



# Royal United Services Institute of Nova Scotia

## Dispatches

### 3 January 2020

*The Royal United Services Institute of Nova Scotia provides a forum for the study, promotion and debate of defence and security issues.*

*Dispatches* is a weekly collection of links and news of current interest, included those tweeted and posted by the Institute on social media. Links to articles are checked at the time they are put into *Dispatches* but may be unavailable at a later date or in some states other than Canada.

If you are not a routine recipient of *Dispatches* but wish to be so, email the Institute's Chief Information Officer (CIO) at [RUSINovaScotia@gmail.com](mailto:RUSINovaScotia@gmail.com). If you do not want to receive *Dispatches*, or wish to receive it at some different frequency, please inform the CIO. If you wish to receive *Dispatches* at a different address (i.e., not your work address), please inform the CIO. Past editions of *Dispatches* may be requested by contacting the CIO.

Everyone is encouraged to email to the CIO links and other content to be included in *Dispatches*.

Submissions and feedback are welcome anytime. Comments to articles can be from members or non-members of RUSI(NS). Any comment in *Dispatches* is the sole opinion of the author and does not necessarily represent the views of the Canadian Department of National Defence, the Canadian Armed Forces, the Royal Canadian Mounted Police or the Royal United Services Institute of Nova Scotia

RUSI(NS) also publishes a weekly *Defence & Security Newsletter*, aimed at opinion leaders and industry. If you are interested in receiving the newsletter, or want past editions, email [admin@duncom.ca](mailto:admin@duncom.ca).

**Membership Renewal.** It is year end and time for membership renewal for 2020. A notification email has been sent to RUSI(NS) members and prospects. Whether you are paying dues or your dues are waived, please fill out the renewal form. Your information is important for the accuracy of our data base and therefore our operations. Please return your renewal form promptly.

**Survey.** The beginning of 2020 is also time for the annual RUSI(NS) survey. Survey Monkey will be used again to manage the survey. You will receive a survey email in January asking you to fill in the survey. The survey will be short. Your feedback is important and wanted – please take the time to complete the survey. For those who receive RUSI(NS) emails at an @forces address and therefore would have issues with a Survey Monkey link, a separate email will be sent to you.

#### **Events:**

To list an event in *Dispatches*, email the CIO by noon Thursday. RUSI(NS) events are by invitation only. If you are interested in attending and have not been invited, email [RUSINovaScotia@gmail.com](mailto:RUSINovaScotia@gmail.com). RUSI(NS) events may be cancelled at short notice – email RUSI(NS) if there is a question of an event occurring.

**22 January, Wednesday** - Distinguished Speaker Brigadier-General Roch Pelletier, Commander 5th Canadian Division. The title of his talk is "Commander 5th Canadian Division

– Army Reserve Update." 1130-1330. Royal Artillery Park Officers' Mess. Note this is the third Wednesday of the month, not our normal second.

**12 February, Wednesday** - RUSI(NS) *Annual General Meeting*. Noon start. Royal Artillery Park Officers' Mess.

**19 February, Wednesday** – (to be confirmed) Distinguished Speaker Dr Harvey-Clark, Dalhousie about on diving on heritage wrecks (ocean war graves), and Major (retired) John McCallum about munitions. 1130-1330. Royal Artillery Park Officers' Mess.

**18 March, Wednesday** - Distinguished Speaker Dr Jonathan Fowler, Saint Mary's University, about archeological surveys of fortifications and burial grounds of old Halifax. 1130-1330. Royal Artillery Park Officers' Mess (site of one of the 1749 forts).

**15 April, Wednesday** – (to be confirmed) Chief of Halifax Regional Police Dan Kinsella, about policing in HRM. 1130-1330. Royal Artillery Park Officers' Mess.

**20 May, Wednesday** - Distinguished Speaker to be announced.

**17 June, Wednesday** - Distinguished Speaker to be announced.

**15 July, Wednesday** - Distinguished Speaker to be announced.

#### **Recent Publications:**

The United Services Institute of Nanaimo and North Island (USINNI) Newsletter Vol 28 No 1 January 2020 is available on request to [RUSINovaScotia@gmail.com](mailto:RUSINovaScotia@gmail.com).

RUSI(NS) Presentation "Office of the Veterans Ombudsman" <https://rusi-ns.ca/veterans-ombudsman-presentation/>, by Craig Dalton, 20 November 2019

**Tweeted by @RUSI\_NS:** RUSI(NS) tweets may also be viewed by clicking on the icon at <https://RUSI-NS.ca>. To have something tweeted or retweeted, email the CIO at [RUSINovaScotia@gmail.com](mailto:RUSINovaScotia@gmail.com). Original article title in parentheses.

Canadian Global Affairs Institute @CAGlobalAffairs 28 Dec tweeted and RUSI(NS) retweeted: What are grey-zone conflicts and how can the contemporary world adapt to respond to them? Check out Dani Belo and David Carment's CGAI Policy Perspective: [https://cgai.ca/grey\\_zone\\_conflict\\_implications\\_for\\_conflict\\_management](https://cgai.ca/grey_zone_conflict_implications_for_conflict_management) (Grey-Zone Conflict: Implications for Conflict Management)



Procurement of @RCAF\_ARC #CC295 search&rescue aircraft "one of the few major successes for Canada's beleaguered military procurement system in recent years" <https://www.cbc.ca/news/SOMNIA-1.5407890> First-of-type buys often have issues. Overall, to-be-named #SAR a/c procurement a success



Development by @ParksCanada of regulations for 'ocean war graves' is just now ongoing. Japanese Navy submarine wreck in CAN waters would be interesting addition to site list <https://vancouverisland.ctvnews.ca/did-canada-sink-a-japanese-submarine-75-years-ago-underwater-scans-show-possible-evidence-1.4748813> (Did Canada sink a Japanese submarine 75 years ago? Underwater scans show possible evidence)



"As a maritime nation with three penetrable coastlines and a vast #Arctic Archipelago, Canada's future lies in ensuring the maritime commerce routes that intersect its territory remain open." <http://natoassociation.ca/the-arctic-doctrine-of-sovereignty-security-and-regional-economic-development/> Yes, it's the marine (port & navigation) infrastructure (The Arctic Doctrine of Sovereignty, Security and Regional Economic Development)



**Posted on Facebook Royal United Services Institute NS with comments:**

138 UK F-35 Lightnings, do we still need them? – A personal view

<https://ukdefencejournal.org.uk/138-uk-f-35-lightnings-do-we-still-need-them-a-personal-view/>



An interesting read for its open source analysis and rationale of UK aircraft fleet numbers. Is there something similar and publicly available for the 88 aircraft Canada is to procure on its future fighter project?

See: Future fighter capability project <https://www.canada.ca/en/department-national-defence/services/procurement/fighter-jets/future-fighter-capability-project.html> and 'quad chart' (overall at: <https://www.canada.ca/content/dam/dnd-mdn/documents/quad-charts/ffcp-quad-chart-en.pdf>)

Pentagon proposes big cuts to US Navy destroyer construction, retiring 13 cruisers

<https://www.defensenews.com/naval/2019/12/24/pentagon-proposes-big-cuts-to-us-navy-destroyer-construction-retiring-13-cruisers/>



Aging hulls, mechanical and electronic systems in the cruisers, all requiring greater maintenance. The oldest of the Ticonderoga-class in active service is about 35 years. That says something about how long a Navy should push retaining ships (implicitly, sailing and not spending inordinate amount of time alongside). At some point the cost of upkeep just does not make it worth holding on to a ship. Our Halifax-class frigates have gone through major modernizations but that was for select systems. For HALIFAX herself, the ship was launched in 1988. Bring on the Canadian Surface Combatants! And as always, it is important that the Royal Canadian Navy (RCN) include strong Fleet Maintenance Facilities.

Not that Canada has a (publicly declared) fleet size objective, but the article's point on what to count is interesting. Should advanced drones, particularly large surface and sub-surface ones, be considered as fleet units and so counted? Or should they just be thought of as systems just like the multiple boats and target drones the RCN already has? A decision to think of large drones as fleet units could change public discussion and understanding of what our Navy is and does. One has to figure that planners are already thinking about the effects of large drones on fleet structure and operations.

Proposal for sweeping cuts to US Navy shipbuilding, force structure could herald a new strategy, experts say

<https://www.defensenews.com/naval/2019/12/27/proposal-for-sweeping-cuts-to-us-navy-shipbuilding-force-structure-could-herald-a-new-strategy-experts-say/>



"We need stability in the shipbuilding industrial base..."

Though the article is about the US Navy and its fleet size (not a Canadian issue as size of the Royal Canadian Navy is not legislated but reflects budget allocations and geo-strategic requirements), the article's point about stability in the shipbuilding industry is very relevant to Canada and is an if not the major factor behind the National Shipbuilding Strategy.

3 ways to teach a robot dog new tricks for war

<https://www.c4isrnet.com/unmanned/robotics/2019/12/30/3-ways-to-teach-a-robot-dog-new-tricks-for-war/>



Hmm, great idea, a ground drone as a sensor carrier for squads and other small groups.

Ya just gotta figure what the troops are going to come up with as names for their 'robot dogs.'

How good is the government at threat information sharing?

<https://www.fifthdomain.com/dod/2019/12/30/how-good-is-the-government-at-threat-information-sharing/>



"Unclassified Joint Report on the Implementation of the Cybersecurity Information Sharing Act of 2015" - it would be great to see a Canadian version of such a report. Kinda suspect it too would identify cross-department challenges.

<Sigh> Automated Indicator Sharing (AIS). Doesn't anyone check to determine whether an acronym is already in broad use? AIS = automatic identification system, a marine tracking capability already in much use, including by (!) intelligence centres.

Pentagon Creates 'Cadre of Pricing Experts' to Curb Parts Abuses

<https://www.bloomberg.com/news/articles/2019-12-20/pentagon-creates-cadre-of-pricing-experts-to-curb-parts-abuses>



Considering the size of many Canadian defence procurement projects, what effort is being made by the Canadian federal government "to identify pricing trends for spare parts and suppliers that should be monitored to prevent" gouging?

New in 2020: A new robotic mule is headed to help carry the load for grunts

<https://www.armytimes.com/news/your-army/2019/12/30/new-in-2020-a-new-robotic-mule-is-headed-to-help-carry-the-load-for-grunts/>



Ground drones for logistics. Good idea. Troops are carrying too much as it is now. Some of the technologies being developed are in danger of adding even more load to individual soldiers.

Hmm, does this mean that the operators of such 'robot mules' will be called 'skimmers'?

The Return of the Tunnel Bomb: A Medieval Tactic on the Modern Battlefield

<https://mwi.usma.edu/return-tunnel-bomb-medieval-tactic-modern-battlefield/>



Bring back the Tunnelling Companies! Re-badge the Reserves in Cape Breton as Miners!

Seriously though, underground operations have long been a part, and an ugly one at that, of land warfare. And in general usage enough historically and currently (think urban operations) that it should be part of army training.

See:

1st Canadian Tunnelling Company [https://en.wikipedia.org/wiki/1st\\_Canadian\\_Tunnelling\\_Company](https://en.wikipedia.org/wiki/1st_Canadian_Tunnelling_Company)  
2nd Canadian Tunnelling Company [https://en.wikipedia.org/wiki/2nd\\_Canadian\\_Tunnelling\\_Company](https://en.wikipedia.org/wiki/2nd_Canadian_Tunnelling_Company)  
3rd Canadian Tunnelling Company [https://en.wikipedia.org/wiki/3rd\\_Canadian\\_Tunnelling\\_Company](https://en.wikipedia.org/wiki/3rd_Canadian_Tunnelling_Company)

The Past, Present and Future of Maritime Trade Warfare

<https://navalinstitute.com.au/the-past-present-and-future-of-maritime-trade-warfare/>



Trade or commerce warfare is not as past as some would think. There may not be classic raiders, but small craft, mines, cyber and other means can attempt the same effects. Trade warfare is a matter for those interested in naval and foreign affairs to understand.

Legend of Colombia's Narco-Subs Reaching Europe Becomes Reality

<https://www.insightcrime.org/news/analysis/colombia-narco-submarines-europe/>



The use of submarines and semi-submersibles by drug smugglers must be making for an interesting nexus between navies with their theatre anti-submarine operations, and security agencies attempting to counter the flow of drugs. What must the "common maritime crime operating picture" look like? Quite the inter-agency information exchange challenge!

This Is What War Looks Like in 2029

<https://www.thedailybeast.com/this-is-what-war-looks-like-in-2029>



"Instead, (China and Russia) conduct shadowy campaigns where money and information are the weapons and the internet is the battleground."

Financial warfare (finwar). (Public) information warfare. Cyberwar. Plus legal warfare (lawfare), debt diplomacy/operations and others. These aren't future war - they are happening now. Is Canada, the Canadian Armed Forces and other departments and agencies at all levels prepared to undertake activities (defensive and offensive) in these areas?

Biotechnology and Human Augmentation: Issues for National Security Practitioners

<https://thestrategybridge.org/the-bridge/2019/2/5/biotechnology-and-human-augmentation-issues-for-national-security-practitioners>



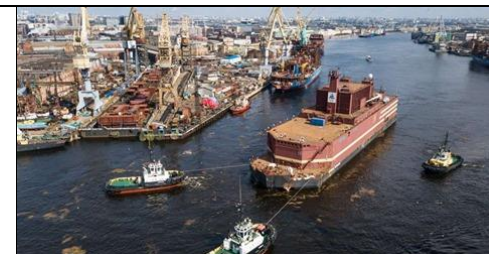
"It is vital for the future of global security, and for the human race, that mechanisms for responsible ethical and legal use of biotechnology are considered and developed."

Biotechnology is a field that should be discussed much more by defence and security organizations. Do we really know what effects it is going to have?

**Posted on Facebook Royal United Services Institute NS:** RUSI(NS) postings may be viewed by clicking on the icon at <https://RUSI-NS.ca>. To have something posted or commented, email the CIO by noon Thursday.

Russia is dominating the Arctic, but it's not looking to fight over it

<https://www.msn.com/en-ca/news/world/russia-is-dominating-the-arctic-but-its-not-looking-to-fight-over-it/ar-BBYooQD?ocid=se>



China sails carrier group through Taiwan Strait as election nears

[https://www.reuters.com/article/us-taiwan-china-election/china-sails-carrier-group-through-taiwan-strait-as-election-nears-idUSKBN1YU0H0?utm\\_source=Sailthru&utm\\_medium=email&utm\\_campaign=EBB%2012.27.19&utm\\_term=Editorial%20-%20Early%20Bird%20Brief](https://www.reuters.com/article/us-taiwan-china-election/china-sails-carrier-group-through-taiwan-strait-as-election-nears-idUSKBN1YU0H0?utm_source=Sailthru&utm_medium=email&utm_campaign=EBB%2012.27.19&utm_term=Editorial%20-%20Early%20Bird%20Brief)



REUTERS

Canada's Afghan mission ended in 2014 — the war is now a distant memory for most Canadians

<https://ottawacitizen.com/news/national/defence-watch/canadas-afghan-mission-ended-in-2014-the-war-is-now-a-distant-memory-for-most-canadians>



What China's rise as a polar power means for Canada: New MLI paper by Anne-Marie Brady

[https://macdonaldlaurier.ca/files/pdf/ChinaArctic\\_FWeb.pdf?mc\\_cid=060963427a&mc\\_eid=a8426c0175](https://macdonaldlaurier.ca/files/pdf/ChinaArctic_FWeb.pdf?mc_cid=060963427a&mc_eid=a8426c0175)



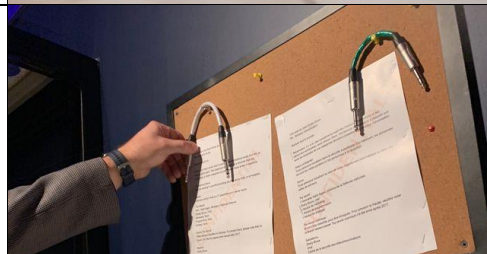
Mounties used Cold War-era suitcase cameras to monitor Communists, documents show

<https://www.theglobeandmail.com/canada/toronto/article-mounties-eyed-cold-war-candid-camera-scheme-declassified-documents/>



Only 1 Person Has Solved A Canadian Spy Agency's Escape Room

[https://www.huffingtonpost.ca/entry/communications-security-establishment\\_ca\\_5e07b00be4b0843d360706ed?](https://www.huffingtonpost.ca/entry/communications-security-establishment_ca_5e07b00be4b0843d360706ed?)





'I think we're largely forgotten': Nearly 80 years ago, Canadians fought the Battle of Hong Kong

<https://www.theglobeandmail.com/politics/article-i-think-were-largely-forgotten-nearly-80-years-ago-canadians/>



Japan OKs controversial plan to send naval forces to Mideast

[https://www.navytimes.com/news/your-navy/2019/12/28/japan-oks-controversial-plan-to-send-naval-forces-to-mideast/?utm\\_source=Sailthru&utm\\_medium=email&utm\\_campaign=EBB%2012.30.19&utm\\_term=Editorial%20-%20Early%20Bird%20Brief](https://www.navytimes.com/news/your-navy/2019/12/28/japan-oks-controversial-plan-to-send-naval-forces-to-mideast/?utm_source=Sailthru&utm_medium=email&utm_campaign=EBB%2012.30.19&utm_term=Editorial%20-%20Early%20Bird%20Brief)



Russia: New weapon can travel 27 times the speed of sound

[https://www.navytimes.com/news/your-navy/2019/12/28/russia-new-weapon-can-travel-27-times-the-speed-of-sound/?utm\\_source=Sailthru&utm\\_medium=email&utm\\_campaign=EBB%2012.30.19&utm\\_term=Editorial%20-%20Early%20Bird%20Brief](https://www.navytimes.com/news/your-navy/2019/12/28/russia-new-weapon-can-travel-27-times-the-speed-of-sound/?utm_source=Sailthru&utm_medium=email&utm_campaign=EBB%2012.30.19&utm_term=Editorial%20-%20Early%20Bird%20Brief)



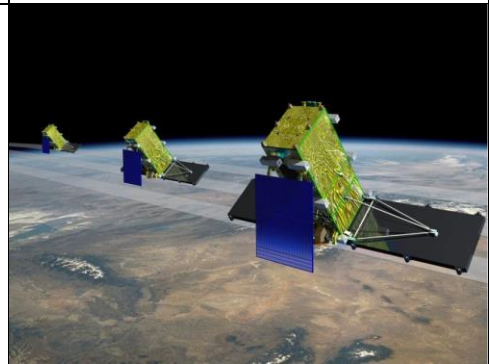
Sweden's defense minister on relations with America, Russian threats and the European Union

[https://www.defensenews.com/smr/nato-2020-defined/2019/12/27/swedens-defense-minister-on-relations-with-america-russian-threats-and-the-european-union/?utm\\_source=Sailthru&utm\\_medium=email&utm\\_campaign=EBB%2012.30.19&utm\\_term=Editorial%20-%20Early%20Bird%20Brief](https://www.defensenews.com/smr/nato-2020-defined/2019/12/27/swedens-defense-minister-on-relations-with-america-russian-threats-and-the-european-union/?utm_source=Sailthru&utm_medium=email&utm_campaign=EBB%2012.30.19&utm_term=Editorial%20-%20Early%20Bird%20Brief)



Canadian surveillance satellite system now operational

<https://ottawacitizen.com/news/national/defence-watch/canadian-surveillance-satellite-system-now-operational>



Industry updates: New search and rescue aircraft to fly in Canada in mid-2020, second Offshore Fisheries Science Vessel delivered

<https://ottawacitizen.com/news/national/defence-watch/industry-updates-new-search-and-rescue-aircraft-to-fly-in-canada-in-mid-2020-second-offshore-fisheries-science-vessel-delivered>



Pilot shortage can't be addressed by existing programs, documents suggest

<https://www.cbc.ca/news/somnia-1.5381158>



How Canada's military reacted to seeing Pokemon Go players trespassing on its bases

<https://www.cbc.ca/news/somnia-1.5393774>



Lockheed Martin hits 2019 F-35 delivery target of 131 jets

[https://www.reuters.com/article/us-lockheed-f35/lockheed-martin-hits-2019-f-35-delivery-target-of-131-jets-idUSKBN1YY1D3?utm\\_source=Sailthru&utm\\_medium=email&utm\\_campaign=EBB%2012.31.19&utm\\_term=Editorial%20-%20Early%20Bird%20Brief](https://www.reuters.com/article/us-lockheed-f35/lockheed-martin-hits-2019-f-35-delivery-target-of-131-jets-idUSKBN1YY1D3?utm_source=Sailthru&utm_medium=email&utm_campaign=EBB%2012.31.19&utm_term=Editorial%20-%20Early%20Bird%20Brief)



Political pressure grows as Trudeau government moves closer to Huawei 5G decision

<https://globalnews.ca/news/6355962/political-pressure-huawei-trudeau-decision/>



**Other Sources:** Recommendations for ‘themes’ (e.g., #drones) to list in this section are welcome.

## #A2R

What Happened to Retention?

<https://wavellroom.com/2019/09/17/what-happened-to-retention-military-army-career/>

## **#airpower**

Book Review - Bombs without Boots: The Limits of Airpower

<https://www.armyupress.army.mil/Journals/Military-Review/English-Edition-Archives/November-December-2019/Rousseau-BR-Essay/>

Contested Skies: A Brief Guide to the Historiography of the Air War in Vietnam

<https://balloonstodrones.com/2019/05/01/airwarvietnam-contested-skies-a-brief-guide-to-the-historiography-of-the-air-war-in-vietnam/>

## **#Arctic**

Report to Congress on Changes in the Arctic

<https://news.usni.org/2019/12/27/report-to-congress-on-changes-in-the-arctic-4>

## **#China #Arctic**

What China's Rise as a Polar Power Means for Canada

[https://macdonaldlaurier.ca/files/pdf/ChinaArctic\\_FWeb.pdf](https://macdonaldlaurier.ca/files/pdf/ChinaArctic_FWeb.pdf)

## **#cyber ops**

Cyber threats top of mind for defence minister heading into 2020

<https://ipolitics.ca/2019/12/27/cyber-threats-top-of-mind-for-defence-minister-heading-into-2020/>

## **#information operations**

The biggest threat is failing to address the reality of online alternative media ecosystems

<https://firstdraftnews.org/latest/year-in-review-the-biggest-threat-is-failing-to-address-the-reality-of-online-alternative-media-ecosystems/>

Interesting: findclone - to reverse image search people's faces.

America vs. Russian Disinformation: How Societal Cohesion and Empowered Institutions can Win the War against Fake News

<https://mwi.usma.edu/america-vs-russian-disinformation-societal-cohesion-empowered-institutions-can-win-war-fake-news/>

## **#intelligence**

Making a MiG-Killer: Technology and Signals Intelligence for Air-to-Air Combat in Vietnam

<https://balloonstodrones.com/2019/08/15/airwarvietnam-making-a-mig-killer-technology-and-signals-intelligence-for-air-to-air-combat-in-vietnam/>

## **#ranks**

Do we need to simplify the rank structures of UK Armed Forces?

<https://uklandpower.com/2018/11/07/do-we-need-to-simplify-the-rank-structures-of-uk-armed-forces/>

How applicable is the rationale to Canada?

## **#revolutions**

Impact of Coups and Color Revolutions on Operations

<https://www.armyupress.army.mil/Special-Topics/Hot-Topics/Coups-CR/>

Army University Press compilation of works from Military Review, the Combat Studies Institute, Command and General Staff College student monographs from students, and selected others.

## **#Royal Canadian Air Force**

Rearming the Canadian Air Force

<https://www.westernstandardonline.com/2019/12/mccoll-rearming-the-canadian-air-force/>  
Debatable?

## **#Russia**

An open letter to NORAD and USNORTHCOM - Let's talk about Russian Navy operations

<http://www.vesselofinterest.com/2019/12/an-open-letter-to-norad-and-usnorthcom.html>

## **#security assistance**

What makes a security assistance mission successful?

<https://policyoptions.irpp.org/magazines/december-2019/what-makes-a-security-assistance-mission-successful/>

## **#training**

Army Training

<https://www.armyupress.army.mil/Journals/NCO-Journal/Archives/2019/December/Army-Training/>

## **#wargaming**

Reflections on Teaching Wargame Design

<https://warontherocks.com/2020/01/reflections-on-teaching-wargame-design/>

## **#war**

The Tyler Doctrine and War Powers

<https://www.lawfareblog.com/tyler-doctrine-and-war-powers>

For those interested in comparing to Canadian authorities to decide conflict.

## **Other:**

### **Post-Election Thoughts**

It is likely that the issues no one talked about during the election will be the major events that will dominate this government's term in office. Foreign affairs and defence were not discussed. So many issues in these areas are now apparent.

Canada is now in a very real quandary of its own making regarding the Arctic. The ongoing lack of effort is finally really going to hurt when the world declares the North West Passage as international waters. The magic lines that Canada has drawn may be meaningless and Canadian laws may hardly make any impact on major powers determined to exploit the Arctic. Russia, China and the US are likely to challenge the status quo shortly. It will be a blow to the Canadian public to see the loss of what everyone accepted as a known fact, that of Canadian sovereignty in our north. In retrospect, Canada has done very little to maintain our sovereignty. Little or no development, virtually no population or infrastructure development, no navigation aids to speak of and very little mapping of the ocean bottom are just some examples of neglect in our North. There have been a number of articles on China's ambitions in both the Arctic and Antarctic. Canada can and will be challenged this decade. The Government may legislate all it wants but we are on very soft ground. Our lack of effort will have hurt us in a manner that we do not fully appreciate as yet.

Russia as an example is building new submarines, armed ice breakers, re-building fourteen military bases, increasing naval and air patrols in the North and even challenging US and Canadian airspace. A Michael Byers' article in regard to the Arctic was missing the whole Russian rearmament

program. Militarization of the North has always been there. Canada just merely put its head in the sand as a method of dealing with the issues.

New fighter aircraft is an issue that will not be easily solved. There is considerable debate whether the F-35 has the necessary “legs” to patrol our part of the continent, and it has but a single engine which while more reliable than past engines is insufficient for such a hostile environment with few airfields suitable for that aircraft. The numbers of airframes for the second largest landmass is inadequate at best. 88 cannot do all that we have tasked the air force to do. These tasks include air defence, NATO missions, training, and maintenance as well as accounting for normal losses. The numbers are hardly larger than that of Finland or Norway. This is hardly the effort of one of the largest economies in the world faced with an increasing number of challenges.

The China challenge will continue in other areas. Our trials with China are just beginning and Canada is woefully unprepared for a hostile player who is willing to conduct directed activities against us. One has to question whether our defence forces are sufficiently robust to deal with a belligerent power. One wonders whether Canada has focused on Russia whilst ignoring the very real threat from China.

### **Some fun air trivia**

The Caterpillar Club ([https://en.wikipedia.org/wiki/Caterpillar\\_Club](https://en.wikipedia.org/wiki/Caterpillar_Club)) is an 'informal association of people who have successfully used a parachute to bail out of a disabled aircraft.'

The Goldfish Club ([https://en.wikipedia.org/wiki/Goldfish\\_Club](https://en.wikipedia.org/wiki/Goldfish_Club)) is a "worldwide association of people who have escaped an aircraft by parachuting into the water, or whose aircraft crashed in the water, and whose lives were saved by a life jacket, inflatable dinghy, or similar device."

### **Maritime Engineering Journal Fall 2019**

[www.cntha.ca/static/documents/mej/mej-91.pdf](http://www.cntha.ca/static/documents/mej/mej-91.pdf)

select contents:

The enduring legacy of the 1969 HMCS *Kootenay* explosion

Engineering Accuracy – The Key Lesson from HMCS *Kootenay* Gearbox Explosion

HMCS *Kootenay* – Lessons Learned

‘Dinger’ Bell’s Trial by Fire

Naval Remote Weapon Station — The Road to IOC