CANADIAN NAVAL REVIEW

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Winner of the 2017 CNMT Essay Competition

How to Sink the Hermit Kingdom

Naval Occupations and the RCN: A Complex Yet Necessary Restructuring

The Kriegsmarine's Black Flag of Surrender and the Royal Canadian Navy

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Credit: Leading Seaman Brad Upshall, 12 Wing Shearwater, NS

NATO warships, led by HMCS ***Fredericton****, depart Halifax for Exercise Cutlass Fury on 12 September 2016.*

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Invisible Pirates and the Marine Industry

As anyone who follows the news knows, cyber-attacks are on the increase.[1] Perpetrators can be individuals, organizations or states, and they can have varying motives. Cyber-attacks could be by a state-sponsored actor for political reasons, a non-state actor for political reasons, a criminal actor for criminal reasons, a corporation for economic reasons, or a disgruntled individual for personal reasons – the possibilities are endless, cyber-warriors, cyber-activists, cyber-criminals, cyber-terrorists, and now cyber-pirates.

Europol estimates that more money is now made via cyber-crime than through the narcotics trade.[2] Cyber-crime is estimated to cost billions of dollars a year to governments, businesses and individuals – some predict it will be trillions of dollars soon.[3]

We take our computers and personal devices for granted. We are always connected to the internet and obsessively check our smartphones and social media. We have our phones and houses connected so we can unlock the door, turn on the lights, and tell the robot to vacuum the living-room – all while we're in a meeting at the office. It's not likely that someone will bother to hack into our vacuum cleaner, but with personal and financial data stored on our smartphones and increased reliance on a networked 'internet of things,' we become vulnerable on a personal level to breaches of data confidentiality, integrity and availability. But we are also all vulnerable to attacks on financial institutions, energy supply lines, railways, traffic management systems, health systems and water treatment facilities.

But I don't want to talk about hacking on every level, I want to talk about the marine industry and cyber-security, shipping and ports in particular. The marine industry is an attractive target for hackers – or what are increasingly being called 'invisible pirates.' It is attractive because

> [i]t's an industry revolving around high value assets, moving valuable cargoes, that is transitioning to an increased reliance on digital systems. These technologies – ranging from automatic identification systems (AIS), to GPS, electronic chart displays and information systems (ECDIS), and complex cargo and energy management systems – are all vulnerable to attack and exploitation.[4]

The European Transport Workers' Federation and the European Community Shipowners' Association are pushing the European Commission to streamline and digitalize regulations for cargo, crews and ship data. Instead of completing the information separately for national authorities, they want to have one single European data source – the 'reporting once' principle – that can be located in a 'cloud' which European national authorities can access.

This is part of a trend towards 'big data' in the marine sector to tie information from a variety of sources together into one accessible database. Big data is enabled by advanced sensor technology that allows, for example, engine, propulsion, ballasting, positioning, damage control, fuel, traffic, cargo, port and weather data to be collected and monitored on board ships. 'Smart ship' applications can include the following:

- remote sensing which can continuously monitor ship locations from remote locations;
- voyage planning which allows ships to plan their routes after looking at traffic and weather data;
- traffic management which means port authorities can avoid congestion and improve cargo handling;
- operations and maintenance management which monitors ship performance data and gives advance warning of the need for maintenance;
- energy management which looks at fuel use, energy

Credit: Maersk

***Emma Maersk** is the lead ship of Maersk's E-class container ships which were the largest in the world when built in 2006 with a notional capacity of 15,550 20-ft containers.*

production and storage;
- environmental legislation monitoring which assesses ship emissions; and
- vessel safety which provides information on manoeuvring to avoid collisions.[5]

Smart ship technology can be extremely useful to optimize vessel performance and ensure that traffic and cargos travel efficiently. It makes sense to connect the marine industry to databases for effectiveness of operations. But it also provides a much easier way for hackers to obtain information – why hack 26 national systems in Europe, for example, when you can get all that information off one system. And this is the conundrum for shipping. Collecting more data and making it more accessible saves the crews, companies and authorities time from filling in multiple sets of paperwork, but it also makes a large database that may be attractive to hackers.

Just as 'network-centric warfare' makes militaries more efficient but also more vulnerable to cyber-warriors, so too do smart ships face vulnerability when they create single points of entry for hackers. As Max Bobys, Vice President of Hudson Analytics, states "[a]s ship systems become more integrated, and as data is increasingly shared with shore-based systems, the likelihood of a successful cyber attack becomes almost certain."[6] Bobys also notes that as "the march towards ever-greater connectivity onboard ships continues, cyber risks will similarly develop. They are here to stay. They are relentless, malicious, fast moving and ubiquitous."[7] As Sofia Furstenberg, Project Manager at Nor-Shipping, argues "[m]any shipping businesses have yet to acknowledge the scale of the threat facing them. They are steaming full speed ahead on the course to digitalization without having adequate security procedures and systems in place."[8]

It doesn't seem as if the marine sector has been deliberately targeted yet – security breaches have thus far been accidental or the byproduct of a larger attack. However, we shouldn't assume that this will be the case in the future. Invisible pirates may be attempting to obtain the cargo manifest and container numbers so they can identify valuable cargos. Or they may be targeting not the ship but the corporation that owns the ship via weaknesses on the ship.

The WannaCry attack, which happened in May 2017, affected around 200,000 users in 150 countries, and brought the risks of cyber-attacks into public attention (again). Then, on 27 June 2017, among other corporations, A.P. Moller-Maersk AS – one of the largest shipping companies in the world – was hit by the Petya cyber-attack. Maersk was unable to process new orders and experienced

Credit: Maersk

APM Terminals is Maersk's business unit responsible for the development and operation of 64 terminals around the globe.

computer outages on its systems. The attack affected container shipping, port and tug boat operations, oil and gas production, drilling services and oil tankers. Maersk subsidiary APM Terminals was also affected, which disrupted shipping container terminals around the world, including Los Angeles, two in Rotterdam and India's largest container port. Ships could not be loaded and unloaded, resulting in delays and congestion around the ports as trains and trucks waited to deliver or pick up cargos.

Most Canadian imports not coming from the United States travel via the oceans. 'Just-in-time' manufacturing and sales mean that stores and factories will quickly run out of supplies if there is an interruption in the supply lines. The Petya attack took one of the world's largest shipping companies offline for almost a week – on 3 July 2017, Maersk announced that it had brought its systems back online and operations had returned to normal. What happens when the next attack occurs? So far authorities have not been able to identify, and certainly not arrest, anyone for either attack. Attribution and prosecution for cyber-attacks are extremely difficult.

These are tough times for the marine sector – global trade has slowed and that means shipping rates are down and there is an over-supply of ships. In this climate, shipping companies may be tempted to cut costs as much as they can, including system upgrades, maintenance and training. The ramifications may be serious. Imagine the GPS system of a cruise ship being hacked so that the ship goes off course and runs aground. Imagine what could happen if a ship has its propulsion systems hacked. Imagine cargo ships or tankers colliding at a busy port because traffic management systems have been compromised.

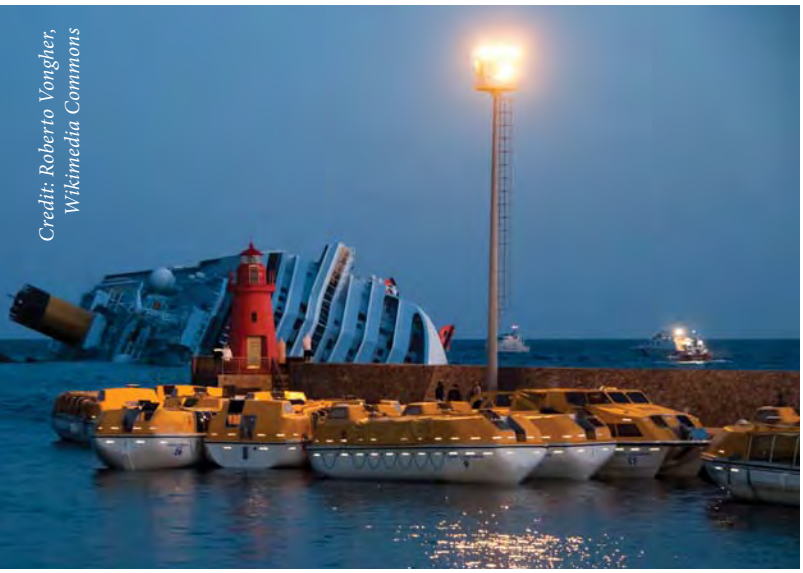
Unmanned, remote-controlled vessels are becoming a reality. In May 2017 a Singapore-based company successfully

Credit: Vancouver Fraser Port Authority

The Port of Vancouver is Canada's largest port, as well as North America's most diversified.

deployed a 17-metre independent unmanned surface vessel (IUSV) in the South China Sea for 22 days. It was controlled from Singapore using satellite communications.[9] Imagine the possibilities of hacking into a remotely controlled vessel in an area as fraught with tension as the South China Sea. Like everything related to increased computer connections, it is both a miracle and the opportunity for things to go horribly wrong. As of now these attacks are in the realm of the imagination, but cyber-attacks at sea with terrible consequences could happen, and probably will happen. As Anne McElvoy notes in an article in *The Guardian*, "[i]t is a safe bet that if you have thought of a bad scenario, it is probably on the way to happening."[10]

There are standard practices ships can implement to reduce risk. Companies can have a response plan made up in advance, undertake regular risk assessments, back up critical information, and review security measures regularly. But perhaps the first step to take is training crews on proper security procedures. The International Maritime Bureau (IMB) says that the biggest risk to cyber-security on ships is the human element, indeed it reports that "more than 80 percent of offshore cyber, information technology and operational technology security breaches were the direct result of human error."[11] And email is one of the most likely entry point for security breaches. As George Ward, Project Support Manager at ECDIS Ltd., notes, "I predict that the first catastrophic maritime cyber incident will not be the result of a direct attack on a safety critical specific piece of equipment. It will be the result of an infection of a random PC, perhaps an unassuming email to a crew member, whose PC is either connected to the vessel's internal super highway or he transmits the infection internally whilst it lies dormant."[12]



Credit: Roberto Vongher, Wikimedia Commons

How will greater dependency on digital systems interact with the human element which played such a crucial role in the ***Costa Concordia*** *disaster?*

This reflects that the marine sector has not yet been specifically targeted by hackers – but it will come. The good news is that there is growing awareness of the risks of cyber-attack at sea. Once we're aware of the threat, we can begin to address it. In June 2017, the International Maritime Organization decided to require shipowners and managers to incorporate cyber-risk management into safety management systems. As well, there are civilian organizations springing up to help mariners increase cyber-security. (And one presumes that navies are also working to minimize cyber-attacks at sea.) It's a difficult challenge but perhaps the threat from invisible pirates can be reduced to the same level as from visible ones.

Dr. Ann Griffiths

Notes

1. The fact that the share prices of cyber-security companies rise after every cyber-attack – an interesting conflict of interest – is a topic for another day. See Helen Reid, "Cybersecurity Stocks Rise After Global Attacks," *The Globe and Mail*, 16 May 2017, p. B13.
2. Special Report: Cyber Security, "Leaked CIA Cyber Tricks May Make Us WannaCry Some More," *Financial Times*, 25 May 2017.
3. Steve Morgan, "Cyber Crime Costs Projected to Reach $2 Trillion by 2019," *Forbes*, 17 January 2016.
4. John Titmus, quoted in "Security Specialist Highlights the Threat of 'Invisible Pirates,'" *Ship Management International*, 23 May 2017. The same quotation also appears in "Countering Maritime's 'Invisible Pirates,'" Marine Link, 22 May 2017.
5. Ibna Zaman, "Ten Smart Ship Applications for an Intelligent Future," Marine Link, 5 July 2017.
6. Max Bobys, "A Case for Maritime Cyber Security Capability," *Maritime Reporter and Engineering News*, Marine Link, May 2017.
7. *Ibid*.
8. Sofia Furstenberg, quoted in "Countering Maritime's 'Invisible Pirates,'" Marine Link, 22 May 2017.
9. Eric Haun, "USV Deployed for 22 Days in South China Sea," Marine Link, 31 May 2017.
10. Anne McElvoy, "What if the Menace of Large Hacks Becomes a Routine Part of Life?" *The Guardian*, 14 May 2017.
11. Cited by Captain Andrew Kinsey, "Cyber Vigilance at Sea: The New Norm," Marine Link, 22 May 2017.
12. George Ward, "Your Ship has Probably been Cyber Attacked," Marine Link, 13 April 2017.

Winner of the 2017 CNMT Essay Competition

How to Sink the Hermit Kingdom: Improving Maritime Sanctions against North Korea

Robert Huish

Credit: Korean Central News Agency

*Kim Jong-un stands in the conning tower of a North Korean **Romeo**-class submarine during an inspection of the Korean People's Army Naval Unit 167, June 2014.*

Kim Jong-un, the 'Supreme Leader' of the Democratic People's Republic of Korea (DPKR)/North Korea, boasts of his ability to burn "Manhattan to ashes."[1] He also states that "[w]e will not hesitate to slap them with a pre-emptive nuclear strike,"[2] and notes that "any cesspool of evils in the earth, including the U.S. mainland [are] within our striking range."[3] Hot-headed, unpredictable and ever-ready to threaten nuclear holocaust through bellicose rhetoric, North Korea is a dangerous player in the international community. Beyond the belligerent balderdash, North Korea engages in a collection of dangerous and illicit activities on the world stage. The country's economy mostly consists of weapons trafficking, insurance scams, crystal methamphetamine production, and even orchestrating rhino hunting in Tanzania.[4] At home, some 200,000 of North Korea's 26 million people are imprisoned in political labour camps, many only because their parents or grandparents badmouthed the Kim dynasty. The severity of the human rights crisis in North Korea has been described at best as "deeply disturbing" and at worst as "unimaginable."[5]

Kim Jong-un boasts of his ability to burn "Manhattan to ashes."

The Supreme Leader clearly indicates that he's willing to attack, but does North Korea have the capability to do so? In addition to the nuclear weapons, it has developed, it has the third largest standing army in the world, and a submarine-equipped navy with a track record of torpedoing South Korean vessels and kidnapping Japanese nationals. North Korea shows capacity to engage in hostile actions against its adversaries with little remorse for the consequences.[6]

Out of all the political, strategic and economic responses to pursue against North Korea, the international community, in particular the United States and the United Nations, rely on maritime sanctions as a favoured means of

pressuring the Kim regime. But are maritime sanctions the most effective method to de-escalate security concerns, to promote human rights and to curb the contentious behaviour of the regime?

This article argues that current maritime sanctions against North Korea are not effective in achieving the desired behavioural change as the Kim regime comfortably circumvents them. North Korea pursues underhanded actions of using flags of convenience for its vessels, false or misleading vessel identification, shoddy registry information, offshore shell-company ownership of vessels, and the continued circumvention of sanctions via insurance clubs. However, if the international community were to add financial measures to third parties, namely the maritime protection and indemnity (P&I) insurance clubs that facilitate vessel traffic into the country, this could be powerful in curtailing North Korea's dangerous behaviour.

In order to spur behaviour change in the Kim regime it is necessary to pursue financial measures on the maritime environment that facilitates the regime's activities, rather than aiming measures at North Korea itself. Current sanctions are only concerned with vessel traffic between the issuer and target, which has little impact on the Kim regime's murky trade and financial networks. This is to say that current sanctions against North Korea are only effective if a North Korean-flagged, owned, or operated vessel enters the waters of the United States, the European Union, or a country willing to enforce the UN sanctions. Financial measures focused on the P&I insurance clubs that cover the 'open-ended risks' of sending vessels into North Korean waters would have a better impact on the regime. Such an approach has long been overlooked in sanction policy. Now, in an era with increased hostilities on the Korean Peninsula, and dubious US foreign policy towards Asia, such measures may be an important step for the international maritime community to take against the threats that North Korea poses to its own people and to the world.

This article is based on work conducted between May 2016 and June 2017 to track marine traffic into North Korean ports after increased sanctions were imposed against North Korea by the United States and the United Nations in early 2016. Vessels were tracked using Automated Identification System (AIS) International Maritime Organization (IMO) tracking numbers. Monitoring revealed that most vessels were running under flags of convenience, were owned and managed by offshore shell companies in Asia and the Pacific, and were backed by P&I insurance clubs in Europe, South Korea and New Zealand. The research suggests that North Korea continues to benefit from maritime trade and traffic despite the new sanctions, hence creating a need for more innovative maritime responses.

Credit: MC1 Peter D. Lawlor, US Navy

*The South Korean corvette ROKS **Cheonan**, sunk by a North Korean torpedo in March 2010, was raised and now serves as a memorial.*

Sanctions, Insurance and Mischief

On 7 July 2016 the US Treasury Department enacted new sanctions on Kim Jong-un, along with 10 other top officials in the DPRK. A previous round of financial measures in June 2015 targeted maritime traffic to North Korea, with a specific focus on military material and resources. Executive Order 13466 of 2016 enhances the 2015 sanctions by "prohibiting persons from registering vessels in North Korea, obtaining authorization for a vessel to fly the North Korean flag, and owning, leasing, operating, or insuring any vessel flagged by North Korea."[7] The United Kingdom Treasury similarly issued financial measures on a list of 66 North Korean individuals and 42 DPRK entities with threat of asset seizure.[8]

There is debate about the nature and extent of smart sanctions, including maritime sanctions, and they have not always been successful.

Sanctions typically deny resources to hostile regimes, or exclude them from the international community. Many scholars, however, suggest that sanctions do not often lead to behaviour change of the target, and if anything they create murkier geopolitical relationships between the target and its trading partners not directly in the line of sight of sanction enforcement. As well, when sanctions are enforced, often the leaders of hostile governments can circumvent them, and typically it is the general population that suffers due to trade restrictions. Sanctions are only effective if the target state actually wants to be a good citizen of the international community.[9] North Korea has little interest in being a good global citizen. The policy of *Juche* or self-reliance abhors formal cooperation or partnerships with other countries, and instead praises national seclusion under the Supreme Leader's ability to protect the nation from all outside evils.

The pursuit of target-specific financial measures or 'smart sanctions' is lauded as a means of strategic pressure by limiting the ability of government authorities to access resources rather than the entire population. Even still, there is debate about the nature and extent of smart sanctions,[10] including maritime sanctions, and they have not always been successful. This is why a new approach to maritime sanctions against North Korea is needed.

Doing Business with the Hermit Kingdom

North Korea circumvents maritime sanctions through four methods: (1) sailing vessels under flags of convenience; (2) broadcasting false or misleading vessel identification and registry; (3) setting up offshore shell-company ownership of vessels; and (4) relying on maritime P&I club insurance. I'll briefly discuss all of these, but will focus in particular on number 4.

Credit: Bjørn Christian Tørrissen

The Juche Tower in central Pyongyang symbolizes the North Korean regime's desire for self-reliance.

Between May 2016 and June 2016 some 70 vessels demonstrated disingenuous behaviour in dealing with North Korea.[11] *Chon Un 68* (IMO: 9001021), a North Korean vessel operating under a flag of convenience, and *Voge Challenger* (IMO: 9490454), a European-based vessel doing business with the Kim regime, are examples of vessels bypassing maritime sanctions.

Chon Un 68 is a North Korean-named, but Tanzanian-flagged cargo vessel with a 4,000 ton capacity. On 10 July 2016, according to AIS it was in Nampo, North Korea, and on 18 July it was docked in Weifang, China. On 29 July 2016 the ship registered its destination as Barra, a small passenger ferry dock in the Western Hebrides of Scotland. This is a false registry by the ship's management meant for distraction. On 10 October 2016 *Chon Un 68* was sailing for Nampo, once again with its destination as Barra, demonstrating a consistent pattern of mendacious behaviour.

Chon Un 68 is managed by Hua Heng Shipping, owned by K&H Shipping, and is insured by a Korean P&I club out of Seoul, South Korea. Hua Hang and K&H are

***Chon Un 68**, shown in this photo under her former name, **Inter Prime**, on 3 December 2010.*

based in Hong Kong. Upon first glance, nothing is particularly sinister about a Tanzanian-flagged vessel owned and managed in Hong Kong carrying insurance from a South Korean P&I club. However, according to the Offshore Leaks database, Hua Heng is a shell company set up by Capture Advantage Co. Ltd., a British Virgin Islands shell company that remains unaffected by sanctions. In June 2017, the United States specifically targeted a similar shell company, Dalian Global Shipping for operating *Sea Star 7* (IMO: 8310396), a Panamanian-flagged vessel that frequented North Korean ports. *Chong Un* is frequently in North Korean waters, and despite strict South Korean regulations against insuring vessels entering North Korea, it carries out operations with impunity thanks to a Hong Kong-based shell company, a P&I club insurance invoice and a Tanzanian flag of convenience.[12]

Broadcasting false destinations is routine for vessels coming and going from North Korea. For example, the vessel *Voge Challenger*, sailing under a Liberian flag, owned by TSC Ship Management out of Hamburg, traveled from Vancouver, Canada, on 18 June 2016 broadcasting a false destination of Port Qasim anchorage in Pakistan. AIS tracking confirmed its location in the Port Qasim anchorage in Pakistan for a 12-hour period on 3 August. However, AIS tracking showed that *Voge Challenger* stopped in Sinpo, North Korea, between 17 July and 26 July before carrying on to Pakistan.

Closing down North Korea's Open-Ended Risk

Continued maritime traffic into North Korea opens the door for corruption within P&I insurance clubs. Aside from counterfeiting foreign currency, trafficking weapons and exporting narcotics, a centrepiece to North Korea's economy is insurance fraud. In 2009 to celebrate Kim Jong-il's birthday, two North Korean insurance managers stuffed $20 million USD into canvas bags and shipped them from a Singapore insurance firm through Beijing to Pyongyang.[13] In 2005 North Korea was challenged in court when Allianz Insurance, a German firm, and Lloyd's Insurance, a British firm, disputed the claim of a North Korean helicopter crashing into a warehouse in Pyongyang. The firms maintained that the crash was staged by the Kim regime in order to receive a generous payout. Western insurers and US officials say the North Korean government has collected hundreds of millions of dollars from some of the world's largest insurance companies.[14] The regime made many suspicious claims for transportation accidents, factory fires, flood damage and other alleged disasters against European insurance firms like Allianz. No charges have been put forward to date against North Korea scamming P&I insurance clubs, but considering that the clubs do not have underwriters and insure 'unlimited risk,' the conditions are excellent for fraud by the regime.

P&I insurance is essential for maritime operators as without it shipowners cannot properly operate. The 'opened-ended' insurance clubs have reduced risk and facilitated maritime traffic since the 19th century, yet the unique financial model of not using insurance underwriters, but requiring members to pay annual 'calls' into a lump community pot has routinely been called into question over due diligence and transparency. A regular insurance firm that provides insurance on measurable risks would scrutinize and assess a claim in detail with the use of underwriters. P&I insurance clubs insure indeterminate risks, such as third-party liability, including loss of cargo, damage, or involvement in acts of war. If a club member draws a 'call,' third-party underwriters are hired to assess the damage, and the claimant would be expected to contribute a larger call in the following year.

So far, there is little political appetite to discipline insurance clubs that violate sanctions against North Korea.

Some level of insurance is required for vessels to enter international ports, and North Korean-flagged vessels, or North Korean vessels running under flags of convenience, are no exception. P&I clubs offer insurance for open-ended risks which most registered insurers are not willing to assume. Skuld, a Norwegian P&I club, recently reported that fraud in the P&I business was on the increase, especially in ports not adhering to due diligence in offloading procedures.[15] There are a number of known scams in the industry, including bunkering fraud, cargo and document fraud and port-related fake agency invoice frauds, that would all involve P&I claims. P&I club insurers provide very high payouts, usually with open-ended risk policies reaching into the billions of US dollars.

As noted, North Korea has a track record of insurance fraud, and the P&I club industry is a target for the cash-strapped regime to gain hard currency Given that many

Credit: Stephen Chester, Shipspotting.com

***Mi Yang 8**, photographed here in Inchon, South Korea, on 15 March 2010, under its old name **Pan Star**, illustrates the variety of sizes and types of commercial vessels serving the North Korean economy.*

traditional insurance firms with underwriters avoid dealings with North Korea, P&I clubs should have the same incentive to avoid contracts with the Kim regime. Yet, business is booming, as North Korean vessels secure club membership through offshore shell companies, and they are willing to pay the annual calls to the clubs. So far, there is little political appetite to discipline insurance clubs that violate sanctions. Maritime P&I clubs connected to vessel traffic into North Korea are often operating in violation of sanctions, but few mechanisms of enforcement are rigorously applied. Navigators, a British P&I club, was charged by the United States on 48 sanctions violations in 2016 for insuring vessels doing trade with North Korea, Cuba, Iran and Sudan. (Interestingly enough, the sanction violations were caught through the *Cuban Assets Control Act* (1963) against vessel traffic to Cuba, and not through any sanctions against North Korea.) The P&I club was charged $275,000 USD for the violations. Yet the company received over $1 million USD in premiums from North Korea for 24 P&I insurance policies to the regime. Such a small financial penalty is hardly a deterrent for P&I clubs to do business with North Korea.[16] From the point of view of P&I clubs, money received from North Korea's annual calls outweighs the risk of sanction penalty or of fraud.

Many P&I clubs ensure North Korean vessels, and the following clubs only represent a sample. West of England P&I, headquartered in Luxembourg, has P&I contracts for dozens of vessels traveling to North Korea. It insures *Mi Yang 8* (IMO: 8863733), a North Korean-flagged vessel owned by Miyang Shipping, a Pyongyang entity. Skuld P&I, a Norwegian P&I club, currently insures *Tian Zhu* (IMO: 9338981) a formerly North Korean-flagged vessel owned by the Hunchun Sino Unity Shipping concern in Hong Kong.[17] Other P&I clubs connected to North Korea include Steamship Mutual P&I, North of England P&I, and Standard Club in the UK, all of which are in jurisdictions with sanctions prohibiting the insurance of North Korean vessels.

Sun Unity (IMO: 8736382) traveled from a Chinese port to Nampo, North Korea, on 2 August 2016. The vessel is owned by a Hong Kong firm, and insured by Maritime Mutual Insurance Association, a P&I club with an office in Auckland, New Zealand. In 2005 the government of Japan complained to the government of New Zealand that Maritime Mutual exploited a loophole in sanction law to profit from insuring North Korean vessels to enter Japanese waters. The P&I club calls itself an insurance agent, even though it is not registered as one in New Zealand. The directors of Maritime Mutual are thought to be based in Liechtenstein and the island of Guernsey.[18] The club has insured North Korean vessels for over 10 years.[19]

Skuld P&I and West of England P&I both have statements on their websites about sanctions against North Korea. The statements caution against the transportation of precious metals, rare earths, rock fuels, luxury goods and weapons. They also caution against owning or operating North Korean-flagged vessels, or "vessels owned, operated or crewed by North Korea." West of England P&I notes that "[m]embers considering any business involving voyages to North Korea or North Korean persons are strongly advised to read all the materials referred to on this webpage and to contact the Managers for further advice before fixing."[20] The message is not for owners and managers to avoid dealings with North Korea, but to deal with them with caution.

Two risks exist with North Korea continuing to participate in P&I clubs. First, the P&I club memberships allow North Korean-associated vessels to enter international harbours, which undermines US and UN sanctions against the Kim regime. Second, the Kim regime is famous for insurance fraud to traditional insurance firms, and P&I clubs themselves are at risk of being taken as victims of such fraud. It is why P&I clubs would benefit by reducing their assumed risk in not insuring North Korean vessels, or those operating under flags of convenience. Individual actors may be willing to circumvent international rules, much in the same way as North Korea skirts sanctions, but "collective international action to exclude them from the benefits of doing so can improve global regulatory efforts."[21]

There are three options to improve the efficacy of maritime sanctions against North Korea. First, P&I clubs

Credit: Serge Gordon, Shipspotting.com

Voge Challenger *as seen in Vancouver's Burrard Inlet on 26 January 2013.*

could voluntarily agree not to insure North Korean vessels. The challenge with this option, however, is that the regime is willing to pay for policies, creating a lucrative market. The regime needs P&I insurance to move vessels in and out of its ports, and this is why it is willing to go to the lengths of managing vessels through shell companies, and of paying large sums for annual calls to the P&I clubs. Second, sanctions aimed at P&I clubs could prevent further insurance of North Korean vessels. Third, sanctions issuers could go even further by compensating P&I clubs if they cancel policies with North Korean vessels, effectively delivering no financial loss to the P&I club, and yet immediately freezing North Korean vessels from entering foreign ports.

Conclusions

North Korea is a danger to itself and to the world. Kim Jong-un threatens to set Manhattan alight with nuclear weapons, while committing human rights abuses at home. Of all of the available tools in the international community's repertoire to deal with the irrational and unpredictable regime, the UN and the United States rely on maritime sanctions as the preferred offensive to invoke behavioural change in Kim Jong-un's regime. However, not only are the current maritime sanctions ineffective, they encourage the regime to pursue disingenuous behaviour of reflagging vessels, inaccurately broadcasting AIS data, and potentially taking advantage of the P&I club system.

This article suggests that a way forward in putting pressure on North Korea through maritime sanctions would be to focus on, and directly involve, P&I clubs that insure North Korean vessels. This article demonstrates how easily North Korea benefits from the complexity of the global shipping industry. Flags of convenience, shell companies and P&I clubs all allow the regime to continue its nuclear proliferation plans and human rights abuses, without much interference. This article also illuminates how easy it is for insincere parties to pursue illicit activities through international maritime shipping. The AIS system, established after 11 September 2001 was designed to be a means to counter terrorism. However, as North Korea demonstrates, it takes very little to broadcast inaccurate information with impunity.

Considering that North Korea continues to pursue irrational and dangerous activities on the world stage, it may be time for maritime scholars and experts to consider policy solutions that enhance the integrity of maritime sanctions against Kim Jong-un's regime with additional pressure on P&I clubs. Failing to do so will only ensure that the regime continues its security violations and unbridled human rights abuses.

Notes

1. Danielle Demetriou, "North Korea Threatens to 'Burn Manhattan to Ashes' with a Hydrogen Bomb," *The Telegraph*, 14 March 2016.
2. Sang Hun Choe, "North Korea Propaganda Video Depicts Strike on the United States," *New York Times*, 27 March 2016.
3. Sang Hun Choe, "Kim Jong-un Says North Korea is Preparing to Test Long-Range Missile," *New York Times*, 1 January 2017.
4. Don Pinnock, "North Korean Diplomats Implicated in Illegal Rhino Horn Trade - Report," *The Guardian*, 15 July 2016.
5. Robert Huish, "The Failure of Maritime Sanctions Enforcement against North Korea," *Asia Policy*, Vol. 23, No. 1 (2017), pp. 131-152; and Robert M. Collins, "Marked for Life: Songbun, North Korea's Social Classification System," Committee for Human Rights in North Korea, 2012.
6. Patricia G. Steinhoff, "Kidnapped Japanese in North Korea: The New Left Connection," *The Journal of Japanese Studies*, Vol. 30, No. 1 (2004), pp. 123-142.
7. United States Treasury Department, The Office of Foreign Assets Control, "North Korea Designations," 7 July 2016, available at https://www.treasury.gov/resource-center/sanctions/OFAC-Enforcement/Pages/20160706.aspx.
8. United Kingdom, Her Majesty's Treasury, "Consolidated List of Financial Sanctions Targets in the United Kingdom," 2016, available at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/528488/northkorea.pdf.
9. See Peter A.G. Van Bergeijk, *Economic Diplomacy and the Geography of International Trade* (New York: Edward Elgar Publishing, 2014).
10. See Joy Gordon. "Smart Sanctions Revisited," *Ethics and International Affairs*, Vol. 25, No. 3 (2011), pp. 315-335; Huish, "The Failure of Maritime Sanctions Enforcement against North Korea"; Clifton T. Morgan, "Hearing the Noise: Economic Sanctions Theory and Anomalous Evidence," *International Interactions*, Vol. 41, No. 4 (2015), pp. 744-754; and George A. Lopez and David Cortright, "Financial Sanctions: The Key to a 'Smart' Sanctions Strategy," *Die Friedens-Warte*, 1997, pp. 327-336.
11. Huish, "The Failure of Maritime Sanctions Enforcement against North Korea."
12. *Ibid.*
13. Blane Harden, "Global Insurance Fraud by North Korea Outlined," *The Washington Post*, 17 June 2009. Harden is an investigative journalist, and received this information in interviews and court documents.
14. *Ibid.*
15. Daria Avdeeva, "North Korea Sanctions," Skuld, 2016, available at https://www.skuld.com/topics/voyage--port-risks/sanctions/insight/insight-north-korea-sanctions/north-korea-sanctions.
16. "North Korea News: Insurance Company Hit with Small Fine for Insuring North Korean Ships," RoKDrop.net, August 2015, available at www.rokdrop.net/2015/08/insurance-company-hit-with-small-fine-for-insuring-north-korean-ships.
17. *Ibid.* As of 1 August 2016 the IMO broadcast reported a name change of the vessel to *Chang Phyong*, and the vessel sailing under the flag of Kiribati, a flag of convenience.
18. Sunrise Exchange News, "Lax NZ Laws Provide Rogue States with a Loophole," 8 March 2005, available at www.insurancenews.com.au/local/lax-nz-laws-provide-rogue-state-with-a-loophole.
19. Huish, "The Failure of Maritime Sanctions Enforcement against North Korea."
20. West of England P&I, "North Korea," 2017, available at www.westpandi.com/Special/Sanctions/north-korea/.
21. Elizabeth R. DeSombre, "Fishing Under Flags of Convenience: Using Market Power to Increase Participation in International Regulation," *Global Environmental Politics*, Vol. 5, No. 4 (2005), pp. 73-94.

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Naval Occupations and the RCN: A Complex Yet Necessary Restructuring

Commander Luc Tremblay

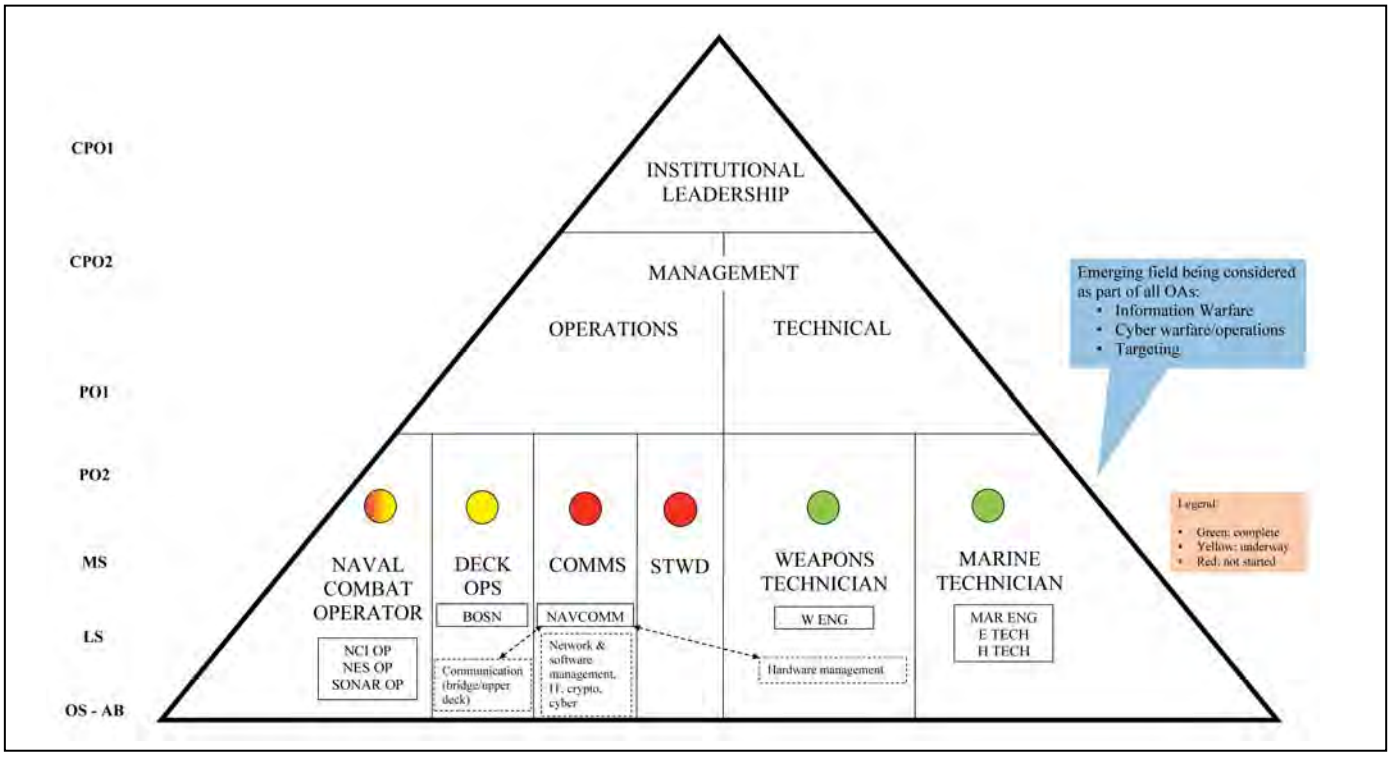
The Royal Canadian Navy (RCN) is in the midst of the largest fleet recapitalization of its modern history. The return of HMCS *Toronto* to the fleet in November 2016 marked the end of the *Halifax*-Class Modernization project. The focus now shifts toward the transition to the future fleet with three new classes of ships being introduced: the Arctic Offshore Patrol Ship (AOPS); the Joint Support Ship (JSS); and the Canadian Surface Combatant (CSC).

What many Canadians may not realize is that recapitalizing the fleet isn't simply a matter of building new ships – although, of course, shipbuilding is what gets the attention – the new ships also need crews. With new ships comes new equipment/technology, new missions, new crew sizes[1] and new crew roles. This may mean a reclassification and restructuring of crew occupations. In response to the construction and introduction of the new classes of ships, transforming the current naval occupation structure to meet the realities of the future fleet is critical. The need to review occupational roles stems from the fact that the next generation of warships will be crewed by fewer sailors who will need different skills and have as much if not more to do. The RCN seeks economies without compromising on effectiveness or delivery time of the ships.

In support of the direction provided in the RCN Executive Plan 2013-2017,[2] the restructuring of naval occupations was discussed at the Admiral's Council in January 2015 and primarily focused on the non-commissioned member (NCM) occupations. A command vision of the future occupation structure emerged and is illustrated in Figure 1. Based on this vision, the Director of Naval Training and Personnel wrote a problem definition paper, which in turn led to the demand for a review of the entire NCM occupation structure, to include the Regular and Reserve components.[3]

This article will not debate the advantages or the disadvantages of occupation restructuring in the RCN but rather highlight the impact of recent changes and occupation studies currently underway as they pertain to the development of naval occupations. The modernization and acquisition of new more technologically advanced platforms makes it imperative that the RCN conducts a thorough review of its occupation structures in its quest for more efficient crew sizes. Fleet recapitalization must

Figure 1. Future Occupation Structure



Credit: Author's collection

Credit: Leading Seaman Ogle Henry, Formation Imaging Services

*Members of the Combat Systems Engineering Department conduct maintenance on the close-in weapon system onboard HMCS **St. John's** during **Operation Reassurance**, 1 June 2017.*

go hand in hand with occupation restructuring in order to deliver excellence at sea.

History

This isn't the first time that naval occupations have been reviewed as new ships were introduced. Crews have had to adjust to new ships and new technology since mankind first took to the water – from rowing to sailing to coal-fired engines, and so on. Over the past four decades, Canadian naval occupations have undergone significant changes as a result of advances in technology and the introduction of new classes of ships. In 1978, the Maritime Other Ranks Production Study (MORPS) was published, resulting in significant changes that eliminated or merged several traditional naval Military Occupation Codes (MOCs).[4] MORPS was the first of many initiatives designed to amend and improve naval occupations resulting in numerous 'tweaks' and improvements as the RCN was about to accept the *Halifax*-class frigates in the 1990s.

Beginning in 1999, the Military Occupation Structure Analysis, Re-design and Tailoring (MOSART) project was the first large-scale review of Canadian Armed Forces occupations since the unification of the forces in the 1960s. The MOSART mission was "to identify how the Military Occupation Structure (MOS) and supporting policies need to change to support the Canadian Forces' mission now and in the future."[5] The basic objective of MOSART was to modernize the occupation structure which is one the fundamental building blocks of the military's personnel management systems.

As part of MOSART, naval occupations were reviewed with support by senior naval leadership and naval subject-matter experts, and strategic direction was provided by the RCN throughout the process. Specifically, four naval career fields were studied: naval operations (officer); naval operations (NCM); combat system technicians; and marine system technicians. The career fields were "intended as a new HR management tool which would group related occupations that share tasks and knowledge."[6] These studies were undertaken to optimize the occupation framework and result in recommendations for new structures providing greater flexibility and a better ability to manage naval occupations.

What many Canadians may not realize is that recapitalizing the fleet isn't simply a matter of building new ships – the new ships also need crews.

MOSART was closed out in the spring of 2007 in response to a decision taken at an Armed Forces Council (AFC) meeting. The AFC directed that "each Environmental Commander should evaluate their requirements and resources, and continue with those studies that best addressed their particular operation needs."[7] In this spirit, the RCN carried on with the occupation analysis studies commenced under MOSART for all naval occupations. Although work continued, no major changes to naval occupations occurred with the exception of the weapons engineer technician occupation, officially implemented in 2011.

In response to the Commander's Guidance and Direction to the RCN Executive Plan 2013-2017, an occupation analysis was requested in 2015 to examine and assess what would be necessary in the future RCN occupation structure. The primary objective of this initiative is to "develop occupational structures that will best support the RCN's objective of smaller, more efficient, yet effective crewing models in all future RCN classes of vessels."[8]

Credit: Corporal Anthony Chand, Formation Imaging Services

*Personnel at their stations in the operations room of HMCS **Athabaskan** during **Operation Caribbe** on 9 May 2015.*

This initiative directed that a holistic review of tasks be completed, divided in two categories of naval occupations: operations and technical. Under operations, three new occupations are being established: naval combat operator; deck operator; and communicator. Weapons engineer technician and marine technician are the two technical occupations. Although the RCN recognizes that the weapons engineer technician occupation has had an occupation analysis recently, it is quite likely that a short study might be required for possible adjustment to align with the RCN vision. Each new operations occupation encompasses previous naval occupations being reviewed. They are:

- Naval Combat Operator: naval electronic system operator, naval combat information operator and sonar operator;
- Deck Operator: boatswain and portions of the communicator occupation; and
- Communicator: no other occupation included.

The weapons engineering technician occupation emerged from the consolidation of the naval weapons technician and naval electronics technician (acoustic, tactical, communication) occupations. The recently implemented marine technician occupation will be described in greater detail below.

Occupation Analysis

The Directorate for Personnel Generation Requirement (DPGR) within Chief Military Personnel (CMP) is currently the organization responsible for the conduct of occupation analyses. These occur at the request of environmental commanders who act as the sponsor organizations. The analyses are generally requested based on future fleet requirements, advances in technology and the changing nature of operations.

Occupation analysis is carried out using the Military Employment Structure (MES) – Change Management Framework. Figure 2 illustrates the eight phases of the MES process. It is a process by which occupation specifications are reviewed and updated, and its main objective is to find greater efficiencies within assigned tasks. Supported by a problem definition paper from the sponsor organization, the analysis team embarks on a review process that can take up to 18 months to complete. The team normally consists of subject-matter experts and is headed by a senior officer. Throughout the review, the team is in regular contact with the sponsor organization to ensure that the analysis supports the Commander's intent.

During the analysis process, recommendations are developed and decisions are made to ensure that naval requirements are met. Recommendations can range from making adjustments to current occupation structures, to shifting work and tasks within and between existing occupations, to creating or deleting occupations to meet the needs of the RCN.

Figure 2. Phases of the Military Employment Structure

		Phase 1	Phase 2				Phase 3			Phase 4	Phase 5				Phase 6
Occupation	PDP	SAG 1	Task ID	JDs	Posn Map	SAG 2	QRA	SOA	FR	SAG 3	MES IP Draft	MES IP Review	Matrix Review	MES IP Signed	Implement
MAR TECH	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
DECK OPS	✓	✓	✓												
COMBAT OPERATOR	✓	✓													
CLEARANCE DIVER	✓														
		✓ Completed				✓ In Progress									

Occupation	
Future Priorities	COMMUNICATION — Problem Definition Paper - TBD
	NAVAL TECHNICAL OFFICER — Problem Definition Paper - TBD
	W ENG TECH
	MARS

Credit: Author's collection

Credit: Leading Seaman Ogle Henry, Formation Imaging Services

Marine Technicians AS Sam Richard, LS Haig Zakarian and OS Ian Whiteway repair a switch in the diesel generator onboard HMCS ***St. John's*** *during* ***Operation Reassurance****, 8 June 2017.*

There are many challenges that can affect occupation restructuring for any navy, ranging from the length of shipbuilding projects, the uncertainty of crew sizes, an unclear scope of work and the strategic direction of fleet composition. All four combined can make the resulting restructuring exercise quite challenging. Despite this, occupation studies and restructuring can make for a continuous cycle of improvements and changes to reflect the evolving nature of naval occupations.

A New Approach: Marine Technician

Now we will examine how this process of renewal manifests itself from theory to practice. As part of the general occupational analysis, the first occupation reviewed was the newest occupation in the RCN: marine technician. The new occupation was officially stood up on 1 May 2017 with a two-year transition period to allow for full implementation. This new occupation is a combination of the skills held formerly by the marine engineer, hull technician and electrical technician occupations.

The review began in September 2014 in response to a problem definition paper directing that the marine engineer and electrical technician occupations be combined. The primary goal was to re-align the occupations in advance of the arrival of the new ships being built under the National Shipbuilding Strategy with technology and crewing models that cross traditional occupational boundaries. In addition, the problem definition paper identified a number of issues affecting each occupation that the study team needed to resolve.

As the RCN is in a period of intense change as it positions itself for the future fleet, there were two major course corrections to the study while in progress. First, there was ambiguity early in the study about the RCN's vision for marine engineering systems operators, the Reserve force marine technical occupation. It became clear that the navy intended that the new marine technician occupation would take over the role of marine engineering systems operators in *Kingston*-class ships – i.e., the Maritime Coastal Defence Vessels which are usually used by the Naval Reserve – and that the marine technician should have a Reserve force component, although with a much narrower scope than originally directed in the problem definition paper. Therefore, a subject-matter expert from the Naval Reserve was assigned to the study by the RCN.

Second, and after several months of analysis, the team noted significant overlap with the hull technician occupation training and work in some classes of ships. Based on this observation, the RCN decided to expand the scope of the study to include the hull technician occupation and as a result, a subject-matter expert on this joined the team in July 2015.

Advisory group briefings provided an opportunity for the occupation analysis team to get a steer from senior naval leadership before moving forward with recommendations that could significantly alter the way the RCN would employ the new marine technicians. The first briefing was delivered in the fall of 2015 to the Naval Strategic Management Board (NSMB) chaired by the Deputy Commander of the RCN. This was an opportunity for the RCN to provide some clarification on its vision for the Naval Reserve and on plans to make the transition from legacy *Protecteur* and *Iroquois*-class ships to the arrival of AOPS, JSS and CSC. The second briefing was much more in-depth and was delivered to the NSMB in January 2016. The team outlined four structural options: a single occupation without sub-divisions; and three distinct models with sub-divisions that broke the broad stroke of the occupation in various ways. Much of the discussion focused on the balance between technical skills and engineering plant operations. The team indicated that the analysis was leading them away from the status quo model that required an engineering plant operator also to be a technician. This was informed by an examination of technical occupation structures in allied navies and in Transport Canada models.

In response, senior naval leaders showed a willingness to examine alternate models provided there was continued emphasis on excellence at sea and the ability to operate and maintain the engineering plant *in extremis*. Having examined the alternatives, one option for the new structure – a single occupation with no sub-divisions – was removed from further consideration. The analysis team was directed to focus on the remaining three options.

The final briefing to NSMB occurred in June 2016. Based on its assessment, the occupation analysis team recommended to the RCN that a single occupation be stood up, divided into mechanical and electrical sub-occupations from the Leading Seaman (LS) to Petty Officer Second

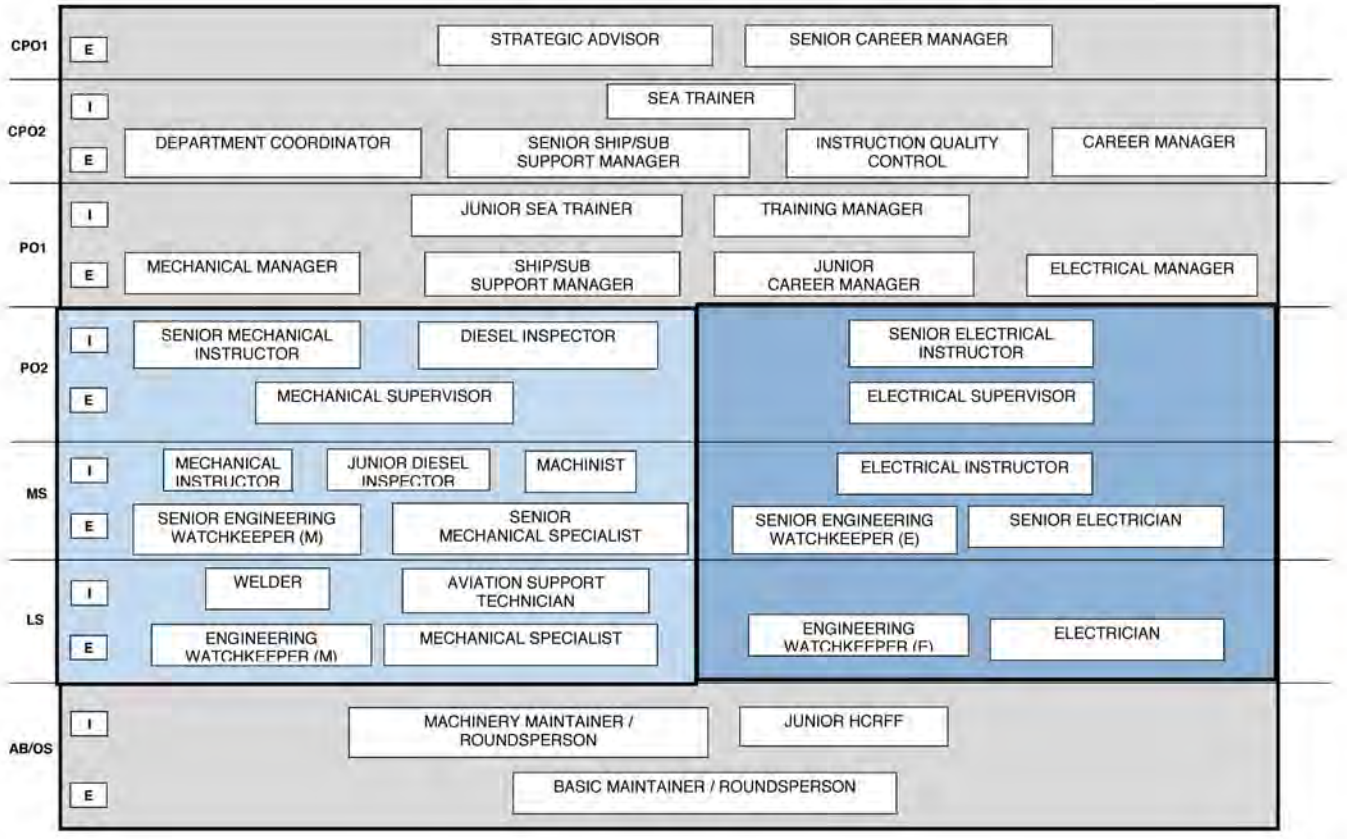
Class (PO2) ranks as illustrated in Figure 3. The RCN accepted the recommendation and directed the team to proceed with implementation planning.

While it seems simple as described here, the analysis team and RCN senior leadership faced many challenges throughout the process. The RCN is in the midst of a period of intense change on many personnel fronts in preparation for the future fleet. The development of crewing options for AOPS, JSS, CSC and the interim Auxiliary Oil Replenishment vessel have made the development of the new occupation more difficult. These ship-classes are very different, with different roles and crew sizes, so occupational analysis must take this into account. As well, the addition of the hull technician occupation mid-study was significant as the occupation analysis team had to reconsider all of the earlier analysis, considerably enlarging the scope of work. Finally, the Reserve component proved to be the most difficult aspect of the study. Early on in the process, the RCN vision for the Naval Reserve was not fully developed, making it a challenge for the team to develop a viable option. As clarification came mid-study, the solution became more apparent and it was decided that the Naval Reserve would focus on the mechanical sub-occupation (rather than the electrical sub-occupation) which can be supported by part-time sailors.

The introduction of the marine technician occupation provided several useful lessons for the RCN as it continues on its journey. The development of a strategic communications plan dealing with occupation restructuring is critical to the success of any change initiative. Although it is important to ensure that the details of the analysis remain available only to senior naval leadership and other key stakeholders until a final decision is made, a concerted effort must be made to inform sailors that their naval occupation is being reviewed and that their concerns are being taken into consideration. Failing to do so will make the implementation much more difficult.

These types of large-scale occupation changes can be challenging for those affected. Human factors play a central role in whether the changes to an occupation will be accepted. It is important to note that changes could affect key elements of sailors' careers, and not just the feeling of pride they have for their occupation. Seniority, pension, training, career progression and pay are some of the things that are coming into play. Rapid or continuous change can have a negative effect on organizational health and poorly managed organizational change can trigger an increase in anxiety within the workforce. These issues represent a major challenge when conducting an initiative like this, and restructuring of occupations has an impact

Figure 3. Marine Technician Occupation Structure



Credit: Author's collection

on morale especially if this is ignored or considered only near the end of the process.

To mitigate these risks and assuage the fears associated with complex occupational changes, the RCN and occupation analysis team developed a mentor network, consisting of various stakeholders such as the Naval Technical Branch Advisor, the Chief Petty Officer of the navy and Commanding Officers of the Fleet Maintenance Facilities on each coast. These mentors became ambassadors for the RCN and their awareness of the upcoming changes to the occupation structure helped improve the communication in the fleet.

As well, a marine technician steering committee was formed concurrently with the occupation analysis, comprised of three senior naval Captains (personnel, training and technical authority) with direct responsibility for its implementation. As major stakeholders, they provided a forum for effective decision-making and shared valuable advice on wide-ranging issues affecting the legacy occupations as they make the transition to the marine technician occupation. While this can never completely eliminate issues, strategies to answer questions around career progression, promotion and specialist pay were tackled early to reduce anxiety of the sailors and their families.

Coming Soon: Deck Operator and Combat Operator

This is not the end of the occupation analysis and restructuring. The deck operator occupation is the second occupation study being undertaken in support of the latest RCN occupation review. The first briefing was delivered in April 2017 and the occupation analysis team is in the preliminary stage of the process. This new study has been tasked to look at the work of boatswain and small portions of the communicator tasks. The team has been asked to consider and review tasks such as demolition, force protection, replenishment at sea and visual/tactical communications.

The third occupation study – naval combat operator – began in May 2017. This study presents unique challenges in light of the fact that many combat capabilities have not yet been identified in the CSC project. As part of the problem definition paper, and in addition to the current tasks assigned to the three combat occupations, the RCN has requested that information warfare and the use of unmanned systems be considered as part of the analysis. Like any new task, electronic/cyber warfare and unmanned systems will have implications for the crew. How will they affect crewing, who will take on the new tasks? These elements will be considered in the occupation study.

Conclusion

Transformation is about much more than warships and force structure, it is also about the people who will serve on the ships, and so while procurement and delivery seize the headlines, important activities such as occupation restructuring are also playing out. (It should be noted that although this article focuses on the navy, the reconsideration of occupations is also carried out by the army and air force as technology and equipment changes.)

The recent implementation of the marine technician occupation, coupled with the current occupational studies underway, illustrate a continuation of the RCN renewal efforts. The goal of the future occupation structure is to ensure that the sailors of the RCN are generated, trained and prepared to operate in all of Canada's classes of ships in the most effective and efficient manner in support of the mandates given by the government. The creation, reorganization or deletion of an occupation creates both a fundamental change in the management of the NCM naval occupations writ large and a shift in a culture rooted in years of naval history.

This naval occupation restructuring is key to the successful introduction of new platforms into the RCN fleet. New ships are being built, but ships need crews to maximize effectiveness. If crews are well-trained and the occupations are suited to the technology and framework of the ships, then the RCN will be able to respond to all challenges. A key element of this will be communication with personnel as the process unfolds – this ensures buy-in and avoids confusion and lowered morale. If done correctly, occupational restructuring will allow the RCN to re-invest in operational readiness and ensure success in operations today and in the future.

Notes

1. Note that there has also been much study about the crew size of the new ships. See (Commander) Renee Chow, Ramona Burke and (Lieutenant-Commander) Dennis Witzke, "A Systems Approach to Naval Crewing Analysis: Coping with Complexity," *Canadian Naval Review*, Vol. 11, No. 3 (Winter 2016), pp. 16-21.
2. Department of National Defence, "Commander's Guidance and Direction to the Royal Canadian Navy, Executive Plan 2013-2017."
3. Directorate Naval Personnel and Training, "Problem Definition Paper – RCN NCM Occupation Structure," 17 September 2015.
4. Commodore J.J. Gauvin, "Remarks from the Director General Maritime Personnel Readiness," *The Matelot*, Department of National Defence (DND), July 2002, p. 7. Military Occupation Code (MOC) was replaced in the early 2000s by Military Occupation Structure (MOS).
5. Larry Lindsay, "MOSART," *The Matelot*, DND, Fall-Winter 2003, p. 20.
6. Commander G. Petitpas and Commander G.P. McCabe, "Update on MOSART," *The Matelot*, DND, Winter 2008, p. 68.
7. *Ibid*, p. 67.
8. Directorate Naval Personnel and Training, "Problem Definition Paper – RCN NCM Occupation Structure," p. 2.

Commander Luc Tremblay is currently the section head responsible for occupation management for the Royal Canadian Navy.

The Kriegsmarine's Black Flag of Surrender and the Royal Canadian Navy

Sub-Lieutenant Warren O. Bush

"It orders us to surface, to set a black flag [of surrender], to throw overboard all our ammunition and to wait for further orders," wrote Werner Hirschmann, engineer of the German submarine U-190 in his wartime diary on 11 May 1945.[1] The *Kriegsmarine*, or German Navy between 1935 and 1945, ordered its operational U-boats to stand down on 8 May 1945, and subsequently both U-190 and U-889 surrendered to the Royal Canadian Navy (RCN) on 11 and 14 May, respectively. The events surrounding the former U-boat's surrender are fairly well known, while those concerning the latter are less known but contribute to an interesting chapter in Canadian naval annals nonetheless. A brief examination of the Kreigsmarine's black flag of surrender to the RCN reveals a distinctive experience – and it fills in a small piece of the end game of the Battle of the Atlantic for both military historians and Canadians alike.

But before we talk about the end game, we should talk about the beginning. The city of Bremen's major shipbuilding firm, AG Weser, built both U-190 and U-889. Commissioned on 24 September 1942 as a Type IXC/40 U-boat, U-190 plied the Atlantic beginning on 24 September 1942. The Kriegsmarine commissioned U-889, also a Type IXC/40 U-boat, on 4 August 1944. The final patrol of both subs coincided with a bold bluff by Admiral Karl Dönitz, head of the Kriegsmarine. By 1945 acutely aware that the 560,000 Allied service members his U-boats tied down would be redistributed if the truth emerged about the declining condition of his undersea force, Dönitz waged a campaign of deception that convinced the Allies that he controlled more operational U-boats than he actually did (by a lot). As such, the final patrols of U-190 and U-889 represented fairly major tactical gambles – the potential success of both subs had a direct correlation to the success of Dönitz's bluff.

Credit: Canadian War Museum

"German Prisoners Leaving Their U-Boat, Bay Bulls, Newfoundland." This painting by Canadian artist Thomas C. Wood depicts U-190's German crew members being transferred to shore on 14 May 1945, after their surrender. Note the black flag of surrender on the periscope and the Canadian naval ensign flying from the mast.

Credit: Lt Richard G. Arless / Canada. Dept. of National Defence / Library and Archives Canada / PA-157033

*Survivors of the minesweeper HMCS **Esquimalt** disembark from HMCS **Sarnia**. **Esquimalt** was the last Canadian naval vessel to be sunk in the war from enemy action.*

U-190 undertook six war patrols. Captain Max Wintermeyer commanded the first four from 24 September 1942 to 5 July 1944, but during his tenure the sub only managed to sink one ship, the British merchant vessel *Empire Lakeland* en route from New York to Glasgow on 8 March 1943. None of the 57 crewmen or eight gunners on *Empire Lakeland* survived. Captain Hans-Erwin Reith then took command of U-190's final two patrols beginning on 6 July 1944. The first voyage was unremarkable, but the second differed markedly.

Reith's final patrol began on 19 February 1945 and lasted 85 days. Shortly after entering the Atlantic, he received orders to destroy shipping around Halifax Harbour, a plan based on the successes of U-806 and U-1232 in late 1944 and early 1945. The subs sunk six merchant ships in the area – U-1232 sunk three of them within 13 minutes – and the minesweeper HMCS *Clayoquot*. (Reith's superiors did not know that these sinkings prompted Allied authorities to eschew Halifax as an assembly point and replace it with Portland and Boston.) U-190 dodged a handful of attacks from Allied shipping while crossing the Atlantic. But in general its travels were uneventful, and the crew entertained itself as it could. The boat's engineer Hirschmann recorded that the crew "developed an interesting social intercourse with a solitary fly that appeared in mid ocean," and "engaged in an intense analysis of, and debate about, the growth of the only living matter aboard the U-190 – mildew."

U-190 entered the Halifax area at the beginning of April 1945, where it prowled for slightly over two weeks without sinking any ships (the crew did fire torpedoes at a tanker, but missed). The crew evaded detection by capitalizing on the Allied dogma that U-boats would employ deep water as a safe zone, and settled on the sea floor near the coast where numerous wrecks and oceanographic properties obscured a potential Asdic signature (a primitive form of sonar). However, on a patrol during 16 April the crew detected the distinctive pinging of Asdic, and then Reith spotted what he identified as a small warship via periscope – HMCS *Esquimalt*. Convinced that U-190 had been detected, Reith ordered a torpedo (or 'eel,' as the Germans called them) fired at the enemy ship, which "immediately started to go under, rolling over to starboard and sinking stern first," recalled Able Seaman Joseph Wilson, "She disappeared within four minutes."[2] The rapidity with which the unfortunate *Esquimalt* sank did not allow the radio operator to send news of the attack, and before aid arrived 44 of the ship's 70 crewmen died from either wounds or hypothermia. *Esquimalt* was the last Canadian naval ship lost to an enemy during the war.

Three days later a technical mishap immobilized U-190 and it began flooding, a problem that forced it to the surface off Halifax Harbour for a full two hours, but Allied ships had concentrated a search for the sub in deeper water. As U-190 engineer Hirschmann remembers, "[s]o there we were, sitting ducks on a brightly moonlit night in sight of the Sambro Light Ship at the mouth of Halifax Harbour.... Today I find it hard to believe that we could spend that much time on the surface near one of the busiest ports in the world and not be discovered."

U-889 stalked the North Atlantic along with U-190, but departed Axis territory on 5 April, well after Reith. Similarly assigned to hunt along North America's eastern seaboard, the sub's commander, Friedrich Brauecker, either did not sight any targets during the Atlantic crossing or opted not to expend any torpedoes. By the time U-889 arrived in the western Atlantic, Germany had capitulated.

Despite Dönitz ordering his U-boats to stand down on 8 May, heavy fighting had knocked out all German radios powerful enough to reach U-boats in distant waters, creating widespread confusion. Once the crews of both U-190 and U-889 actually made sense of the orders to surrender, they sailed eastward for Europe, although neither made it very far.

Credit: Canada. Dept. of National Defence / Library and Archives Canada / PA-116720

*A **Canso** flying boat of RCAF No. 161 Squadron flies over the newly-surrendered U-889, now flying the White Ensign.*

After almost sinking themselves for the second time in less than a month, this time through a torpedo disposal mishap, the crew of U-190 finally successfully made radio contact with the outside world. Hirschmann recorded in his diary, "unfortunately it is not the homeland that answers but Cape Race in Newfoundland." He also noted his lack of enthusiasm for where the sub was to surrender when he wrote "we are not enthusiastic! We have had quite enough cold during the last months." The Canadian corvettes HMCS *Thorlock* and HMCS *Victoriaville* broke from escorting a convoy to meet the sub around 500 miles off Cape Race, where Reith officially surrendered. Canadian sailors boarded U-190, transferred most of the crew to *Thorlock*, and then sailed for Bay Bulls, Newfoundland, along with a skeleton crew of Germans left behind for operational reasons.

U-889 surrendered after being spotted by a Newfoundland-based RCAF Liberator on 10 May just south of the Grand Banks' notorious Virgin Rocks navigation hazard. The Canadian corvettes HMCS *Dunvegan*, HMCS *Rockcliffe* and three minesweepers belonging to Slow Convoy 175 intercepted the sub, and the Canadian frigates HMCS *Buckingham* and HMCS *Inch Arran* then took over the escort to Shelburne, Nova Scotia, where they arrived on 14 May. On the sub's first night of captivity, according to Hirschmann, Brauecker, the former commander who was still on the sub, flashed *Dunvegan*, "And so to bed. Have a good night."

The surrender of both subs generated a considerable media circus, and the submariners officially became prisoners of war (POWs). But prisoners of whom – Canada, Newfoundland, or the United States? The international disposition and geographic particulars of hostilities warrant mention. While this examination focuses on Canada's role in the surrender of German subs, the Americans were also active in the same region, at the same time, through their base at Argentia, Newfoundland – then British soil, not Canadian.

The North Atlantic environs received intense attention between April and May 1945 because Allied intelligence confirmed the departure of six Type IXC U-boats from Axis territory, a 'wolfpack' the Germans dubbed *Seewolf*. Designed to reproduce the success off North America's eastern seaboard similar to that of *Operation Drumbeat* in 1942 (during which U-boats sunk 609 ships), *Seewolf* particularly rattled the Americans because they thought that the wolfpack carried V1 rockets to be used against coastal American cities. As it turned out, the subs carried no rockets, yet the rumor resulted in *Operation Teardrop*, a major American campaign to destroy U-boats destined for North American waters – the campaign consisted of a hardly inconsiderable 42 destroyers and four aircraft carriers.

"So there we were, sitting ducks on a brightly moonlit night in sight of the Sambro Light Ship at the mouth of Halifax Harbour."

In any event, other U-boat surrenders took place in the Atlantic with terrestrial North American implications (five surrendered to the Americans), but only U-190 and U-889 surrendered to the Royal Canadian Navy. And they did so more by chance than anything else. At the conclusion of hostilities, only 26 U-boats were actually on patrol.

Allied authorities interrogated the crews from U-190 and U-889. After this they shipped the officers to a POW camp at Gravenhurst, Ontario, while the enlisted men went to

various different camps. The lives of enlisted POWs are difficult to assess in the historical record – although students from Stanford and Brandon University conducted a scholarly archaeological investigation of Manitoba's Whitewater POW Camp in 2011-2012 so there is some information – but the German officers apparently enjoyed Gravenhurst's POW camp, again according to Hirschmann's diary. He remembered that the camp was located "near the shore of a lovely lake, it had all the comforts of life (with the exception of female company) and we prisoners were treated like guests of the country." Inside Camp 20, or 'the Muskoka Officers Club,' the inmates created a band (they played swing) and enjoyed a library, a tennis court, a farm, a diving tower and even a water polo basin. They also received rations of beer and somehow created a secret still to make their own alcohol.

Despite this, they stuck to a rigid military hierarchy – inmates wore their uniforms with medals, saluted superiors and conducted themselves as if on an active base. There was one exception to this smooth hierarchy. The officers of U-190 petitioned the camp's highest administrative superior to be officially removed from Reith's authority, as relations between him and the crew had deteriorated.

The men from U-190 and U-889 eventually trickled out of the camps and were allowed to return home (although not before a far less enjoyable stay at camps in Britain), but Brauecker remained incarcerated until December 1948 – one of the last U-boat commanders to be released.

The surrender of both subs generated a considerable media circus, and the submariners became prisoners of war.

Werner Hirschmann later immigrated to Canada and published his wartime memoirs in 2004, with the assistance of military historian Donald E. Graves, titled *Another Time, Another Place: A U-Boat Officer's Wartime Album*. The work is an outstanding contribution to the historiography of the Second World War, and is the definitive account of the Kreigsmarine's black flag of surrender to the Royal Canadian Navy. Additionally, Lawrence Paterson's comprehensive *Black Flag: The Surrender of Germany's U-Boat Forces* gives global context to the Kreigsmarine's 1945 surrender.

Perhaps the most interesting remnants of U-190's saga remain in the Crow's Nest, the RCN's officers club in

Credit: Edward W. Dinsmore / Canada. Dept. of National Defence / Library and Archives Canada / PA-145577

A close-up photo of U-190's conning tower, showing part of the schnorkel and the Canadian White Ensign flying over the Kriegsmarine flag.

Credit: Albert F. Tigerstedt / Canada. Dept. of National Defence / Library and Archives Canada / PA-133131

U-190 alongside St. John's jetty. The distinctive narrowing of her deck was meant to improve diving times.

St. John's, Newfoundland. There, the sub's periscope is proudly on display, and a binder of original photographs from the surrender at Bay Bulls can be seen with special permission. Despite Hirschmann's lack of enthusiasm, the submariners look positively delighted to be surrendering their boat, and to be finished with hostilities.

As order emerged in the ruins of the Third Reich, Allied authorities decided on an ignominious fate for Germany's once-august U-boat fleet – all but 30 of the 156 surrendered subs would be scuttled. Through a tripartite agreement as part of the much larger Potsdam Conference designed to work out Germany's future, the British, Soviet and American governments concluded that 10 U-boats would go to each country for research and testing purposes. The Royal Navy then scuttled 116 of the 156 surrendered subs between 17 November 1945 and 11 February 1946 in an exercise code named *Operation Deadlight*.

Neither U-190 nor U-889 met a watery grave through the disposal operation. Allied military authorities determined that Canada could use U-190 for research, while the United States could do the same with U-889. The US Navy took possession of the latter sub on 10 January 1946, ran tests with its hydrophone, and then destroyed it outside of Portsmouth, New Hampshire, near the end of 1947 during torpedo trials.

The RCN, for its part, would hear of nothing so banal! The newly commissioned HMCS U-190 went on a ceremonial tour of the St. Lawrence River in the summer of 1945, and visited various communities. Thereafter it served as an anti-submarine training vessel until being decommissioned on 24 July 1947. Perhaps in an act of closure, the navy transported the sub to the approximate location of *Esquimalt*'s destruction, and put on a pyrotechnic display for Trafalgar Day, 21 October of 1947. According to Hirschmann, who was still writing his diary and was still a good source of information on the topic,

> This event called for Canadian naval aircraft – Fireflies armed with rockets and Seafires armed with bombs – to attack U-190, which would be followed by gunfire from two Tribal class destroyers, HMCS *Haida* and HMCS *Nootka*, which would actually sink our old boat. As it was going down, an escort vessel would then administer the *coup de grace* by firing Hedgehog depth charges.

The operation became somewhat muddled, but there can be no question that the fireworks wouldn't have disappointed any onlookers. Thus concluded the Kriegsmarine's black flag of surrender to the Royal Canadian Navy.

Notes

1. Werner Hirschmann, with Donald E. Graves, *Another Time, Another Place: A U-Boat Officer's Wartime Album* (Annapolis: Naval Institute Press, 2004). All subsequent Hirschmann quotations are also from this source.
2. Quoted in Donald E. Graves, *In Peril on the Sea: The Royal Canadian Navy and the Battle of the Atlantic* (Montreal: Robin Brass Studio, 2003), chapter 8.

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Making Waves

2% is Not a Credible Policy … or Even a Policy

Vice-Admiral (Ret'd) Sir Jeremy Blackham

Democratic countries regularly repeat the platitude that defence of the nation is the first duty and priority of government. Few of them appear to support this with clear strategic vision and policy, let alone with coherently structured forces and adequate funding. A number of 'tricks' have been used to present this failure to the public; the latest is the NATO minimum defence spending target of 2% of Gross Domestic Product (GDP). The thinking here seems to be that if you spend 2% of your GDP you have a good defence policy; if not, your policy is flawed. This is, of course, a ridiculous way to make defence policy.

The sensible, and admittedly difficult, way to construct a defence policy lies along the following lines:

1. determine what stance and role your state wishes to adopt in the world;
2. identify the threats, risks and vulnerabilities your state faces in the light of 1 above;
3. identify those other states with whom you share 1 and 2 above and with whom you might form alliances;
4. determine the force structure and capabilities needed either alone or in concert with allies; and
5. provide funding to equip, man, train and support the resultant force structure, expressing publicly the risks inherent in any shortfalls and determining the acceptability or otherwise of these risks.

Credit: Leading Airman (Photographer) Alex Knott

NATO Secretary General Jens Stoltenberg meets with Prime Minister Justin Trudeau during the meeting of NATO Heads of State and Government in Brussels, 25 May 2017.

If you conclude that the funding required to satisfy Step 5 is more than you are prepared to pay, or can afford, then you must revisit the cycle above, changing the assumptions and making publicly clear what the impact of any reductions is likely to be.

In reality all five steps are rarely completed, Step 5 least of all. Canada has just published a new defence policy following a year of public consultations, which in theory addressed Steps 1 to 4. But despite generally positive reaction, most defence analysts and observers remain skeptical about the funding. The government asserts that the increased capability will be fully funded, but having booted most of the spending down the road until after the next election, few people believe this sleight of hand. In the most recent UK defence reviews – in 1998, which was widely regarded as carrying out Steps 1 to 4 very competently, and that of 2015, which was also competently carried out, if to a lesser extent – Step 5 was the weak link. In both reviews the resources to meet the results of the reviews were not provided and so the reviews clearly and significantly failed to produce sustainable policy.

In many countries in the West – the United States is an interesting exception – defence funding is seen as problematic, and something that politicians are reluctant to provide as there are few votes to be gained from high defence spending. This is largely because an ill-informed public (and often ill-informed politicians) is believed to be unwilling to fund an organization which guards against contingencies which most Western states have ceased to believe exist, despite the evidence of the world around them. If Westerners cannot or will not imagine war, they cannot imagine why they need to spend money guarding against it. They don't understand the elements or methods of deterrence – i.e., that successful deterrence means that nothing has happened. They don't understand that the most expensive instruments of defence are, after all, the least likely to be used and ideally would never be used, but may be essential for national survival should lower level deterrence fail. The consequence is that governments are nervous of fulfilling their duty of explaining to the public what defence is about.

So in NATO they have instead hit upon another device. Spend a minimum of 2% of GDP on defence. Of course this is relatively meaningless. Let us set aside the fact that only a tiny handful of NATO countries even claim (in some cases rather spuriously) to spend at this level, and ask *why* it is a meaningless measure of an effective defence policy. This seems to be particularly relevant just now, given President Trump's recent call for other NATO states to spend 2% on defence and his apparent skepticism over Article 5 of the NATO treaty, and given suggestions by Germany and Canada that other NATO states might have to 'go it alone.' This might lead to different approaches to defence, one of which could perhaps be a move to spend 2% of GDP. So it is worth understanding the shortcomings of this 2% device.

One of the problems with this measurement is that defence spending is calculated in different ways in different countries, despite there being a NATO definition of qualifying defence expenditure. This means that the measurement has shown itself, certainly in the UK, as being easy to manipulate. As well, because economies grow and shrink, it is difficult to be precise, in advance, as to what figure 2% of GDP will actually be and so planning ahead is difficult. The different sizes, cost bases, wage rates, scale of domestic industry, exchange rates, etc., mean that the amount of 'capability' purchased by a unit of GDP varies widely, and the impact on national economies varies widely too. *En passant,* this factor is also highly relevant in comparing NATO's defence effort with that of potential hostile states.

A particular problem with the 2% target is that the unit of measurement of defence effort becomes cash input, rather than capability output, thus undoubtedly reducing the incentive to find cheaper or more efficient solutions. This is arguably the antithesis of efficiency – indeed it removes a great deal of the pressure for normal efficiencies of the 'more for less' kind.

Using this device as a baseline for an effective defence policy means that the public debate on defence becomes immeasurably simpler but it also becomes divorced from the discussion of force structures and military capability, difficult subjects certainly, and becomes oversimplified and focused on a single, but relatively meaningless statistic. Decisions on defence capability are at real risk of being taken without regard to the factors listed at the start of this commentary, in particular to the development and scale of the potential threat. A financial target trumps strategic vision and evaluation. The public debate is thus dragged on to the wrong territory.

From a politician's point of view, this is a rather satisfactory state of affairs because it shifts the focus of any debate from reality to promise, from detail to vague promises and from output to input. Moreover, it allows public resources to be spent on electorally more appealing programs and even effectively closes down debate about the true requirements of defence and security. But what about the oft-quoted mantra that the defence of the nation is the first duty and priority of government?

It is interesting that in UK, and indeed in other European countries, the relative place of defence in government spending priorities has sharply declined in recent decades, despite regular statements from some governments that the world has become more dangerous – something

*A child waves the Union Flag as HMS **Ark Royal** leaves Portsmouth for the final time. HMS **Ark Royal** was decommissioned as a result of the Strategic Defence and Security Review in 2010.*

with which few defence or strategy experts would argue. In the UK, defence forces are at their smallest for a very long time[1] but more importantly, they are undermanned and parts of the force structure are aged and close to being insupportable. But the emphasis on financial input allows this to be obscured, if not actually hidden from public sight, although not from the sight of servicemen and women, whose morale shrinks as their careers shrink and their capability shrinks. It is no accident that this input emphasis coincides with the worst manning crisis in over 50 years, although this will be steadfastly denied by both government and, more alarmingly, senior service officers.

Sadly, the 2% NATO mantra – the input emphasis – allows easy if not wholly credible or accurate claims to be made by politicians, and criticisms of defence expenditure or force structure to be denied without adequate explanation. It is a device invented largely for this purpose in the face of increasingly widespread calls for greater defence effort by NATO members to allow governments to appear to answer the demand without doing very much. It falls somewhat short of honesty.

The 2% of GDP mantra is not a rational or adequate defence and security policy. Rather it is a superficial cover for the lack of an intellectually sound, viable and effective defence policy. It is a measurement of the wrong thing which allows the tough questions to be ducked, whilst appearing to be worthy. It is a potentially dangerous and disingenuous approach to defence and security in an increasingly dangerous world.

Notes

1. It is perhaps worth noting that, in the case of the UK, currently the proportion of GDP devoted to defence is the lowest in more than 150 years.

New Wings for the Fleet

Colonel Peter C. Allan

Generations of maritime helicopter warriors have anticipated this eventuality: the moment when a new helicopter would relieve our beloved CH-124 Sea King of its long-held duties and take its place in the modern maritime battlespace. The moment is tantalizingly close and although there remain challenges, both seen and unseen, the implementation of the CH-148 Cyclone as Canada's new maritime helicopter has gained an irreversible momentum that will see Cyclones in shipborne operations within a year.

The Maritime Helicopter Project was established to replace Canada's fleet of CH-124 Sea King helicopters following the cancellation of the New Shipborne Aircraft (NSA) project in 1993. Through a competitive process, Sikorsky Aircraft Corporation was selected to provide the CH-148 Cyclone, a variant of its S-92 helicopter. In 2004, Sikorsky was awarded two separate contracts to fulfill the requirements of the project: an acquisition contract valued at $1.9B for delivery of 28 Cyclones, *Halifax*-class ship modifications, a training facility and facility upgrades; and a 20-year in-service support contract to provide sparing, logistical and engineering support valued at $5.8B. Under the terms of the original contract, delivery of the first Cyclones was to be in 2008.

*Crew conduct torpedo-loading drills on the CH-124 Sea King helicopter onboard HMCS **St. John's** during **Operation Reassurance**, 17 June 2017.*

By 2013, with no Cyclones yet delivered to Canada, the project was in need of renewed energy. An independent third party was engaged to assess the viability of the project. This was followed by a government-led options analysis on the way forward for a maritime helicopter capability that included a review of in-service options to replace the CH-124. The review concluded that the Cyclone project could deliver a viable and operationally relevant maritime helicopter capability. As recommended in the third-party report, changes were made to the project governance structure to support the developmental nature of the project. In addition, the acquisition contract was amended in 2014 to incorporate a strategy that would deliver to the RCAF a block of early versions of the helicopter while development towards a fully compliant Cyclone continued.

With some fanfare, the first six Block 1 Cyclones were accepted by Canada on 19 June 2015 at 12 Wing, Shearwater, NS. While Cyclones had been at Shearwater for some time before the official acceptance, formal acceptance really marked the turning point when the focus began to shift significantly from routine Sea King operational duties to the implementation of the Cyclone. Since then, an additional five Block 1 Cyclones have arrived and the original six helicopters have been returned to the Sikorsky production line for modification to the Block 2 configuration. An additional four Block 1 Cyclones will be delivered to Shearwater over the course of this summer.

As envisioned in the strategy to deliver the helicopters in blocks, the Block 1 Cyclones have been used by the personnel of the Helicopter Operational Test and Evaluation Facility (HOTEF) to begin initial operational test and evaluation. Equipped with a fully functional avionics suite, flight management system, radar, electro-optics system, sonar, acoustic processor, data link, rescue hoist and cargo slinging system, the Block 1 Cyclone has supported a broad range of operational testing. Initial results have been very encouraging, confirming the capabilities of the Cyclone in a range of shore-based, utility, anti-submarine warfare, surveillance and shipborne operations.

Of particular note, HOTEF deployed in HMCS *Montreal* in the spring and fall of 2016, successfully testing the ability to operate and maintain a Cyclone at sea. Although the Block 1 helicopters are restricted to a limited operating envelope (ship motion of 2.5° pitch, 5.5° roll), deck handling, launch, approach and recovery evolutions were

Credit: Corporal Jennifer Chiasson, 12 Wing Imaging Services

Members of 12 Wing gather for a group picture at the unveiling of the Cyclone helicopter at 12 Wing Shearwater on 19 June 2015.

all assessed as satisfactory. In addition, a range of tactical operations, including prosecution of submarine targets, were highly successful, demonstrating not only a significant capability but also the potent capability to come as Block 2 is further integrated and enhances the mission systems.

The arrival of the first Cyclones in Shearwater also highlighted the need to shift increasing resources and personnel out of Sea King operations so that they could make the transition to the Cyclone. In preparation for taking delivery, HOTEF, for the first time in the unit's history, established a fully accredited maintenance organization to conduct first-line maintenance on the Cyclones. The small team was initially challenged to keep up with all of the maintenance tasks on the new fleet but quickly adapted and drove significant improvements to the new maintenance system. Perhaps the greatest value gained from the blocking strategy was the opportunity to exercise the maintenance and ground support systems well ahead of the need to fly in operations.

While operational testing has continued, there has been a concentrated effort to make progress on the training of technicians and air crew. In late 2015, 406 Maritime Operational Training Squadron completed its last Sea King courses and shifted focus solely to Cyclone training. The squadron has moved into the new training facility and is working side by side with contracted instructors delivering a full suite of training for aviation and avionics technicians, pilots, air combat systems officers and airborne electronic sensor operators. To date, 105 technicians have completed conversion training and 21 air crew have completed initial cadre training. An additional 40 technicians and 24 air crew are currently training to fill the ever-growing demand for Cyclone-qualified personnel.

The first cadre of air crew produced crews for HOTEF to conduct initial testing and evaluation. The second wave of air crew currently in training will reinforce HOTEF, establish a flight standards organization and will become the instructors to train the first operational Cyclone air crews who will start their training early this fall. With sufficient technicians and air crew trained, and with supporting standards and instructional organizations established, the RCAF will be in a position to declare initial operational capability of the Cyclone in the spring of 2018. The first operational deployment of a Cyclone on an RCN frigate is expected to follow soon thereafter.

In comparison to its Sea King predecessor, the Cyclone offers significant advances in operational capability. Initial testing and evaluation have already confirmed a surveillance capacity exceeding that achieved by the Sea King by an order of magnitude. The radar's inverse synthetic aperture (ISAR) imaging mode and electro-optics system introduce a stand-off surveillance, reconnaissance and contact identification capability that the Sea King has never had. The sonar contact ranges achieved to date against submarine targets confirm another order of magnitude improvement over the Sea King's performance. The operational effect delivered by the Cyclone coupled with the modernized *Halifax*-class frigate will be a giant leap forward for Canada's maritime capability.

As argued by Lieutenant-Colonel Chris Barnard in a recent article, it is not just in the maritime domain that the Cyclone will bring air power to bear.[1] The significant intelligence, surveillance and reconnaissance (ISR) capacity of the Cyclone has the potential to support a variety of over-land missions in both domestic and international operations. With the ability to record all data collected for later analysis, there is great potential to contribute pattern-of-life analysis and targeting processes. Missions such as non-combatant evacuation, humanitarian response and even battlefield mobility could be supported, leveraging the medium-lift capacity and self-defence capabilities of the Cyclone. The inherent ability to support and launch

Credit: Leading Seaman Dan Bard, Formation Imaging Services

*A CH-148 Cyclone helicopter moves into position over HMCS **Montreal** for refueling on 20 April 2016 off the coast of Nova Scotia.*

such missions from a ship multiplies the potential flexibility and reach of Cyclone air power.

The road to Cyclone implementation has not been without challenges. Aside from the long delays in acquisition, there have been some technical challenges to overcome. For example, the Commander of 1 Canadian Air Division ordered a temporary pause of Cyclone flight operations on 12 March 2017 after a HOTEF crew operating in the vicinity of Shearwater experienced an un-commanded change in altitude accompanied by transient indications of flight control computer failures. Exhaustive analysis by Sikorsky and its team has confirmed that the incident resulted from an error in the current flight control computer software. The analysis also clearly defined the operating conditions under which there is a risk of recurrence, thereby permitting a safe return to flight operations with some limitations. A software update will be required to solve the problem but, in the meantime, training, testing and evaluation have resumed with only a minor delay to the implementation schedule.

Development of the Block 2 Cyclone has continued on schedule and it is expected that Canada will accept the first six Block 2 helicopters in June 2018. Block 2 incorporates systems upgrades that enhance the integration of sensor data, expand environmental operating envelopes, enhance self-defence capabilities and allow shipborne operations in conditions up to sea state six. In fact, testing was conducted in HMCS *Montreal* this past winter and the ship and helicopter operated in sea state six and beyond; a truly challenging environment for all involved!

Delivery of the full fleet of 28 Cyclones is expected to be complete in 2021. While it is still too early to declare success, there is every indication that the Cyclone is ready to take on the challenges of maritime helicopter operations. Training of crews has been accelerated to enable an expansion to six operating Helicopter Air Detachments by spring of 2019 with an established growth path to the final operating capability of 11 detachments. In-service support arrangements are established and have already started to resolve significant support issues. Fully integrated with the RCN, the Cyclone weapon system will deliver enhanced air power in the maritime domain with the agility to respond to a multitude of missions at home and around the world. Most importantly, 12 Wing's maritime helicopter warriors are motivated and enthusiastic about using the advanced capabilities of the Cyclone to enable their mission of providing *Wings for the Fleet.*

Notes

1. Lieutenant-Colonel Chris Barnard, "Maritime Helicopter: Non-traditional Right from the Start," *Inform*, Issue 32, June 2017. Access to this article is limited, interested readers should contact the Editor for a copy.

The Interim Fast Attack Tanker

Colonel (Ret'd) John Orr

Ever since Noah launched the dove, there has been a debate about how to provide embarked aviation capability to at-sea forces. In Canada, this capability is currently provided by the Royal Canadian Air Force (RCAF) to the Royal Canadian Navy (RCN) in the form of the venerable Sea King helicopter which will soon be replaced at sea by the Cyclone.

Canada's development in the 1960s of the helicopter-carrying destroyer (DDH) concept – the marriage of a medium-sized helicopter with an escort-sized warship – has been applauded, and copied, throughout the navies of the world. What is less well understood is that it was intended that the DDHs (now helicopter-carrying frigates (FFHs)) were to be supported by the aircraft carrier HMCS *Bonaventure* with her own operational helicopters and, more importantly, second-line maintenance facilities and full supply bins.

In the immediate aftermath of the decommissioning of the carrier in 1970, Canada, of necessity, adopted a concept of the embarked helicopter as a private ship's asset and the success, or more likely failure, of the individual aircraft depended on luck and whether the helicopter air

detachment (HELAIRDET) was able to obtain a suitable stores pack-up prior to sailing.

Later experience with the *Iroquois*-class DDHs with their two helicopters (one of which often became a reusable spare parts container) and the supply ship (AOR) with a complement of two or three Sea Kings showed that if you wanted to support aviation at sea more effectively, you needed more than one 'bird in the hand.'

In a commentary elsewhere in this journal, Colonel Peter Allan has indicated that the first operational Cyclone HELAIRDET will be embarked in a frigate in the first half of 2018 with a gradual increase to a desired end state of 11 HELAIRDETs at some point in the future. As has been argued previously in this journal[1] and hinted at by Colonel Allan, given the Cyclone's intelligence, surveillance, reconnaissance (ISR) and battlefield utility, it is highly likely that a significant proportion of the operationally available Cyclones will be diverted to support of forces ashore.

Given this reality, perhaps it is timely to reconsider at-sea basing for the Cyclone. In the mid-1980s, the concept of capitalizing on the inherent aviation capability of the AOR was championed by Captain (N) Hal Davies.[2] He insisted that his ship not only embark up to three aircraft but that sufficient air crew, maintenance personnel and spares be provided to permit sustained air operations. Thus was born the concept of the Fast Attack Tanker (FAT).

Since that time, the operational significance of the AOR to embarked air operations has been emphasized in numerous operations, most notably *Operation Friction* (First Gulf War, 1991) and especially *Operation Deliverance* (Somalia, 1992-1993). And in a negative sense, the absence of an AOR for Roto 2 of *Operation Apollo* (Gulf of Oman, 2003) re-emphasized the importance of an AOR for embarked air operations.

It has recently been announced that the interim AOR (iAOR), *Project Resolve*, will be unveiled to the public at Chantier Davie in Lévis, Quebec, on 20 July 2017.[3] While the timetable of the iAOR's acceptance is not clear, once operational she will provide a much-needed capability to the fleet as well as to embarked aviation.

Credit: Petty Officer 2nd Class W Loane

*Task Group 302.3 conducts replenishment at sea en route to the Persian Gulf for **Operation Friction**, September 1990. HMCS **Protecteur** (centre) enabled sustained Sea King helicopter operations throughout the mission.*

Given the demonstrated advantage of basing as many aircraft as possible in one ship, it is strongly recommended that rather than deploying all operational Cyclones to individual frigates with the inherent fracturing of the potential air effort, they should instead be concentrated in the iAOR – and Joint Support Ship (JSS) when available. The operational cycle will, of course, dictate that individual ships be deployed to various multinational operations. But this should be the exception and not the rule.

Concerns may be raised due to the civilian crew arrangements of the iAOR. From the perspective of the Air Department, this is not a problem. In fact, the Royal Navy experience with its Sea King operations in civilian-manned Royal Fleet Auxiliaries would indicate that just the opposite is true. And lest concerns be raised regarding operations 'in

Credit: Davie Shipbuilding

The interim AOR being built at Davie Shipbuilding undergoes painting as it nears structural completion, June 2017.

harm's way,' combat experience in the Falklands with MV *Reliant* has proved the concept of operating onboard a civilian-manned vessel during hostilities can be very effective.

The question then becomes what to do with the 'spare' decks that will result. During the long draw-down of Sea Kings available for deployment, the navy conducted trials with unmanned aerial vehicles (UAVs) for operational ships. While the results of these trials are not known, it is surmised that a basic UAV platform could provide a modicum of aviation capability in the future for those ships without an assigned HELAIRDET.

Years of experience have shown that in order to provide a more effective air capability at sea, it is advisable to deploy as many aircraft as possible together in one ship. Given this fact and the strong likelihood that at least some of the operationally available Cyclones will be employed in a battlefield ISR role ashore, it is strongly recommended that the iAOR be transformed into an iFAT with the inherent capability to provide a much more potent air effort.

And who knows, if Father Noah had been conducting flight operations from an iFAT, perhaps the proverbial dove would have continued to return to the ark, with or without an olive branch! And where would we be then?

Notes

1. Colonel (Ret'd) John Orr, "Is 'Maritime' Still in the Future of Maritime Air?" *Canadian Naval Review*, Vol. 12, No. 1 (Spring 2016), pp. 30-31.
2. Captain (N) Davis was captain of three ships prior to *Protecteur* and had also served as Commander, Sea Training. He was well versed in embarked air operations.
3. David Pugliese "Resolve-class Supply Ship for Royal Canadian Navy to be Unveiled Next Month," *Ottawa Citizen*, 15 June 2017.

Strong, Secure, Engaged in Atlantic Africa

Brian K. Wentzell

In February 2017, the Canadian Armed Forces, through the Royal Canadian Navy (RCN), launched a novel mission to the Atlantic coast of Africa. Named Neptune Trident 17-01, the mission was designed, as a peace support mission, to provide inspiration and training to coast guard and maritime security forces of interested countries in the Gulf of Guinea area. Participating countries included Sierra Leone, Liberia, Senegal and Cote d'Ivoire. Global Affairs Canada, through its embassies and consulates in the area, provided assistance by arranging events involving government leaders and community organizations.

The mission evolved from an invitation from the Commander, US Navy 6th Fleet, Naples, Italy. The 6th Fleet has responsibility for American naval operations in the Mediterranean Sea region and Africa. That fleet is designed for operations by large naval ships in naval task groups. In the Gulf of Guinea, maritime security operations are more suited for coastal capabilities involving sovereignty patrols by one or two patrol vessels and ship inspections by boarding parties. With the assistance of allied navies, the US Navy (USN) conducts an annual exercise, dubbed Obangame Express, in African waters.

Credit: Master Corporal Pat Blanchard, Canadian Forces Combat Camera

Lieutenant-Commander Paul Smith, Commanding Officer HMCS ***Summerside*** *and Neptune Trident Task Force Commander, speaks with Leading Seaman Eidukas-Mooney while pierside in Freetown, Sierra Leone, 19 March 2017.*

The RCN routinely operates in coastal and small sea areas, as well as the open oceans. Its Maritime Coastal Defence Vessels (MCDVs) conduct counter-drug operations with the US Coast Guard in Caribbean and eastern Pacific Ocean waters. It also has a trained and experienced boarding party unit in the form of the Maritime Tactical Operations Group (MTOG). Operating together, the MCDVs and MTOG constitute a useful force for coastal security operations. With the addition of law enforcement officers, they can conduct fishery protection and contraband interception tasks, if required.

The RCN realised that responding to the USN request with a *Halifax*-class frigate was unnecessary because the MCDVs, with a MTOG detachment, were more appropriate for assisting small coast guard organizations in the development of patrol and boarding skills. With operating costs of about $5,000 per day, the MCDVs are much cheaper to operate than a frigate, which costs seven times as much per day to operate. Despite their relatively small size, the MCDVs have successfully conducted operations in the Arctic Ocean and trans-Atlantic crossings to Europe. Thus, they were suitable for a transit to the Gulf of Guinea, so deployment plans were developed and approved by the Canadian government and host country governments. The MTOG detachment was deployed by air and met up with the ships in one of the host countries.

The RCN tasked HMCS *Summerside* and HMCS *Moncton*, commanded by Lieutenant-Commander Paul Smith

and Lieutenant-Commander Nicole Robichaud respectively, with the mission. Each ship was crewed by approximately 45 officers and sailors for the operation. The crews comprised both Regular and Reserve members of the navy. On 18 February 2017, the ships departed from Halifax, Nova Scotia. The transit to the Gulf of Guinea was uneventful and the ships arrived in early March.

Once in the operating area, the ships separated for port visits. *Summerside* spent some time in Sierra Leone, which has historic ties with Nova Scotia. In 1792 African Nova Scotians, among others, emigrated to Freetown and started a colony, now the Republic of Sierra Leone. In addition to mentoring and training Sierra Leone Coast Guard personnel, the ship's crew attended local events organized through the Canadian diplomatic staff. Such activities introduced local residents to Canadians, and vice versa, and fostered the development of mutual respect and knowledge.

Moncton also visited Monrovia, Liberia. As the country tries to resurrect itself from the devastation of civil war and the Ebola crisis, there is need for training and mentoring of maritime security and law enforcement personnel. The crew attended local events and conducted familiarization training for coast guard personnel. The role of women in the navy and non-traditional roles was of particular interest to the Liberians.

From the maritime security perspective, the Canadian crews learned that training, skills, operations and equipment were at a rudimentary level in all of the states they visited. The choice of the MCDVs was therefore appropriate as they represent a level of capability that these small countries may be able to achieve in the near to mid-term future. The inclusion of the MTOG detachment was also appropriate as basic naval boarding team skills and equipment should be achievable in the near future.

From my discussions with Commander David Finch, Lieutenant-Commander Smith and Lieutenant-Commander Robichaud,[1] there is enthusiasm for further similar deployments to Africa. One question for Canada is whether such efforts should be focused upon some or all of the countries visited or whether more countries should be visited before any longer term commitments are made.

Through the lens of capacity building, the debate in Canada should not be controversial or lengthy. Canada has a history of supporting overseas development. It has trained military and naval officers and non-commissioned people from foreign countries. The question is how best to train and equip military, coast guard and law enforcement people from small African states. Before that question can be addressed, more work on assessing the needs of such coastal states may be required. It was apparent to Lieutenant-Commanders Smith and Robichaud that fishery violations are a significant issue – foreign trawlers routinely violate the sovereignty of coastal African states. These small states have no capacity to monitor or stop such activities. The RCN ships detected foreign fishing activity, however, they had no authority to intervene. There is an opportunity to assist the affected countries to address this issue.

Canada has the ability to negotiate agreements with those countries with territorial waters and exclusive economic zones (EEZs) in the Gulf of Guinea to train and equip coast guard personnel in maritime resource law and enforcement techniques. The RCN has the ability to train personnel in the use of small arms, medium and heavy machine guns as well as communications equipment, boarding techniques and personal protection. Canada can supply small vessels capable of operating in coastal waters in varying weather conditions and teach people

Credit: MARLANT

*HMCS **Summerside** and HMCS **Moncton** dock at Freetown, Sierra Leone, during Neptune Trident, 19 March 2017.*

to operate and maintain such vessels, their systems and equipment. The Canadian Armed Forces can go further and assist in the establishment of shore-based command, communications, surveillance and support facilities. Funding can be arranged through overseas assistance programs as well as funding from the recipient state government. Local involvement and investment are necessary if the capabilities and systems acquired are to become part of the national infrastructure.

The desirable outcome would be that each participating country is able to enforce its national laws in its territorial waters and EEZ without continuing foreign assistance. Capacity building cannot be achieved quickly but it can be achieved over time. By taxing foreign fishing entities, countries could finance a portion of their maritime law enforcement operations and reduce the burden of the costs of facilities and equipment.

If there is a desire to move forward with one or more partners, the issue is whether the Canadian government and the governments of the African countries on the Gulf of Guinea can develop suitable plans, initiatives and measurements to achieve success in the achievement of such outcomes.

Canada strives to be strong, secure and engaged internationally in matters of foreign relations, trade, science, technology, defence, to name a few areas. Success is not guaranteed in any initiative. However, with proper processes and determination on the part of Canada and partnering states, success is achievable. The ultimate question is whether Canada, and the partnering countries, are prepared to take some risks and undertake the necessary steps to achieve success.

Notes

1. Author's discussion with Commander David Finch, Lieutenant-Commander Paul Smith and Lieutenant-Commander Nicole Robichaud, 7 July 2017 on board HMCS *Summerside*.

The Heart of the Fleet: The Joint Support Ship Program

Brian Carter*

Canada is at a watershed moment in its naval history. With the National Shipbuilding Strategy (NSS), the government has made a firm commitment to recapitalize the fleet for both the Royal Canadian Navy (RCN) and the Canadian Coast Guard (CCG) as part of a truly national project. As is to be expected with any such program, the NSS has been thoroughly scrutinized and doubts have been raised about the ability of Canada to meet these ambitions. While these doubts are well-known, what remains misunderstood is the true value of the NSS. It is not simply an attempt to build ships, but an effort to transform

Hiyí Skwáyel, Squamish for 'Big Blue,' is the 300-tonne gantry crane standing astride Seaspan Vancouver Shipyards, where the Joint Support Ships will be built.

Canada's sovereign shipbuilding industry and remove it from the constraints of the boom-and-bust cycles that have cast a pall over it in the past. By examining the Joint Support Ship (JSS) program, this article seeks to establish the importance of the NSS in meeting this national ambition, and to underscore the importance of investing in these domestic marine capabilities.

The JSS program is a key component of the NSS and Canada's next generation of naval vessels. It is also complementary to the government's intent to build and operate 15 Canadian Surface Combatants (CSC). Since the retirement of the *Protecteur*-class auxiliary oiler replenishment ships the RCN's support capabilities have greatly diminished. With the JSS program, the government has committed to addressing this problem with a tailored, long-term solution. As Seaspan constructs these ships, it will also develop its shipbuilding capabilities and gain the experience necessary to complete large and complex projects for the government while creating jobs and economic opportunities.

As the Honourable Harjit Sajjan Minister of Defence has said, years of underfunding have left the Canadian Armed Forces with significant operational gaps, including deployed support capabilities.[1] Under the NSS, and working closely with the government and the RCN, Seaspan has made significant progress towards addressing a part of this capabilities gap. To date, this includes signing the Design and Production Engineering contract and the Long Lead Items contract. With delivery of the JSS, Canada will possess a long-term and complete solution to its supply and support challenges.

The JSS program is a critical component of the modern Canadian fleet and to any functional task group. As Canada seeks to invest billions in recapitalizing the RCN, having fully capable support ships that can meet the strenuous demands of combat and disaster situations is of the utmost importance. With the renewed commitment to delivering the CSC package of ships, the importance of JSS is clear. This is all the more true as Canada looks to engage globally and partner with allies on maintaining shared security

Projected to have a minimum 30-year service life, the JSS will be the heart of the RCN fleet. Built to naval specifications at Seaspan's Vancouver Shipyards and based on a proven German design, these ships will be deployable to any theatre and threat environment with self-defence, survivability and ice capabilities. The ships will be constructed with twin main engines, twin shafts, twin rudders and a bow thruster for enhanced manoeuvrability, exceeding traditional conventional commercial vessels. Additionally, they will maintain NATO-standard medical, surgical and dental facilities and a NATO-compliant encrypted communications suite.

Canada is making a significant investment with the JSS program, but its full value is only appreciable within the broader context of the NSS and Canada's future military requirements. The government's recent Defence Policy Review made it abundantly clear that the RCN will be called upon to operate in a range of environments and participate in a diverse set of missions. With the significant planned investment of more than $60 billion in 15 CSCs, Canada has made a commitment to meeting the RCN's needs for combat vessels. This will help the CSC program to overcome the funding shortfall identified by the Parliamentary Budget Office (PBO) in its recent report.[2] To ensure these naval combat vessels are not hamstrung by inadequate support, the government has similarly pledged to construct the minimum of two ships as part of the JSS program.

The significance of the JSS program goes far beyond simply providing ships that fully meet – and, indeed, exceed – the technical requirements and broader mission needs of the RCN. It is part of the broader NSS effort to transform and sustain Canadian shipbuilding. Included in the non-combat package of large ships to be delivered by Seaspan, the JSS is helping to develop a domestic marine industrial base and supply chain that is able to support the demands of a sovereign state determined to provide its own security and maintain its defence capabilities.

Through the NSS, the government has provided predictable work and stability for Canada's shipbuilding industry. For Seaspan this has meant significant investment in its facilities, equipment and people. Since winning the NSS competition, Seaspan has put more than $170 million of its own money into updating and upgrading its Vancouver Shipyards. These investments have transformed the yard into the most modern shipyard of its kind in North America and ensured that it has the capacity to handle the initial non-combat package and beyond.

Just as critical as investments in facilities and equipment have been the efforts to attract, train and retain a highly

Figure 1. Canada's Joint Support Ship Program

30+ year operational life expectancy - Owned and operated by the RCN

Capable of 20 knots - Deployable to a number of theatres, whether Arctic or equatorial

Credit: Provided by author

Specifications

- Twin main engines, twin shafts, twin rudders, and bow thruster
- Ship-to-shore connector and small craft with launch and recovery systems
- 62 multipurpose sealift containers and more than 7,000 tonnes of cargo fuel
- Accommodation for 239
- Built to DNV GL* classification standards

*Det Norske Veritas Germanischer Lloyd

Support to Task Group and Operations

- NATO-compliant communications suite, medical and dental facilities
- Integrated Command Management System to support naval task groups
- Two CH-148 helicopters with support systems enable a range of operations
- Defended by two close-in weapon systems, four naval remote weapon stations (NRWS) and six .50 calibre guns

skilled workforce of professionals and tradespeople capable of building to international standards. Seaspan has invested significantly to this end by providing $2.9 million in education programs, such as the marine engineering and naval architecture program at the University of British Columbia in Vancouver and funding for the British Columbia Institute of Technology, Camosun College, and the Canadian Welding Association to develop skilled tradespeople. Much of this money is focused on encouraging participation from non-traditional parts of the labour force. With billions of dollars in federal work over the foreseeable future, Seaspan's portion of the NSS package will create and sustain more than 2,300 Canadian jobs on an annual average for the first 10 years of the NSS program. Investments in Canada's domestic workforce have been augmented by attracting world-class talent. Seaspan has made a concerted effort to hire individuals with significant experience in successfully delivering similar programs. These highly skilled individuals are critical to building and sustaining Canada's domestic capabilities.

Efforts to develop and attract new talent are mirrored by Seaspan's work to develop a strong, reliable and competitive domestic supply chain. This includes working in close collaboration with tier one suppliers – such as Thales Canada and Vard Marine – and with smaller companies that are less established. For instance, Genoa Design International from Newfoundland and Labrador and Bronswerk Marine from Quebec have experienced a considerable impact on their businesses thanks to NSS-related work. All of these companies have invested heavily in innovation, transformed their operations, and are in a prime position to seize opportunities on the international market. During the design and construction period of JSS, Seaspan expects $1 billion in contracts across Canada.

Through Seaspan's investments in its workforce and facilities, the NSS is demonstrating its long-term value. The CCG and RCN fleets will both be renewed and in possession of quality, Canadian-built, vessels that fully meet the needs of Canada's women and men in uniform. Furthermore, this effort will allow for the creation of thousands of jobs, with the benefits of billions in economic activity enjoyed across the country. It will also help to develop a supply chain that can serve Canada's domestic industry and realize opportunities internationally. In this way, the NSS will leave an indelible mark on Canada's economy.

Notes

* Brian Carter is President of Seaspan Shipyards.

1. Minister of National Defence Harjit Sajjan, "Towards a New Defence Policy for Canada," speech, 3 May 2017, available at www.canada.ca/en/department-national-defence/news/2017/05/towards_a_new_defence-policyforcanada.html.
2. Office of the Parliamentary Budget Officer, "The Cost of Canada's Surface Combatants," 1 June 2017, available at http://www.pbo-dpb.gc.ca/web/default/files/Documents/Reports/2017/CSC%20Costing/CSC_EN.pdf.

Policy Debates 100 Years Later

(Introduced by) Colonel (Ret'd) John Orr

In preparation for the upcoming Canadian Nautical Research Society (CNRS)-Royal Canadian Navy (RCN) 2017 Conference, "Canada and Canadians in the Great War at Sea, 1914-19," being held in Halifax from 10-12 August, researchers have been digging into the various archives for insight into what happened, and why, during the RCN's first hostilities. Some surprising gems have emerged, one of which relates to the development (more properly the *lack* of development) of a Canadian Air Force. One of the strongest proponents of a Canadian Air Force was a Lieutenant Colonel W. Grant Morden. Morden served in the pre-war militia (cavalry) in Montreal. At the beginning of the war, he was appointed as an Honorary Lieutenant Colonel and named to the Remount Committee. He headed overseas as the second-in-command of the Advanced Remount Depot in England and on his return to Canada in February 1915, was 'struck-off-strength.' By August 1915, however, he was back overseas as a Personal Staff Officer to Sir Sam Hughes, the Minister of Militia and Defence, with a special remit to study aviation.

In the papers of Sir Robert Borden, Canadian Prime Minister from 1911 to 1920, is an unattributed, undated document relating to the deliberations of a Cabinet sub-committee regarding a proposal to establish a government-backed factory and school of aviation in Canada to recruit Canadians into the Royal Flying Corps. Based on its place in Borden's papers and the clipping from the Montréal Gazette that follows, it is reasonable to deduce that it was drafted around August 1916 by Grant Morden and sent to Borden or perhaps Loring Christie, Borden's foreign policy advisor.[1] The letter is critical of virtually all the players at the senior, and not so senior, levels who were involved in the debate at the time. It is printed here to indicate that far from being a time of refined deliberation, the debates of 100 years ago were just as (or more) raucous and opinionated as they are today.

Lieutenant Colonel W. Grant Morden (?) to Sir Robert Borden (?) August 1916 (?)

I see by the papers that you are all sitting in solemn conclave on the question of aeronautics – now, this is a highly technical subject, and there's not a one of you who knows a dam [sic] thing about it. To my mind, it is no end of a scandal that this should be so, and that Canada has not been building her own machines long ere this. She might easily have been but for that ignorant and egotistical bounder – Sam Hughes.[2] In 1914 he refused to listen to the only man[3] we have who really knows anything about the subject, and in the mean time the country has been flooded with ignorant but enthusiastic humbugs who have done more harm than good.

Credit: Library and Archives Canada/C-020260

J.A.D. McCurdy helped design and fly the first 'all Canadian' aircraft, the Baddeck No. 1 shown here undergoing military trials in Petawawa, August 1909.

Old Merritt[4] knows absolutely nothing about the subject but he makes a great noise in the papers and is quite pleased with himself. McCurdy,[5] of the Curtis [sic] Co.[6] is only out for the coin, and not with-standing the fact that he debauched both Pinsent[7] of the Naval Service and the gallant Major Ross-Hume,[8] has failed to make good, owing largely to the fact that there is nothing to him.

Somerville[9] is another fraud who should be shown up, as he poses as being both an expert and a pilot, without being either. This young man went to the Thomas Bros. school[10] in New York ostensibly to take a license and join the R.F.C. But not having the necessary skill or courage he became a tout for the school and was actually taking pay from the Thomas people all the time he was there. Being plausible he made a good thing out of it, and getting in with that half-baked young pup Booth[11] of Ottawa, he sucked him into the building of a regular fool of a machine which is being constructed by Morgans,[12] and it is to their credit entirely if the machine is any good, as they have built without plans, our friend being capable of nothing more than a silly and fanciful little sketch, although the wings show some design; but these I am told were stolen from the Thomas factory before he left their employ.

There are others that I could mention, but I won't weary you, and the ones I have mentioned are the worst offenders. Personally I feel very strongly on this subject, and am going to try and persuade my man to see you now that Sir Sam is away, provided I can get into touch with him; but failing this I am going to take matters into the papers, as Hazen[13] and his crew of incompetents are really worse than Hughes, and they have been making a bloody and expensive mess of the whole thing.

Faithfully yours...

Notes

1. The document can be found at http://heritage.canadiana.ca/view/oocihm.lac_reel_c4316/1029?r=0&s=6.
2. Sir Sam Hughes, Minister of Militia and Defence.
3. Most likely Major G.S. Maunsell of the Militia Department, an early advocate for military aviation inside the Canadian military.
4. Lieutenant Colonel Hamilton Merritt (Ret'd) established the Canadian Aviation Fund, a civilian agency advocating for a Canadian aviation school.
5. J.A.D. McCurdy was a member of Alexander Graham Bell's Aerial Experiment Association (AEA) and, in February 1909, the first Canadian to fly in Canada. McCurdy established a flying school in Toronto in April 1915 to train prospective candidates for the Royal Naval Air Service (RNAS) and the Royal Flying Corps (RFC). McCurdy was the managing director of the firm until it was taken over by the Imperial Munitions Board in late 1916.
6. Curtiss Co., an aviation company founded by Glenn Curtiss in Hammondsport, NY, and also a member of the AEA.
7. Assistant Paymaster H.C.F. Pinsent, RN, Naval Secretary, Naval Service of Canada. He vetted applicants for the RNAS.
8. Captain Alexander Ross-Hume, Royal Flying Corps, sent to Canada to assist with recruiting for the RFC in 1915.
9. Unknown.
10. Aircraft manufacturing company established by William and Oliver Thomas in Hammondsport, NY, and eventually moved to Ithaca, NY.
11. Unknown but perhaps a son or grandson of J.R. Booth, an Ottawa lumber baron of the late 19th century.
12. Unknown but obviously an aircraft manufacturer.
13. J.D. Hazen, Minister of the Naval Service.

Comment on the McCoy/Tulloch Article on a Canadian HA/DR Ship

Patrick Ambrose

I read Mr. McCoy/Mr. Tulloch's article in the spring issue of *CNR* (Volume 13, No. 1) with great interest. I think that Canada's need for a humanitarian assistance/disaster relief (HA/DR) ship is pretty much a no-brainer. Mr. McCoy/Mr. Tulloch made some very good points. I would change two details though. First, the cost should not come from DND's budget but from a foreign aid budget. Rather than simply sending millions of dollars to foreign countries or the United Nations, etc., spend some of that money to develop, provide and support a truly Canadian service to stricken people. Second, the ship (and I agree that there should be two ships) should be owned by the Canadian Coast Guard and not the navy. The core crew should be either a leasing agent or the coast guard with additional hospital, equipment operators and aid delivery by various partnered non-governmental organizations. DND could provide crews for landing craft, helicopters etc. when needed.

Having said all of this, however, like most Canadians I am skeptical whether any ships will ever get built under a Liberal government. I've lived under Trudeau I and Chretien. Forgive me for being unconvinced.

Dollars and Sense:
Strong Secure Engaged

Dave Perry

On 7 June 2017 the Minister of National Defence unveiled Canada's new defence policy – *Strong Secure Engaged*.[1] As with most policies, it did not include everything it might have. For the RCN, notably absent were mentions of a third support ship (or the interim AOR), a humanitarian assistance, disaster relief vessel, and a commitment to buy new submarines. And as with the last 20-year defence policy, the Canada First Defence Strategy (CFDS), it remains to be seen if either the political will or funding devoted to this new policy will endure over time. Those caveats aside, *Strong Secure Engaged* is on the whole a good policy framework for Canada's defence and is in several ways a great news document for the RCN.

Credit: Leading Seaman Dan Bard, Formation Imaging Services

Defence Minister Harjit Sajjan presents the new Canadian defence policy, ***Strong, Secure, Engaged****, in Halifax on 12 June 2017.*

The policy is underpinned, like its predecessor, by a 20-year funding commitment. Unlike the CFDS, this policy is presented with a fully accrual-based budget for new capital purchases, which is a beneficial improvement providing a simplified and clearer source of funds for all defence spending. The policy also locks in over time the annual budget escalator of the Department of National Defence (DND) at the 3% level, whereas that increase had previously been time limited, and set to expire in 2026/2027.

And, critically, the new defence policy provided DND with a modest annual budget increase, which over the life of the 20-year policy provides an additional $48.9 billion on an accrual basis and $62.3 billion in cash terms.[2] Crucially, the bulk of this funding increase is allocated towards new capital purchases, where new funding is most needed. On an accrual basis, $33.8 billion in new capital money was provided over the 20-year period to fund 52 projects which previously had no funding at all. In addition, over that same period, the new policy has reallocated $5.9 billion to bolster the budgets of a number of projects which had money assigned previously, but not enough. The two biggest changes were the increase of the budget for the Canadian Surface Combatant (CSC) from $26.2 billion to between $56-60 billion, and the Future Fighter Capability Project which had its acquisition budget raised from $9 billion to between $15-19 billion. The increases were in part to deal with a major refinement to the fleet sizes for each. The policy dictates that the CSC project will produce a fleet of 15 ships and that the future fighter buy will increase to a fleet of 88 jets. This raises the official size of these fleets from 'up to' 15 combatants and 65 jets under the previous government.

If the policy is implemented as outlined, this will mean a paradigm shift in the amount of spending on capital equipment. In real dollars, annual spending on capital (both infrastructure and equipment) will almost quadruple over the next seven years. As a percentage of overall expenditures each year, capital would rise to a whopping 42% of all spending, and spending on major equipment alone would rise to more than 32% in the same time frame.[3] Capital spending at that level would not just meet, but well surpass NATO's target of 20% of defence spending devoted to new equipment purchases.

Beyond the capital funds, the new policy commits an additional $15.1 billion in operating funding, $9 billion of which will go towards increasing the personnel complement of the defence team by 3,500 Regular force, 1,500 Reserve and 1,500 civilian positions. In addition to the personnel increase, a long list of initiatives has been proposed to modernize multiple elements of defence including diversifying the forces, revisiting the military's terms of service, facilitating transfers between the Regular and the Reserve forces, and reforming the classes of service for reservists.

As the document also outlines, the net impact of these new changes would push defence spending (measured on a basis consistent with historical reporting) to 1.2%

*Table 1. Defence Funding ($ millions)**

	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
Accrual Basis	17,148	17,174	17,636	18,677	19,464	20,015
Cash Basis	18,908	20,683	21,428	21,714	24,276	25,315

2022-23	2023-24	2024-25	2025-26	2026-27	Total 10yrs	Total 20yrs
20,870	22,092	23,278	23,899	24,551	207,654	497,012
26,048	29,879	31,741	31,931	32,673	265,688	553,003

*Not including future mission costs

Credit: Department of National Defence

The new defence policy establishes new accounting models and funding increases for the next 20 years.

of Gross Domestic Product (GDP) by 2024/2025, and to 1.4% of GDP under Canada's new accounting calculation which includes a number of previously excluded items such as payments to veterans. Interestingly, this government which went to great lengths to argue in public that the share of GDP devoted to defence was not the way that Canada's alliance contributions should be measured, devoted an entire page of its defence policy to outlining exactly how Canada will measure up in that regard as a result of the new policy.

One other defence-wide initiative seems of particular benefit to the RCN. The statement that the Canadian Forces "maintain an operational advantage over the threats of today and tomorrow,"[4] appears to indicate a commitment to achieving a more sophisticated level of capability than the past language of combat-capable forces implied. Beyond this, the clear commitment to a fleet of 15 surface combatants, and other specifics make this a naval friendly policy. For the first time since the 1994 White Paper, Canada's public defence policy explicitly commits to retaining a submarine capability, mandating that the RCN will not just modernize its *Victoria*-class submarines, but also operate them. The policy also restates previous commitments to the Arctic Offshore Patrol Ship (AOPS) and Joint Support Ship (JSS) projects, and new investments in naval intelligence, surveillance and reconnaissance (ISR), upgraded armament and upgraded lightweight torpedoes.

Credit: Timothy Choi

***Victoria**-class submarine HMCS **Chicoutimi** enters Esquimalt after sea trials, 6 October 2014. The new defence policy explicitly commits to retaining a submarine capability.*

The (huge) commitment of additional funds aside, the policy reads in places as if sections of text were lifted directly from *Leadmark 2050*.[5] The document specifically labels the RCN a blue-water navy, and reinforces and defines the naval task group concept, specifying it to be a force of up to four surface combatants, a joint support ship and, supplemented where warranted, by a submarine. Further, the document speaks of the importance of the navy maintaining 'persistent presence' far from national territory, contributing meaningfully to joint action ashore, supporting the sustainment of joint operations from the sea, and stresses the need to operate in the Arctic – all themes developed in the RCN's own vision document.

The policy only provides a set of objectives for defence, not an actual plan of implementation, which, given the width and breadth of initiatives – 111 in total – will be extraordinarily difficult to achieve as outlined. Nonetheless, as a starting point, this policy is sound. Certainly anyone who took seriously the Liberal Party of Canada's election platform commitment to maintain existing defence funding levels should be more than pleasantly surprised. It will take years to see if the commitments are realizable and if the funding is there, but this is certainly starting from the right place.

Notes

1. Canada, Department of National Defence. *Strong Secure Engaged: Canada's Defence Policy*, June 2017.
2. The document also spells out in great detail the way these two accounting systems work for anyone interested in learning about the differences. See Annex A.
3. *Strong Secure Engaged*, and information provided to the author by DND officials.
4. *Strong Secure Engaged*, p. 33.
5. Royal Canadian Navy, *Leadmark 2050: Canada in a Maritime World*, Ottawa, 2016.

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A View from the West:

Sea Trials: The Benefits of Using UNCLOS to Settle Maritime Disputes

Jocelyn Sandhu

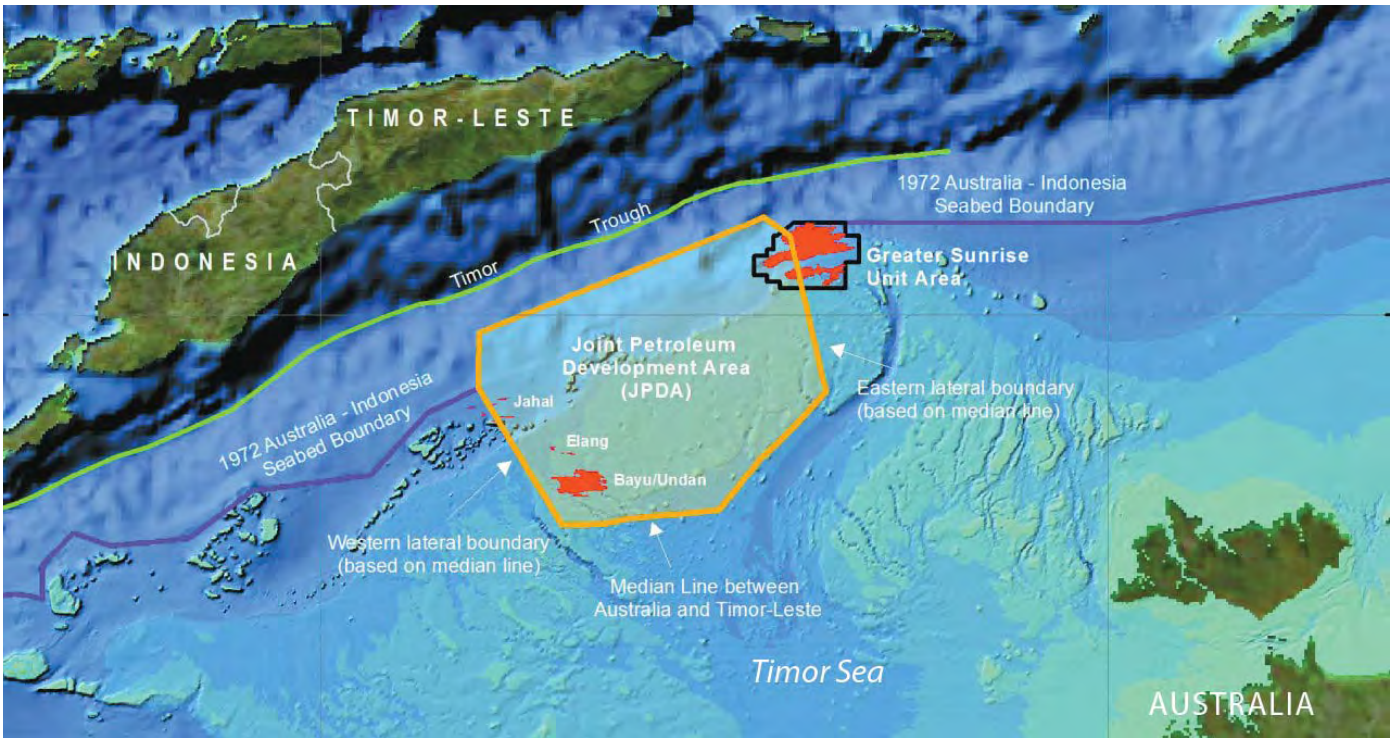
In 2013, cordial relations between Australia and its smaller neighbour Timor-Leste were seriously disrupted when it was revealed that Australia spied on Timor-Leste to gain an unfair advantage while negotiating the Certain Maritime Arrangements in the Timor Sea (CMATS) treaty – the treaty that defined the countries' respective development rights over the Greater Sunrise oil field.[1] Dili's accusations that Canberra had instructed its visiting officials to bug the Timorese negotiation room were aggravated when a raid by Australian intelligence services at the office of one of Dili's lawyers resulted in the seizure of confidential documents and data that detailed the country's upcoming arbitration case against Australia.[2]

The scandal not only attracted domestic and international scrutiny, but it also bolstered Timor-Leste's longstanding contention that CMATS was unfair as it included a condition that prevented a permanent maritime boundary from being created while the treaty was in force. For Dili, CMATS became an agreement that was illegitimately negotiated by Canberra in order to avoid establishing a delimitation that could hurt its interests. When Australia denied allegations of spying, as well as refused to renegotiate the CMATS treaty, it seemed as though the countries had arrived at a high-stakes impasse, and were unable to agree on a way forward.

Jump to 2017 and the situation has significantly changed. In January, Australia and Timor-Leste released a statement outlining the progress that was being made on their dispute, which included an agreement to invalidate CMATS, despite knowing that doing so would provide an opening for the boundary negotiations Australia had resisted for so long. Meanwhile Timor-Leste, in an apparent quid pro quo, withdrew its arbitration case on the validity of CMATS from the Permanent Court of Arbitration (PCA). At present, both countries are continuing to negotiate, with the goal of establishing a permanent maritime boundary between them – a goal they recently reaffirmed in another joint statement released in June.[3]

So what caused this rapid shift in affairs? How was progress made when the two countries were so far from consensus? The turning point in the dispute most likely arrived when Timor-Leste decided to use the dispute resolution mechanisms offered to it under the United Nations Convention on the Law of the Sea (UNCLOS). Recent maritime dispute cases reveal that when countries engage with the dispute resolution options under UNCLOS, the results can be beneficial for both smaller and larger states.

UNCLOS established international maritime laws that were meant not only to define the legitimate use of oceans



Credit: Geoscience Australia/Department of Foreign Affairs and Trade

Map showing the Joint Petroleum Development Area, Greater Sunrise Unit Area, and related maritime boundaries.

and waterways, but also to protect the rights of coastal countries to access resources within their exclusive economic zones without fear of interference from others.[4] But how could the convention deal with future compliance issues? A crucial component of solving this problem lies in the inclusion of dispute resolution and arbitration mechanisms that states can access should a maritime dispute occur. Signatories can pre-select their preferred method of arbitration out of the four different options offered upon signing, a necessary inclusion as countries are often hesitant to sign on to international conventions they can't tailor somewhat to their own preferences. However, if no preference is given, or if the choices of the disputing parties conflict, then any future disputes involving these states will fall under option three – referral to an independent arbitration court that meets UNCLOS' standards.[5] Although the other options have been used before, this article will focus exclusively on option three as it is the one most often used to solve disputes. So far, all but one of the cases falling under this option have been carried out by the PCA, simply because it is best equipped to do so. Both Australia and Timor-Leste specified different preferences upon signing UNCLOS, so when Timor-Leste triggered the arbitration process over CMATS, the case was automatically sent to a PCA-administered tribunal.[6]

A dispute resolution process with the PCA can occur through a binding tribunal or through a non-binding conciliation commission in which the PCA acts as a guide to help feuding countries move in the right direction – an option currently being used by Australia and Timor-Leste to solve their boundary dispute.[7] Countries are also able to opt out of certain issues that can be subjected to arbitration. In 2002, Australia opted to exclude debates about maritime delimitations or sovereignty from being subject to compulsory arbitration – a move it made just months before Timor-Leste's independence was finalized. However, this option does not allow countries to be completely exempt from arbitration nor does it prevent excluded subjects from being addressed through other dispute resolution mechanisms. Ultimately, UNCLOS offers a way in which countries can appeal to a third party with authority under international law to administer recommendations and rulings that can provide direction and help resolve disputes. This benefits participants in several key ways.

First, involving international dispute resolution authorities like the PCA can help smaller countries safeguard their interests against more powerful adversaries. One doesn't have to squint to see the ramifications that power imbalances have on relations between countries. For Timor-Leste and Australia, this imbalance led to one-sided negotiations on the CMATS treaty, from which

Credit: Mass Communications Specialist 1st Class Jay C. Pugh, US Navy

*Philippine Navy frigate BRP **Gregorio Del Pilar** at sea during an exercise. She was involved in the 2012 Scarbourgh Shoal incident in which several Chinese civilian vessels were intercepted for carrying out illegal resource extraction.*

Australia stood to benefit economically.[8] The involvement of the PCA helped to place Dili on equal footing with Canberra.

The use of dispute resolution to ameliorate the problem of unequal actors can also be seen in the *Philippines v. China* arbitration case, which was initiated by Manila after China repeatedly prevented Filipino fishermen from accessing their traditional fishing grounds in the Scarborough Shoal. The Philippines was vindicated by the tribunal as the PCA ruled in its favour on 14 of its 15 claims – legal validation that Manila would probably have never received from one-on-one negotiations with Beijing.[9] The PCA made it clear in both cases that proceedings would go forward with or without the participation of both parties, reassuring smaller states that they don't need the cooperation of larger states to engage with UNCLOS' dispute resolution options. Without the backing of the PCA, both Timor-Leste and the Philippines would likely have been left to negotiate with their neighbouring states from disadvantaged positions.

Second, adhering to the decisions of international dispute resolution bodies creates certainty and stability in tumultuous regions. Although in the short term the decision to work with a conciliation commission to establish a permanent maritime boundary may not be economically favourable to Australia, Canberra and Dili are ultimately working towards creating the conditions needed not only to secure their shared maritime region, but also to ensure long-term cooperation within the oil-rich Timor Sea. In contrast, China's unwillingness to work inside the framework of international law and engage with the PCA prevents it from ensuring stability in the South China Sea. The ruling *could* provide a clear way forward for cooperation in the region, should China choose to accept it.[10]

Third, using options under UNCLOS can assist in resolving disputes that have been deadlocked for long periods of time. With Timor-Leste and Australia, negotiations for a maritime boundary had been stalled for years before the involvement of a conciliation commission helped push

The Bayu Undan natural gas production platforms are at the heart of the Joint Petroleum Development Area.

talks forward. PCA involvement also successfully assisted negotiations between Bangladesh and India which, like Timor-Leste and Australia, had been unable to decide on a boundary in the Bay of Bengal for decades. After Bangladesh finally decided to initiate arbitration with the PCA, both countries participated fully in the proceedings and a ruling was handed down in 2014.[11] Though the tribunal awarded Bangladesh 80% of the disputed area, both countries abided by the decision out of a sense of relief, concluding that the arrangement would not only encourage diplomacy between the two, but would also benefit both economically.

Fourth, decisions by international dispute resolution bodies like the PCA can set definitive precedents for future maritime disputes. When it comes to international conventions like UNCLOS it's important to tighten the loopholes of interpretation as much as possible, as countries tend to try to exploit even the most minimal of grey areas. In the arbitration case *Mauritius v. United Kingdom* (UK), Mauritius challenged the UK's creation of a Marine Protected Area (MPA) off the Chagos Archipelago in Mauritius' EEZ. The UK questioned the jurisdiction of the tribunal, arguing that the PCA did not have the authority to deal with issues of territorial sovereignty. In response, the tribunal determined that while it could not address sovereignty, it could assert its authority over the case by arguing that the creation of the MPA violated the UK's obligations under UNCLOS.[12] This decision was crucial in defining the authority of the PCA for future cases of maritime arbitration, and would be cited by the conciliation commission when Australia put forward a similar complaint. Additionally, the PCA's 2016 ruling in *Philippines v. China*, which rejected China's historical nine-dash line and classified the Spratly Islands as Low-Tide Elevations, was an important clarification to the definitions provided by UNCLOS that will help states involved in future cases defend their claims.

Finally, escalating the dispute to involve international arbitration can increase both international and domestic awareness of the issue – resulting in internal and external pressure that can help convince reluctant countries to comply with rulings. When Australia's protests about the jurisdictional authority of the conciliation commission were dismissed as invalid, international and domestic audiences were watching Canberra's reaction closely. The commission's decision to continue with the proceedings came just months after the ruling on the *Philippines v. China* case – a ruling that Australia had highly praised and had called on China to comply with. This seeming hypocrisy put enough pressure on Canberra that it agreed to accept the commission's involvement.

By engaging with the maritime dispute resolution options under UNCLOS, countries like Timor-Leste and Australia have the potential to shape international views on how maritime issues should be approached. A dispute resolution process overseen by a third party like the PCA can be extremely beneficial for all states involved, not only for smaller countries like Timor-Leste, but also for larger countries like Australia. By recognizing the validity of the dispute resolution processes under UNCLOS, a country has the opportunity to demonstrate a consistent and firm stance towards maritime law, thereby helping to cultivate norms that can protect maritime interests in the future. Ultimately, when states recognize the benefits of engaging in lawful international dispute resolution processes as a solution to maritime disputes, they create the potential to spur an ongoing shift in maritime engagement that, if committed to, can provide order to otherwise unpredictable waters.

Notes

1. Maritime Boundary Office, "Timor Sea Agreements," 2016, available at http://www.gfm.tl/learn/timor-sea-agreements.
2. "East Timor Drops Australia Spying Case at UN's International Court of Justice," *The Guardian*, Australian Associated Press, 13 June 2015.
3. The statement can be found on the Permanent Court of Arbitration website, https://pcacases.com/web/sendattach/2157.
4. Permanent Court of Arbitration, United Nations Convention on the Law of the Sea (UNCLOS), 1982, an outline of the arbitration services can be found at https://pca-cpa.org/en/services/arbitration-services/unclos.
5. United Nations, "UNCLOS, Part XV: Settlement of Disputes," available at http://www.un.org/depts/los/convention_agreements/texts/unclos/part15.htm.
6. United Nations, "Settlement of Disputes Mechanism," 10 April 2013, available at http://www.un.org/depts/los/settlement_of_disputes/choice_procedure.htm.
7. UN, UNCLOS.
8. Hong Thao Nguyen, "Joint Development of Permanent Maritime Boundary: The Case of East Timor and Australia," The Maritime Awareness Project, 24 January 2017.
9. Julian Ku and Chris Mirasola, "Tracking China`s Compliance with the South China Sea Arbitral Award: Scarborough Shoal Update," Lawfare blog, 31 October 2016, available at https://www.lawfareblog.com/tracking-chinas-compliance-south-china-sea-arbitral-award-scarborough-shoal-update.
10. Bill Hayton, "Will There Now be Peace in the South China Sea?" Chatham House, 14 July 2016.
11. Ankit Panda, "International Court Rules in Favour of Bangladesh on Maritime Dispute with India," *The Diplomat*, 10 July 2014.
12. Natalie Klein, "Some Lessons from Mauritius v UK for Philippines v China," *ILA Reporter*, 16 April 2015.

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Warship Developments:

The Canadian Surface Combatant

Doug Thomas

Canada's new defence policy, *Strong, Secure, Engaged*, announced on 7 June 2017, states that Canada will be:

- *Strong at home*, its sovereignty well defended by the Canadian Armed Forces, also ready to assist in times of natural disaster, other emergencies and search and rescue;
- *Secure in North America*, active in a renewed defence partnership in NORAD and with the United States; and
- *Engaged in the world*, with the Canadian Armed Forces doing its part in Canada's contributions to a more stable and peaceful world including through peace support operations and peacekeeping.[1]

For those of us concerned about the future of the Royal Canadian Navy, a highlight of the Defence Minister's speech announcing the new defence policy was the following:

> This plan fully funds, for the first time, the Royal Canadian Navy's full complement of 15 Canadian Surface Combatant ships necessary to replace the existing frigates and retired destroyers. Fifteen. Not 'up to' 15 and not 12. And definitely not six, which is the number the previous government's plan would have paid for, as the Parliamentary Budget Officer reported last week.[2]

This is obviously very good news, with a fair bit of political 'spin'! It was the former Stephen Harper Conservative government that developed the much-needed National Shipbuilding Procurement Strategy (NSPS) to build ships for the government fleets: the navy and coast guard. The current government has rebranded this initiative the National Shipbuilding Strategy (NSS). However, funding and actually building the needed ships is a major undertaking and kudos to whichever government gets on with it.

There has been a great deal of conjecture recently in the media and elsewhere that the Canadian Surface Combatant (CSC) was unaffordable and therefore that the numbers of ships to be ordered would be cut in order to bring down program costs. There has also been concern that there could be a significant pause between completion of the current Arctic Offshore Patrol Ships (AOPS) and the commencement of building the CSC at Halifax's Irving Shipbuilding Inc. A significant delay, and thus loss of jobs, would be highly regrettable, as it would mean losing some of Irving's highly-skilled workforce which have built the 12 mid-shore *Hero*-class patrol vessels for the Canadian Coast Guard and are building the more complex and much larger AOPS for the navy. The new defence policy statement should allay those concerns for the time being.

Credit: Russell Millard, AWD Alliance

The lead ship of Australia's new ***Hobart****-class Air Warfare Destroyers commences acceptance sea trials, January 2017.*

So, where do things stand? Irving Shipbuilding Inc. is the prime contractor but ship design will be procured offshore by modifying an existing design. Another important role is to integrate the combat system selected for these ships. At least half of the cost of these ships will be to procure, install and integrate their very complex combat systems which will provide internal and external communications, tactical data systems capable of developing and exchanging the operational picture with friendly units in the mission area, and successfully detecting and engaging air, surface and sub-surface threats with missiles, gunfire and torpedoes. Responses to the CSC Request for Proposal are due 22 June 2017 and completion of the procurement process is targeted for Fall 2017. Ship construction should start in the early 2020s.

On 2 July 2017, the UK Ministry of Defence awarded construction contracts for the first batch of three Type 26 frigates. This updated image accompanied the press release, showing minor changes compared to previous renderings.

What Might These Ships Look Like?

We should expect these ships to be 6,000-7,000 tonnes standard displacement, between 450-500 feet in length, with a maximum speed of at least 28 knots, a ship's company (crew) of perhaps 180 with accommodation for up to another 60-80 personnel needed for whatever mission the ship will be performing. This might include a helicopter air crew, task group staff, special forces, boarding party, technical support teams, medical teams, etc. There have been some recent statements indicating that all ships will be equipped with the same weapons and sensors. This could mean that all ships will be general purpose frigates – as the *Halifax*-class Canadian Patrol Frigates are – or all area-air defence ships similar to an updated *Iroquois*-class destroyer (DDG), or something in between.

This would be contrary to the long-held plan to have a portion of the vessels equipped with area-air defence missile systems and command and control facilities for a Flag Officer and staff to coordinate the operation of a number of allied aircraft, ships and submarines over a large ocean area. This is a capability of today's RCN which was demonstrated to good effect during *Operation Apollo* some 12-14 years ago, and in multinational exercises to this day. A good example of this capability with many of the physical characteristics described above is seen in Australia's *Hobart*-class Air Warfare Destroyers, based on an improved Spanish design with a conspicuous infusion of state-of-the-art US weapons systems.

The majority of the CSCs were to be general-purpose vessels, with a specialization in anti-submarine warfare and equipped with self-defence weapons (such as point-defence surface-to-air missiles) rather than weapons which could protect other vessels under a large 'umbrella.' A candidate for this capability might be the very modern British Type 26 Global Combat Ship – the first two of eight for the Royal Navy will be laid-down shortly.

Both types of CSCs would have shared a common hull and propulsion system, as well as similar internal layouts. There are many good reasons for doing this, not least of which is economies of scale in building a larger number of similar vessels and the relative ease of training sailors for the new fleet. More to follow on the rationale in the near future, I am sure.

Conclusions

I will admit to being pleasantly surprised at the Minister's recent announcement. I had expected to hear of delays or a watered-down fleet regarding numbers and capabilities. That does not seem to be the case, and I hope we will actually see construction of the new 15-ship surface combatant fleet beginning within the next five years.

Notes

1. Department of National Defence, *Strong Secure Engaged: Canada's Defence Policy*, 2017, p. 14. Emphasis in the original.
2. Minister of National Defence, "Strong Secure Engaged: A New Defence Policy for Canada," speech, 7 June 2017, available at www.canada.ca/en/department-national-defence/news/2017/06/strong_secure_engagedanewdefencepolicyforcanada.html.

Book Reviews

Torch: North Africa and the Allied Path to Victory, by Vincent P. O'Hara, Annapolis: US Naval Institute Press, 2015, 384 pages, photos, maps, tables, notes, bibliography, index, CAN $66 (hardcover), ISBN 978-1-61251-823-7

Reviewed by Jonathan King

Operation Torch was the codename given to the joint Anglo-American mission to invade and capture Vichy French-controlled North Africa in 1942. O'Hara argues in his book that *Torch* was a failure on some levels, but a success on others. Specifically the Allies failed to take Tunisia and the other major cities of the region, but they did enough to force the Axis powers to take North Africa seriously as a theatre of operations, as well as gaining France as an ally as the Vichy forces in North Africa turned against the Germans.

Torch was designed to be a first outing for the Allied states and O'Hara wants to examine how they fared at the operational level within a joint task force framework. He argues that the operation was a mixture of good planning and bad coordination. He notes that although the Allies captured five of the most strategically important cities in the region, they failed to capture Tunisia and failed to open the second front which Russia desperately wanted. As well, the Allies failed to reach their main objective, but they were successful in pulling German attention away from Europe, thereby forcing it to expend massive resources in order to stall the Allies from reaching vital ports and supply lines.

O'Hara's book is convincing in its interpretation of events and in his argument that *Torch* was an unexpected success. Where O'Hara really interests the reader is his discussion how the French reacted and fought, and how their in-fighting did more damage to the defence of North Africa than the Allies did in their attack. He specifically talks about the split between the Admirals who supported Marshal Petain, and those who were fighting for French autonomy (but did not support General de Gaulle). O'Hara specifies that it was this split that lead the Admirals in North Africa to perform limited defence and in some cases, to welcome the Allied forces. This breakdown, O'Hara argues, was a key factor in the Allies taking most of North Africa so quickly.

O'Hara also argues that the Allied actions were more successful in the tactical and operational realms than they were in the strategic realms because the Allies were more interested in the former than the latter. O'Hara furthers this argument at the end of the book where he focuses on how the tactical lessons learned from *Torch* were instrumental in both *Operations Husky* and *Overlord*. He goes further by saying that *Torch* in many ways was the precursor for most amphibious operations, and that the success of the operation at both operational and tactical levels was far more significant than the strategic value.

In closing, O'Hara has written a well-researched and well-articulated book that emphasizes *Torch*'s value within the context of the Second World War. This differs from other interpretations that make the argument that it was an exception. O'Hara convinces the reader that *Torch* was a success, and places the operation as more of a trial by fire for the Allies than an American victory that marked the first US engagement in the Atlantic theatre. For historians, students, enthusiasts and scholars, this is a highly recommended book, and one that can entertain as well as explain.

Toward a New Maritime Strategy: American Naval Thinking in the Post-Cold War Era, by Captain (USN) Peter D. Haynes, Annapolis, Maryland: Naval Institute Press, 2015, 292 pages, US $34.37 (hardcover), $18.70 (Kindle), ISBN 978-1-61251-852-7

Reviewed by Colonel (Ret'd) Brian K. Wentzell

Captain Peter Haynes is a naval strategist who has undertaken a well-researched analysis of American maritime strategy in the post-Cold War period. The analysis is candid and his conclusions reflect a degree of independence that one might not expect from a serving officer. He is to be congratulated for his objectivity and thoughtful conclusions.

In October 2007, the US Navy published "A Cooperative Strategy for 21st Century Seapower." Captain Haynes ascribes the navy's intent as being:

> ... not only to redefine the terms of its own relevance but also to make a revolutionary argument about where the vital interests of the United States lie and the nature of US naval power in relation to those interests. The Navy argued that those interests should not be seen in terms of the threats to US territory and lives, but rather in light of the relationship between the United States and the international economic and political system (p. 1).

Thus, US interests and the interests of other countries are "best served by fostering a peaceful global system comprised of interdependent networks of trade, finance, information, law, people and governance" (p. 1).

To Haynes and the writers of the strategy, it was clear that the United States could not go it alone in the maritime world of the 21st century. However, it was equally clear that the US Navy, Marine Corps and Coast Guard "have a uniquely preeminent role in protecting the system and sustaining the United States leadership of that system" (p. 2). After all, the United States, its allies and trading partners depend upon that system to provide and sustain their prosperity and stability.

Haynes reviews, in some detail, the development of US maritime and naval strategy from the early days of the Cold War through the development of the Cooperative Strategy of 2007. By reviewing key naval policy documents and how they were developed, the author presents the evolution of maritime strategy and contrasts it with naval strategy. He concludes that the Cooperative Strategy is, in fact, a classic maritime strategy. Because the vast majority of US trade travels by sea and much of its wealth depends upon that trade, a maritime strategy is necessary to tie its "economic, political, and security interests" (p. 3) together. In the author's view, American maritime strategy is traditionally linked with "the relationship between the state and global markets" (p. 3).

Throughout the Cold War the USN focused on the pursuit of balanced, aircraft carrier-based, forward-deployed operations amid intense competition for resources with the air force and army. Such competition forced naval leaders to focus on *naval* rather than broader *maritime* issues. The nuclear and non-nuclear threats of the Soviet Navy forced the US Navy to develop and implement counter strategies. Competition for financial and political support for nuclear and conventional forces came from the US Air Force.

Naval leaders were, of necessity, focused on the operational needs of their service and, hence, the development and implementation of naval strategy. The navy developed a flexible fleet that was forward deployed and able to project considerable sea, sub-sea, amphibious and air power. Its focus was on operations and operational excellence; not the broader matter of developing and implementing a maritime strategy.

With the end of the Cold War in 1989, and the demise of the Soviet Union itself in 1991, came the clamouring for a peace dividend from the American people. Naval and military budgets were reduced and the numbers of ships, aircraft and facilities declined. There was no peer competitor to the United States. The events of 9/11, the rise of international terrorist organizations, and the wars in Afghanistan and Iraq revealed determined new challengers to the existing world order. Many are non-state actors, such as Al Qaeda or its offshoots, while others are states such as Iran and North Korea.

These new actors developed strategies designed to interfere with global economic and financial systems, not the conquering of the territories of the United States and its closest allies. An American naval strategy was not an adequate response to the emerging threats, which involved diverse state and non-state actors, organized crime syndicates, drug traffickers and religious zealots. No one military service, government department, or state could counter these threats on its own.

Since the year 2000, the emergence of China as an apparent peer competitor to the United States has made political, military and naval strategies more complex. The success of the Chinese economy has provided China with financial and technical resources to build a modern navy and anti-access, area-denial capabilities that can be used to interrupt maritime trade and commerce as well as international political alignments. The increasing ability of the People's Liberation Army and its Navy, to influence political, security and economic events in the Pacific and Indian Oceans is seen as a threat by neighbouring countries. India and Japan have started to respond to the activities of China, and other countries, such as the Philippines and Vietnam, have started to enhance their military and naval capabilities. However, they cannot provide adequate responses on their own. There is therefore a need for a maritime strategy to protect the flow of world trade and the international economic system.

Haynes links the development and adoption of the Cooperative Strategy of 2007 to these events. His book reveals the processes, debates and conflicting views that lead to the creation of the strategy. In the end it was the efforts of a relatively small number of admirals and senior naval and Marine Corps officers that won the debate.

In the final chapter, Captain Haynes reviews the reaction of American academic, political, military and naval leaders to the strategy. There was not universal acceptance that the strategy was, in fact, a maritime strategy. However, the leaders of the USN from 2005 onward stayed the course and the maritime strategy survives. In fact, the latest Chief of Naval Operations, Admiral John M. Richardson, issued "A Design for Maintaining Maritime Superiority" in January 2016 that clearly supports the Cooperative Strategy as revised and links all the naval efforts in the present year to that strategy.

It is time for Canada and other countries dependent on the world economic and trade system to develop maritime strategies that consider all aspects of the ocean

environment as it relates to their economy, security and society.

Thinking Boldly, Planning Wisely: The Higher Education and Training of Royal Navy Officers, 1919-39, by Joseph Moretz, Solihull, West Midlands: Helion, 2014, 540 pages, $107 (hardcover), ISBN 978-1-909982-90-1

Reviewed by Colonel (Ret'd) P.J. Williams

The Duke of Wellington, perhaps apocryphally, said that the battle of Waterloo was won on the playing fields of Eton. Joseph Moretz concludes that the Battles of the Atlantic and the Mediterranean in the Second World War, "were won on a table in Portsmouth – and in arguments and schemes played at Greenwich, Camberley, Andover, Quetta, and 9 Buckingham Gate" (p. 492). (Andover was home to the Royal Air Force Staff College, Camberley, that of the Army Staff College, Quetta that of the Indian Army Staff College and 9 Buckingham Gate was the location of the Imperial Defence College.) It was the courses taught at the first two locations, primarily to mid-ranking Royal Navy (RN) and Commonwealth officers in the inter-war period, which are the focus of this meticulous, detailed and scholarly study.

Moretz has two aims. First, he examines the extent to which the RN sought to improve the higher training and education of its Lieutenant-Commanders to Captains. Second, he studies how the RN sought to find its place in what we would now call the 'joint' domain, working alongside the Army and the Royal Air Force (RAF). Moretz is an independent writer with a long career in the US Department of Defense. The book's title comes from the tagline of *The* (British) *Naval Review*: "Think Wisely, Plan Boldly, Act Swiftly."

Moretz starts with a brief survey of the Great War and the contentious issue of writing the RN's official history afterward. What should have been a relatively straightforward affair was anything but, and one is left with the impression that there were elements in the RN hierarchy who would have preferred to have left it unwritten. He also underlines the importance of fiscal policy at the time: Britain was in a dire financial state after the war and this meant that education and training, while not totally ignored, did not always receive the necessary resources. This, combined with the so-called '10 Year Rule,'[1] meant that defence often received short shrift.

The book describes the RN's efforts in the face of such challenges to revise, develop and implement courses to prepare RN officers for the future – the Staff Course and the Senior Officers' War Course at Greenwich, and the Senior Officers' Technical Course and the Tactical Course in Portsmouth.[2] How the RN integrated its training and education with other service colleges is also described, as well as the future employment of graduates. The book has useful appendices, including one which describes what Moretz calls 'the Truants,' that is those officers who avoided higher education between the wars.

This is a useful segue into the point, stressed several times, which left the greatest impression on me: despite the vast efforts described in the book, it seems that the RN, to use modern parlance, never fully 'bought in' to the idea of higher education for its officers, including those destined for flag rank. As late as 1939, the majority of RN Admirals were not 'psc' (passed staff college), and this was not considered a career-killer. As the author concludes, "the officer trained in staff and war studies was prized, but the seaman remained the essential element" (p. 499).

Moretz has an engaging style. I assumed he was American, but after reading the text which is liberally sprinkled with 'perforce,' 'anon' and 'whilst,' I had my doubts. In any case, it perfectly suits not only the period under review, but also the officers being studied. Clearly, Moretz did his homework and the bibliography, which is some 18 pages, contains primary sources which take up almost a third of that total. From the detailed footnotes on most pages, he appears to have studied the personnel records of almost every naval officer who attended the RN's various training and educational establishments in the inter-war period, a sterling effort. I noted that many Canadian naval historians including Marc Milner, Tony German, Donald Schurman and Barry Hunt are cited throughout the work.

Although expensive, the book would be a welcome complement to any references being consulted in the design of future officer training programs, regardless of service. Arguably, not unlike the RN of this study, the Canadian Armed Forces (CAF) in the post-Afghanistan period is between wars, and it currently has a large number of mid-level officers with experience from that conflict. Lest we sit on our laurels while preparing for the next conflict, it would be worthwhile to learn from the lessons of this fine book, truants and all, so that we can avoid the kind of Waterloo which Wellington's opponent met. Very highly recommended.

Notes

1. The '10 Year Rule' was a British government guideline, first adopted in August 1919, that the armed forces should draft their estimates "on the assumption that the British Empire would not be engaged in any great war during the next ten years." See https://en.wikipedia.org/wiki/Ten_Year_Rule.
2. Notably, many future RCN leaders in the Second World War had attended these courses, including the then Captains Victor Brodeur, George Jones, Leonard Murray and Percy Nelles.

The U.S. Naval Institute on Naval Cooperation, edited by Sam J. Tangredi, Annapolis, Maryland: Naval Institute Press, 2015, 209 pages, US $27.50 (soft cover), ISBN 978-1-61251-853-4

Reviewed by Colonel (Ret'd) P.J. Williams

This book forms part of the US Naval Institute's "Wheel Books" series, recalling the days in which junior leaders kept their own accounts, such as a personal journal, to record lessons learned. Like others in the series, it reprints previous writings on naval cooperation from past issues of the Naval Institute's *Proceedings* journal.

The editor is a retired USN officer. The contributors are mostly USN or US Coast Guard (USCG) officers, including several USN officers of flag rank. There are also articles by naval officers from Italy and Nigeria, and an article by the noted British naval historian, Geoffrey Till. Sadly, there are no Canadians among the contributors. Canada, however, does rate several positive mentions in the work.

The editor seeks to provide a useful tool to make, "the objections, strategy, methods and impact of naval co-operation even clearer" (p. 4). He points out that cooperation does not necessarily include those activities that fall short of actual armed conflict, as 'warfighting' remains an inherently cooperative endeavour.

Following the editor's introduction, the book is organized into six parts, each introduced with some contextual comments. The parts are:

- Part I: Alliances, Coalitions and Partners;
- Part II: International Programs, Visits and Exercises;
- Part III: International Law and Diplomacy;
- Part IV: Maritime Security; and
- Part V: Humanitarian Assistance and Disaster Relief; and
- Part VI: Encounters at Sea.

With the exception of Parts V and VI which have only one article, each section consists of several articles. As well, there is a useful "Further Reading" section at the end of the book.

While Tangredi admits that there is no accepted definition of naval cooperation, for the purposes of this work he takes it to mean, "a virtual myriad of programs and activities for one overarching goal: to enhance the interoperability of US naval forces with foreign navies and militaries to achieve mutual strategic objectives" (p. 2).

Cooperation also extends to adhering to various international legal agreements, not the least of which is the UN Convention on the Law of the Sea (UNCLOS) which the United States signed but has not yet ratified. The book contains two articles on this agreement, one very much in favour of UNCLOS. The article which follows refers to the treaty (perhaps deliberately) by another, albeit unfortunate, acronym LOST (for Law of the Sea Treaty), and, well, you can guess on what side of the argument that author is.

A very useful contribution is made by a USCG officer in an article entitled "International Law and the Naval Commander." Notwithstanding the author's provenance, this article should be required reading for every naval officer before sailing from port.

My last job in uniform included dealing with the Russian Federation in the verification of various arms control agreements. Thus, I was very interested by the perspective in one article – entitled "Fascination and Frustration" – by a former US naval attaché in Moscow about the challenges in dealing (circa 2004) with his host state counterparts.

Another article, "Incidents at Sea," tells the story of how in 1972 the United States and the Soviet Union developed the Incidents at Sea Agreement (INCSEA). It was something I was not aware of before, and it was particularly interesting. INCSEA was used as the basis for a similar multinational agreement in the South China Sea, and one would hope that its provisions informed the development of protocols to avoid air incidents between Russian and Western aircraft over Syria.

A book on naval cooperation resonates in Canada – rarely do Her Majesty's Canadian Ships work alone. Whether in the Caribbean countering illegal trafficking, in the Baltic or the Mediterranean in support of NATO commitment or with other states in the Pacific, the Canadian Navy operates as a matter of course with other allies and partners in the furtherance of shared objectives and interests.

My only quibble here is the tone which the editor employed in an endnote in his introduction. Speaking of a decision by the New Zealand government to prohibit USN ships from visiting that country unless the USN declared that the vessels did not carry nuclear weapons, he rather deridingly makes reference to New Zealand's "miniscule military forces" (p. 10, footnote 2). I didn't feel that such comment was necessary in this book, particularly since the book is espousing cooperation. But this is a small point.

This useful book highlights the importance of such international cooperation – cooperation that is just as critical in the air and on land. Therefore, while it will be of particular interest to Canadian naval leaders about to proceed on overseas operations, it would also be useful background for soldiers and aviators destined to join Canada's frigate in the Baltic region as part of NATO's deploy and deter mission in Eastern Europe. Those responsible for Canada's international engagement program would also find this a worthy read. Recommended.

Lieutenant-Commander Jim Reddy, Commanding Officer of HMCS *Sackville*, presented the 2017 Canadian Naval Memorial Trust Essay Competition first prize cheque to Dr. Robert Huish of Dalhousie University, for his essay "How to Sink the Hermit Kingdom: Improving Maritime Sanctions against North Korea." Dr. Huish had the opportunity to join CNMT members on 14 July for lunch onboard and tour The Last Corvette at her summer berth on the Halifax Waterfront.

The US Navy aircraft carrier USS *Dwight D. Eisenhower* CVN 69 anchored in Halifax Harbour, 1 July 2017. The ship was invited to Halifax to help commemorate Canada's 150th anniversary.

Credit: Mass Communication Specialist 3rd Class Nathan T. Beard, U.S. Navy