others, the protection of the people, their ways of life, welfare and well-being; strengthening of the country's democratic institutions, safeguard its territorial integrity and*

*sovereign rights; and enhancing the Philippines' role and image as a strategic partners of the international community.*

*The **NSP 2017-2022** is a document that outlines our national security priorities based on a realistic and profound outlook on the dynamic and evolving security environment. Essentially, it provides a roadmap for the attainment of our national security vision and aspirations within six years, as well as prescribes the course of action that the Government would undertake to achieve those. Corollary to this, the **NSP 2017-2022** seeks to promote transparent, unified and balanced resource allocation to effectively and efficiently realize our defined goals and objectives, in the furtherance of our national security vision."*

## 12-POINT NATIONAL SECURITY AGENDA

*"This document is the declaration of the Government's commitment to continuously develop a national security system that is rules-based, able to effectively respond not only to security threats but also to opportunities beneficial to the national interest. Enhancing the process, scope and organizations cohesiveness of the national security system is imperative so that the whole of Government, with the support of the Filipino society,*





acts in a coordinated and synchronized manner toward the implementation of the following 12-point National Security Agenda:

1. "Human and Political Security. Effectively respond to the complexity of both old and new security threats to the safety, welfare and well-being of Filipinos. It is an important element to protect the core of human lives and institutions that enhance peace, unity, freedom, democracy and people's dignity.
2. "Health Security. Enhance the quality of life of Filipinos by preventing and mitigating the effects of infectious diseases as well as interdicting illegal and hazardous agents (e.g., chemical, biological and radiological contrabands) including illegal drugs that destroy the future generations of Filipinos.
3. "Economic, Infrastructure and Financial Security. Harness science and technology for global competitiveness, level the economic playing field, promote multi-resource economy that guarantees the interests of the next generation, develop infrastructure and tourism attractiveness, and enable our people to innovate and upgrade their capabilities to protect that livelihood and resources. Pursue the development of financial institutions, which are essential mechanisms for productive enterprises.
4. "Food and Water Security. Promote food security in the country by addressing the causes of food shortage and low agricultural productivity due to natural calamities, obsolete agricultural technology, and conversion of agricultural lands to subdivisions and other commercial land uses. Safeguard access to quality water to preserve ecosystem, sustain livelihoods, health, food and nutrition, and achieve socio-economic development.
5. "Military and Border Security. Achieve self-reliance in defense, assume full responsibility for security, protect the country from internal and external threats, and strengthen national sovereignty by modernizing capabilities of core security sectors.
6. "Socio-Cultural Security. Heighten consciousness and pride on the Filipino heritage and values, strengthen and preserve them from unintended destruction and violence that threaten the integrity of our nation and the character of our democracy.
7. "Environmental and Disaster Security. Guarantee the right to live in green and environment-friendly conditions, preserve and develop these conditions, and protect the eco-systems from damages brought about by the people's destructive practices on land, air and marine life. In addition, enhance our disaster preparedness through preventive and mitigating mechanisms from natural and/or human-induced emergencies that may impact on our environment and the safety of our citizenry.
8. "Energy Security. Secure and protect energy supply throughout the country and pursue the sustainment of existing sources and the development of alternative sources of energy to support the demands of economic enterprises and households and contribute to the global efforts to address climate change.
9. "Maritime and Airspace Security. Ensure safety of life and protection of trade and marine resources against piracy, poaching, illegal intrusion, terrorism, and human and drug trafficking at sea. In addition, ensure safe and secure airspace by improving airspace security measures and capabilities in space-based radar systems and satellites.
10. "International Security. Maintain an independent foreign policy in the community of nations, and ensure a stable and secure international environment for the country and people to thrive as a nation, politically, economically, socially and ecologically.

11. "Information and Cyber Security. Safeguard our classified action plans and programs, sensitive Government intentions, and State secrets from espionage and other hostile actions to protect and preserve national security interests. In addition, shield the country from computer-generated cyber attacks that could cause massive crises in our economy, banking and financial institutions, communications, and other critical infrastructures.
12. "Transportation and Port Security. Strengthen the integration and modernization of multi-modal transport systems (i.e., land, sea and air) to connect all the islands of the archipelago and thereby securing the mobility of people, goods, services and commerce. Further, safeguard both public and private transportation terminals and ports of the country.

## ORGANIZATION FOR NATIONAL SECURITY

Responding effectively to the constantly and rapidly changing challenges of the national security environment requires a reliable and coordinated decision-making and policy response mechanism and structure. This is to ensure that national security managers are given timely and accurate information and well-informed advice to enable them to arrive at sound policy decisions. Once the decision is made, this will be properly coordinated to the designated Government Agencies for implementation.

This is the rationale behind the formation of an **Organization for National Security (ONS)**. To address the **NSP's** goals and objectives and the emerging and urgent national security concerns, the Government shall periodically convene the National Security Council (**NSC Proper**) and regularly conduct NSC Executive Committee (**ExCom**) meetings.

The **NSC Proper** is a collegial body with the President as Chairman and the following as members, as provided in E.O. No. 34, s-2001: 11 members of the Cabinet, 16 Legislative officials, the former Presidents, and other officials and private citizens who may be called on by the President from time-to-time.

The **NSC ExCom** shall be composed of the President as Chairman and the following as members: Senate President or rep, House Speaker or rep, National Security Adviser, DFA Secretary, DND Secretary, DOJ Secretary, DILG Secretary, NEDA Director-General and other officials and private citizens who may be called on by the President from time-to-time.



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# NFWM Clinches PN 2018 Unit Award

by ENS Jesca May P Viduya PN and ENS Lara V Litusquen PN



**N**aval Forces Western Mindanao (NFWM) received the Best Operating Forces Unit Award during the **120th Philippine Navy's Founding Anniversary** in June. **President Rodrigo Duterte** personally congratulated **NFWM Commander RAdm Rene V Medina** while **FOIC VAdm Robert Empredad** attached the streamer to **NFWM's** standard in a ceremony held in Davao.

As the **Philippine Navy** marked its 120th Founding Anniversary with an enduring theme, "Protecting the Seas, Securing Our Future," outstanding PN units, Officers and personnel were recognized for serving the organization with honor and excellence.

As rated on the **Annual General Inspection (AGI) 2017**, the **Naval Forces Western Mindanao (NFWM)** was ranked highest of all NOFs of the **Philippine Navy**, and for the first time bagged the award as **Naval Operating Forces of The Year**. As such, it obtained the PN FOIC's streamer and Plaque of Commendation. The award is for the performance and efficiency of the Command in accomplishing its mission, which greatly contributed to the mission accomplishment of the **Philippine Navy** as a whole. After 21 years of indefatigable labor, dedication, and worthy efforts of the people behind this success, **NFWM** and its men and women were humbled and motivated to work beyond its means.

Through the collective efforts of its highly motivated and efficient human resources, the **NFWM** Command indeed accomplished its multifarious missions. And with no objection, the **NFWM** Command has continuously sent personnel for schooling as mandated by Higher Headquarters to correlate with its mission to provide emphasis to enhance navy personnel skills.

The **NFWM** Command successfully conducted 34 training activities, which

benefited 1,455 training participants from organic, OPCON, and tenant units. During "Regatta de Zamboanga," the command conducted the **Fleet-Marine Interoperability Training** with the **Philippine Air Force** through Capabilities Demonstration on Amphibious Raid and Tactical Maneuvers with the aim to upkeep skills, competency, and enhance inter-operability with other Branches of Service.

With the dynamics in the area of operations of **NFWM** Forces being confronted by various threats and challenges, the organization has to be responsive. In the implementation **NFWM** Support Plan "Malinawon" to WMC Campaign Plan "Kasanyangan," the command task organized Naval Task Force 61 to improve effectiveness and operational response.

For the **AGI** CY 2017, with the organizational reform and modification of the organization of the units as well as boosting the morale and welfare of the personnel, **NFWM** had ably increased its AGI rating from 96.94% in CY 2016 to 98.93% in CY 2017.

The effective implementation of **PN Strategic Sail Plan 2020** was notably appreciated by **RAdm Rene V Medina** AFP, Commander, Western Mindanao Command during his official visit to **HNFWM** where he stated that 60% of the accomplishment of the entire Western Mindanao Command was provided by **NFWM** in CY 2017. The **PN Strategic Sail Plan 2020** achieved an increase in rating from 3.5 to 3.99, and a Silver Award during the AGI CY 2017.

On the Capability-Build Up as measured by the OPREVAL rating, the **NFWM** Command had significantly increased its rating from 92% in CY2016 to 98% in CY2017 due to the administrative organizational reform being implemented by the **NFWM** Command to enhance efficiency in terms of measurement parameters.



Moreover, the **NFWM** Command has had a significant increase in the conduct of Maritime Patrol, Sealift Operations, Air Operations and Special Operations, Territorial Defense Operations, and Internal Security Operations. Less attention was given to other law enforcement mandates undertaken by law enforcers. The modification of line of effort of the Command has decreased the occurrence of incidents at sea by 67% and increased the number of rescued victims to 133% in CY 2017 compared with CY 2016 level. The most significant result of this effort was the **NFWM** Command having been able to pinpoint the location of Isnilon Hapilon which initiated the battle of the Government Forces against the ISIS-inspired local and foreign terrorist, Maute Group, Abu Sayaf Group, and other armed groups that joined this new breed of terrorists that intend to establish a Wilayat in South East Asia, specifically in Marawi City, Mindanao.



Through the **Naval Task Group (NTG) Tawi-Tawi**, the command participated and launched 2 Trilateral Maritime and Air Patrol, and 2 Port Visits. The Command initially established Maritime Coordinating Center (MCC) in order to enable information and intelligence sharing as part of the **Trilateral Cooperative Arrangement**. Combined Maritime Patrol Exercise were also conducted last October 2017 as well as SEMAPHOREX and PASSEX. The **NFWM** Command also spear-headed the Combined **Philippine Navy (PN)** and **Australian Navy (RAN) Maritime Security Engagement (PN-RAN MSE)** launched last November 2017.

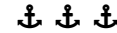
On special operations and intensified intelligence operations, the **NFWM** Command successfully neutralized high valued targets of the Abu Sayaf Group and other armed threat groups within the area



of operations. Through its Naval Task Group and able Fleet-Marine Units, the **NFWM** Command conducted several **Focused Military Operations (FMO)** within the Area of Operations.

Over the years, the **NFWM** Command has been continuously developing and setting the standards as a command without limiting its mission.

"We tend to not leave behind the past as it reminds us to strive more, aim more and do more. The future is coming, yes it is and we are not stopping. We have witnessed how **NFWM** evolved into a strong and credible navy that has molded young minds and brave hearts amidst challenges. It doesn't end there, and it's the beginning of an unstoppable service to our maritime nation," **RAdm Rene V Medina** AFP, Commander, **Naval Forces Western Mindanao**, expressed.



**ABOUT THE AUTHORS**



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# Will the Philippines Be Involved in a Conflict Between the United States and North Korea?

by BGen Manuel Oxales (Ret.)



*A B-2 Spirit bomber takes off from Guam. One of the unmistakable signs that conflict is imminent will be the mass departure of these bombers from their home base in Missouri.*

In the Korean War (1950-1953) between the United Nations coalition led by the military forces of the United States and South Korea against North Korea backed up by Chinese troops, the Philippines sent 3 battalions of some 7,000 personnel equipped, supplied, placed by and fought under U.S. operational command (The PMA post-WWII Class of 1951 had an early graduation, were sent to and had their first baptism of fire in Korea).

In August 2017, North Korea hurled missiles over islands north of Japan towards the sea over a distance of 3,600 km. Again in October, it launched a missile over Guam, a U.S. territory about 3,400 km from Pyongyang. It boasted to have tested nuclear weapons. On Guam are based U.S. B-52 long range and B-2 Stealth bombers capable of carrying nuclear bombs. U.S. nuclear-tipped Patriot missiles, anti-ballistic missiles, and Pacific Fleet are based in Japan. Top U.S. officials responded to North Korea's threat to massively retaliate if Guam would be attacked.

The exchange of threats by two nuclear capable states alarmed Department of Defense Secretary **Delfin Lorenzana** who said the Philippines could be hit by debris from an errant missile directed at

Guam, 2,500 km away. He said the country has no defense against a missile attack and is vulnerable to nuclear fallout.

In the event that negotiations between U.S. President Donald Trump and North Korea leader Kim Jung-Un fail and war between the two nuclear capable states is inevitable, will the Philippines be involved?

The Philippines could be involved because of its close identification and association with U.S. in the past and its obligations under two bilateral treaties, the 1951 RP-U.S. Mutual Defense Treaty (MDT) signed on 23-September-1951, one year after the Korean war broke out on 25-June-1950 and the 2014 RP-U.S. **Enhanced Defense Cooperation Agreement (EDCA)** signed on 10-February-2014.

Philippines' close partnership with U.S. was unmistakably demonstrated by its support and loyalty in WWII and in two regional wars in the Pacific. A few weeks after the Japanese sneak attack on Pearl Harbor, Hawaii on 7-December-1941, a newly organized and fledgling 100,000 Philippine army of the Commonwealth government of President Manuel L. Quezon was inducted by President Franklin Roosevelt into the service of the **United**

**States Armed Forces in the Far East (USAFFE)** and placed under the command of General Douglas MacArthur. Together with some 20,000 American soldiers they fought a heroic defense of Bataan and Corregidor in the face of overwhelming and superior Japanese Imperial army. In the Korean War, the Filipino soldier fought side by side with the American defending the South Korean territory. In the Vietnam War of the 1970's, the Philippines provided some 2000 civic action personnel to the South Vietnamese people. The two regional conflicts in **Clark Air Base** in Pampanga and **Subic Naval Base** in Zambales were used intensively as assembly, training, staging of military forces, rest, recreation and hospitalization of American personnel, supply and support of U.S. aircraft and naval vessels.

(In the last year of the Korean War, China supported North Korea with 100,000 soldiers that contained and drove back the U.S. led United Nations coalition forces below the 38th parallel and culminated in an Armistice in 1953. North Korea is a close economic and trading partner and receives military aid from China. Both countries signed in 1961 a mutual defense agreement obligating to assist each other in the event of attack on each other's territory).

Under the 1951 MDT, its principal provision states that, *"Each Party recognizes that an armed attack on either Parties in the Pacific would be dangerous to its own peace and security and would act to meet the common danger according to its constitutional processes."*

The Parties referred to are construed to include their territories; military forces on land, sea and air; aircraft on flight; naval vessel on sea; land equipment; or weapons in space.

The constitutional processes referred to is the sole power and authority of Congress under the 1987 Constitution which states that *'Congress by a vote of two thirds of both Houses in joint session assembled, voting separately shall have the 'sole power to declare the existence of an emergency or a state of war.'*

It would deliberate on whether *'an emergency or a state of war exists' and on the why-what-how-when it 'would act to meet common danger.'* It would consider many factors like the present utilization of the AFP, its capabilities, and the character of the next conflict in the Korean Peninsula and its environs.

Since the end of WWII, the AFP has been preoccupied with fighting internal threats like the decades old leftist insurgency, century old separatist movements, and more recently, non-state foreign inspired and funded secessionist organization. Except for a 3-year involvement in the Korean War, its armed forces have not had ample experience in conventional warfare, which is characterized by large deployment of ground forces on a wide open battlefield supported by heavy fire from aircraft and sea vessels, employing tactical maneuver, and strategic movements to destroy the enemy's capabilities and support structure.

Unlike the Korean War (1950-53), the next conflict in the Korean Peninsula would be fought with weapons and equipment much advanced in technology, precision and destructibility. The combatants would employ air, sea and land-based missiles, smart precision bombs, tanks with precision guided rockets, laser guided guns, drones armed with bombs, cyber attack devices, equipment in space for surveillance and tracking, and other destructive weapons. The use of chemical agents or nuclear weapons launched by artillery, aircraft and missiles would result in casualties of hundred of thousands in an instant. God forbid!

With its present utilization, capabilities and weaponry, the AFP could not be of much help MILITARILY to the U.S. in the warfare scenario

characterized above. It would not make a decisive impact on the battlefield. At best, its contribution would be symbolic and very limited support. It is not expected to do so.

U.S. expectations are availability of and access to military bases in the Philippines for U.S. forces and personnel as provided in two bilateral treaties, the 2014 **EDCA** and its responsibilities under the Visiting Forces Agreement (**VFA**) signed in 1998.

Under the 2014 **EDCA** signed by Philippine Defense Secretary **Voltaire Gazmin** and U.S. Ambassador **Philip Goldberg**, the Philippines allows U.S. forces and contractors to operate out of 'agreed locations' which are facilities and areas provided by the Armed Forces of the Philippines. These are: **Clark Air Base** in Pampanga, **Subic Naval Base** in Zambales, **Ft Magsaysay** in Nueva Ecija, **Basa Air Base** in Pampanga, **Ebuen Air Base** in Cebu city, **Antonio Bautista Air Base** in Palawan, and **Lumbia Airport** in Cagayan de Oro, and other areas as mutually agreed upon. It allows 'U.S. forces to preposition and store defense materials, equipment and supplies' which do not include nuclear weapons. Also, the U.S. is allowed to build structures and facilities to be occupied by its personnel and storage of equipment on a rotational basis and not allowed to have permanent bases The Agreement is renewable after ten years.

The selections of the sites are significant. Two were former U.S. military bases, Clark and Subic used intensively in support of U.S. military operations during the Korean and Vietnam Wars. These bases. One in Luzon closed a jet fighter aircraft with a runway and facilities, which could be made operational. One, in Cebu was used as a transit hub for disaster and humanitarian assistance for the victims of the Yolanda typhoon and the one in northern Mindanao and Palawan conveniently selected for future missions is Southern Mindanao and South China (West Philippine sea.). **EDCA** supplemented the **VFA** ratified in 1999 which provides guidelines and procedures for the treatment of U.S. personnel on temporary visits to the Philippines for the annual bilateral

exercise with the AFP on matters such as jurisdiction and trial for crimes committed against the laws of the Philippines or the U.S., and immigration requirements like visa, passports and customs and other issues.

The 2014 **EDCA** was entered into to correct an incongruous situation. Under the 1951 RP-U.S. **MDT**, the U.S. is obligated to defend the Philippines against external attack. But with the termination in 1992 of the 1947 RP-U.S. Military Base Agreement, the U.S. government felt that without bases or 'locations' in the Philippines on which to preposition and operate its military forces, it cannot effectively comply with its obligations under the treaty.

On the part of the government of President Benigno Aquino III it wanted a more visible, concrete evidence and manifestation of U.S. determination and resolve to comply with its obligation under the 1951 MDT in the face of China's increasing assertiveness and claim of historic rights over islands and waters in the vast South China sea. These disputed islands are claimed, occupied by and form parts of the territory or exclusive economic zones of Taiwan, Philippines, Vietnam, Malaysia, Brunei and Indonesia. With the signing of **EDCA**, former Secretary **Voltaire Gasmin** would later say, "We will not be bullied anymore."

After the civil war and subsequent takeover of China by the communists by the late 1940's the Philippines has not had any official government contacts with China until President Ferdinand Marcos established full diplomatic relations in 1975. (It was with the Kuomintang

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*"The first, the supreme,  
the most far-reaching  
act of judgment that  
the Statesman and the  
Commander have to  
make is to establish by  
what test the kind of war  
they are embarking..."*

*- Clausewitz (1832),  
On War*

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government of Taiwan that the Philippines had official contacts). Since then the Philippine has had vigorous exchanges with China in trade, commerce, investments, tourism, employment, and others. The government of both countries had very cordial and harmonious relations.

The mood seemed to have changed in 2009 when China submitted to the United Nations its claim over islands in the vast South China Sea with an 'old map with nine dashes (9-lines) that extended from Hainan island in southernmost China to the south in Borneo, northward to Taiwan in a U shape figure. The line encompassed the entire sea and overlapped the territorial claims of 4 Southeast Asian countries including the Philippines and Taiwan. As China began building structures, expanding the disputed islands at will, the Claimant Countries were alarmed.

For the Philippine government, the tipping point was a month-long standoff between a navy ship and a Chinese Coast Guard vessel that occupied and guarded the **Scarborough Shoal** located some 150 km west of Zambales (well within Philippine EEZ), but 550 km from southern coast of China, and has long been a traditional fishing ground of Filipino fishermen. President Aquino likened it to Nazi Germany occupying a Sudetenland, a territory with a German minority in Czechoslovakia, before the start of WWII and the Allies not doing anything about it. The historical reference riled China as unfair and unfriendly, and soured the relations between the governments of China and the Philippines.

In 2013, President Aquino filed a complaint before the **Arbitral Tribunal of the Permanent Court of Justice** in Hague Netherlands which ruled in 2015 invalidating China's claim based on historic rights over the Scarborough Shoal and that the disputed islets and sea are within the exclusive economic zone of the Philippines. China had declared it would not recognize the court, and its decision was therefore not binding. Of the ASEAN countries that have similar claims in South China Sea, it was only the Philippines that filed a case before an international court despite the urgings and position of China that such matters should be resolved bilaterally by two neighbors.

President Rodrigo Duterte saw the scenario in a different light. He felt that an adversarial position by the Philippine government to a neighboring state economically dominant and a rising military Power is not good for the country and its people. As a corollary, too close an alignment with a big Power that has rivals for world domination and spheres of influence and also faces lower level known but highly lethal adversaries could be disastrous to the Philippines. If a disaster strikes that country, its after shocks could place the Philippines in peril.

To make things more picturesque, when two elephants quarrel, the ground will shake and quake. The frogs and mice should move away or keep a distance otherwise they will be hurt or crushed to death by the two beasts.

As writers on international relations postulate, a weak state may relate with a very strong state by three stances: (1) adversarial, (2) band wagoning, or (3) appeasement. Simply stated, adversarial is confrontational, band wagoning is getting along, and appeasement is giving in.

But there is another way as writer and sociologist Arthur Winslow Jones said is a financial risk reducer called "hedging" which is usually practiced by a player in the stock market. By buying other stocks, he hopes that a loss in stocks in his possession can be recovered from a gain in other stocks. Should all his stocks gain, then, well and good.

Explaining the paradigm shift in Philippine foreign policy Ambassador to China **Jose Sta Romana** stressed that the Philippines is not separating from its historic alliance with U.S., a close ally but improving its relations with China and Russia. He meant increasing contacts through trade, commerce, social and people exchanges, more jobs for Filipinos overseas and attracting more investment and tourists to the country. With China, the focus is how to lower tensions and resolve maritime dispute over certain islands and seas west of the Philippines.

The U.S. is a big donor and patron and has given much more economic and military assistance and humanitarian aid to the Philippines than any country thus far. During the ASEAN Summit last November 2017, President Duterte especially thanked the U.S. for the help given in the fight in **Marawi City** against the ISIS-inspired and funded rebels. He also acknowledged the equipment given to the armed forces by China and Russia and welcomed pledges for the rehabilitation of the conflict-ravaged city. These gestures of goodwill, however, did not escape cynics who warned of a possible Trojan horse. Assuring many sectors in the country – political parties, business, military, academe and others – the President categorically stated there would be no military alliance. No more entangling alliances!

As the Philippine Secretary of Foreign Affairs **Alan Peter Cayetano** succinctly stated, *"The core of Philippine foreign policy 'is to be a friend to all and an enemy of no one."*

Six decades ago a great Filipino nationalist Claro M. Recto, a senator and later ambassador, wisely counseled, *"No hagamos enemigos, donde no podemos tener amigos"* – Let us not make enemies where we cannot have friends. However, with the shift in its foreign policy, would the Philippines be involved in a second Korean War?



Books by the author:

*'Advocacy Even in Retirement'* 2012, designated reference by National Defense College of the Philippines, AFP Education, Training & Doctrine Command, the Public Safety College and the Offices of Senators Gregorio Honasan and Antonio Trillanes III)

*'Two Stories of the Philippines February 1986 Revolution'*, 1987, filmed in 1988 into a 2-hour tele-movie starred by top actors Eddie Garcia and Dante Rivero.

*'Advocacy Through the Years'* 2017 (Essays and Letters from 2003 to 2017), designated reference by the AFP Education, Training & Doctrine Command



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# NAMEI Polytechnic Institute and the Shipbuilding & Repair Industry

by Capt Tomas B Baino Pn (Ret) Naval Architect



## INTRODUCTION

Don **Felix B. Padilla** was the first Filipino to graduate as a Naval Architect and Marine Engineer from the Massachusetts Institute of Technology (MIT, USA).

Don Felix returned to the Philippines to share his learning and knowledge with his country and established the **Naval Architecture and Marine Engineering Institute (NAMEI)** in 1947. He wanted to give his fellow Filipinos the chance to work for the progress and development of the country through the Maritime Sciences (MarSci). This was his dream.

Don Felix passed away in 1982, but his dream continues. **NAMEI's** goal is to make economic advancement



Engr. Felix B. Padilla - NAMEI Founder

accessible to the ordinary Filipino through affordable quality education. For over 50 years, **NAMEI** has trained many young Filipinos to become successful professionals in the maritime industry. Today, **NAMEI** is recognized as a pioneer in maritime education, imparting up-to-date technical skills to the Filipino youth and leading them towards a bright and prosperous future.

## Vision

By providing education that meets global standards yet remains affordable to the Filipino people in accordance with its aim of serving God and mankind, **NAMEI** Polytechnic Institute works towards an economically, technologically, and morally enlightened and prosperous Philippines.

## Mission

- ◆ To provide quality education and holistic personal development that enables students to reach their full potential;
- ◆ To maintain an effective updated curriculum for the attainment of desired learning competencies; and,
- ◆ To build an environment that promotes good morals, human dignity, and social responsibility.



## Goals

- ♦ Students that possess the knowledge, skills and values necessary for a productive and successful career.
- ♦ Achievement of national and international needs and standards through our well-trained graduates.

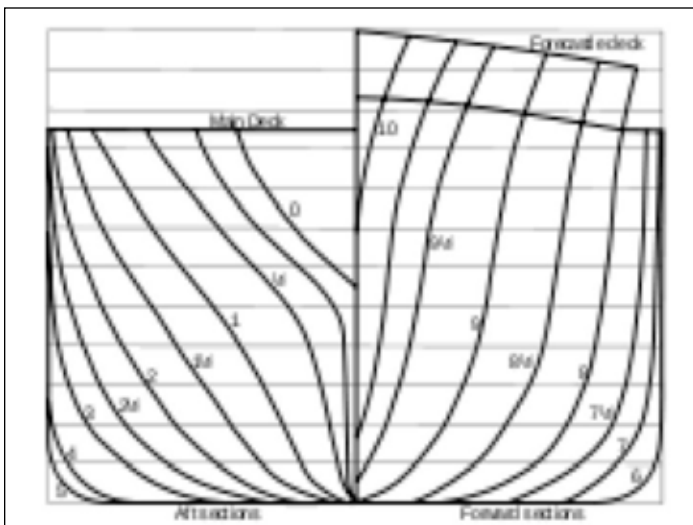
## Some Notable NAMEI Alumni

- ♦ Engr. Bernardo Ebeo, former director, Naval Sea Systems Command Management Office for the Western Pacific at Pearl Harbor;
- ♦ C/E Bienvenido Maranan;
- ♦ Engr. Samuel Lim, president, FAME & SONAME;
- ♦ Engr. Rosalio Quirante, currently PRC examinee;
- ♦ Engr. Cipriano Bautista, former mayor of Navotas;
- ♦ Engr. Martin Mayuga, Naval Architect British Columbia Ferries Vancouver Canada;
- ♦ And many others in the MARINA local and foreign shipbuilding and repair industry.

## NAVAL ARCHITECTURE

Naval architecture, or naval engineering, involves basic and applied research, design, development, design evaluation and calculations during all stages of the life of a marine vehicle. Preliminary design of the vessel, its detailed design, construction, trials, operation and maintenance, launching and dry-docking are the main activities involved. Ship design calculations are also required for ships being modified (by means of conversion, rebuilding, modernization, or repair). Naval architecture also involves formulation of safety regulations and damage-control rules and the approval and certification of ship designs to meet statutory and non-statutory requirements.

### Hydrostatics



Body plan of a ship showing the hull form

Hydrostatics concerns the conditions to which the vessel is subjected while at rest in water and to its ability to remain afloat. This involves computing buoyancy, displacement, and other hydrostatic properties such as trim (the measure of the longitudinal inclination of the vessel) and stability (the ability of a vessel to restore itself to an upright position after being inclined by wind, sea, or loading conditions).

## Bernardo Ramos Ebeo Scholarship for Naval Architecture and Marine Engineering



The scholarship is awarded to high school graduates in need of financial support for a college education. Recipients are provided free tuition for a Bachelor of Science degree in Naval Architecture and Marine Engineering.

In addition, it also supports a Faculty Excellence Award in Teaching for educators.

Named as one of the school's most respected graduates, the Bernardo Ramos Ebeo Scholarship serves as his legacy to inspire future NAMEI students and graduates.

### Hydrodynamics

Hydrodynamics concerns the flow of water around the ship's hull, bow, and stern, and over bodies such as propeller blades or rudder, or through thruster tunnels. Resistance – battling motion in water is primarily due to flow of water around the hull. Powering calculation is done based on this. Propulsion – moving the vessel through water using propellers, thrusters, water jets, sails etc. Engine types are mainly internal combustion. Some vessels are electrically powered using nuclear or solar energy. Ship motions – movements of the vessel in seaway in response to waves and wind. Controllability – maneuvering, controlling, and maintaining position and direction of the vessel.

### Flotation and stability

While atop a liquid surface a floating body has 6 degrees of freedom in its movements, these are categorized in either rotation or translation.

- ♦ Fore and aft translation is termed surge.
- ♦ Transverse translation is termed sway.
- ♦ Vertical translation is termed heave.
- ♦ Rotation about a transverse axis is termed trim or pitch.
- ♦ Rotation about a fore and aft axis is termed heel or roll.
- ♦ Rotation about a vertical axis is termed yaw.

Longitudinal stability for longitudinal inclinations, the stability depends upon the distance between the center of gravity and the longitudinal meta-center.

While a body floats on a liquid surface it still encounters the force of gravity pushing down on it. In order to stay afloat and avoid sinking, there is an opposing force that acts against the body known as **hydrostatic pressures**. The forces acting on the body must be of the same magnitude and same line of motion in order to maintain the body at equilibrium.

### Structures

Structures involve selection of material of construction, structural analysis of global and local strength of the vessel, vibration of the structural components and structural responses of the vessel during motions in seaway.

### Arrangements

Arrangements involve concept design, layout and access, fire protection, allocation of spaces, ergonomics and capacity.

## Construction

Construction depends on the material used. When steel or aluminum is used this involves welding of the plates and profiles after rolling, marking, cutting, and bending as per the structural design drawings or models, followed by erection and launching.

## SHIPBUILDING and REPAIR INDUSTRY IN THE PHILIPPINES



*Herma Shipyard, Mariveles, Bataan*



*Cebu Shipyard, Mactan*

## SHIPBUILDING and REPAIR AS PART OF DEFENSE INDUSTRY IN FOREIGN COUNTRIES

### Warship Construction and Retrofit

Warships are the chief instruments for a nation to extend its military might, by protecting own interests like fleet and offshore platforms against enemy attack. They prevent the enemy from using the sea to transport their military forces and are also used to blockade, i.e., in attempts to prevent an enemy from importing by sea the commodities necessary for his prosecution of the war by blockading and attacking the enemy's merchant shipping. Offensive actions against the enemy's military installations, ports and economic/strategic targets form another important role. The operations to be performed by a warship

make it necessary that it has to be sleek and fast moving, besides being of high maneuvering capabilities. When these features are considered as the basic requirements, the resulting structure will have to be light, and at the same time it has to withstand weapon-imparted loads like impacts due to recoil, blast, explosions, etc.



### Categorization of Warships

In order to accomplish the above functional objectives, naval ships have been designed to be faster and structurally stronger than merchant ships, and thus be capable of carrying offensive weapons. Modern combat ships have generally been classified into five major categories:

- ◆ Ships with landing/take off facilities and hangars for aircraft viz. **aircraft carriers** and landing platforms.
- ◆ Vessels that fight primarily with guns or with rocket-propelled missiles and guns which form part of the carrier escort force. A **Corvette** is a small single-screw ship designed for convoy duties. A **Frigate** is a longer and improvised version of a **Corvette**. A **Destroyer** is a fast and slender, and is generally equipped with torpedoes, anti-submarine equipment, medium-calibre, anti-aircraft guns, and guided missiles as their chief weapons. A **Cruiser** is large, fast, moderately armed, and displacement is in between that of an **aircraft carrier** and the **Destroyer**.
- ◆ Ships that take part in active combat and perform miscellaneous tasks e.g., anti-submarine warfare, amphibious operations.
- ◆ Submarines that mainly operate from underwater using mines, torpedoes, and depth charges, and missiles.
- ◆ Miscellaneous ships like, fleet tankers, survey vessels, etc.
- ◆ Structural Features of Warships

Warships above 60 m in length are usually longitudinally framed, with a transverse frame at every standard frame spacing. Special quality steels like B quality steel conforming to NES 791, 10XSND, DS40, AK 25 and, HY 80 are used for the construction of warships. The structure should withstand shock and blast loads in addition to the conventional loads.

### Structural Behavior and Failure Modes

The possible modes of failure caused by slamming in heavy seas can be divided into two groups: primary failures, where the ship's survival is threatened and secondary failures, where the

continuance of the voyage in the normal mode of operation is impaired. Primary damage modes consist of local yielding of forefoot plates due to excessive bending at hard points and rupture of welded joints, plastic buckling of bow and forefoot plates, yielding of frames in the highly loaded areas of the hull, yielding and possible rupture of hull girder plates caused by the severe vibratory motion of the entire ship, and low-cycle fatigue in highly stressed locations. Secondary modes of failure can be shock damage to navigational and communication systems, shock damage to piping and electrical transmission systems.

### Design Philosophy

The motto of fighting ships all around the world is "To Float, To Move and To Fight." The naval design spiral commences with the threat analysis for developing a variety of conceptual solutions, ranging from the conservative to the abstract and encompassing the latest technological advances and developmental research. Warships are generally sleek, slender with V shaped sections and block coefficients below 0.5, compared to fuller forms and higher values in the range of 0.8 to 0.9 for tankers, around 0.75 for general cargo ships etc. The ratios like LIB, L/D, B/D, B/T etc. of a warship also vary significantly from a commercial ship. Warships normally operate in the higher Froude number regime, and the hydrodynamic design of the hull is primarily aimed at achieving higher speeds with the minimum power. In case of damage in action or otherwise, it is desirable that the ship retains some fighting ability, or at least allows sufficient time for the crew to disembark safely. Warships are conforming to Naval Engineering Standards (NES). NES 154 [30] defines the structural strength standards in the design, construction and modification of surface warships and the basis for approval and acceptance. So far, no clear recommendations or guidelines based on probability methods are prescribed in NES. Introduction of classification society rules is the latest development in warship design. The rules are based on the concept that static and dynamic loads experienced during normal operating conditions should not compromise the structural integrity, water tightness, and general safe operation of the ship. The formulae in the rules for the scantlings of structural members like stiffeners, beams, girders, etc. are normally based on elastic or plastic theory using simple beam models supported at one or more points, and with varying degrees of fixity at the ends, associated with an appropriate concentrated or distributed load.

### MARINE PROPULSION



Marine propulsion is the mechanism or system used to generate thrust to move a ship or boat across water. While paddles and sails are still used by some smaller boats, most modern ships are propelled by mechanical systems consisting of an electric motor or engine turning a **propeller**, or less frequently, in pump-jets, an **impeller**. Marine engineering is the discipline concerned with the engineering design process of marine propulsion systems.

### Marine Propulsion Plant

The marine propulsion plant is the heart of the ship that provides the move function at any weather condition at the most economical means. This is the heaviest and biggest component of a ship's systems.



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## Serving the Philippine shipping and shipbuilding industry

The Society of Naval Architects and Marine Engineers, Inc. (SONAME) is a duly-PRC accredited professional association of Filipino naval architects and marine engineers, shipping and shipbuilding professionals. Our main objective is to advance the art, science and practice of the design, construction, operation, repairs and maintenance of marine vessels, structures, machinery and related fields, encouraging the exchange and recording of information, offering career guidance and supporting education and enhancing the professional status and integrity of its membership.



# 68 years

OF NAVAL ARCHITECTURE AND MARINE ENGINEERING IN THE PHILIPPINES

"FOR FILIPINOS, BY FILIPINOS"





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SOCIETY OF NAVAL ARCHITECTS AND MARINE ENGINEERS

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# Spotlight on Autonomous Ships at IMO Meeting

by IMO News

On 16-May-2018, the **International Maritime Organization (IMO)** –responsible for regulating international shipping– began efforts on the **regulation of autonomous ships** with the 99th session of the **Maritime Safety Committee (MSC 99)**. The **MSC** began looking at how the safe, secure and environmentally sound operation of **Maritime Autonomous Surface Ships (MASS)** may be introduced in **IMO** instruments.

With a myriad of emergent new technologies on the horizon of the maritime industry, such as **autonomous vessels**, it is vital that regulations are established to ensure the safety, security and efficiency of a new generation of ships. Under this, **IMO** looked towards how such vessels could be addressed under the instruments of the organization.

It was anticipated that a working group would be established to develop a plan of work and terms of reference for an inter-sessional correspondence or working group, according to **IMO**.

The **IMO**, as the global regulatory body, sets the regulations for safe, secure and efficient shipping and for prevention of pollution by ships. In regards to integrating new technologies in shipping, we need to balance the benefits derived from new and advancing technologies against:

- ♦ Safety and security concerns;
- ♦ Impact on the environment;
- ♦ International trade facilitation;
- ♦ Potential costs to the industry; and
- ♦ Impact on personnel, both on-board and ashore.

The scoping exercise was aimed at looking at the current regulations in relation to **MASS**. What **IMO** was looking at was how the rules already adopted could be applied to a ship in various modes of autonomy. **IMO** was looking at each regulation and seeing whether it would apply to a ship in an autonomous mode; whether it would not apply at all; or if a new rule specific for autonomous ships was needed.

In order to carry out the scoping exercise of existing **IMO** regulations, and how they would pertain to **MASS** operations, **IMO's MSC** had identified 4 different degrees of autonomy (in non-hierarchical order), recognizing that a ship may operate at different degrees within a single voyage:

- ♦ Ship with automated processes and decision support: Seafarers are on board to operate and control shipboard systems and functions. Some operations may be automated.
- ♦ Remotely controlled ship with seafarers on board: The ship is controlled and operated from another location, but seafarers are on board.
- ♦ Remotely controlled ship without seafarers on board: The ship is controlled and operated from another location. There are no seafarers on board.
- ♦ Fully autonomous ship: The operating system of the ship is able to

make decisions and determine actions by itself.

For the purpose of the regulatory scoping exercise, a **MASS** is defined as a ship, which, to a varying degree, can operate independently of human interaction.

The first step was the scoping exercise. The scoping exercise, planned to be completed by 2020, identified current provisions in an agreed list of **IMO** instruments and assess how they may or may not be applicable to ships with varying degrees of autonomy, and/or whether they may preclude **MASS** operations.

The second step was an analysis to determine the most appropriate way of addressing **MASS** operations, accounting for the human element, technology, and operational factors.



The **IMO** scoping exercise looked at provisions in a number of treaties adopted by **IMO** over the years to set the rules for safe, secure and environment-friendly shipping. These rules are on:

- ♦ Construction, design and equipment in the **IMO Safety of Life at Sea (SOLAS)** convention;
- ♦ Collision regulations (**COLREG**);
- ♦ Rules on Search and Rescue at sea (**SAR**);
- ♦ Training of seafarers and fishers (**STCW, STCW-F**);
- ♦ Loading and stability (Load Lines);
- ♦ Tonnage measurement (Tonnage Convention); and
- ♦ Special trade passenger ship instruments for transport of large numbers of passengers on certain voyages (SPACE STP, STP).

For now, the fully autonomous vessels are small, while most predictions are that **autonomous** or **semi-autonomous operations** would be limited to short voyages, e.g., from one specific port to another, across a short distance.

The **MSC** recognized at its last session that **IMO** should take a proactive role on this issue, given the rapid technological developments relating to the operation of ships in various autonomous/automated modes. The scoping exercise was seen as a starting point and was expected to touch on an extensive range of issues, i.e., the human element, safety, security, interactions with ports, pilotage, responses to incidents, and protection of the marine environment.

Commenting on the **MSC 99**, the **Danish Maritime Authority (DMA)** said that the global industry needs international regulation to facilitate the use of autonomous ships.

*"The first projects with **autonomous ships** have been launched and we have approved the first test sites in Denmark. Development is rapid in this domain and it is crucial to bring the international regulation up to speed. That is why it is so important that the **IMO** will now begin to lay the groundwork for such regulation,"* said **Andreas Nordseth**, Director General, **DMA**. 📍

# Denmark Presents Plan to Ratify HNS Convention

by SAFETY4SEA



**D**enmark presented its plan to ratify the **2010 International Convention on Liability and Compensation for Damage in connection with the Carriage of Hazardous and Noxious Substances by Sea (HNS)**. The Convention aims to provide compensation for costs, including clean up and restoring the environment in case of an incident involving HNS cargoes.

With entry into force of the convention, access to a comprehensive and global liability and compensation regime, similar to that available to those affected by oil spills, will be granted. Costs will be shared between ship-owners and HNS cargo receivers.

The HNS Convention will enter into force 18 months after it has been acceded by 12 countries, meeting certain criteria regarding to tonnage and reporting annually the quantity of HNS cargo received in a State. The treaty requires at least 40 million tons of cargo, which are liable to the HNS Fund.

Until the HNS Convention comes into effect, an existing **EU Directive on Environmental Liability for Preventing and Remedying Environmental Damage** will apply to HNS incidents in the waters of EU Member States, without the benefits of the international regime.

8 States (Canada, Denmark, France, Germany, Greece, the Netherlands, Norway and Turkey) have signed the 2010 HNS Protocol, subject to ratification.

On 23-April-2018, **Canada** and **Turkey** both ratified the 2010 HNS Protocol, joining **Norway** as the first 3 States to lead the way towards entry into force of the 2010 International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea (HNS Convention).

**Henriette Ingvarsdén**, Head of Legal Affairs at **Danish Shipping**, stated, *"I am happy to see the up-coming Danish ratification of the last member of the IMO family of maritime law conventions – the 2010 HNS Convention. The entry into force of the convention will ensure that those who have suffered damage have access to an international liability and compensation regime. I hope it will encourage other States to ratify the convention so it can enter into force as soon as possible."*

**VPO Global News** reports that **Christian Gorrissen**, Vice President and Head of Legal at **Torm**, said, *"The Danish ratification of the HNS Convention is important to shipping as the carriage of HNS by sea is growing by almost all ship types including container ships, chemical, liquefied natural gas (LNG) and liquefied petroleum gas (LPG) tankers. Thus, we look forward to the entry into force of the convention."* ⚓

# Martek Calls for Urgent ISPS Review

by Martek Marine



Commercial shipping is waking up to the growing threat that drones pose to the safety and security of vessels. Terrorist use of drones deploying explosives is already well documented and the potential for a drone to deliver an explosive charge through the deck of an oil/gas tanker or on a passenger ship with potentially catastrophic results is a stark reality. Vessels in port, at anchor or on coastal transits are potential 'sitting ducks' and currently powerless to know if and when they're going to be attacked, let alone be in a position to defend against the threat.

The **ISPS Code Part A para 1.3.3** mandates requirements, "preventing the introduction of unauthorized weapons, incendiary devices or explosive to ships" and Ship Security Plans need to address counter measures to protect from such threats. The problem is that, up until now, aerial threats from drones have just not been considered.

The **ISPS Code** requirements for **Ship Security Assessments (SSA)** as well as **Ship Security Plans (SSP)** are specific and comprehensive regarding identification and countermeasures for all risks EXCEPT aerial risks! A 'straw poll' of company security officers and ship security officers from within **Martek's** existing client base was alarming – most were totally oblivious to the emerging threat of drones nor had they even contemplated this threat in their periodic reviews of the **SSA/SSP**.

**Martek** feel this is a topic which merits serious consideration are writing to all maritime non-government organizations, classification societies and flag administrations to raise the issue and get their individual responses on the matter. **Martek** want to support the industry to ensure the mandatory objectives of ISPS "to detect security threats and take preventive measures against security

incidents affecting ships or port facilities used in international trade" are fulfilled in its implementation.

**Martek** CEO **Paul Luen** commented, "ISPS needs an urgent update to address the growing threat that drones pose to safety & security of commercial shipping. It's critical that awareness is urgently raised, and procedures updated to counter the growing threat before it's too late."

To combat this emerging threat, **Martek Marine** has developed the **M.A.D.S™** Maritime Drone Detection & Defeat System. **M.A.D.S** detects and identifies commercial drones within a 20+km range providing GPS positioning of both drone & pilot together with the drone's speed & heading. Configurable and escalating stage alarms in real time allow the threat level to be assessed in good time. It has both fixed and portable D-Fence™ drone jammers.

Once a real drone threat has been established, the system enables a 500m+ electronic 'exclusion zone' to be created around the vessel. Should the drone approach this exclusion zone, its control/video signal will be interrupted, initiating its fail-safe mode forcing it to land or return to its operator.

Since the recent launch of the system, **Martek** has secured a strong order book and are expanding operations to meet growing worldwide demand. **Martek** is actively seeking new global partners and agents for **M.A.D.S**.

"Drone technology offers some amazing benefits to the maritime industry but as ever, 'bad actors' will seek to use the technology for nefarious purposes. The development of **M.A.D.S** is a major breakthrough to help mitigate such threats and protect global shipping," CEO Paul Luen added. ⚓

# Guerrero Supports New Performance Indicator for Maritime Safety

MARINA News



The Philippines through **MARINA** Administrator **Rey Leonardo B Guerrero** conveyed on 02-July-2018 its support for the inclusion of **“number of serious incidents per year, and per vessel type”** as a new performance indicator for maritime safety in the Strategic Plan, 2018-2023 of the **International Maritime Organization (IMO)** which held the 120th Session of the **IMO Council**, London, United Kingdom from 02–06 July 2018.

**MARINA’s** attendance at this **IMO** meeting is part of the Philippines’ commitment being one of the 40 members of the **IMO** Council, the executive body responsible for supervising the work of the Organization.

There are 10 Member States that each belong to Category A and B for total of 20 Member States. The Member States under Category A are those with the largest interest in providing international shipping services while those in Category B are Member States with the largest interest in international seaborne trade.

The Philippines belongs to Category C, which means it is one among the other 20 **IMO** Member States that have special interests in maritime transport or navigation and whose election to the Council will ensure the representation of all major geographic areas of the world.

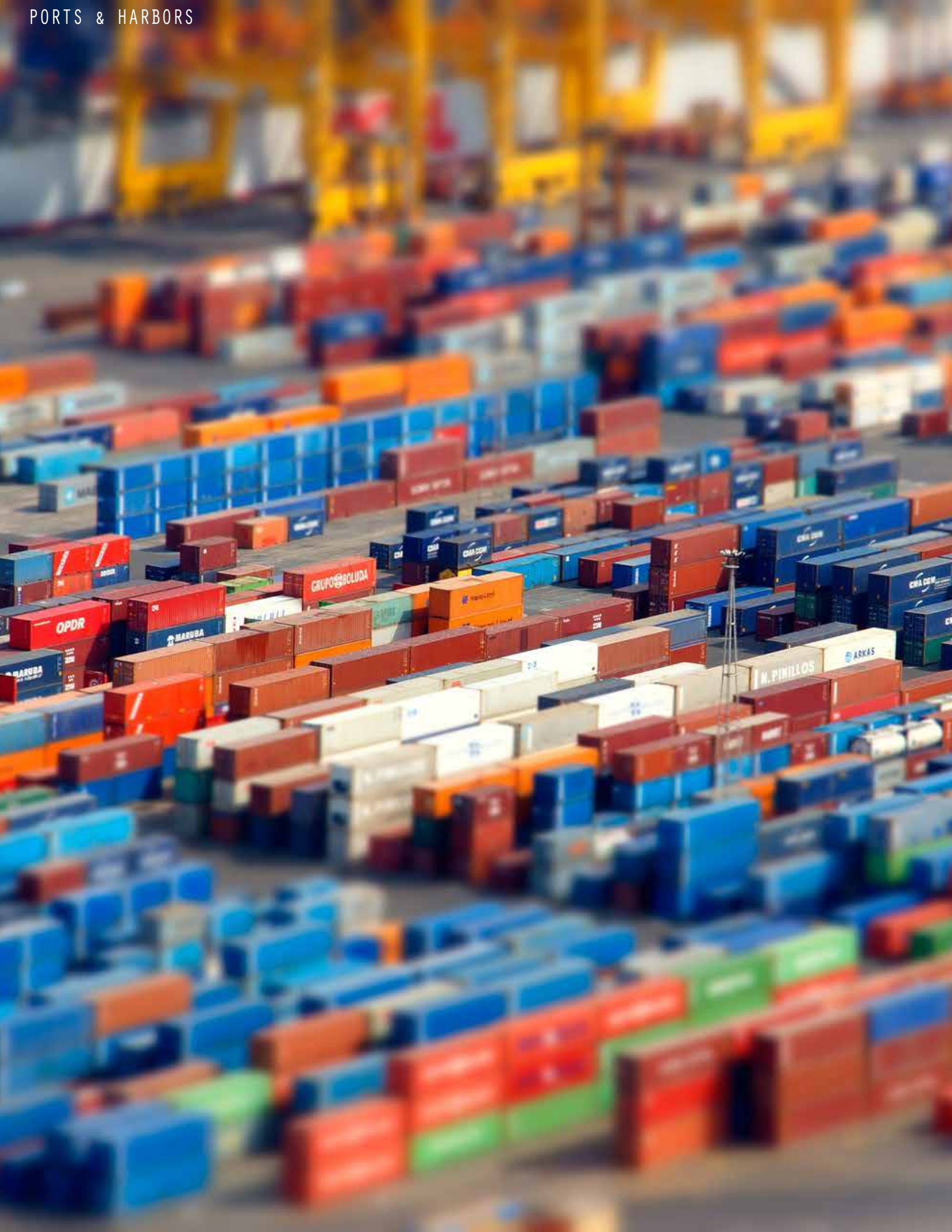
While in London, Administrator **Guerrero** will also meet with representatives of the **European Commission (EC)** to provide updates on the status of Philippines’ compliance with the outstanding issues that the **European Maritime Safety Agency (EMSA)** has raised on the country’s maritime education, training and certification system, as well as to re-assure them of our continuing commitment to meet the country’s obligations under the **International Convention on Standards of Training, Certification and Watchkeeping** for seafarers 1978, as amended otherwise known as the **STCW Convention** for seafarers. ⚓



## 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.







# PPA Sets Sight on Infra Build-Up as it Marks Its 44th Founding Anniversary

by PPA News

Marking its 44th anniversary on this day, the **Philippine Ports Authority (PPA)** has been making big investments in terms of port infrastructure in its bid to achieve its vision by 2020.

It is also in line with the current thrust of the Duterte administration to realize the golden age of infrastructure and be at par with our international partners. Incidentally, the move is also parallel to one of the major programs of the **International Maritime Organization (IMO)** of building better ports for the future. PPA General Manager **Jay Daniel R. Santiago** said the focus of the infrastructure projects include full containerization of Philippine ports and the provision of larger backup areas; safe and convenient Passenger Terminal Buildings (PTBs); upgrade and construction of cruise terminals in key areas nationwide. *"The President's and Sec. Arthur P. Tugade's marching orders are to heavily invest on port infrastructure in order to provide port services of global standards by 2020," Santiago said. "Since the start of the year, almost all of our resources have been directed to our port projects. We have already required all our contractors and suppliers to increase their productivity in order to finish the projects, particularly the locally-funded projects (LFPs), on time if not ahead of time," Santiago stressed.*

*"This year, we have earmarked close to P6 billion to carry out our LFPs, which run to around 109 port projects, wherein 46 are in Luzon, 23 in the Visayas, and 40 projects in Mindanao," Santiago said.* For the Luzon port projects, a total of 9 have already been completed while 18 are ongoing and 19 projects are under procurement. In the Visayas, 6 have already been completed, 10 are ongoing while 5 projects are under procurement. Mindanao registered the biggest number of completed projects with 21 while 49 projects are ongoing. The region also has 35 projects under procurement. Currently, **PPA** is also carrying out several infrastructure projects in key areas to support the booming cruise industry aimed at developing international hubs for cruise liners in Surigao, Ilocos Norte, Bohol, Boracay, Metro Manila, and Palawan. These make up the nation's major nautical cruise arteries. It has also lined up port programs for the development of these cruise terminals.

**Financial Performance.** As a result of its aggressive infrastructure push, the **PPA** registered lower net income in the first five months of the year as its expenses soared, as expected, to finance the said projects. **PPA's** total revenues for the first five months of 2018 went up by 13% to P6.84 billion from P6.04 billion a year earlier. Expenses increased 44% to P3.01 billion from P2.08 billion in 2017 primarily due to the huge infra spending on repair and maintenance and Land improvements that increased more than 139%, resulting in a net income of P3.83 billion or some 3.24% lower than the P3.96 billion posted in the same period in 2017. Nonetheless, despite the huge financial requirements, the **PPA** remains very liquid and financially stable with a net worth of P187.57 billion.

**Operational Highlights.** Philippine cargo throughput for the first 5 months of the year slightly increased by 0.44% due to the high activity in domestic consumption and positive business climate nationwide. Total throughput reached 98.89 million metric tons (mmt) for the period compared to the 2017 figure of 98.46 mmt wherein domestic cargo volume went up almost 4% to 42.36 mmt. **Foreign cargo traffic** decreased by 1.85% to 56.524 mmt wherein imported products inched up by 4% to 37.99 mmt while export volume declined by 12.12% to 18.52 mmt. In terms of container traffic, volume soared by 8.6% to 3.02 million twenty-foot equivalent units (TEUs) as against the 2017 same period volume of 2.78 million TEUs. **Domestic boxes** registered an increase of 9.4% to 1.23 million TEUs compared to the 1.12 million TEUs handled last year while foreign boxes registered an increase of 8% to 1.79 million TEUs from 1.65 million TEUs in 2017. **Passenger volume** continued to expand as of end May as it increased by 9.3% to 36.76 million versus the 33.63 million handled in the same period last year due to the increase in reliance of the sea-traveling public on **Ro-Ro vessels**, fastcrafts, and motorized bancas for inter-island travel particularly in the ports of Bohol, Masbate, Mindoro, Negros Oriental and Siquijor and Negros Occidental-Bacolod-Banago area. The soaring international cruise tourism industry has also positively contributed to the overall performance of the country's passage industry as it soared by more than 184.76% from a mere 43,820 international cruise passengers last year to 124,779 passengers this year. The concentration of cruise ship passengers is at the ports of Manila, Panay/Guimaras, Batangas, and Palawan. There is no sign of port congestion in any of the major gateway ports of the Philippines particularly Manila ports as productivity remains stable with a combined average productivity of 23 moves an hour. In terms of yard utilization, the average is at 60% while berth occupancy rate at the 3 ports is at 59%.

**Dividends.** **PPA** posted a record high in 2017 in terms of dividends remitted to the national coffers after remitting more than P3 billion, its highest contribution to the National coffers since 1986. The state-owned agency's dividend for 2017 also eclipsed by at least 30% all the dividends it remitted to the government at least in the last decade, including its erstwhile record of P2.158 billion remitted in 2015. **PPA** is mandated to remit 50% of its annual net income to the National Government after it was granted fiscal autonomy during the term of President Corazon C. Aquino. In the last couple of years, the **PPA** is a regular member of the 'Billionaires Club' of Government Owned and Controlled Corporations contributing billions of pesos in dividends. With this all-time high dividend by **PPA**, it is expected to maintain its inclusion in the elite list of GOCCs.

**Cruise Tourism.** Philippine cruise ship arrivals posted unprecedented figures capped by the simultaneous docking of cruise ships at the **Manila South Harbor** recently. **Manila South Harbor**, managed

and operated by **Asian Terminals, Inc.**, registered the biggest number of cruise ships docked at the ports with SuperStar Virgo of Star Cruises, Costa Atlantica of Costa Cruises, Amsterdam of Holland America Lines, and Silver Shadow of Silversea Cruises. The continuous hike in cruise ship arrivals is a testament to the initiatives put into place by different government agencies like the **PPA**, and Departments of Tourism and Transportation. **PPA** has been injecting so much effort to improve the cruise facilities of our ports particularly Puerto Princesa in Palawan, South Harbor, North Harbor in Manila, Bohol in the Visayas, and Currimao in Northern Luzon. The more than 1000% increase in the number of cruise tourism passengers slowly reaping the benefits of those initiatives.

**New PPA Logo.**

**PHILIPPINE PORTS AUTHORITY**



The **Philippine Ports Authority (PPA)** also unveiled its new logo in its bid to transform the agency into a more able and model corporate organization. The new logo got the nod of the Office of the National Historical Commission of December 2017. The new logo embodies **PPA**, which is to provide port services of encompassing the 3 major islands of Luzon, Visayas and Mindanao. The government's main thrust, through the **PPA**, is to ensure interconnectivity between the Philippine islands through port development. The sun symbolizes economic improvement and progress of the country; the 3 waves stand for the waters of the 3 island groups in the country – Luzon, Visayas and Mindanao. The government's main thrust, through the **PPA**, is to ensure interconnectivity between the Philippine islands through port development. The blue and red circle within the star symbolizes the globe, which depicts **PPA's** Vision "to have provided port services of global standards. The cargoes represent one of the basic functions of the **PPA** which is port operations."

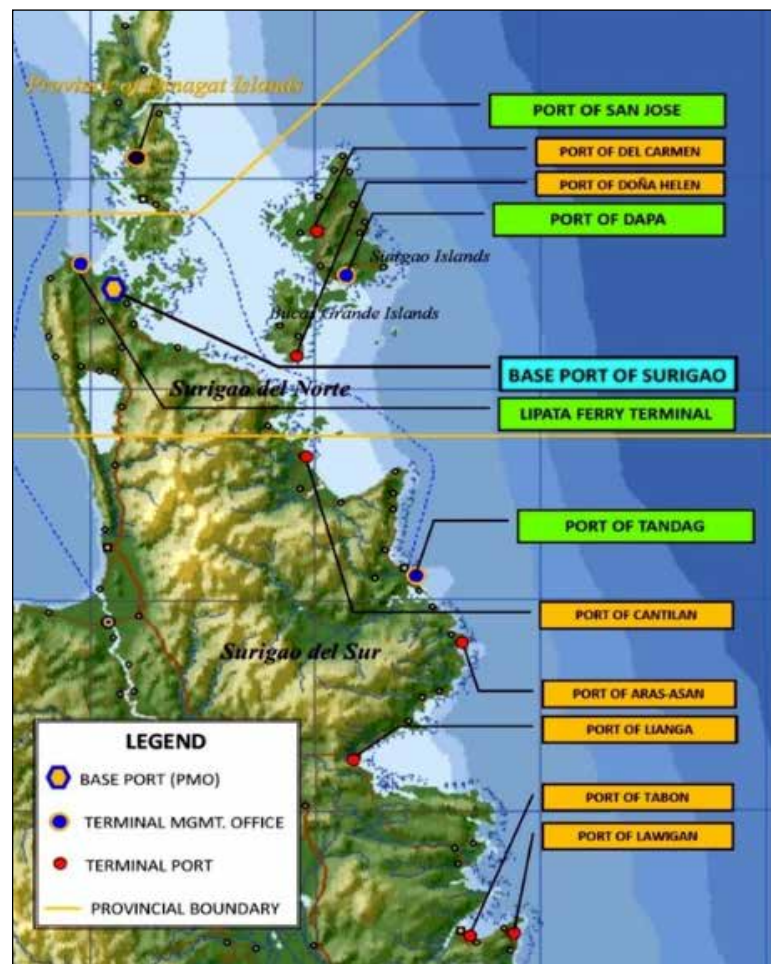
transparent, reliable. The new **PPA** President through the Philippines in the vision of the global standards of the country, and maintain the highest standards with vessel operators, cargo owners, port stakeholders, safety, environmental protection, etc. The sharp element of the logo is the North Star, a symbol of guidance, direction, stability and leadership. It denotes the **PPA's** firm stand in the achievement of its Vision and Mission. This element also stands for the letter "P" in the **PPA/** Philippine Ports Authority while creating the image of a bollard. The sun symbolizes economic improvement and progress of the country; the 3 waves stand for the waters of the 3 island groups in the country – Luzon, Visayas and Mindanao. The government's main thrust, through the **PPA**, is to ensure interconnectivity between the Philippine islands through port development. The blue and red circle within the star symbolizes the globe, which depicts **PPA's** Vision "to have provided port services of global standards. The cargoes represent one of the basic functions of the **PPA** which is port operations."

**FOI Compliance.** The **Philippine Ports Authority (PPA)** is fully compliant with the requirements of Freedom of Information (FOI) reinforcing its earlier commitment to be fully transparent to the public. The **PPA** has received recognition from the Presidential Communications Operations Office (**PCOO**), one of only three Government Owned and Controlled Corporations recognized by the **PCOO** along with the Authority of the Freeport Area of Bataan (**AFAB**) and the National Housing Authority (**NHA**). In order to be fully responsive to all requests, **PPA** has its FOI internal database monitoring system and has included in the preparation of its programs the following initiatives to provide a more efficient FOI requests' management: introduction of enhancements to its internal FOI monitoring system compliant with the required FOI registry format; provision of an FOI kiosk to cater to walk-in requesting parties; and **PPA**-wide orientation seminar to fully inform the employees and document custodians on the Freedom of Information and the **PPA** FOI Agency Manual.

**Strong international performance.** The **Port of Manila** leaped 4 notches higher finishing at 32nd spot in the list of the 2016 top 100 container ports worldwide and jumped one step higher to 22 in the list of Asian ports included in the top 100 container ports, according to the list released by the Lloyd's List in 2017. Manila was able to post very positive performance in 2016 due to the Philippines' booming national economy that increased 6.8% from 5.9% a year earlier. It also added that the higher volume handled at the Manila Port's international terminals, composed of the **Manila International Container Terminal (MICT)** and the **Manila South Harbor**, was due to the Terminal Appointment Booking System put into place sometime in 2015. The country bested other notable international ports in terms of container volume like the ports of Felixtowe (36), Seattle/Tacoma (41), Vancouver (52), Kobe (55), Incheon (58), Nagoya (59), Melbourne (62), London (66), among others. In Asia, Manila ports outperformed the ports of Jawaharlal Nehru in India, Tanjung Perak (Surabaya) in Indonesia, Kobe, Yokohama and Nagoya in Japan as well as Incheon in South Korea. In the 2016 edition, 53 Asian ports made the list while 47 Asian ports were included in the 2015 list.

**Anniversary 2018.** This year's anniversary was celebrated in an austere manner to infuse the fund into port projects and corporate social responsibility programs instead. The theme: "44 years of building better ports for a better future," was highlighted in a Thanksgiving Mass on 11 July held at the **PPA** Corporate Office, followed by a recognition of several **PPA** employees for exemplary performance in the past year. Winners from the different sports events in the first ever **PPA National Sportsfest** were cited. For entertainment, the General Manager, Assistant General Manager for Operations, Assistant General Manager for Finance and Administration, and General Manager for Engineering did a number during the celebration.

"Celebrating the anniversary is not about bonuses and raffle items. It is about our service to the public, which will guarantee the continued relevant existence of the agency," **Santiago** said. 🚢





# The Port of Surigao

by PPA News

The **Port of Surigao** serves as the Base Port of the Port Management Office of Surigao. Located in **Surigao City** on the northeastern coast of Mindanao, the **Port of Surigao** lies in a protected cove, making it an all-weather facility and ideal port of refuge.

The Port Management Office (PMO) of **Surigao** has jurisdiction over various ports in the provinces of Surigao Del Norte including Siargao and Bucas Grande Islands, Surigao del Sur, and the Province of Dinagat Islands.

Passengers and cargoes from Southern Leyte and even Agusan Del Sur and Agusan Del Norte are handled at **Surigao**, thereby making it the premier port in the **Caraga Region**.

2017 Port Statistics show the **Port of Surigao** cargo throughput comprised 11.7% of total PPA ports nationwide; Passenger traffic comprised 3.2%; Shipcalls comprised 3%; Ro-Ro traffic comprised 2.8%; and Container TEUs comprised less than 1%.

**PMO Surigao**, headed by Port Manager **Mildred J Padilla**, has **4 Terminal Management Offices (TMO)**. **TMO Lipata**, headed by **Allan P Yap**, lies northwest of the Base Port in Surigao del Norte. **TMO Siargao**, headed by Francisco M Suriaga Jr, oversees ports in Siargao and Bucas Grande Islands from its base at the Port of Dapa in Siargao Islands, Surigao del Norte. **TMO Dinagat Islands**, headed by **Jerk E**

**Comparativo**, oversees government ports in the island province from its base in the Port of San Jose. **TMO Tandag**, headed by **Debs G Consuegra**, manages ports in Surigao del Sur from its base at the Port of Tandag in Tandag City. There are 3 ports with Ro-Ro ramps: Baseport of Surigao, TMO Siargao Dapa, and TMO Dinagat San Jose.

**HISTORY.** The **Port of Surigao** has a long and colorful history that dates back to the arrival of **Ferdinand Magellan** in 1521. From the Island of **Homonhon**, sailing through the **Strait of Surigao** along the coast of Dinagat Island, Magellan's fleet dropped anchor at **Surigao** for watering before proceeding to the Island of **Cebu** where he was killed on **Mactan** Island nearby.

The Port Management Office of Surigao (**PMO Surigao**) officially came to exist on 01-August-1977 when the **Philippine Ports Authority (PPA)** established its port management unit in **Surigao City** as it took

over port operations, maintenance and related functions from the Bureau of Customs and from the then Bureau of Public Works.

Development of the **Port of Surigao** under the Fourth IBRD package was bided on 12-March-1987 and awarded to F.T. Sanchez Construction on 8-April-1987. The contract took effect on 28-September-1987. The project was formally inaugurated on 9-July-1990 thus modernizing the port, enhancing its role as a gateway to Mindanao. ⚓



Counterclockwise from top left: TMO Siargao, TMO Lipata, TMO Tandag, TMO Dinagat Islands

# TRENDS REPORT 2018: Disruptive Technology for Defence Transformation

by DEFENSE IQ

## Reflecting on Last Year's Conference

The inaugural Disruptive Technology for Defence Transformation conference took place in London on 24-25 October 2017 and examined how disruptive technology will transform defense capability and operations. It was attended by: senior military from many countries; NATO; technology firms such as Google and QinetiQ; leading aerospace and defense companies including Northrop Grumman and BAE Systems; research institutions such as IISS and OSTL; and academia including Cranfield University and the US National Defense University. The Conference was sponsored by Northrop Grumman Europe and chaired by General Sir Richard Barrons.

The Conference examined the current and anticipated operational environment and existing approaches to force modernization, setting the scene for exploring the wide span of disruptive technologies that by and large are being led by the commercial sector. The core issue for the Conference was how these technologies, whether singly or in combination, may be adapted or adopted to transform defense capabilities and operating methods in a way that delivers extraordinary advantage over larger, more traditional armed forces.

The Conference considered that it is very likely that much of this transformation can be accomplished at lower cost than present programmes given the logarithmic cost reductions exhibited by information-based technology. The Conference touched on the spectrum of requirements of Counter-Terrorism and Insurgency, Hybrid confrontation, and conventional conflict at scale, pace and great lethality between peer armed forces. Urgency behind this work was widely acknowledged, in the face of a more challenging, less stable multipolar

world in which both state conflict and the threat from resilient non-state actors are escalating risks. There is already a deficit against some potential adversaries in cyber, domination of the Electro-Magnetic Spectrum, Air Defence, and ability to maintain access to space-based capability. The easy global availability of a great deal of new technology means that the process of 21st century transformation in order to protect homelands and vital interests is a race already underway at pace. This transformation will not easily be conducted in secret unlike previous military transformations.

The Conference considered the challenges of acquiring disruptive technology. It is clear that the organisation and process used to acquire large conventional platforms such as ships will not work for the provision of fast-paced technology where two years is regarded as the longest tenable horizon for anticipating what technology will deliver. It will be necessary to change how specifications are written, allowing room for constant development, and to invest in experimentation in the knowledge that some work will fail. To introduce disruptive technology into defence requires an acquisition system that emulates how technology companies act in a highly competitive environment.

The Conference concluded that bringing together international military, government, alliance, technology, academic and industrial representatives to establish relationships and understanding in this arena was essential and should be repeated annually.

## Conclusions Drawn From 2017

Data will power most transformative change, starting with how intelligence is collected, fused, analysed and presented to leaders

and users. The faster 'big data' and machine learning is drawn into the heart of intelligence, surveillance, and target acquisition capability to replace traditional methods the quicker a decisive edge can be established. Conversely, the importance of stealth in all environments and the requirement to conceal battlefield signatures becomes a core requirement.

Military Command and Control will become faster, more accurate, more agile and resilient the faster it can introduce machine learning supported by robust data and communication services. This has the potential to significantly reduce the size and vulnerability of deployed HQs, and the potential for reach-back to resilient static national and alliance HQs. It suggests a major saving in staff manpower is achievable.

Many militaries, in all domains, are actively experimenting with the potential for a manned/unmanned mix of capability. In particular, the combination of data, connectivity, robotics and autonomy looks to be the route to restoring mass. resilience, deception, and combat power when compared to the cost of conventional platforms and volunteer forces. It will not be long before some Services 'bake in' manpower cost savings on the back of robotics.

There will be a profoundly difficult debate about the limits on autonomous weapons, with clear advantages in some uses, such as the defence of major installations and platforms from attack at speed and scale, and great risk in others, especially where lethal force without a 'man on the loop' may be applied around civilians.

There is no doubt that Virtual and Augmented Reality will become pivotal to seamless individual and collective training, experimentation, concept development, planning and mission support. The technology will permit training that cannot be done in the physical world. The drive is for single synthetic environments that support all these activities in one solution.

There are several emerging technologies that require more concentrated attention and experimentation as they have demonstrably clear potential to disrupt conventional military structures and methods: synthetic biology, the use of graphene, and 3D printing for operations and support were all examined. In each case the civilian lead requires clear, focused military engagement.

## Round Table Discussions

### LETHAL AUTONOMY: CONCERNS & CHALLENGES

*Led by Colonel Dan M. Sullivan, Chief of Staff MCWL, Deputy Director, Futures Directorate, U.S. Marine Corps*

When discussing AI it is important to distinguish between neural networks and Algorithmic Based networks. AI is a spectrum of capability that is evolving rapidly. It will be critical to define terms precisely going forward (e.g. partially autonomous, fully autonomous, man-in-the-loop, positive identification). There is a certain amount of unpredictability of an entity that is vastly more intelligent than its operator. If AI proves to be many times more accurate than humans at determining PID, would it be ethical to restrict the machine from making "shoot/don't shoot" decisions.

Current indications are that our adversaries are pursuing this capability and the development of AI is not occurring in a controlled environment like we had during the first and second offsets. Education and transparency with the public is critical to generate support for whichever path policy makers choose to pursue regarding lethal autonomy.

Recommendations: The recommendations were that signing any international prohibitions regarding lethal autonomy at this time

would not be wise in order to preserve decision space for policy makers until we more fully understand this capability. There should be continued interdisciplinary research on this topic in order to make informed decisions regarding lethal autonomy going forward. In the meantime, nations should issue a "no first use" policy regarding lethal, autonomous systems.

### AI OPPORTUNITIES & THREATS

*Led by Paul Winstanley, Former Executive Director Innovations, UKDSC, Independent Consultant*

There is a potential EW / cyber threat for AI, for example, an AI algorithm could be "fed" inappropriate training data to reduce its initial effectiveness. Building trust between the AI solution and the warfighter was a key discussion point. In particular there is a need to understand, as after action reporting, why the AI made a particular decision. Understanding the rationale would help build trust. AI could be deployed initially in training and simulation systems to start building the necessary trust. There is an interest in using AI as part of a war game, in particular as OPFOR, and being able to train the AI based on the potential adversary's previous tactics, the same AI solution could then be used as an operational "coach". There is a risk of being too reliant on commercial AI training and validation as the defence operating environment has some specific, and unique, attributes. AI is seen as being useful to manage the mass of data to inform a human decision but it is recognised that some situations don't allow sufficient time for a human reaction. In this case, using AI for a non-lethal response would be easier than for a lethal response. Recommendations: It was proposed that AI is certified based on standards of performance rather than an absolute and objective test; essentially AI is assessed in the same way as humans. A roadmap for AI application would be beneficial i.e. which are the priority "easy" implementations to the most challenging.

### BREAKING PARADIGMS AND IMAGINING POTENTIAL FUTURES

*Led by Dr. Lydia Kostopoulos, College of Information and Cyberspace, National Defense University, U.S.A.*

Informed decision making can be used to strategic effect across domains; both the battlefield and when furthering national security interests. Thorough risk assessment is required in efforts to monitor, assess, and give right to authorities to take the risk. There is a need to know who owns the risk and create a possible risk authority map. In order to overcome information overload strategic intelligence and machine learning can be used, in addition to human machine teaming. Networked learning can also be utilised, using people in conjunction with networked machines, devices and sensors. Looking forwards in terms of cooperation and communication, the paradigms are rapidly changing and so is the battlefield.

### REFORMING ACQUISITION TO MATCH THE SPEED OF INNOVATION

*Malcolm Warr, Member, UK Federation of Small Businesses*

Taking into consideration that over 93% of private sector are employed in the UK work in SMEs there is currently too much linear process 'lust to dust' and there is a need to move towards circular procurement with shortcuts through lessons learned. More effective contracting is needed; small innovative acquisition needs higher individual procurement expertise than complex projects. The MoD needs to acquire an SME champion in order to insert new expertise at all levels and 'gateway' organisations are needed to improve communications and information exchanged. In terms of tangible benefits this can add real value and provide bespoke design within budget. Barriers to this as that the current system is too inflexible and there is lack of

proven SME/Corporate contracting models. Other barriers include the blurred roles and accountability, holistic risk and poor time management. Corporates tend to dismiss value of disruptive technology and are designed to work with sustaining technologies.

### **VIRTUAL & AUGMENTED REALITY IN TRAINING, PLANNING, & OPERATIONS**

*Led by Air Marshal (retd.) Sir Christopher Harper, Former Director General International Military Staff, HQ NATO*

The capability of AV/RV currently available can be as good as the "Viz" glasses depicted in Ghost Fleet and is already being used by TSA for facial recognition at US airports and by the Ukrainian Army. Potential opportunities for the training of operators of complex systems are obvious. The F35 pilot of the future will conduct only 50% of their training flying the real aircraft and the rest will take place in simulators. There are a number of F35 systems that cannot be used in peacetime. However, these systems require more than just pilot (or-pilot-to-pilot) training, and Intel Analysts, engineers, fighter and air traffic controllers will also need simulated/virtual training if their skills are to be honed. This begs the requirement for co-operative, distributed, networked training in a massive scale, virtual world. The limitations are that the realities of physical environment are challenging to simulate, for example bomb disposal training in an air conditioned VR training room vs the reality of a hot/humid climate when wearing a CBRN suit. It is also impossible to simulate or emulate real danger or threat to life. (Although pain and electric shock could be used if ethically acceptable). That being said, immersion in a virtual world does generate some sense of reality - including G-force, movement, balance etc. The practical utility of AR/VR technology is growing fast. It has significant potential for applications in the defence and security space but its capabilities are inadequately understood. Risks, benefits and opportunities need to be carefully considered and mapped.

### **SYNTHETIC BIOLOGY FOR MILITARILY USEFUL TECHNOLOGY**

*Led by Petra Oyston, Technical Fellow, Defence Science and Technology Laboratory, UK*

The key issues facing emerging and disruptive technology include experimentation and the consideration of how to transition from civilian application to defence application. The discussion considered if the innovate UK was an appropriate mechanism when the defence sector cannot afford to do everything. Partnerships will underpin everything, there are too many problems to be considered and not enough funds to deal with them so competition must be avoided and be replaced by closer working and openness. Legislation will be unlikely to be able to keep up with the developments and targeted investment is required to develop further multidisciplinary communities and realise fully disruptive impacts of synthetic biology.

In order to establish support and an exploitation route for a capability that is very innovative, cross-cutting and might fit applications that "are not interested in biology" we need to calculate how low level technology can enhance high level capability requirements and also calculate a method to identify breakpoints or knees in the performance curve. It is important to identify what needs to be done specifically in military research that is not being done in the civilian arena, and also understanding that civilian exploitation is a necessary factor in making technology economically viable for military use. Identifying the factor that can add value to a civilian technology to make it valuable to the military tends to depend on individual's innovative thought.

### **POTENTIAL OF 3D PRINTING FOR FUTURE DEFENCE CAPABILITY**

*Led by Michael Petch, Editor-in-chief, 3D Printing Industry*

Throughout the Disruptive Technology for Defence Transformation

event numerous speakers made reference to projects enabled by 3D printing. Perhaps notably these speakers did not always refer to additive manufacturing/3D printing directly, possibly this is indicative of how the technology has now become used widely enough to no longer warrant a specific name check.

Discussion of 3D printing's potential can be characterised across three domains: machines, materials and software. In this first domain, the availability of Metal AM systems was illustrated vividly by the presence metal printer at the conference. With a price point approximately, half that of comparable systems the machine demonstrates the relentless march of progress and the growing accessibility of metal 3D printing.

Discussion around materials for 3D printing was addressed with topics including the use big data to rapidly develop new alloys and a reduction of dependence on scarce resources through the creation of meta-materials.

In the software domain issues around security of digital assets and topology optimization in line with biomimicry were considered as areas for investigation. 3D printing applications included the potential for economic disruption brought about via leapfrogging of under industrialized economies and the potential for AM to disrupt existing manufacturing strongholds - with the societal changes this may entail. Addressing mega-trends such as urbanisation and the increase in number of megacities, 3D printing was seen as one technology poised to find application - with initial examples provided in logistics.

### **THE POTENTIAL IMPACT OF GRAPHENE TECHNOLOGIES ON DEFENCE SYSTEMS**

*Led by Steven J Savage, Research director (materials technology), Swedish Defence Research Agency*

Graphene and graphene-based technologies as we understand them today seem unlikely to be regarded as disruptive technologies, but will certainly be classed as sustaining innovation. Some defence applications would be very valuable, including: new, multi-spectral photodetectors for broadband sensors covering the visual and infrared, structural radar absorbers and structural batteries or supercapacitors. The latter would be valuable in emerging applications demanding extreme multifunctionality, such as small unmanned systems. Graphene enhanced lightweight ballistic protection may be practicable but this is a very complex application and it is too early to make any credible forecast.

Despite the immaturity of the field, thanks to the high level of civil interest some applications may be very easy to implement immediately, such as thermal interface materials to allow electronics to be more easily cooled. This would lead to longer lifetime, improved reliability and higher power output. It is likely that graphene-containing coatings and paints for improved corrosion resistance and anti-fouling will be developed and would lead to reduced maintenance costs. Graphene-containing coatings for electrical conductivity (lightning protection and de-icing) are being developed.

As with all new technologies, progressing from low TRL and surviving the valley of death is difficult. The forecast for graphene technologies is in this respect not too gloomy because several major companies are already investing heavily. This investment is aimed at civil products, so it is important to monitor, evaluate and adapt those technologies for defence requirements. A cost-effective way to do this is by developing communities of interest (small companies, larger companies, defence research agencies and academia). These should be informal and versatile, but nonetheless should do more than simple horizon scanning and technology watch. In addition, it is essential to evaluate the military usefulness of the emerging technology. 📌

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- Enhance C4ISR capabilities and achieve greater agility by incorporating AI and robotics
- Advance training for the modern Warfighter by incorporating AR/VR and developing a synthetic training environment



# Inmarsat FleetBroadband Takes Major Step Toward Formal GMDSS Approval

by Vessel Performance Optimisation (VPO) News


The role of **Inmarsat** as the sole provider of satellite technology performing to **Global Maritime Distress and Safety System (GMDSS)** standards is set for advancement after an **IMO** Sub-Committee decided to greenlight consideration of both **FleetBroadband** and **Fleet One** for formal approval. To date, **Inmarsat** is the only company that has received approval from the **International Maritime Organization** to provide the **GMDSS** data and messaging communications on which mariners rely in the last resort, currently via **Inmarsat C** and **Fleet 77** services.

**IMO** delegates tasked with modernizing GMDSS at a Navigation Communications and Search and Rescue (NCSR) Sub-Committee meeting in March agreed that **FleetBroadband** should undergo the necessary and technical assessment by **IMSO** (International Mobile Satellite Organization), with a report provided for consideration by the next NCSR in 2018. According to an assessment offered by the **IMO's** UK delegation, **FleetBroadband** has achieved availability surpassing the 99.9% required for GMDSS by **IMO** in every year since January 2010. Operating on L-band via the **Inmarsat** fleet of four I-4 satellites, **Inmarsat FleetBroadband** terminals are equipped with the same GMDSS functionality as **Inmarsat C**. Today, around 160,000 **Inmarsat C** terminals are installed on ships operating worldwide.

"Given that most of **FleetBroadband's** components already meet **IMO** performance standards, the service is on course for a formal approval, and this is very much in line with the agreed timetable for the modernization of GMDSS," said **Peter Broadhurst**, **Inmarsat** Maritime Senior Vice President, Safety and Security. "Our continuing commitment to investment in L-Band includes the development of a new **Maritime Safety Terminal (MST)** to enable easier functionality, standardized interface and information rich safety data." **Inmarsat** has solely been supporting GMDSS capabilities since its inception from the 1-February-1999, ensuring that thousands of lives have been saved. "Safety is a cornerstone of all **Inmarsat** services to the maritime community," said Broadhurst. "It's in our DNA." He added that an information paper provided to **IMO** by the UK delegation had noted that **FleetBroadband** effectively complies with GMDSS while offering enhanced safety and distress features. NCSR was satisfied that **Inmarsat** had met the last Maritime Safety Committee's request to offer detail of outstanding matters to **IMSO**. This had opened

the way for **FleetBroadband's** approval to progress. **FleetBroadband** has been **Inmarsat's** flagship maritime service for a decade and currently supports connectivity onboard 45,000 vessels. Offering dependable, seamless coverage, it was the first maritime communications service to deliver cost-effective, broadband data and voice simultaneously through a compact antenna. The L-band service is far less susceptible to rain fade than VSAT, Ku-band or C-band systems. **FleetBroadband** also provides continuous back-up for the Ka-band connectivity offered through Fleet Xpress, the **Inmarsat** service launched in March 2016 that takes maritime communications to the next level.

"The ability of **FleetBroadband** to deliver the **Maritime Safety Data Service (MSDS)** will be a direct and clear net safety benefit for ships at sea," said Broadhurst. "**IMO** can now move swiftly forward with its approval process, so that **Inmarsat FleetBroadband** terminals can be formally considered against resolution A1001.25—the GMDSS mobile satellite communication systems criteria for which **Inmarsat C** is approved." The NCSR also agreed that **Fleet One** services from **Inmarsat** merited technical consideration by **IMO** to assess their inclusion within GMDSS service provision. Also operating on L-band, **Fleet One** meets the needs of low data usage commercial and leisure customers across any vessel size. With the same global coverage as **FleetBroadband**, **Fleet One** offers business-critical applications, simultaneous voice and SMS, plus **Inmarsat's** free '505' safety service for direct connection to a **Maritime Rescue Coordination Centre (MRCC)**.

**FleetBroadband** is a proven maritime broadband solution, delivering global data and voice services for all vessels: satellite voice calls and internet connectivity for business and crew use. **FleetBroadband** is also the trusted back-up for **Inmarsat's** high speed connectivity service Fleet Xpress. **Inmarsat plc** is the leading provider of global mobile satellite communications services. Since 1979, **Inmarsat** has been providing reliable voice and high-speed data communications to governments, enterprises and other organizations, with a range of services that can be used on land, at sea or in the air. **Inmarsat** operates in more than 60 locations around the world, with a presence in the major ports and centers of commerce on every continent. **Inmarsat** is listed on the London Stock Exchange (ISAT.L). 



# The Importance of Crew in Energy Efficient Shipping

by Vessel Performance Optimisation (VPO Global)



*“The most important aspect of saving fuel and energy on board a vessel, is the crew,”* **Peter Knudsen**, managing director at **Blueflow Energy Management** told VPO Global.

The maritime industry has taken huge strides to improve the performance of the global fleet with the development of new technologies, increasing quantities of data, and improved connectivity between ship and shore. Advanced monitoring packages and ultra-modern technologies have the potential to reap huge savings in fuel and time, but in order for these savings to be achieved, the crew on board must understand what is going on and should have the desire to drive a more energy efficient ship.

*“You can put any hardware on board, but if you don’t have the crew on your side, then it will have limited effects,”* explained Mr **Knudsen** as he emphasized the importance of having the crew’s mindset with you at all times. A lot of the time new technologies and data collection systems are installed on board a vessel and the crew are expected to know how to operate them and expected to want to drive fuel savings, but this is not always the case.

One of the key problems is that information is often presented on board but not in a way that all crew will be able to understand. This not only makes it challenging for them to recognize where efficiency gains can be made, but can also leave them feeling overwhelmed as increasingly complex technology is installed without additional training on how to operate it or interpret the results it generates.

For Mr **Knudsen**, the answer is to ensure the crew is involved and feel part of a decision that leads to better ship performance. *“The first thing is to make sure the information on the vessel’s performance is easy to read, easy to understand and interpret and most importantly, that the results are available immediately when change has been made.”* Mr Knudsen believes that giving this feedback to the driver is one of the

most motivational aspects for improving efficiency. *“If they can see what they do then they know they can affect it, they will start to compete with themselves, gaining more and more knowledge on how to operate a vessel to maximum efficiency.”* He explained that giving seafarers this control enables them to engage in the processes that lead to fuel savings and increases their exposure to technologies and software, enabling them to develop a more thorough understanding of the operational environment surrounding them.

**Steven Jones**, project leader **Seafarers Happiness Index**, confirmed to VPO Global that training seafarers to use the technology and not giving them too much too soon is vital to a vessel’s operational efficiency.

*“The danger is for seafarers that they are faced with a huge ramp up in technology, not necessarily being trained efficiently to use it, but expected to perform so much better with it. So, you’re caught in a really difficult place between two stones – this crush and pressure and rising tide of incredible potential of technology, with this clamor from those that have invested in it to want those results, and the people on the ship not terribly prepared for it. So how do we translate the potential of technology into the actuals of it? That is a difficult one.”*

Mr **Jones** believes that there is a cultural shift in what it is to be a seafarer now. *“In order to get the most out of a vessel and to get the best performance from a technology, we must look at how the potentials of technology can be translated into the actuals of it.”*

One part of this is ensuring that crews are recognized for their capabilities in operating technologies that enhance vessel performance. *“It is hugely important that seafarers are embraced as an important part of the solution and not just sent over the horizon with a load of new technology and a load of new problems, which may have potential vulnerabilities attached.”* ⚓



# NEXUS for GEMINI: Van Oord Takes Export Cable-Laying Into its Own Hands

by DAMEN News

**T**heo de Lange, Commercial Manager, Van Oord Offshore Wind Projects, says that despite some delayed projects, Europe's Offshore Wind cable-laying demand is expected to grow rapidly. "UK Round 3 projects, but also German and probably also Dutch projects, are moving farther away from shore, into deeper waters. That means those vessels doing the cable-laying need to be suitable for rougher conditions."

To meet these challenges, contractors are placing orders for new cable-laying vessels or ship conversion projects. Van Oord, which has relied on its own adapted side-stone dumpers or on chartered vessels, decided to invest in its own purpose-built cable-laying vessel – part of Van Oord's business model as offshore wind EPC contractor – "building the complete balance of plant of wind farms, and at the same time doing that with our own equipment." Van Oord had a clear set of requirements for its new cable-laying vessel, including accommodation, dynamic positioning capabilities and the ship's dimensions, but also faced a relatively short timeframe before mobilizing her for Gemini. The team looked at vessel conversion options and existing Offshore Support Vessel designs, but found these too limiting. When presented with the Damen Offshore Carrier 8500 concept, Van Oord quickly decided to order Nexus, the first in class for Damen's new multipurpose design.

"Damen's concept was probably originally made for transportation and installation purposes," Theo De Lange says. "So the start was

different from, for example, a dedicated offshore vessel with all kinds of capabilities that probably we don't need for cable-laying. The Damen concept was kind of a basic design with flat deck, enough accommodation and enough deck space. That was the perfect basis for making it a cable-laying vessel." Because the engineering for the basic design was close to completion, it was possible for Damen to build the vessel in what De Lange says is a very short timeframe. "They also offered a reasonable price/performance balance. And of course Damen has a good track record. That gave us enough confidence that this project would also be delivered in time," De Lange said.

Despite the demanding deadline, Damen undertook additional engineering to fit Van Oord's specifications. The main challenge was extending the accommodation without losing too much deck space, while maintaining low noise and vibrations and certified comfort class for up to 90 persons. "A high accommodation standard is very important," says De Lange. "Not only for Van Oord personnel, but there will be suppliers on board like cable companies and testing teams. So you have all kind of requirements from clients and suppliers that we also had to comply with. I think this vessel at the moment is perfectly suitable for the majority of Round 3 projects. It's definitely capable of installing the export cables, but without any problems we could also do the infield cables. Most probably it will also do some infield cable-laying for Gemini," De Lange added. ⚓

# Future of the Fjords All-Electric Vessel Launched in Norway

by Vessel Performance Optimisation (VPO) News



A fully electric zero-emission passenger vessel, **Future of the Fjords**, has been launched in Norway. It is the result of a collaboration between several industry partners that wanted to develop an environmentally conscious, no emissions vessel.

Comprising an electric propulsion system and a Power Dock floating charging station that can take on grey and black water to ensure no sewage discharge into the pristine waters between **Flåm** and **Gudvangen**, confirms **The Fjords** CEO, **Rolf Sandvik**. The **Power Dock** was developed in partnership with **Brødrene Aa**, the company that also constructed the vessel, to charge the 2.4 MWh battery pack on board the vessel by connecting to the local electricity grid. The **Future of the Fjords** will be able to recharge itself in around 20 minutes using this method.

*"We believe this vessel sets new standards: demonstrating to maritime players worldwide that it is possible to have beautiful, functional, efficient and green vessels, as long as there's both the necessary commitment and a team to help realize your goals. We were lucky enough to have the best minds in the business on our team, and you can see the result of that today,"* said Mr. **Sanvik**.

When it set sail on May 15, the vessel carried passengers through the UNESCO World Heritage listed Nærøysfjord, Norway. The NOK 144m vessel is owned and operated by **The Fjords**.

The 42m long carbon fibre vessel has space for 400 passengers and will make around 700 trips per year, sailing at around 16 knots

maximum speed.

The **Future of the Fjords** is the sister ship to the **Vision of the Fjords**, a diesel-electric hybrid vessel launched in 2016.

Involved in the development of the zero-emission vessel were **Fjord1** and **Flåm AS**, the joint owners of the Fjords. They provided the commitment and funding to build the vessel. **Brødrene Aa** designed and built the vessel from carbon fibre composites and developed the **Power Dock**, while **DNV GL** provided advisory and class services throughout the process.

Other companies involved include **Enova**, a Norwegian organization promoting low emission solutions. Enova provided funding of NOK 17.8m to help bring the vessel to fruition and 6.9m for the **Power Dock** solution. The **NGO Bellona Foundation** acted as a project consultant and supporter, while **Westcon Power & Automation** tailored the vessel's all electric propulsion and battery system.

**Servogear**, a specialist in the design and manufacture of controllable pitch propeller systems worked with key project partners to create the optimal product and configuration for the **Future of the Fjords**.

*"I'd like to take this chance to thank all of our suppliers and partners for playing vital roles within this project,"* said Mr. Sandvik. *"This is a team success and we sincerely hope they're as proud of Future of The Fjords as we are."* ⚓



# Dutch Police Order Six Patrol Vessels from Damen

by Damen News

**T**he Dutch Police has ordered six patrol vessels from **Damen Shipyards** for its 'Zeehavenpolitie' and 'Landelijke Eenheid' units.

Three of the new vessels are seagoing (**Stan Patrol 2506**), while the other three are for the inland waterways (**Stan Patrol 2005**). All six will be built at Damen's headquarters in Gorinchem in the Netherlands, and are due to be delivered between 2019-2021.

**Jeroen van Woerkum, Damen Shipyards Sales Manager Benelux** is delighted to have won the European tender for the six patrol vessels. "We used our expertise and the knowledge that we have built up over the years and optimised it with the latest fuel saving and environmental technologies."

Lower fuel consumption. "These patrol vessels, built from aluminium with a composite superstructure, are lightweight, have less resistance, higher performance and lower fuel consumption. Damen was able to achieve the very strict requirements for reducing noise and the environmental impact and even exceed them." Damen's extensive R&D efforts have led to a big reduction in noise and vibrations, improving crew comfort, he adds.

**Exhaust treatment equipment.** The patrol vessels already comply with the new environmental rules (**Euro Stage V** for inland vessels) for cleaner exhaust emissions, which are being introduced in 2020. "These vessels are actually a step ahead of the regulations. In 2020, vessels have to have after-treatment installations on board but these new patrol ships will already have this equipment."

**Slipway for RIB launch.** Another important addition is the installation of a slipway on the aft of the seagoing, Damen Stan Patrol 2506 from which the RIBs can be launched. Previously, patrol vessels of this size would have to use a crane and a davit. "The slipway is operationally safer, more reliable and the launch of the RIB is much faster. RIBs can

be launched in higher wind speeds for example. The slipway also makes it much easier to retrieve the vessel."

Although details cannot be revealed at present, the layout of the wheelhouse has been fully customized and the vessels will be equipped with night vision technology. The six vessels will replace existing vessels, and will be deployed in the North Sea and on Dutch waterways, and in the ports of Vlissingen, IJmuiden and Rotterdam.

**Damen Shipyards Group** operates 34 shipbuilding and repair yards, employing 10,000 people worldwide. **Damen** has delivered more than 6,000 vessels in more than 100 countries and delivers some 160 vessels annually to customers worldwide. Based on its unique, standardised ship-design concept, **Damen** is able to guarantee consistent quality. **Damen's** focus on standardisation, modular construction and keeping vessels in stock leads to short delivery times, low "total cost of ownership," high resale values and reliable performance. Furthermore, **Damen** vessels are based on thorough R&D and proven technology. **Damen** offers a wide range of products, including tugs, workboats, naval and patrol vessels, high speed craft, cargo vessels, dredgers, vessels for the offshore industry, ferries, pontoons and superyachts. For nearly all vessel types, **Damen** offers a broad range of services, including maintenance, spare parts delivery, training and the transfer of shipbuilding know-how. **Damen** also offers a variety of marine components, such as nozzles, rudders, anchors, anchor chains and steelworks. **Damen Shiprepair & Conversion** (DSC) has a worldwide network of 18 repair and conversion yards of which 12 are located in North West Europe. Facilities at the yards include more than 50 floating and covered drydocks, the largest of which is 420 x 90 metres, as well as slopes, ship lifts and indoor halls. Projects range from the smallest simple repairs through Class' maintenance to complex refits and the complete conversion of large offshore structures. **DSC** completes around 1,300 repair and maintenance jobs annually, both at yards and ports, and during voyage. ⚓

# Swedish ferry tests Volvo Penta IMO Tier III solution

by Volvo Penta News and VPO Global



The Svanhild ferry operates 24 hours per day, and has been trialing Volvo Penta's D13MH engine with selective catalytic reduction, ahead of IMO Tier III regulations coming into force.

With 114 journeys every day, the **Svanhild** ferry has a heavy workload in transporting passengers and cars between two Swedish islands. The roll-on roll-off (Ro-Ro) vessel makes 57 return trips between the islands of Lilla Varholmen and Bjorko, west of Gothenburg. Each journey on the 900m route takes around five minutes, but with such a busy schedule, time is of the essence. Yet efficiency is not the only mark of the ferry's success; as the company is a division of the government's Swedish Transport Administration, sustainability is also valued. As such, **Trafikverket Färjerederiet** has been field-testing **Volvo Penta's IMO Tier III** engine package, to see whether a reduction in NOx emissions is compatible with the required performance.

In addition to reducing NOx emissions, **Volvo Penta's IMO Tier III** solution also provides optimized sulphur fuel up to 1000 ppm, and ability to use either 32% or 40% urea, while the Selective Catalytic Reduction (SCR) also acts as a silencer to reduce noise by up to 35 dBA. "We chose to test **Volvo Penta's IMO Tier III** solution because our vision is to operate a service that is as environmentally-friendly as possible," says **Mikael Olofsson**, the **Svanhild's** skipper for **Trafikverket Färjerederiet**. "We have been carrying out testing for a year and it has been great."

**A 24-hour per day operation.** The **Trafikverket Färjerederiet** operates a number of routes throughout Sweden. The 213ft (65m) **Svanhild** ferry – on the 'Bjorkoleden' route – runs 24 hours per day, making journeys every 10-20 minutes during peak hours, for commuters and sightseers. It has a capacity of 40 cars and 197 passengers. With an engine room at each end of the vessel, the ferry is able to travel easily between the two ports without having to turn around. It previously used four engines – two in each engine room – and was equipped with **Volvo Penta's 12-liter TAMD 122A** models providing 203kW at 1800 rpm. The **Svanhild** ferry now uses only one 13-liter unit in each engine room, and is installed with **Volvo**

**Penta's D13MH** models that provide 441kW at 1900 rpm. The **Volvo Penta D13MH** engines in the ferry use a 360-degree gearbox and are also both equipped with an SCR unit to reduce emissions for forthcoming **IMO Tier III** regulations. "It is good for us to require less maintenance with fewer engines, and reduced fuel consumption and minimal exhaust emissions," says Olofsson. He adds, "The co-operation we've had with **Volvo Penta** is very good, so we are very happy so far."

**Maximizing emissions reduction.** The **Volvo Penta D13MH** model is an in-line 6-cylinder diesel engine that uses a high-pressure unit injector system, overhead camshaft, a twin-entry turbo with a water-cooled exhaust manifold, and miller valve timing. This contributes to world-class fuel efficiency and excellent operating economy, combined with very low emissions. As **IMO Tier III** regulations in the North and Baltic seas will come into force in 2021, requiring a reduction in NOx emissions by around 70%, **Volvo Penta's** engine solution uses an SCR unit with 2 alternative exhaust outlets and a separate UREA injector pipe for flexible and compact installation. The engine package surpasses regulations by reducing emissions up to 75%. Additional benefits of **Volvo Penta's IMO Tier III** solution: (1) Optimized for sulfur fuel up to 1000 ppm; (2) Ability to use either 32% or 40% urea; (3) SCR acts a silencer to reduce noise up to 35 dBA; (4) 6-inch robust bolt flanges; and (5) Twin 6-inch outlets.

**Aniko Holm**, Manager for marine field tests at **Volvo Penta** added: "In using more powerful engines than previously on the **Svanhild** ferry, **Trafikverket Färjerederiet** has made a great choice with our **D13MH** models. These two 13-litre engines give them all the power they need to run the ferry smoothly and efficiently, but with half the requirements for servicing and maintenance. And in using our **IMO Tier III** package, the ferry company is maximizing the reduction of emissions, well ahead of 2021 deadline." 🚢

# Coastal Environment Protection in Manila Bay

by Josephine M. Viray

What once was a beacon of loveliness that would first catch your eye with its glorious sunset is now a down drum of uncleanliness, an eyesore of unseemliness that casts a sty. This is not the result of a mere slip-up but rather continuous discharge of toxic oil, industrial effluents, agricultural runoffs, untreated wastewater, and city garbage over the decades. The source of pollution is both sea-based and land-based. Manila Bay is no longer the reservoir of clear blue water of Post World War II era. It is now awash with oil and grime, choked by seepage from corporate industries, ocean-going vessels such as oil tankers and very large container carriers. Quite often, lifeless sea creatures are washed ashore and their immediate cause of death has been directly attributed to the intake of toxic oil residue and plastic trash that have been polluting the bay waters and shoreline. *"Pollutants which come from both land and sea are responsible for grave effects on marine life because they interfere with the functions of marine ecosystem,"* said ENS Grace Idos, Chief of Staff, Marine Environmental Research and Development Center (MERDC) of the Marine Environmental Protection Command (MEPCOM), which is part of the **Philippine Coast Guard**. ENS Grace Idos added that among the many contributors to the pollution in the bay are oil spills from ships, vessels, industries along waterways, and owners of land vehicles that throw their used oil in creeks, canals, and drainage every time they change engine oil. But the most hazardous to human and marine life is untreated wastewater dumped into the bay.

With the continuous increase in population and industrialization, Manila Bay has been facing several issues arising from conflicts in the use of the bay and its natural resources, continued decline in the quality of the bay water and sediment, and rapid destruction of marine habitats. The **Pampanga River** contributes 49% of net fresh water inflow into the bay (Jacinto et al., 2000a). But the northern part of the bay receives volcanic lahar discharges; the western coast receives watershed discharges from Bataan; and the eastern side receives rural and urban river flow from the coastal towns of **Cavite** and **Bulacan**, in addition to more polluted runoffs from the rivers of Metro-Manila, particularly **Pasig River**, which contributes 21% of net freshwater flows. The other rivers together contribute 26% of net freshwater. The remaining 4% comes from precipitation into Manila Bay [I. Velazquez et al (2006). *Biophysical Environment of Manila Bay: Then and Now. The Environment in Asia Pacific Harbours*, pp. 293-307].

Manila Bay is located in western Luzon, bounded by **Cavite** and **Metro-Manila cities** on the east, **Bulacan** and **Pampanga** on the north, and Bataan on the west and northwest. The southern part of

the bay opens to the West Philippine Sea. Garbage emanating from the **Pasig River** pollutes our waterways, and most of the garbage that eventually surfaces in Manila Bay comes from these provinces, driven by the river current during high tide and storms. Wastewater plants in these provinces must meet treatment standards. Historically, untreated wastewater was discharged into Manila Bay from dumpsites like **Navotas** (Pier 18) and **Cavite** (World Bank Environment Monitor, 2003). Even to-date, garbage and wastewater treatment, particularly in **Cavite** and **Bulacan**, must be strictly complied with simply because of their immediate effects on the waters of Manila Bay. But a lot of effluents from logging, mining, pharmaceutical industries, and agricultural runoffs also come from provinces as far north as **Ilocos** and **Zambales**.



Photo credit: Atty. Mark Julius Estur / Lakwaserongtsinelas.com

Last January, the **Philippine Coast Guard Auxiliary** undertook a one-day clean up drive along the shoreline of Manila Bay. A whole truckload of trash was hauled from a portion of the shoreline. In the same month, the **Philippine** and **Norwegian** governments signed a Memorandum of Understanding (MOU) for a sustainable development and management master plan for Manila Bay. They agreed to draft the **Manila Bay Sustainable Development Master Plan**, which would guide future decisions on projects such as coastal protection, solid waste and water resources management, transport, reclamation, and rehabilitation of the **Pasig River**.

Coastal protection in Manila Bay with over 190 km of coastline to cover is no easy feat. The Metro-Manila cities and surrounding provinces of the bay must pluck up **Political Will** to step up and help design the Sustainable Development Plan to save Manila Bay's water, shoreline, indigenous 50 fish species, and mangroves. The 54K hectares of Nilad mangrove forests are almost gone. Most importantly, the design of low-cost sewage treatment plants must be explored in light of tight budget resources of the LGUs.

Until the master plan is finished and officially unveiled, we need more local community clean up efforts, in tandem with corporate giants that produced the majority of toxic effluents and plastic trash in the bay, not on a one-time basis but on a comprehensive clean up effort all year round. Let's do this for the long haul. We could allot 10 km of shoreline per city on an "adoption" basis. Until its environs are healthy, clean and beautiful once again only then can we, and the next generations to come, truly savor the fresh bay breezes, local seafood catch of the day, and the magnificent peach sunsets along the boardwalk of historical Manila Bay. 🌅

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