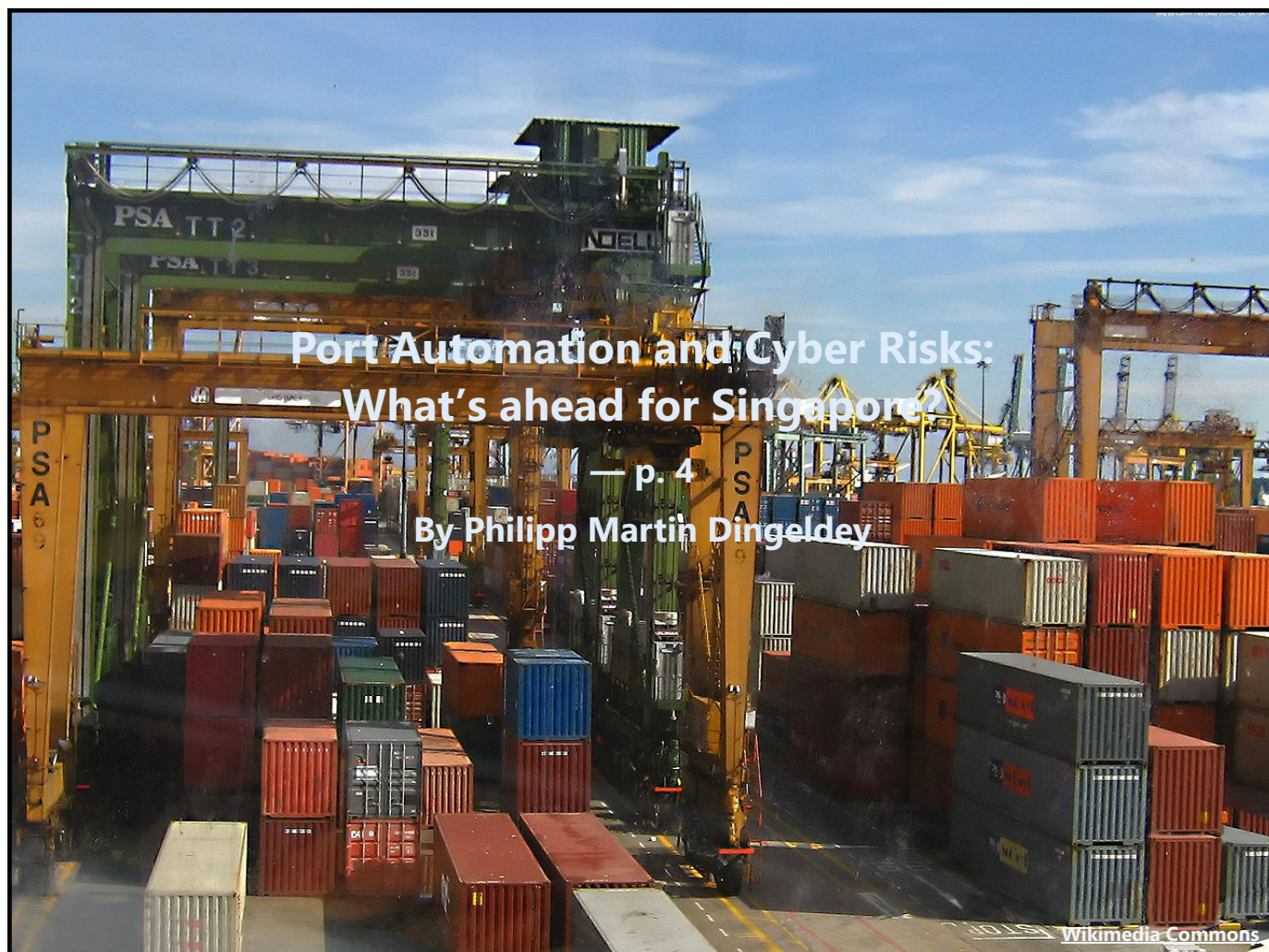


Featured *MSP Perspectives*:



MSP Perspectives:

Port Automation and Cyber Risks: What's ahead for Singapore?
— p. 4

Naval Development and Policy:

Raja Permaisuri of Perak launches LCS Maharaja Lela
— p. 5

Maritime Safety and Security:

ASEAN, China adopt framework for crafting code on South China Sea
— p. 7

Shipping, Ports, and the Maritime Economy:

Another one bites the dust
— p. 9

Table of Contents

MSP PERSPECTIVES	4
Port Automation and Cyber Risks: What's ahead for Singapore?	4
NAVAL DEVELOPMENT AND POLICY	5
Raja Permaisuri of Perak launches LCS Maharaja Lela	5
China commissions new naval supply ship	5
Daewoo Shipbuilding hands over submarine to Indonesian navy	5
Tests on China's first homegrown aircraft carrier to begin ahead of schedule	5
USS John S. McCain Conducts South China Sea Freedom of Navigation Operation Past	5
Mischief Reef; 3rd South China Sea FONOp This Year	
Malaysian navy ship berths at Middle Rocks	6
LOOK: First ever training of PH Marines in US base	6
Lawmaker says Chinese vessels deployed near Pag-asa Island	6
NAVSEA: Navy Hybrid Path to 355-Ship Fleet Could Only Take 10 to 15 Years	6
LRASM Succeeds in At Sea B-1B Bomber Tactical Launch Test	6
Report of BrahMos sale to Vietnam incorrect: Government	6
MHI lands contract to build new Japanese destroyers	6
Chinese navy's live-fire drill may be warning shot to India amid ongoing Doklam stand-off	6
S. Korea starts reviewing nuclear submarine building plan	6
Missile defence flagged over Korea threats	6
MARITIME SAFETY AND SECURITY	7
ASEAN, China adopt framework for crafting code on South China Sea	7
Transfer of prisoners: India, Somalia ink agreement	7
Malaysia opens new maritime base at Middle Rocks, near Pedra Branca	7
Cruise liner on journey from Sydney to Dubai turns into 'Ghost Ship' for 10 days to stop pirate attack	7
Hisham: Aerial surveillance included in joint maritime ops	7
India, China to join Indian Ocean exercise	8
Pakistan inaugurates construction of Maritime Counter Terrorism Centre	8
Japan to provide \$500 mil. for Indo-Pacific maritime security	8
After Dangerous Collisions, Navy Will Pause for Safety Check	8
Maritime security exercise involving nine countries begins on Monday	8
Philippines, Chinese coast guards hold maritime exercises	8
Indonesia, Vietnam mend ties after talks to settle South China Sea disputes	8
US radar system boosts Philippine maritime security	8
Bali hosts 3rd International Maritime Security Symposium (IMSS) 2017	8
Malaysia sets boat ablaze as it turns up heat on illegal fishing	8
SHIPPING, PORTS, AND THE MARITIME ECONOMY	9
Another one bites the dust	9
Christmas in July for shipping lines as Trans-Pacific container rates climb	9
New rules to follow changes to merchant shipping law	9
Jakarta's port strike hits biggest terminal operator	9
Korea's 14 container shipping lines to form national partnership	9
Influential Thais in push for Kra Canal project	10
MMC in talks to acquire stake in Sabah Ports	10
Drilling ship leaves Vietnam oil block after China row	10
Intra-Asia container volumes grow 2.1% in H1	10
India tightens rules to stop exploitation of sailors	10
Singapore geared up to keep its top spot as major port	10
This robot ship experiment could disrupt the global shipping industry	10
Singapore and Japan to study on LNG bunkering for car carriers	10
S. Korean shipping sector still reeling from Hanjin fall	10
Shipping pollution hotspots mapped with real-time data	10

NOTES

Please click on the links for the full report. All links and news reports are correct at the time of publication. Through this bulletin, you will be linked to external websites. We have no control over the nature, content, and availability of those sites. The inclusion of any links does not necessarily imply a recommendation or endorsement of the views expressed within them.

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Port Automation and Cyber Risks: What's ahead for Singapore?



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In the first half of 2017, Singapore's port recorded volume growth of 6.4 percent. Comparatively, its competitors, namely Port Klang and Tanjung Pelepas, recorded decreases of 3.1 and 4 percent, indicating that Singapore's investments and joint ventures in the past few years have worked.

While this is great news for Singapore's maritime industry, container vessels on the Asia-Europe trade routes will increase in size and container carrying capacity, requiring terminals to be more efficient to achieve fast turn-around times. Ultra large container vessels (ULCVs) are expected to gain a share of 61% of total capacity by the end of 2018, pushing established hubs like Singapore to automate its terminals to stay relevant.

Currently, the Pasir Panjang terminal is used to manage the transition from semi to fully automated operations by training the workforce on automated systems. The fully automated Tuas Port will consolidate all container operations in the West of Singapore by 2040, and cater specifically to the expected increase in ULCV traffic. This raises the question whether automation will secure Singapore's position as transshipment hub in the long-run, and what impact cyber risks may have.

Automation is seen to not only strengthen Singapore's port as transshipment hub well into the future, but also help it to keep up with technological developments and industry trends. Nevertheless, the shipping industry has generally been slow in adapting new technologies, due to its conservative nature and the large number of players involved.

Currently only a fraction of global container volume is handled by fully automated container terminals. In 2016, it was estimated that only 4-5 percent of container volume will be handled by fully automated terminals once ongoing projects were completed. Nonetheless, industry pressure and competition have heightened the need for ports to invest and automate.

Automated terminals allow ports to handle containers more efficiently by using operating systems to plan storage in accordance with collection and transshipment times. This reduces unnecessary box moves, shortens cycle times, and enables consistent and predictable throughput numbers.

While full automation gives large ports like Singapore the advantage of reliable 24/7 operations at low operating costs, it also increases their vulnerability to cyber risks and offers only gradual

productivity increases at peak times.

The ports and shipping industry is seen by many insiders as underprepared for cyber threats. Automation further increases the exposure and impact of cyber threats for ports, highlighting the importance of data and system integrity. How real the threat of cyber threats to automated terminals are was demonstrated in the "Petya" cyber-attack on Maersk in June. The attack forced the shipping giant to interrupt operations at multiple terminals worldwide, causing logistical havoc still in the weeks after the attack.

Ports must be secured against a multitude of risks, while cybercriminals can exploit a number of entry points to steal information or disrupt operations. For example, external vendors, terminal operating systems and unaware employees are likely vulnerable to phishing attacks. Operational systems and their components are not always up to date, allowing criminals to gain comparatively easy access. To prevent most attacks regular operating system updates, resilience exercises and employee awareness campaigns can go a long way.

The difficulty with protecting automated terminals from cyber risks lies with their complexity. These terminals use industrial control systems that translate sensorial data and commands into mechanical actions. The network links between mechanical equipment and sensors are at risk to the same threats as data networks. The complexity is further increased by the months and years it can take to figure out and fix bugs and weaknesses in automated systems.

While the ports and shipping industry still needs to establish a stronger culture for cyber security, Singapore has stepped up and advanced its efforts to raise awareness for cyber threats across several sectors of its economy. Nevertheless, major shipping hubs like the city's port are part of large and less resilient supply chains, which are essential for regional and international trade. These supply chains depend on a small number of key ports, rendering the city state and its port vulnerable to shocks from other ports. To make supply chains and port hubs more resilient from cyber risks, the shipping industry generally will have to adjust and prepare.

With its investment for the Tuas Port Project, Singapore is moving in the right direction, but will have to continuously accommodate technological change and adjust to new risks in order to secure its position and fend off competitors long-term.



MALAYSIA | 24 AUGUST | NEW STRAITS TIMES

Raja Permaisuri of Perak launches LCS Maharaja Lela

Malaysia's first home built Littoral Combat Ships (LCS), named Maharaja Lela, in honour of the late Perak Chieftain and British resistance leader, Datuk Maharaja Lela, was launched today.

[Full Report](#)

CHINA | 1 AUGUST | SOUTH CHINA MORNING POST

China commissions new naval supply ship

China has commissioned its newest and largest naval supply ship as the country tries to beef up its capacity to protect its maritime interests.

[Full Report](#)

INDONESIA | 2 AUGUST | YONHAP

Daewoo Shipbuilding hands over submarine to Indonesian navy

Daewoo Shipbuilding & Marine Engineering Co., a major shipyard here, handed over a 1,400-ton diesel-electric submarine to the Indonesian Navy on Wednesday, becoming the first South Korean company to export a submarine.

[Full Report](#)

CHINA | 8 AUGUST | GLOBAL TIMES

Tests on China's first homegrown aircraft carrier to begin ahead of schedule

China has started to test the power system of its first domestically-built aircraft carrier, and is hoping to begin a mooring test next month ahead of schedule, said the general director of the project on Monday.

[Full Report](#)

UNITED STATES | 10 AUGUST | USNI NEWS

USS John S. McCain Conducts South China Sea Freedom of Navigation Operation Past Mischief Reef; 3rd South China Sea FONOp This Year

A U.S. guided-missile destroyer came within 12 nautical miles of the contested Chinese installation built on an artificial island off the coast of the Philippines on Thursday, a defense official confirmed to USNI News.

[Full Report](#)

Continue on page 6

MALAYSIA | 12 AUGUST | THE STAR ONLINE

Malaysian navy ship berths at Middle Rocks

A Malaysian navy ship berthed for the first time at the country's newest maritime base off Johor on Thursday, 10 days after the Sultan of Johor opened the base on the Middle Rocks outcrop.

[Full Report](#)

THE PHILIPPINES-UNITED STATES | 14 AUGUST | UPDATE PHILIPPINES

LOOK: First ever training of PH Marines in US base

The United States Embassy in Manila today reported the joint training conducted by personnel from Assault Armor Battalion of Philippine Marines and Combat Assault Battalion of US Marines 3rd Marine Division held July 11 to 26 at Camp Schwab, Okinawa, Japan.

[Full Report](#)

CHINA | 15 AUGUST | GMA NEWS

Lawmaker says Chinese vessels deployed near Pag-asa Island

Citing military sources, a lawmaker on Tuesday revealed the presence of several Chinese vessels near the disputed Pag-asa Island, an incident which he called "a threat to our interest in the West Philippine Sea."

[Full Report](#)

UNITED STATES | 17 AUGUST | USNI NEWS

NAVSEA: Navy Hybrid Path to 355-Ship Fleet Could Only Take 10 to 15 Years

The Navy could reach a 355-ship fleet by 2030 if it both extended the service life of most of its current ships and built more than two dozen new ships beyond current shipbuilding plans, two admirals said this week.

[Full Report](#)

UNITED STATES | 18 AUGUST | USNI NEWS

LRASM Succeeds in At Sea B-1B Bomber Tactical Launch Test

The Navy's next-generation anti-ship missile scored in its first tactical configuration test launching from a B-1B Lancer bomber, Lockheed Martin announced on Friday.

[Full Report](#)

INDIA-VIETNAM | 18 AUGUST | THE ECONOMIC TIMES

Report of BrahMos sale to Vietnam incorrect: Government

India today termed as "incorrect" reports of it supplying BrahMos anti-ship cruise missiles to Vietnam even as the South Asian country said the

comprehensive strategic partnership between the two nations has been growing in many fields including security and defence.

[Full Report](#)



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JAPAN | 19 AUGUST | DEFENSE NEWS

MHI lands contract to build new Japanese destroyers

Japan has selected Mitsubishi Heavy Industries, or MHI, to be the lead contractor to build a new class of multipurpose destroyers with construction expected to begin in 2018.

[Full Report](#)

CHINA | 26 AUGUST | SOUTH CHINA MORNING POST

Chinese navy's live-fire drill may be warning shot to India amid ongoing Doklam stand-off

The Chinese navy has held a live-fire drill in the waters of the western Indian Ocean, in a possible sign that the People's Liberation Army is stepping up its readiness for a potential conflict with India.

[Full Report](#)

SOUTH KOREA | 27 AUGUST | YONHAP

S. Korea starts reviewing nuclear submarine building plan

South Korea has started a feasibility review for the building of a nuclear-powered submarine amid North Korea's evolving nuclear and missile threats, government sources said Sunday.

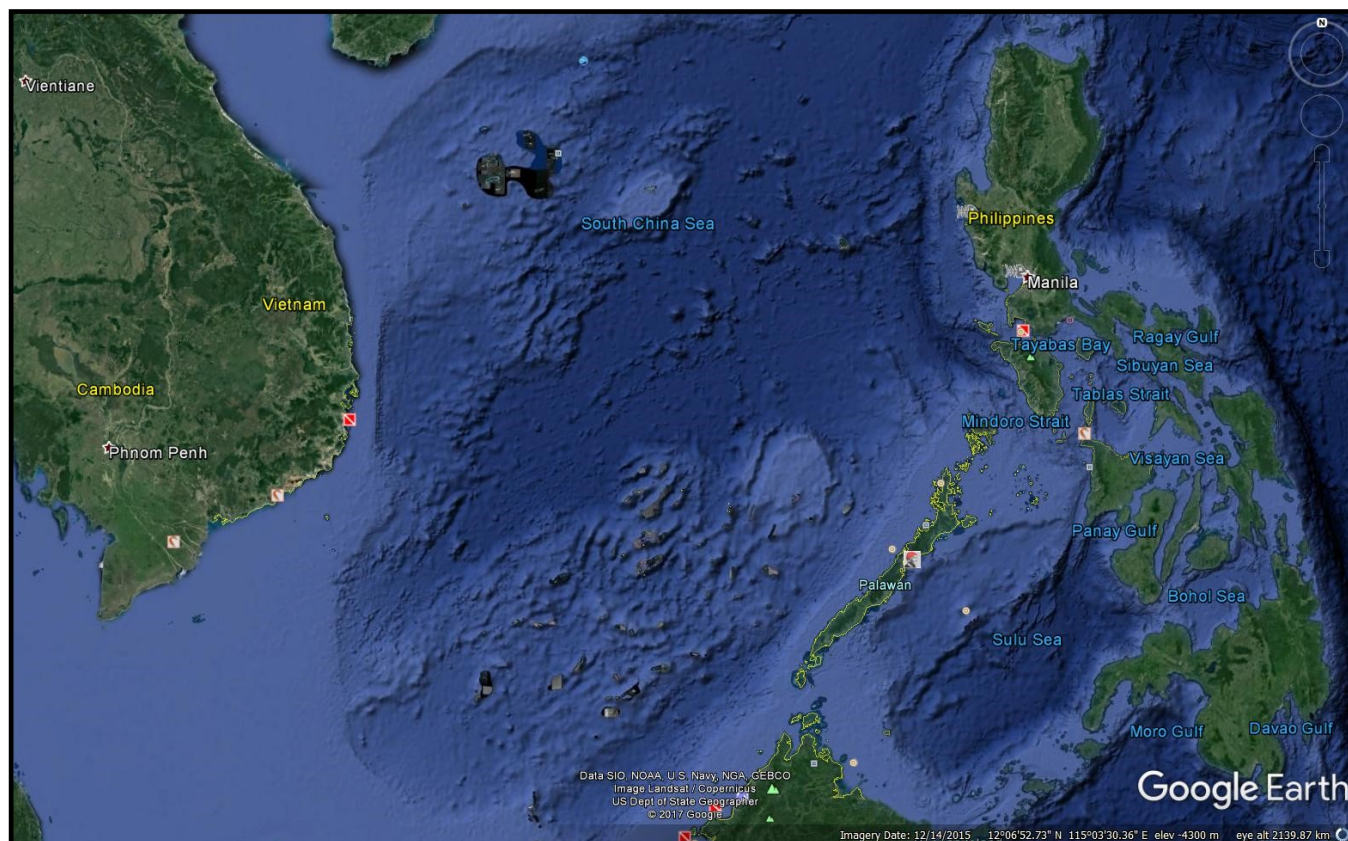
[Full Report](#)

AUSTRALIA | 30 AUGUST | SBS NEWS

Missile defence flagged over Korea threats

The federal government is considering upgrading the Navy's new air warfare destroyers to include missile defence shields after "very irregular behaviour" by North Korea, Defence Industry Minister Christopher Pyne says.

[Full Report](#)



ASEAN-CHINA | 6 AUGUST | REUTERS

ASEAN, China adopt framework for crafting code on South China Sea

Foreign ministers of Southeast Asia and China adopted on Sunday a negotiating framework for a code of conduct in the South China Sea, a move they hailed as progress but seen by critics as tactic to buy China time to consolidate its maritime power.

[Full Report](#)

INDIA-SOMALIA | 2 AUGUST | THE INDIAN EXPRESS

Transfer of prisoners: India, Somalia ink agreement

India and Somalia on Tuesday signed an agreement for transfer of sentenced prisoners after a meeting between their foreign ministers, who discussed the entire gamut of bilateral relations, including issues of piracy and maritime security.

[Full Report](#)

MALAYSIA | 5 AUGUST | CHANNEL NEWSASIA

Malaysia opens new maritime base at Middle Rocks, near Pedra Branca

Malaysia has set up a new maritime base on Middle Rocks, near Pedra Branca, the island awarded to Singapore in an International Court of Justice ruling in 2008.

[Full Report](#)

GLOBAL | 9 AUGUST | INDEPENDENT

Cruise liner on journey from Sydney to Dubai turns into 'Ghost Ship' for 10 days to stop pirate attack

A luxury cruise ship on a world tour imposed a 10 day blackout on guests while it faced the threat of a pirate attack.

[Full Report](#)

MALAYSIA | 12 AUGUST | THE STAR ONLINE

Hisham: Aerial surveillance included in joint maritime ops

Malaysia, Indonesia and the Philippines are expanding the joint maritime patrols to include aerial surveillance operations as well, said Datuk Seri Hishammuddin Tun Hussein.

[Full Report](#)

Continue on page 8

INDIAN OCEAN | 13 AUGUST | THE HINDU

India, China to join Indian Ocean exercise

Despite growing tensions with China, official sources said the Indian Navy would join the People's Liberation Army (PLA) Navy in a maiden maritime search and rescue exercise to be chaired by Bangladesh at the Indian Ocean Naval Symposium (IONS) in November this year.

[Full Report](#)

PAKISTAN | 16 AUGUST | QUWA

Pakistan inaugurates construction of Maritime Counter Terrorism Centre

The Pakistan Navy has inaugurated the construction of a new Maritime Counter Terrorism Centre (MCTC) in Karachi on Wednesday, August 15.

[Full Report](#)

JAPAN | 18 AUGUST | THE MAINICHI

Japan to provide \$500 mil. for Indo-Pacific maritime security

Japan will provide a total of \$500 million in aid for coastal states in the Indo-Pacific in the three years to 2019 to help boost maritime security there, Foreign Minister Taro Kono said Thursday.

[Full Report](#)



UNITED STATES | 21 AUGUST | THE NEW YORK TIMES

After Dangerous Collisions, Navy Will Pause for Safety Check

United States Navy ships worldwide will suspend operations for a day or two this week to examine basic seamanship and teamwork after the second collision of a Navy destroyer with a large commercial ship in two months, the Navy's top officer said on Monday.

[Full Report](#)

INDO-PACIFIC | 22 AUGUST | STRAITS TIMES

Maritime security exercise involving nine countries begins on Monday

A maritime security exercise that brings together nine

countries including the United States began in Singapore on Monday (Aug 22).

[Full Report](#)

CHINA-THE PHILIPPINES | 22 AUGUST | THE PHILIPPINES STAR

Philippines, Chinese coast guards hold maritime exercises

Despite China's creeping occupation of land features within Philippine waters, the Philippine Coast Guard (PCG) has embarked on a joint maritime law enforcement operation with its Chinese counterpart in accordance with President Duterte's instructions.

[Full Report](#)

INDONESIA-VIETNAM | 24 AUGUST | THE STRAITS TIMES

Indonesia, Vietnam mend ties after talks to settle South China Sea disputes

Amid two recent maritime stand-offs in the waters around the Natuna Islands in South China Sea, Indonesia and Vietnam mended ties after President Joko Widodo and Communist Party of Vietnam secretary-general Nguyen Phu Trong held talks in Jakarta on Wednesday (Aug 23).

[Full Report](#)

THE PHILIPPINES-UNITED STATES | 25 AUGUST | ASIAN CORRESPONDENT

US radar system boosts Philippine maritime security

The Philippine Navy (PN) has received a state-of-the-art radar system from the United States as part of Washington's programme to enhance maritime security measures in Southeast Asia.

[Full Report](#)

INDONESIA | 26 AUGUST | THE JAKARTA POST

Bali hosts 3rd International Maritime Security Symposium (IMSS) 2017

Hundreds of navy delegates from 43 countries are currently in Bali attending the 3rd International Maritime Security Symposium (IMSS) 2017.

[Full Report](#)

MALAYSIA | 30 AUGUST | REUTERS

Malaysia sets boat ablaze as it turns up heat on illegal fishing

Malaysia on Wednesday for the first time set fire to a foreign boat for fishing illegally in its waters as it turns up the heat on trespassing trawlers.

[Full Report](#)



CHINA | 1 AUGUST | LLOYD'S LOADING LIST

Another one bites the dust

The path towards oligopolisation in container shipping took another step forwards with the proposed \$6.3 billion sale of Hong Kong-based OOIL to Chinese state-owned Cosco and Shanghai International Port Group.

[Full Report](#)

ASIA | 3 AUGUST | NIKKEI ASIAN REVIEW

Christmas in July for shipping lines as Trans-Pacific container rates climb

Spot rates on containerships bound for the U.S. from Asia have risen by a fifth since late June as Chinese and other consignors accept rate hikes to build up American inventories ahead of the Christmas rush.

[Full Report](#)

MALAYSIA | 4 AUGUST | THE STAR ONLINE

New rules to follow changes to merchant shipping law

All ships planning to navigate Malaysian waters will be required to register beforehand, if proposed amendments to the Merchant Ship-ping Ordinance 1952 are passed.

[Full Report](#)

INDONESIA | 4 AUGUST | REUTERS

Jakarta's port strike hits biggest terminal operator

More than 600 workers at Jakarta's Tanjung Priok port have gone on strike, disrupting operations at the biggest terminal of Indonesia's busiest port.

[Full Report](#)

SOUTH KOREA | 7 AUGUST | LLOYD'S LOADING LIST

Korea's 14 container shipping lines to form national partnership

The nation's 14 boxship owners are scheduled to ink a memorandum of understanding as they seek to form a national shipping consortium, named Korea Shipping Partnership.

[Full Report](#)

Continue on page 10

THAILAND | 7 AUGUST | NIKKEI ASIAN REVIEW

Influential Thais in push for Kra Canal project

China's Belt and Road Initiative may kick-start long-envisioned \$28bn seaway.

[Full Report](#)

MALAYSIA | 11 AUGUST | SPLASH 24/7

MMC in talks to acquire stake in Sabah Ports

Malaysia's MMC Corporation has confirmed that the company is now in talks with Suria Capital Holdings to acquire a stake in Sabah Ports.

[Full Report](#)



[Wikimedia Commons](#)

VIETNAM | 14 AUGUST | REUTERS

Drilling ship leaves Vietnam oil block after China row

The drilling ship at the center of a row between Vietnam and China over oil prospecting in disputed waters in the South China Sea has arrived in waters off the Malaysian port of Labuan.

[Full Report](#)

ASIA | 17 AUGUST | JIFFA

Intra-Asia container volumes grow 2.1% in H1

Major shipping lines moved 1.125 million TEUs of containers in total among 13 countries and regions in Asia in June, which increased 2.1% from a year earlier and registered the first year-on-year growth in six months.

[Full Report](#)

INDIA | 20 AUGUST | GULF NEWS SOCIETY

India tightens rules to stop exploitation of sailors

The Indian government has tightened recruitment rules for seafarers to stop unscrupulous agents and owners of ships from exploiting them.

[Full Report](#)

SINGAPORE | 21 AUGUST | STRAITS TIMES

Singapore geared up to keep its top spot as major port

Work is well under way to secure Singapore's future as a key port of call - most prominently in the form of the new Tuas mega port.

[Full Report](#)

JAPAN | 23 AUGUST | BLOOMBERG

This robot ship experiment could disrupt the global shipping industry

Japan's largest container line plans to test a remote-controlled vessel across the Pacific Ocean in 2019 as it pursues fully autonomous technology that could disrupt the global shipping industry.

[Full Report](#)

SINGAPORE | 28 AUGUST | STRAITS TIMES

Singapore and Japan to study on LNG bunkering for car carriers

The Maritime and Port Authority of Singapore (MPA) is teaming up with the Ports and Harbours Bureau of Japan's Ministry of Land, Infrastructure, Transport, and Tourism (MLIT) to help drive liquefied natural gas (LNG) bunkering in Asia.

[Full Report](#)

SOUTH KOREA | 28 AUGUST | YONHAP NEWS

S. Korean shipping sector still reeling from Hanjin fall

South Korea's shipping industry is still reeling from the fallout from Hanjin Shipping Co.'s bankruptcy last year as the remaining companies have yet to fill the vacuum left by Hanjin.

[Full Report](#)

SOUTHEAST ASIA | 31 AUGUST | ECO-BUSINESS

Shipping pollution hotspots mapped with real-time data

Coastal areas around Southeast Asia suffer the most from pollution caused by ship traffic, according to a global study that estimates shipping emissions based on real-time, local activity for the first time.

[Full Report](#)