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by Paul T. Mitchell
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POLICY UPDATE

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The publication by the Canadian Centre for Policy Alternatives of Michael Byers and Stewart Webb's *That Sinking Feeling: Canada's Submarine Program Springs a Leak*¹ is the latest shot from the long-time critics of Canadian defence policy.² The *Victoria* class has been affected by a long history of problems and delays that have attracted a great deal of media attention in the decade since Canada took possession of the vessels; a critical overview is obviously warranted. Sadly, Byers and Webb's paper aims for easy rhetorical points rather than to establish an accurate record. In areas where the authors confidently assert facts, they are frequently mistaken. In areas where they should be certain, particularly when discussing policy development, their paper is full of equivocation.

The paper will have little effect on the current directions of this government. In spite of media speculation, there is no indication that the submarine project is in any real danger from the Harper Conservatives.³ In this regard, it can be safely ignored by the RCN. This review of the paper is motivated by the evident errors of fact and judgment in what purports to be a rigorous academic analysis of a key weapon system in the RCN. In the defence of our country, a variety of viewpoints is necessary. However, it behooves critics to at least get their facts straight.

This review proceeds in two parts. First, it examines the claims made by Byers and Webb in their report and argues that it is filled with factual errors. Second, it revisits the question of whether submarines are necessary for the defence of Canada, and counters the arguments laid out by Byers and Webb.

POOR CONSTRUCTION?

A perfect case in point is the allegation that the *Victoria* class were poorly constructed vessels.⁴ Byers and Webb cite a British parliamentary review of the programme⁵ during its development, focusing in particular on torpedo tube problems in then *HMS Unseen* (now *HMCS Victoria*), which had to be "welded" shut lest it flood the vessel.⁶ They quote UK MP Mike Hancock, the Liberal Democrat representative for Portsmouth South who states in a CBC interview from March 2012: "Why were the Canadians daft enough to buy them?", "My God, it's a sad tale, isn't it? 'Buyer beware' should have been painted on the sides of these submarines." "I'm appalled

¹ Michael Byers and Stewart Webb, *That Sinking Feeling: Canada's Submarine Programme Springs a Leak*, (Ottawa: Canadian Centre for Policy Alternatives, 2013).

² Michael Byers, *Canadian Armed Forces Under US Command*, (Vancouver: Liu Centre for the Study of Global Issues, 2002); Michael Byers and Stewart Webb, "Canada's F-35 Purchase is a Costly Mistake", *Canadian Foreign Policy*, Vol. 17, No. 3, 2011; Michael Byers and Stewart Webb, *The Worst Procurement in the History of Canada: Solving the Maritime Helicopter Crisis*, (Ottawa: Canadian Centre for Policy Alternatives, 2013).

³ Defence Minister Peter McKay speculated about purchasing nuclear subs for the RCN in 2011 – "in an ideal world, I know nuclear subs are what's needed under deep water, deep ice." However, the following day he noted "'We don't live in an ideal world, so we're not considering it.'" See: Greg Weston, "Canada May Buy Nuclear Submarines", CBC News, 27 Oct. 2011, <http://www.cbc.ca/news/politics/story/2011/10/27/submarines-british-nuclear.html>; and Laura Payton, "No Nuclear Sub Buy Planned, McKay Affirms", CBC News, 28 Oct. 2011, <http://www.cbc.ca/news/politics/story/2011/10/28/pol-nuclear-submarines.html>. The Canadian Press revealed on 20 Aug. 2012 that "naval planners" prepared a nine page briefing note on submarine technology that would be on the market in the 2020-2050 time frame. Canadian Press, "Navy Planners Lay Out Case for Replacement Subs", 20 Aug. 2012, <http://www.ctvnews.ca/canada/navy-planners-lay-out-case-for-replacement-subs-1.922251>.

⁴ Byers & Webb 2013, pp. 6, 12.

⁵ The report noted "the first of class is always subject to particularly rigorous sea trials," and that once the identified faults had been remedied, the vessels would "prove to be excellent submarines." See House of Commons, Procurement of Canada's Victoria Class Submarines, April 2005, p. 8, <http://www.parl.gc.ca/HousePublications/Publication.aspx?DocId=1773092&Language=E&Mode=1&Parl=38&Ses=1>.

⁶ *Ibid*, p. 10



we've done a dumb deal with an ally like this.”⁷ Clearly Mr. Hancock is entitled to his opinions, but if Byers and Webb wish to assert that the subs are second-rate lemons, then some facts are in order. They cite a number of technical details taken from the Globalsecurity.org website on the *Upholder* vessels, including the torpedo tube malfunctions. Yet they fail to include the following, taken from the same web page:

Acceptance of the (*Upholder*) class into service was delayed for three years while such problems were corrected. The result of those corrections, however, was an extremely capable design. When operating on battery power, *Upholders* were almost undetectable on passive sonar, and when snorting, their acoustic signature was comparable to their SSN contemporaries in normal operation. They were physically small, and thus difficult to detect by magnetic anomaly or other non-acoustic means.⁸

Such an oversight seems incredible, but it is not the only one in the report. Indeed, the section heading in their paper “*Victoria Class Fiasco*” seems lifted with minor alteration from the web site of the Barrow in Furness branch of the “Submariners’ Association”, which discusses “The *Upholder Fiasco*”.⁹ Even a quick skim of this resource indicates that the source of the fiasco was not the so-called shoddy construction of the vessels discussed in Byers and Webb’s paper, but rather the haste with which they were withdrawn, for cost cutting reasons, from RN service:

To many serving in the fleet, it now appeared that anything which was not cost effective or productive was a potential candidate to be retired or sold-off. The exception everyone presumed was, of course, new vessels including the *Upholders* - but even they fell victim. ...

But nobody, including Admiral Sir Sandy Woodward, could understand why the brand new *Upholder* submarine squadron was withdrawn from service and listed for sale in what must surely be the most 'questionable' Government decision in respect of equipment procurement for the Royal Navy in the past 50 years.¹⁰

So, quite the contrary to the assertions of Byers and Webb, the submarines are described as capable and advanced systems by the very sources they use to argue the contrary.

As for those “welded” doors, this is also an example of inaccurate research. The authors cite John Pike in their text – see footnote #33, however, the article makes no mention of the torpedo tube doors being “welded” shut, only “sealed”.¹¹ The only reference to “welded” doors seems to come from a CBC report, cited later in *That Sinking Feeling*.¹² However, in a 1987 *Jane’s Defence Weekly* report on the problem, the British Ministry of Defence is quoted “as a precautionary measure, the torpedo tube outer boundaries have been locked shut until the design, production and testing of system modifications has been completed.”¹³ David Peer, in a source also used by Byers and Webb (see footnote 41 in their paper), notes that the design

⁷ CBC News 2012.

⁸ Pike, “Upholder Type 2400”.

⁹ Barrow in Furness Branch, Submariner’s Association, “Upholder Class”, <http://www.rmsubs.co.uk/Boats/BoatDB2/index.php?id=2&BoatID=650&flag=class>.

¹⁰ *Ibid*.

¹¹ John Pike, “Upholder Type 2400”, <http://www.globalsecurity.org/military/world/europe/hms-upholder.htm>

¹² CBC News, “Used Subs a Daft Deal for Canada UK MP says,” 15 March, 2012, <http://www.cbc.ca/news/canada/nova-scotia/story/2012/03/15/ns-british-mp-questions-sub-deal.html>

¹³ Simon Elliot, “*Upholder* to Sail with Sealed Tubes”, *Jane’s Defence Weekly*, 12 Aug. 1989, p. 233.



problem with the torpedo tube doors was solved by the time that *HMS Unicorn (HMCS Windsor)* was built.¹⁴ Finally, the fault only admitted water unexpectedly into the torpedo tubes, not into the actual submarine itself. This would cause the trim of the submarine to become unbalanced requiring a corrective surfacing to sort out the problem, but not any sort of catastrophic damage.¹⁵

WASTED MONEY ON TORPEDOES?

Byers is no stranger to anti-Americanism, once before making the odd claim that CF interoperability with the US posed a threat to Canadian sovereignty because it would facilitate the Americans taking command of our forces even against our wishes.¹⁶ Here the authors suggest that the US “tail” wagged the Canadian “dog” in the requirement to convert the submarines to be able to fire the Mark 48 torpedoes used by the RCN. Outside of the costs to reconfigure the submarine torpedo tubes, an additional \$120 million dollars was spent to upgrade the US manufactured torpedoes. They note:

One consequence of the changes is that the four Victoria-class submarines can no longer fire Harpoon missiles, a long-range U.S.-made anti-ship weapon that is extremely popular in other navies and is, in fact, carried by Canada's *Halifax*-class frigates. The decision to reduce the versatility of the submarines is perplexing, to say the least. It cannot even be explained on cost-savings grounds, since it must have cost more to make the changes to the submarines than it would have cost to purchase the appropriate British made torpedoes.¹⁷

In this, the paper achieves a rhetorical effect at the expense of accuracy. First, the Harpoon missiles that had been used by the *Upholders* were Sub-Harpoons, a different variant of the missile used on our frigates and not interchangeable as the paper seems to suggest.¹⁸ As we did not get weapons with the subs, these would have to have been purchased separately from the subs themselves. Further, an additional training and maintenance bill would also have accompanied this weapon system, also raising the cost. Secondly, the Spearfish torpedo, for which the original torpedo tubes were designed, was at the time of the submarine's acquisition undergoing considerable turmoil in its development and was widely regarded as unreliable. A 1995 report in the *Independent*, a British broadsheet newspaper, notes

(T)he Royal Navy's latest hi-tech torpedo, Spearfish, did a U-turn in the water during its trials and came back on the people who had fired it. Even the “firing point” is not known for certain, but it was probably a British submarine and Dr Malcolm McIntosh, chief of defence procurement at the Ministry of Defence, told the MPs, with masterly understatement, that it was “placed in some jeopardy”.¹⁹

McIntosh is quoted later in the article that the torpedo was “performing appallingly”. *Jane's Naval Weapons* notes:

¹⁴ David Peer, “Some History of the Upholder Class Submarines”, Canadian Naval Review, 3 May 2012, <http://www.navalreview.ca/2012/05/some-history-of-the-upholder-class-submarines/>.

¹⁵ Email from Cmdre. L. Hickey to author, 18 June 2013.

¹⁶ Byers 2002. Standard rules of engagement and “caveats” prevent such unauthorized usage.

¹⁷ Byers & Webb (2013), p. 16.

¹⁸ A fact that is pointed out in one of the sources they use for their report. See: Pike, *Upholder Type 2400*. Distinctions between the different variants of the missile are discussed in Federation of American Scientists, “AGM-84 Harpoon SLAM (Standoff Land Attack Missile)”, <http://www.fas.org/man/dod-101/sys/smart/agm-84.htm>.

¹⁹ Peter Victor, “A Torpedo that Thinks it's a Boomerang”, *The Independent*, 10 Sept. 1995, <http://www.independent.co.uk/news/uk/home-news/the-torpedo-that-thinks-its-a-boomerang-1600329.html>.



A National Audit Office report on naval equipment programmes of 31 March 1993 noted 'problems encountered in satisfying reliability requirements' noting that there had been a 69-month slip to the in-service date, from December 1987 to September 1993, and programme costs had risen GBP 23 million to GBP 1,005 million. By 1989 the slip had increased to 75 months with programme costs rising to GBP 1,795 million.²⁰

Further, even if the navy wanted to risk acquiring this system, none would have been available; *HMS Tireless* was the first British submarine to receive delivery of the torpedoes from BAE Systems in 1999.²¹ It is safe to say that a complement for the Canadian navy would have had to wait until the RN had filled out its requirements first.

But it begs the question, why should the navy have considered taking on an entirely new weapon system. The Mark 48s were already in stock, and like the Sub-Harpoons, the Spearfish would have to have been paid for separately. Further, Canadian submarine crews would have had to be trained on the new systems (another cost) and new maintenance arrangements would have had to be made. The Mark 48s are conveniently maintained in facilities in Washington state, contiguous to the Canadian border.²² Spearfish would have had to be shipped back to the UK or an expensive maintenance facility built in Canada. Even if Spearfish were dramatically less expensive than the Mark 48, our torpedoes were already paid for. Last, Spearfish would not have been interoperable with the fire control system used by the navy. "To take on a new torpedo would be like starting from scratch, and our ability to effectively employ them would have taken years to develop," notes retired RCN Commodore Larry Hickey.²³

THE PROBLEMATIC VICTORIAS

Clearly, the navy's submarines have experienced their share of problems since we acquired them and this report lists several including flooding in the *Corner Brook* as well as its grounding, the fire on *Chicoutimi*, various technical issues on the *Victoria*, and a problematic refit on the *Windsor*.²⁴ Most problems identified by Byers and Webb are a product of processes external to the vessels themselves, rather than attributable to their inherent design. Lengthy refit and few days at sea are partly explained by the "orphan" status of the subs. Only four were built and when the RN divested itself of them, the companies providing spare parts ceased making them.²⁵ Moreover, the spares the RN held were not fully acquired by the RCN due to strict limits placed on the cost of the programme. Re-establishing these supplier networks has proven both expensive and challenging for the RCN. Availability of parts has limited the ability of the vessels to deploy regularly. Haydon also notes that Canada's initial commitment to Operation Apollo had to be funded from within the existing navy budget, which had the effect of postponing the refit work on the submarines, as well as delaying the training of submarine

²⁰ Malcolm Fuller, David Ewing, "Spearfish", *Jane's Naval Weapon Systems 2012-2013*, (London: IHS Global Ltd. 2012), p. 275.

²¹ *Ibid.*

²² See: Defense Industry Daily, "Team Torpedo: US Firms Sell & Support MK48s and MK54s", <http://www.defenseindustrydaily.com/team-torpedo-raytheon-partners-to-support-mk48-and-mk54-requirements-02533/>

²³ Email from Cmdre L. Hickey to author, 18 June 2013.

²⁴ Byers & Webb (2013), pp. 13-15.

²⁵ Peer, 2012. Craven notes that both the Oberon class was operated by a large number of other navies which "greatly simplified Canada's efforts to maintain the platforms over their lifespan." (See footnote 16) Cdr. Michael Craven (RCN), "A Rationality Choice Revisited: Submarine Capability in a Transformational Era", *Canadian Military Review*, Vol. 7, No. 4, 2008. <http://www.journal.forces.gc.ca/vo7/no4/craven-eng.asp>.



crews.²⁶ As the Chief of Naval Staff admitted in 2011, “[w]e honestly thought that we could do it faster, and I will be the first to say that I think we over-promised, and under-delivered.”²⁷

INTELLECTUAL PROPERTY

The report confuses the failure of the RCN to obtain critical technical data from the British with some sort of effort to hide the cost of recovering it from Canadians. Rather than an absence of so-called “User Manuals”, some technical information on the submarines various systems was not provided in the handover. This is made all the more ominous by a reference to redacted data in a RCN report on the subject (“The Canadian ‘Project office’ produced an estimate of how much it would cost to secure the intellectual property rights, but the amount was censured (sic) in the CRS report and has never been made public. It would certainly not have been included in the original procurement budget.”).²⁸ This is a considerable overstatement on their part. The RN could not provide information that it did not control, namely specific technical information controlled by the British company, VSEL and later BAE Systems, supplying the onboard systems.²⁹ In any case, while this caused initial problems, the issue is long past. The RCN has now been operating the submarines for well over a decade and probably knows more about them than the UK did at the time they were sold. The classified figures involved in the discussion of the submarine’s intellectual property contribute nothing but the opportunity to create a spectacle by the authors.

Arctic missions

The authors spend a significant amount of time examining the relationship between submarines and the Arctic. The standard Canadian fear is that the superpowers were taking advantage of our limited capabilities and fearsome geography in the games they played throughout the Cold War. It is not surprising to see some of these arguments recycled here for one more round. They note “what is not clear is whether the United States had sought Canada’s permission for such voyages, and whether permission had been granted.” That it is not clear to them is surprising given their use of the scholarship of the University of Calgary’s Adam Lajeunesse in other parts of their study. Writing in the *Journal of Cold War History* last year, Lajeunesse notes in an article entitled “A very practical requirement: under-ice operations in the Canadian Arctic, 1960–1986”

[F]rom the 1960s to at least 1986 (the point at which all publicly available documentation ends) the American submarine program in Canada’s northern waters appears to have been undertaken not as a secret assault on Canadian sovereignty but as a fully cooperative venture. During this period the US Navy did not use these waters as a regular patrol area and, when it did, transits were normally conducted as some form of joint operation. The documents now available list only eight such voyages between 1960 and 1986 and it seems likely that Canada knew about each of these and concurred with their taking place. ...

²⁶ Peter Haydon, “The Chicoutimi Accident: Lessons Learned and Not Learned”, *Canadian Military Journal*, Vol. 6, No. 3, 2005, <http://www.journal.forces.gc.ca/vo6/no3/maritim-marin-eng.asp>. See also House of Commons 2005, p. 34.

<http://www.parl.gc.ca/HousePublications/Publication.aspx?DocId=1773092&Language=E&Mode=1&Parl=38&Ses=1>.

²⁷ Interview on W5, “Deep Sea Duds,” CTV News Network, 12 November 2011, available at <http://watch.ctv.ca/news/w5/deep-sea-duds/#clip567076>.

²⁸ *Ibid*, p. 17.

²⁹ Peer, 2012.



While Canadian politicians may have offered bluster and nationalistic rhetoric when speaking publicly on the question of Arctic sovereignty, the facts suggest that behind the scenes the defence of the region was being carried out in the same cooperative spirit which has always characterised the defence of the continent. The fears of secretive American submarine passages were unfounded and concerns over the diminution of Canadian sovereignty exaggerated.³⁰

Byers and Webb argue that “It must also be questioned whether it is only the maintenance of a submarine capability that ‘admits Canada to that exclusive group of states participating in regulated and highly classified submarine water space management and intelligence-sharing schemes.’”³¹ Waterspace management is all about the safe operation of submarines amongst friendly partners to ensure that their submarines do not collide with each other or are detected as unknown and potentially hostile targets. It is akin to air traffic control in a highly classified operational context.³² States operating SSBNs or running covert submarine missions do not share the routes used therein, but deconflict the movement of their secret submarine operations with the information shared amongst allied partners. While Byers and Webb assert, with no evidence to support their contention, that it would be in the interest of submarine nations to share information with Canada of covert Arctic submarine operations, this is simply not the case: Canada has been excluded on a number of occasions from information shared amongst its allies. The prime example is the wholesale embargo on classified information that occurred following the decision not to participate in Operation Iraqi Freedom.³³ Similarly, the US embargoed New Zealand in 1987 following that state’s decision to ban all visiting naval ships using nuclear propulsion or deploying nuclear weapons. Canada would have no reason to know the movements of our allies’ submarines if we did not possess our own.³⁴

SPECULATION

For an article that purports to be dedicated to finding policy alternatives, there is a tremendous amount of speculation and uncertainty in the paper. The authors argue against naval opinion that the lifespan of the vessels will be less than 30 years. Byers and Webb describe factors including “poor construction, a long period of storage in salt water, and a series of accidents both before and after Canada acquired them,” will limit the life span of the submarines. No less an authority on naval architecture than CBC reporter Greg Weston is used to justify this conclusion: “(B)y the time the whole fleet is in active service in 2016, the submarines will be almost 30 years old with only perhaps ten years of life left in them.”³⁵ However, the real measure of a submarine’s useful life is determined both by how well it has been maintained and how it is operated. The *Victoria*’s lack of use, documented in the paper, in this case stands them well in terms of their remaining service longevity. In 2001, the RCN instituted its own

³⁰ Adam Lajeunesse, “A very practical requirement: under-ice operations in the Canadian Arctic, 1960–1986”, *Cold War History*, published online at <http://www.tandfonline.com/doi/abs/10.1080/14682745.2012.727800#.Ub9todgmydn>.

³¹ Byers & Webb, 2013, p. 25.

³² Capt. Phil Webster (RCN), “Arctic Sovereignty, Submarine Operations, and Waterspace Management”, *Canadian Naval Review*, Vol. 3, No. 3, Fall 2007, <http://www.navalreview.ca/wp-content/uploads/public/vol3num3/vol3num3art4.pdf>.

³³ Paul T. Mitchell, *Network Centric Warfare and Coalition Operations in an Age of US Military Primacy*, *Adelphi Paper #385*, (London: Taylor and Francis, 2006).

³⁴ Larry Hickey, “Mind the Gap”, *Canadian Naval Review*, Vol. 8, No. 2 Summer 2012, p. 33, <http://www.navalreview.ca/volume8-issue2/>.

³⁵ Greg Weston, “Canada May Buy Nuclear Submarines”, *CBC News*, 27 Oct. 2011, <http://www.cbc.ca/news/politics/story/2011/10/27/submarines-british-nuclear.html>.



SUBSAFE programme, described as an “overarching risk-based safety management system to cover aspects of submarine operations, escape and rescue, materiel, crew effectiveness and occupational health and safety.”³⁶ SUBSAFE programmes were inaugurated by the USN following the loss of the *USS Thresher* due to mechanical problems on board the submarine.³⁷ The RCN's safety programme documents all work done to the submarine in order to certify its safety to dive.

They speculate that the UK's decision to get rid of the submarines was related to the submarine's initial technical problems,³⁸ justified by a source³⁹ that says nothing of the sort. In 1993, the UK Defence White Paper, *Defending Our Future*, concluded that SSNs possessed considerable operational advantages over SSKs and, further, that the number of SSNs in the RN's inventory was sufficient to meet the future defence needs of the country: “We have therefore decided to withdraw the *Upholder* class of conventional submarine from service by 1995 and are currently examining options of their future bearing in mind the investment they represent.”⁴⁰

As discussed briefly above, nothing in their withdrawal suggested any RN dissatisfaction with the boats. Indeed, one former naval officer wrote in *Proceedings* that the *Upholder* cancellation would terminate British SSK design abilities as well as their internationally recognised submarine training programmes.⁴¹ The withdrawal of the *Upholders* seems to have had more to do with budgetary shortfalls and the urge to protect future programmes, not the least of which, future SSN procurement.⁴²

They speculate that the navy's strategic document *Horizon 2050* may have not been released publically due to the “emphasis on Canadian-Chinese cooperation,” a bizarre conclusion given that *Horizon 2050* says nothing about conflict with China – it is only Carleton University professor Elinor Sloan, quoted at length by Byers and Webb, who speculates that the document was written with China in mind.⁴³

But the most egregious speculation is whether the Harper government has a secret plan to replace the submarines. Why are submarines not part of the National Shipbuilding Programme? Any number of reasons could explain their absence. Perhaps because they remain a controversial weapon system for many Canadians that was replaced only due to the sheer luck of the four *Upholders* coming onto the market in the manner they did. The Canadian Naval Review argues:

The simple reason that submarines are not included in the shipbuilding strategy is that a small fleet of approximately four or even as many as eight submarines

³⁶ VAdm. R. D. Buck, “Submarine Safety (SUBSAFE) Policy”, MS: 32549-901 (MSCRM 5), 16 Nov. 2001, http://www.navy.forces.gc.ca/cms/3/3-a_eng.asp?category=7&id=205.

³⁷ US Naval Institute News, “After Thresher: How the US Navy Made Subs Safer”, 4 April 2013, <http://news.usni.org/2013/04/04/after-thresher-how-the-navy-made-subs-safer>.

³⁸ Byers & Webb, 2013, p. 11.

³⁹ Weston, 2011.

⁴⁰ *Defending Our Future*, *Op Cit*, p. 63. See also: “Navy Takes Brunt of Latest UK Cutbacks”, *Jane's Defence Weekly*, 17 July, 1993, p. 8.

⁴¹ Capt. G.A.S.C. Wilson. “RN pays Off Conventional Line”, *Proceedings*, March 1994.

⁴² *Jane's* speculated that the urge was to protect the RN LPH programme, while Wilson argued that it was more likely that a SSK AIP programme might put future SSN procurement at risk and therefore in an age of budgetary scarcity, the *Upholders* had to go. Joris Janssen Lok. “Canada May Take Over UK *Upholder* Fleet”, *Jane's Defence Weekly*, 6 Mar., 1993; Wilson, *Ibid*.

⁴³ Byers & Webb 2013, pp. 25-26.



would detract from the goal of the strategy. There is no synergy gained by adding submarines to a coordinated approach for surface ship construction. Submarines are not included in the NSPS because it makes no military, economic or industrial sense to do so. The number of submarines cannot reasonably support continuous work, so adding them to the NSPS would promote the very "boom and bust" cycle that the strategy was intended to solve.⁴⁴

Whatever the reason, it is ludicrous to think a new batch of submarines could be kept off the books in some secret account given the costs involved and the necessary involvement of actors outside the government.

ARE SUBMARINES NECESSARY FOR THE DEFENCE OF CANADA?

The paper is clearly devoted to the question of whether submarines are necessary to the defence of Canada. The question is politically charged. Under the Chretien government, former Minister of Foreign Affairs, Lloyd Axworthy went so far as to claim that submarines were an "un-Canadian" weapons systems because of their supposedly offensive orientation. Indeed, the former Vice Chief of Defence Staff, VAdm. Gary Garnett once declared to me in an interview that the *Upholder* acquisition was "the most improbable project" because of the ideological opposition within some groups in Canada to replacing the navy's O-boats.⁴⁵

Byers and Webb signal their own position early on, arguing that as the RCN has virtually gone without submarines since it divested itself of its O-boats in 2000 they are clearly not important to Canada's day to day security.⁴⁶ They might have made an even stronger case had they pointed out that for most of its history, the RCN has not possessed submarines. Two submarines were acquired following the declaration of war in 1914, but both were withdrawn from service at the close of that conflict. Two used American submarines were acquired in the early 1960s (*HMCS Grilse* and *Rainbow*) and the new British *Oberons* were purchased in 1965. Even when it did finally acquire them, for much of their operational life, they were not functional naval weapons. The O-boats became operational weapon systems only with the Submarine Operational Up-date Project (SOUP) of the 1980s, when the Mark 48 torpedoes were acquired for them. Prior to that, the submarines had been used only as "clockwork mice" in ASW exercises conducted by the navy.

However, the navy has long advocated for a sub-surface capability. Historian Julie Ferguson has referred to "the long cycle of submarine programmatics" in the RCN to this effect. The RCN argued consistently for submarines throughout the 1950s, and several studies examined the feasibility of acquiring American *Skipjack* class SSNs. The three O-boats were acquired in the 1960s but only as clockwork mice as noted above. Again, Ferguson notes that "It was the idea of operational submarines that offended many, not nuclear power," pointing to the long suspicions about the moral taint associated with submarines in Canada.⁴⁷ Conventional submarines were necessary to train surface ships in ASW techniques in which Canada was specializing for its

⁴⁴ CFPS Maritime Security Policy Program Research Team, "A Review of 'That Sinking Feeling: Canada's Submarine Program Springs a Leak,'" *Canadian Naval Review*, 15 June 2013, <http://www.navalreview.ca/2013/06/a-review-of-that-sinking-feeling-canadas-submarine-program-springs-a-leak/>.

⁴⁵ Paul T. Mitchell, "The Most Improbable Project": *Canadian Acquisition Of The Type 2400 Upholder Class Submarines*, unpublished case study, held in the Information Resource Centre, Canadian Forces College.

⁴⁶ Byers & Webb 2013, p. 19.

⁴⁷ Julie Ferguson. *Through a Canadian Periscope: The Story of the Canadian Submarine Service*, (Toronto: Dundurn Press, 1995), p. 251.



NATO role at sea. As such, they could be justified as necessary in the furtherance of this goal. The exorbitant cost of SSNs meant that they had to perform some operational role in order to justify the huge expense of acquiring them. However, despite the arguments of the RCN, Canadian submarines were to be restricted largely to training purposes.

Nevertheless, it is inaccurate to suggest that Canada has gone without the services of its submarines given the problems many of them have experienced since 2003. A former submarine commander argues that what is important is not the number of days spent at sea, but the quality of those days spent and here our submarines and their crews have quietly delivered the goods:

In the decade that Canada has operated these submarines, they've carried out tests and trials with special operations forces, enforced Canadian sovereignty through fisheries and anti-smuggling patrols, and participated in training with land, sea and air forces in the north. They have contributed to counter narcotics interdiction in our hemisphere, deployed to European waters and participated in advanced training with US carrier battle groups on both coasts.

Our allies have sufficient trust in our submariners' professionalism that Canadians will control the movements of US submarines in the next Pacific Rim exercise. The gesture is hugely significant; our southern neighbours are notoriously skittish about assigning control of their boats to non-US commanders. As well during this past decade, at least four Canadian officers gained sufficient submerged experience to succeed at internationally recognized submarine command courses.⁴⁸

Cynics might point out that bureaucratic agents will always argue for more resources and additional operational capabilities. In suggesting such a state of affairs, they effectively argue that those doing so are poor stewards for the institutions they represent, that they are acting unprofessionally. While it may be an "iron law" that bureaucracies pursue such policies, it is also true that such resources and capabilities must be justified rationally to those who control the purse strings. Such capabilities must be both affordable and they must be necessary. The navy clearly thinks that submarines are critical to its operations given the number of resources it has poured into them in the past decade. This commitment cannot be explained by the surreptitious influence of some sort of submarine union or cabal within the RCN: there are relatively few qualified submariners as a trade within the navy compared to the number of regular sailors.⁴⁹ The senior ranks of the service is not dominated by submarine qualified officers either.⁵⁰ Rather, we must conclude that the navy has found in its best professional judgment that submarines are a critical piece of hardware in modern naval force structure.

⁴⁸ Hickey, 2012, p. 33

⁴⁹ DND notes that there are just 372 positions of all ranks involved in supporting submarine operations within the RCN. The RCN has a total staffing of 8,500 regular sailors. Department of National Defence, "Royal Canadian Navy Submarines: Fleet Status", 26 April, 2013, <http://www.forces.gc.ca/site/news-nouvelles/news-nouvelles-eng.asp?id=3979>.

⁵⁰ A survey of the Directorate of Senior Appointments General and Flag officers biographies reveals that there are 4 subsurface qualified flag officers in the RCN out of a total population of 24 positions. There are one Commodore, two Rear Admirals, and one Vice Admiral. Only two of these positions, Rear Admiral P.T. Finn and Commodore Marcel Halle have any responsibilities overseeing equipment. See <http://www.cmp-cpm.forces.gc.ca/dsa-dns/sa-ns/ab/gfo-oga/index-eng.asp?mLimit=Gen>.



Byers and Webb argue that the Danes had submarines and got rid of them following the end of the Cold War. Surely, if the Danes can safely rid themselves of submarines, it should be safe for Canada to do likewise? This is a specious argument. The deliberation of national military policy is subject to a wide variety of influences, political, social, geographic as well as economic. Comparisons between different national policies, especially at lower levels is difficult. For example, New Zealand does not operate fighters in its air force, should Canada follow in their example and not replace the CF-18s? Iceland, one of our NATO partners no less, doesn't even have a military at all. Should we follow their example and simply transfer any residual capacity to the RCMP for internal defence?

Questions of force structure turn on strategic determinations of threat and capability. As Byers and Webb's criticism of the Navy's *Horizon 2050* demonstrates, there is room for disagreement over what the future holds in terms of the strategic environment. In the present environment, Canada clearly faces few direct military threats, and broader questions of international peace and security are ones to which, as a middle power, we can only hope to make a modest contribution. But, as we have seen in the past two decades, the Canadian Forces have been risked in a variety of locations that no one expected: the former Yugoslavia, Somalia, the Persian Gulf, Afghanistan and Libya. It is impossible to know with any certainty where the government of the day might send them next, just as it is impossible to know what crises will erupt and in what political context they will take place (and thus how the Canadian people and their government will view the necessity to commit force).

As an apolitical instrument of the government, it is not for the military to prejudge these purely political considerations, but simply to be as ready as possible for whatever missions that its government ultimately assigns. The military, thus, must hedge against not only fundamental uncertainty in the international environment, but also the domestic one that determines their commitments. As Jim Fergusson recently argued in respect to the F-35 acquisition, politics not (the absence of) capabilities should determine our ability to make international contributions.⁵¹

Both decisions and "non-decisions" on force capability will resonate long into the future. While Canada desired to play a lead role in the response to the crisis in Central Africa in the mid-1990s, Canada had neither the diplomatic capital nor the military capability by then to pull it off, resulting in the so called "Bungle in the Jungle". The failure of the military to replace our air defence destroyers in time for the retirements of the DDG-280 class ship now means that Canada's future ability to respond with a self-sufficient naval task group, as it did during the Gulf War and most recently in the War on Terror, will be greatly limited. This reduction in capability will constrain the government's hands in real ways. The navy played an important diplomatic function in keeping the Western coalition together during the difficult days following the invasion of Iraq in 2003 as both Richard Gimblett and I have argued.⁵² In future crises, Canada's steadying hand at sea may well be absent, especially if the Joint Support Ship project continues to experience delays.

⁵¹ James Fergusson, "The right debate: Airpower, the future of war, Canadian strategic interests, and the JSF decision", *Canadian Foreign Policy*, Vol. 13, No. 3, 2012, p. 214.

⁵² Richard H. Gimblett, *Operation Apollo: The Golden Age of the Canadian Navy in the War Against Terrorism*, (Ottawa: Magic Light Pub., 2004); Paul T. Mitchell, *Network Centric War and Coalition Operations: The New Military Operating System*, (London: Routledge 2008).



Submarines remain one of the most potent military weapons a state can deploy. They remain difficult to detect and torpedo design has progressed to the point where a single weapon is capable of sinking most vessels. In an age when navy ships cost in the billions of dollars, the loss of a single vessel has a strategic impact all out of proportion to the tactical value they might provide. The loss of the *Belgrano* to *HMS Conqueror's* torpedoes in the Falklands War caused the strategic withdrawal of the Argentinian fleet from the vicinity of the islands, complicating their defence from British forces. While the Argentinian air force continued to harry the British, their jets were operating at the very edge of their range and could stay in the area only for brief strikes. Further, Argentinian submarines successfully targeted *HMS Hermes*, the loss of which would have prompted the withdrawal of the British fleet.⁵³

It is often claimed that Canada's O-boats provided considerable deterrent value during the so-called Turbot crisis, which Byers and Webb note in their paper. Laurence Hickey gives a detailed account just how effective Canadian submarines have been, both during the Turbot Crisis, as well as during on-going fisheries patrols aimed at American fishery vessels that stray over the border between the United States and Canada.⁵⁴ As the above example demonstrates, navies are considerably cautious about deploying into areas where hostile submarines may be present.⁵⁵ Because of their silent nature, conventional boats are particularly troublesome in this regard. Even old and obsolete boats can still pose a threat: during the Falklands, the Argentinean submarine *Santiago del Estero*, was inoperable due to an inability to submerge. Nevertheless, the Argentinians regularly moved it about to give the impression that it was capable of conducting operations.⁵⁶

Byers and Webb make the argument that the demonstrable surveillance coverage provided by submarines could easily be replaced by UAVs. This is simply not the case. First, few UAV platforms can deal with the weather conditions found off all three of our coasts – they are not all-weather platforms. Second, UAV operations envisaged by Byers and Webb would require satellite uplinks, an additional cost not factored into their considerations. Further, such links would be unavailable in many areas of the Arctic as well due to the inherent orbital limitations of the communication satellites that carry UAV traffic.⁵⁷ Although UAVs can fly much longer than manned platforms, they still do not have the persistence of a submarine. Even a conventional boat, using energy management, can remain underwater for weeks at a time listening to the traffic on the surface. Further, they can remain on station for up to a month without replenishment; a frigate can patrol only for about 12 days before it needs to be resupplied with fuel and provisions.⁵⁸ Such long duration UAVs that could meet these

⁵³ Admiral Sandy Woodward and Patrick Robinson, *One Hundred Days* (London: Fontana/Harper Collins, 1992). Also see Cdr. Joseph Lodmell, (USN), "It only takes one" *Proceedings*, December 1996, pp. 30-33.

⁵⁴ Cdr. Laurence M. Hickey, "The Submarine as a Tool of Maritime Enforcement", *Integrated Coastal Zone Management*, Spring 2000, pp. 117-122.

⁵⁵ Canada issued a "Submarine Notice of Intention" in the spring of 1995 advertising an area where submarines would be operating as a way of communicating to the Spanish the presence of a Canadian O-boat. Webster, 2007, p. 33.

⁵⁶ Martin Middlebrook, *The Fight For the Malvinas*, (London: Viking, 1989), p. 74.

⁵⁷ LCol. Jason Kenny, *Unmanned Aerial Systems: Are Expectations Realistic?*, Masters of Defence paper, Canadian Forces College, 2012, pp. 30-54.

⁵⁸ Peter Haydon, "The Chicoutimi Accident Revisited: Lessons Learned and Not Learned", *Canadian Military Journal*, Vol. 6, No. 3, 2004.



demanding performance figures remain experimental platforms only.⁵⁹ Last, unregulated flight of UAVs is not permitted within Canadian airspace. UAV flights need special permission that must be arranged weeks in advance and lasts only for the duration of the flight itself, which dramatically limits their operational flexibility. While such flights may eventually be permitted, new regulations for UAVs may take several years yet to be drafted and will be dependent on the development of autonomous “see and avoid” technologies.⁶⁰

While submarines will likely remain controversial in a Canadian context, they are an accepted part of the naval team in those navies that deploy them, including many of our allies. They provide tremendous value for long range and stealthy surveillance, and their offensive power is a prime consideration in the minds of opposing naval commanders. Our present submarines, even with the on-going costs involved, provide considerable value in this regard, as well as assisting our navy and that of the US in keeping their operational ASW skills honed and effective.

CONCLUSION

While Admiral Garnett may have described the acquisition of the *Upholder* submarines from the British as the most improbable project, subsequent history has also shown it to be only one in a string of troubled procurements by the Canadian Forces. The acquisition of an “orphan class” together with the failure to acquire sufficient replacement parts for the boats led to the on-going delays in getting them operational. Nevertheless, the claims by Byers and Webb that the entire class was poorly constructed and fundamentally flawed from the outset has been shown to be as leaky as they claim the Canadian submarine programme to be.

Second, the argument that Canada does not require submarines for its defence is highly debatable. Only military success and failure can ultimately prove the worth of a specific weapon system. However, the history of submarine operations shows their continuing effectiveness. Canada will continue to deploy its ships into harm's way and thus their crews must be prepared to face undersea threats in their operations. The navy clearly believes that these weapon systems are central to effective naval operations, both offensively as well as defensively. While it has an obvious professional interest in the answer to this question, nothing in this report fundamentally undermines the navy's claim. Our submarines remain affordable within the confines of the existing naval budget⁶¹ and thus there is no reason to eliminate the boats.

Last, the argument that the government has some sort of secret plan to replace the submarines in the future, presumably against the best wishes of the Canadian public, is extraordinary – emerging as it does from such a privileged platform. The theory that Ottawa could conceal a multi-billion dollar project necessarily involving foreign contractors, domestic industrial interests, and considerable interdepartmental coordination must be substantiated with real

⁵⁹ See Defence Industry Daily, “DARPA's Vulture: What Goes Up Needn't come Down”, <http://www.defenseindustrydaily.com/DARPAs-Vulture-What-Goes-Up-Neednt-Come-Down-04852/>; “Zephyr Solar-Powered HALE UAV, United Kingdom”, <http://www.airforce-technology.com/projects/zephyr/>.

⁶⁰ Maj. J.S.F. LaPlante (CF), *The Use of UAS in Canada's Unsegregated Airspace: Foundations and Roadmap*, Masters of Defence paper, Canadian Forces College, 2013, pp. 16, 43-45.

⁶¹ Cdr. Michael Craven observes: “By way of example, the steady-state cost of ownership of the four-boat *Victoria* fleet is estimated at about \$C250 million per year, with an ‘all up’ personnel requirement, including support staff ashore, of less than 500 people. Comparatively, a non-nuclear submarine costs some 30 percent less than a frigate or destroyer to keep at sea on a daily basis, in part the consequence of smaller crew and greater fuel economy.” Craven 2008.



evidence before it is released for widespread public consumption. We can and should have a serious debate on Canada's military programmes. Such a debate needs critical perspectives like that Byers and Webb seek to provide in their report. However, serious debate also requires serious research and the commitment to pursue the truth, wherever it may lead, rather than substandard efforts to score easy rhetorical points. In this, *That Sinking Feeling* does not stand up to critical scrutiny.

► **About the Author**

Paul Mitchell holds a BA (Hons) from Wilfred Laurier University, a MA in War Studies from King's College London, and a PhD from Queen's University at Kingston. Following the completion of his doctoral studies, he worked as a post-doctoral fellow at Dalhousie University in Halifax in the Centre for Foreign Policy Studies, where he assisted with the production of the Canadian Navy's "Adjusting Course" strategy. He also worked as Directing Staff at the Pearson Peacekeeping Centre on their Maritime Peacekeeping course in 1996 and 1997. He has worked at the Canadian Forces College since 1998, first as the Deputy Director Academics, and later as its first Director of Academics (DAcad). As DAcad, Dr Mitchell oversaw the development of the Master of Defence Studies degree following accreditation of the Command and Staff Course by the Ontario Council of Graduate Studies in 2001. Between 2005 and 2007, Dr. Mitchell was an Associate Professor at Singapore's S. Rajaratnam School of International Studies at Nanyang Technological University and also taught at the Singapore Armed Forces Training Institute's Command and Staff College.

Dr Mitchell was awarded the Literary Award by the United States Naval Institute and the Surface Naval Association for his paper on Network-Centric Warfare and Small Navies in 2003, the first non-American and the first civilian to be so recognised. He recently was published in the International Institute for Strategic Studies' prestigious Adelphi Paper series with his Network-Centric Warfare: Coalition Operations in the Age of US Military Primacy.

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