



CANADIAN NAVAL REVIEW

VOLUME 3, NUMBER 4 (WINTER 2008)

**Defending the 'Empty
North': Comparing
Canadian and Australian
Challenges and Strategies**

The Honour to State

Ports and Security

**Implications of Climate
Change on Eastern
Canadian Waters**

**Here Comes the Age of
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VOLUME 3, NUMBER 4 (WINTER 2008)

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Photo: CNR's David Perry, who participated in a DND-sponsored visit to Iqaluit, for Operation Nanook, a joint military training operation.

HMCS *Fredericton* at anchor off Iqaluit, Nunavut prior to the start of Operation Nanook, 9 August 2007.

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Editorial: Generally Speaking

The recent mini-tempest in a teacup over the propriety of General Rick Hillier's latest-in-a-series of forthright public comments has raised an age-old issue of democratic civil-military relations: how and under what circumstances may the military 'speak out' about public policy matters?

A recurring theme in the *Canadian Naval Review* has concerned the need for straight talk from navy personnel about the state of the navy today. Sharon Hobson ("A Missed Opportunity," *CNR*, Spring 2007) laments the trend among serving officers to speak vaguely about 'challenges' to military readiness in public, while confining their informed assessments of truly worrying shortcomings to 'insider' audiences. Similarly, Rear-Admiral (Retired) David Morse in the same issue of *CNR* ("Why is No One Making Waves?") also stresses the need for the navy to express its views openly, but notes the "mixed signals" emanating from senior departmental and military leaders on this score. In this *CNR* volume, Mark Tunnicliffe notes the often corrosive effect of internal naval debates spilling over into the public domain.

Conventional wisdom holds that military personnel at all levels should confine themselves to their own sphere of activities, namely promptly and effectively carrying out lawful orders from the civilian authorities, generally only talking publicly about specific aspects of their own immediate jobs, and providing sound, professional advice when appropriate. The Chief of the Defence Staff, additionally, by law acts as the main military advisor to the government that appoints him or her. Above all, the stricture is that the military must not engage in policy advocacy or debate.

So, when is it appropriate for the military to speak out, and at what point does its professional advice become dissent with its civilian overseers? And, most importantly, should certain forms of dissent be permitted? At one extreme, there is the view held by the then Minister of National Defence (MND), Brooke Claxton, who in 1948 privately opined that, in reference to the qualifications he was seeking in his Chief of the General Staff "There is one proviso: he must not go about making speeches. I am all for silent soldiers as well as sailors."¹

Certainly, General Hillier, as well as many of his predecessors, would fall very short against this high standard of military deference to the civil authority. In this modern age of all-pervasive communications technology, 24/7 media coverage and the demand for public service accountability, it would be difficult, and probably impossible, for the military or any other organ of government to simply remain silent on the many pressing issues of the day. Indeed, some might argue that the requirement for public disclosure demands that the most senior of our military leaders speak out regularly and candidly about the many details of effectively managing a multi-billion dollar organization.

Moreover, when our country is at war or is in a major military engagement abroad such as Afghanistan, then the pressures to communicate to Canadians about the nature of the mission, the dangers it entails, and the demands it places upon our troops are even more insistent. Lives, and maybe much more, after all, are at stake.

In the United States, controversy has recently galvanized around the so-called "Generals' Revolt" concerning the preparations for and conduct of the war in Iraq. But Canada has been no stranger to outspoken military leaders, and certainly our sailors have occasionally forsworn the mantle of the 'Silent Service'. In 1946, Vice-Admiral Howard Reid attacked Ottawa's miserly funding of the navy in comparison to the American case. In 1966, Rear-Admiral William Landymore led the 'revolt of the admirals' against Minister Paul Hellyer's unification



The Honourable Brooke Claxton.



*Rear-Admiral William Landymore:
his actions remain controversial.*

Photo: Internet image

Photo: Joint Task Force Atlantic
Public Relations Office

efforts. In the mid-1970s, Vice-Admiral Douglas Boyle carped about MARCOM's commitment-capability gap. Finally, in 1991 Vice-Admiral Charles Thomas resigned in protest against DND policies that he believed would undermine the navy's future capability. Notably, each case of public disagreement eventually led to the departure of the high-ranked naval officer.

So why fuss about this now, and how is it a concern for the navy? Of late, there have been rumblings behind the scenes about the navy's mortgaging of its future on the altar of current operations. To listen to navy insiders tell it, before long, and in the absence of serious infusions of new funds, the numbers of both ships and personnel are going to decrease dramatically, and this will adversely affect the navy's ability to carry out its roles at home and abroad.

This is the line that Senator Colin Kenny has been advancing for some time, but the problem for outsiders, including the Canadian taxpayer, is this: where is the solid evidence for the interested public to test the veracity of these claims? Without some solid proof, claims of this sort tend to be dismissed as just the disgruntled complaints of the losers in the ongoing game of budgetary politics in Ottawa. In other words, more of the same. But what if these assertions prove to be well-founded? Would our politicians, as well as ordinary Canadians, be prepared to accept the consequences of a navy that was so stretched in hulls and people that it could not properly safeguard Canada's domestic interests, nor effectively advance our interests abroad? Do such matters properly belong in the public realm, and if so, how should our senior officers convey this message to our politicians and citizens? Should our top military leaders have to risk public censure and even disgrace, or else be compelled to resign in order to get the message out?

Should there be a simpler way for senior military commanders to 'tell it like it is' without transgressing the fine line between legitimate professional advice and opinion on the one hand, and overt public disagreement with our elected leaders on the other? How else can Canadians be expected to learn the true state of Canada's readiness for military action?

Some argue that General Hillier may be trying to set a precedent for a more active and forthright role of the government's chief military advisor; others say he has gone too far, and must be reined in. For his part, Hillier is neither contrite nor apologetic about his occasional sallies into the political sphere. And why should he be?



Photo: DND Combat Camera

General Rick Hillier: also often controversial.

There should be no cause for real concern about the perceived breakdown of proper civil-military relations in Canada so long as both sides continue to acknowledge, as they have so far, that the elusive 'line' can and must be drawn by our elected civilian leaders. After all, any Prime Minister could with the stroke of a pen remove a balky CDS from his appointment – the topmost military officer always serves "at the pleasure of" the Crown.

Moreover, surely Canadians deserve to be told, at least once a year, before a formal session of a committee of Parliament, each service's professional assessment of its ability to carry out the operational roles it has been assigned by our government. This should not be seen as an attack on government policy, nor should it have to be unearthed via the slow and painful Canadian Access to Information process.

So, in the interests of a better informed public, is it not time for us not only to permit, but also to welcome, greater latitude for our senior military commanders to explain clearly and very openly their side of the military story? Can we afford to risk the consequences of doing otherwise? 🇨🇦

Dan Middlemiss

Notes

1. Quoted in James Eayrs, *In Defence of Canada: Peacemaking and Deterrence* (Toronto: University of Toronto Press, 1972), p. 64.

Defending the ‘Empty North’: Comparing Canadian and Australian Challenges and Strategies

Aaron Jackson

Photo: Sub-Lieutenant Fraser Gransden, 2007



Not an Australian problem: sea ice in the Davis Strait, summer 2007.

It is often stated that Canada and Australia have much in common in terms of their history, demographics, economies and foreign policy interests.¹ This is also true of their defence forces and both countries have been described as medium military powers, with militaries structured to work in coalition with larger allies but also capable of undertaking independent operations of limited scale. Accompanying this ‘middle power’ military status is the challenge of undertaking a wide array of tasks with limited resources. This has led to the need to create economies of scale wherever possible and has resulted in both countries embracing the trend towards ‘jointery’ that has characterised their recent military operations.

Recently, environmental changes have led to widespread recognition that Canada’s Arctic is becoming more accessible. In particular the Northwest Passage will likely become a more significant shipping route between the Pacific and Atlantic Oceans, navigable for longer each year

due to global warming. Accompanying this accessibility is the increasing presence of fishing vessels, increased exploration for and exploitation of natural resources, and increased use of the area for recreational purposes (by so-called ‘adventure tourism’ companies). These changes have in turn resulted in a growing need for monitoring and policing to ensure that commercial activities are not causing environmental degradation and that other illegal activities such as smuggling are not occurring. Alongside these issues are Canadian Arctic sovereignty concerns, which have been the traditional catalyst for the periodic bouts of public attention that Canadian Arctic security has historically received.

In short, Canada’s Arctic security situation is increasingly echoing the situation Australia faces in defending its own northern territories and sea lanes. An examination of the approach the two countries are taking in defence of their sovereignty and interests in their ‘empty north’² is therefore

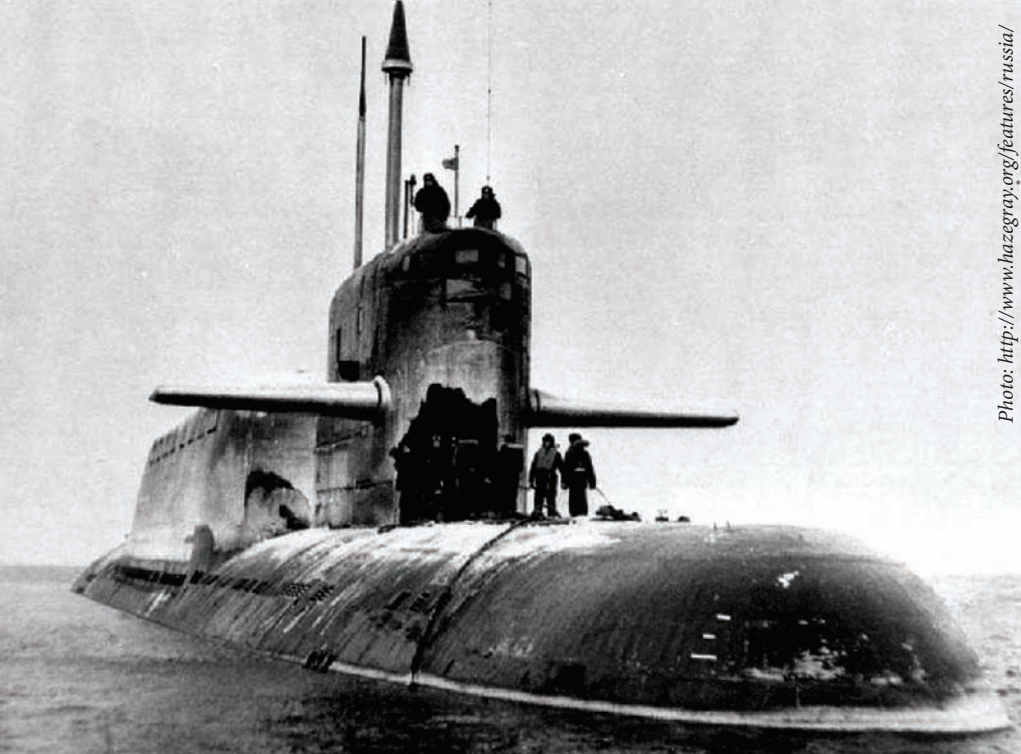


Photo: <http://www.hazegray.org/features/russia/>

A major component of the Cold War Soviet threat: a Delta IV-class SSBN.

warranted. This article conducts this examination, positing that despite environmental and historic differences, contemporary security needs warrant similar strategies for northern defence. Furthermore, the array of security challenges now facing each country has necessitated the adoption of 'joint' and 'interagency' defence strategies.

Northern Defence: Environmental and Historic Differences

When one initially considers the Canadian and Australian north, the first thing that comes to mind is the climatic difference. Canada's north is either Arctic or sub-Arctic, and is frozen for a substantial part of the year, whereas Australia's north is characterised by terrain that varies from desert to rainforest, with heat and humidity providing a common denominator. Despite this obvious difference, these two environmental extremes have similar repercussions for defence planners. Due to their remoteness and harsh environmental conditions the northern territories of both countries are sparsely populated. As a result, the distances between settlements are often great, meaning that sustaining defence assets in these regions requires significant planning and logistical support (especially if the assets are mobile). Furthermore, both countries have a long, porous coastline and maritime approaches that are difficult to monitor continuously and effectively, although Australia has more port facilities along its northern coast than Canada does, meaning naval patrol vessels can more easily take on fuel and supplies.

Beyond the ramifications of their environmental circumstances, the Canadian and Australian northern territories have historically played very different roles in their defence policies. For Canada, the Arctic's remoteness and inaccessibility allowed the region's security to be taken

for granted for much of the country's history. As Peter Haydon observes, "the Arctic only makes it into the Canadian political agenda every 15 or so years when some perceived sovereignty crisis arises."³ As a result, politicians, defence planners and the Canadian public have traditionally concentrated on relations with the United States and military operations abroad in defence of Canada's wider interests, rather than on Arctic security.

The exception to this rule was the Cold War when Canada found itself in an unenviable position between the United States and the Soviet Union. Although this situation necessitated a focus on the defence of Canada's northern approaches

es against a large 'conventional' and nuclear threat, beyond the defence community in Ottawa the north nonetheless remained "out of sight, out of mind" to the majority of Canadians.⁴ Post-Cold War defence budget cuts and the post-9/11 focus on expeditionary operations had, until recently, resulted in a return to the traditional Canadian pattern of taking northern defence for granted or neglecting it in favour of other interests.

Canada's Arctic security situation is increasingly echoing the situation Australia faces in defending its own northern territories and sea lanes.

For Australia, however, northern defence has traditionally been a major focus for defence planners and the public in general. This is because the majority of Australia's perceived security threats have originated not from the south but from the north. Fears of invasion by France, Russia, Japan, communist China, Indonesia, and fears of being 'overrun' by Asian immigrants, all threats originating from somewhere beyond Australia's northern approaches, have at various times in Australian history played major roles in defence policy formulation, although with a few notable exceptions these perceived threats have generally been exaggerated at best and outright ludicrous at worst. Popular perceptions in the Australian psyche that the country is 'alone in a bad neighbourhood' have driven Australia actively to maintain defence alliances and, like Canada, Australia has often deployed forces abroad in defence of its wider interests. Unlike Canada, since the conclusion of the Second World War these deployments have predominantly been in Asia. As a result of this region-

al focus and perceptions of security threats originating to the north, Australia has historically been more proactive in the defence of its northern territories and approaches than Canada.

So What's Changed?

Despite these environmental and historic differences, the challenges Canada and Australia are confronting in defending their northern territories and approaches have, over the past decade, converged. Furthermore, this trend will likely continue into the foreseeable future.

The first factor underlying this convergence is the disappearance of the Soviet threat from beyond Canada's northern approaches. This has shifted the Canadian situation closer to that of Australia, which has not faced an obvious conventional threat from its north since the end of the Second World War (despite the occasional, over-inflated security scare). Even during the 1980s, when the Cold War threat was paramount in Canadian defence policy, Australia did not perceive a similar threat to its own security. Instead, Australian defence planners concluded that:

Australia faces no identifiable direct military threat.... It would take at least 10 years and massive external support for the development of a regional capacity to threaten us with substantial assault.⁵

With regards to a conventional threat materialising to the north of Australia, this statement could still be said to ring true.

Instead, the primary regional threat to Australia today stems from the political and economic instability of many countries in the Pacific region. The security challenges presented by this situation are diverse but are generally related to the problems associated with state failure, including the prospect of mass refugee movements, humanitarian crises and the need for military intervention. Although widespread state failures in the Pacific are yet to occur, this is the worst-case scenario Australia may potentially face in the mid-term and it has already received attention within the Australian defence community. Although this scenario would not directly affect Australian defence of its northern territories and approaches, it would have many indirect effects.

One of these effects – and the second contemporary commonality between Canada and Australia – is the prospect of increased smuggling operations. Already the Royal Australian Navy (RAN) is intercepting smugglers regularly, especially drug and people smugglers, who are generally based in the Asian or Pacific countries to Australia's north. A dramatic and well-publicised example of this



HMAS Cessnock operating with an RAAF P3-C Orion LRPA in northern Australian waters.

type of operation was the pursuit of the *MV Pong Su*, a North Korean-registered drug-smuggling ship that was chased along Australia's east coast by police and the RAN and eventually captured by a Special Forces' boarding party.

Although Canada's geographic location means it is unlikely to face a similar people-smuggling problem as Australia, increasing traffic through the Northwest Passage may result in increased prevalence of the smuggling of drugs and other illegal goods. Eventually, this may result in the Canadian Forces facing a similar situation to the pursuit of the *Pong Su*. Paradoxically, the likelihood of such an occurrence will increase inversely to the assets available in the region to conduct interception operations. Maintaining a proactive maritime surveillance program and, importantly, routinely acting on the information surveillance gathers will greatly deter potential smugglers and may avert the problem from occurring at all in the Canadian case.

A third challenge facing both Canada and Australia is related to the fragile ecosystems that exist in both their northern oceans. Enforcing environmental protection legislation is an increasingly important issue for both countries, as is enforcing fisheries and customs legislation. In this area, environmental and fisheries agencies play the leading role, although military support has generally been required for enforcement purposes. The August 2005 deployment of HMCS *Fredericton* to the Davis Strait, Baffin Bay and the Northwest Passage is a Canadian example of this cooperation.

Finally, both Canada and Australia face challenges to their northern sovereignty. This is a more significant issue for Canada, which is currently facing dual sovereignty challenges at the eastern (the Hans Island dispute with Denmark) and western (the international boundary dispute with the United States) ends of its Arctic waters. Australia is facing a three-way sovereignty dispute with Indonesia and East Timor over access to undersea oil and gas reserves in the Timor Sea, although this has been

partially solved by the signing of the Timor Gap Treaty between Australia and East Timor.⁶

Contemporary Strategies Compared

These contemporary security challenges require a flexible, multifaceted policy response by both the Canadian and Australian governments. The broad variety of challenges has meant that in addition to military forces, numerous other government agencies are now actively involved in the defence of the northern regions of both countries. These agencies include, in Canada's case, the Coast Guard and the Department of Fisheries and Oceans (DFO) and in Australia's case the Department of Immigration and Citizenship (DIC), the Australian Customs Service (ACS), the Department of Environment and Water Resources (DEWR), Coastwatch and the Australian Federal Police (AFP).

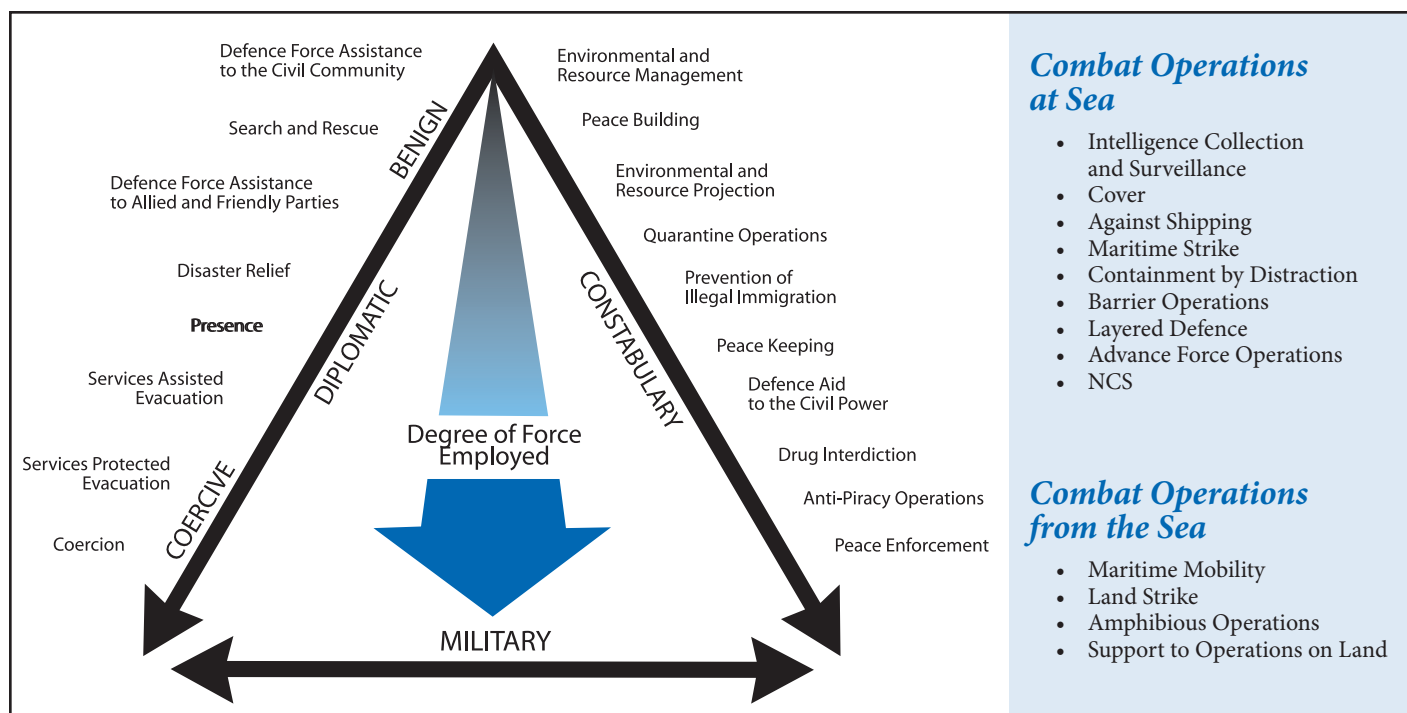
Furthermore, Canadian and Australian maritime, land and air forces all contribute to the defence of the northern regions, undertaking many similar tasks. For example, the Canadian Rangers and Australia's Norforce, both army reserve units, perform almost identical roles conducting surveillance, reconnaissance and sovereignty patrols. Canadian CP-140 Aurora and Australian P-3 Orion (both variants of the same airframe) play a crucial surveillance role over the northern oceans of each country and in both cases this resource is frequently overstretched. Maritime

forces of both countries are required to undertake several tasks that align with the constabulary and diplomatic naval roles established by Ken Booth (see Figure 1).⁷ In particular these tasks include law enforcement, quarantine operations, prevention of illegal immigration, drug interdiction and search and rescue.

The number of agencies involved in northern defence, the variety of security threats that need to be addressed and the environmental challenges that need to be overcome combine to necessitate joint and interagency approaches. In both Canada and Australia, recent security operations have evolved to align with this necessity. An example from each country is illustrative.

In Canada's case, the 2005 northern deployment of HMCS *Fredericton* demonstrates the adoption of a joint and interagency approach. At the request of DFO, *Fredericton* deployed to Canada's northern waters on a fisheries patrol – a textbook example of a naval constabulary operation – with DFO officers aboard to conduct inspections. Fuel resupply was partly provided by the Coast Guard and Aurora aircraft provided the surveillance that allowed *Fredericton* to locate the fishing boats it inspected. During its deployment, *Fredericton* also liaised with the Canadian Rangers, who provided assistance by ferrying crewmembers ashore during the ship's visits to coastal towns.⁸ Overall, interagency and joint coopera-

Figure 1. The Roles of Navies: The 'Booth Model'



Source: RAN Doctrine 1, *Foundations of Australian Maritime Doctrine* (Canberra: Defence Publishing Service (Australia), 2000), p. 57. For the original diagram see Ken Booth, *Navies and Foreign Policy*, New York: Holmes & Meier, 1979, p. 16.



HMCS Fredericton with the CCGS Martha Black alongside during Operation Nanook in August 2007.

tion allowed *Fredericton* to achieve its mission with a great degree of success, demonstrating the utility and effectiveness of this type of activity in the defence of Canada's northern interests.

The number of agencies involved in northern defence, the variety of security threats ... and the environmental challenges that need to be overcome combine to necessitate joint and interagency approaches.

Australia has conducted several northern security operations over the past decade. Most noteworthy amongst these are *Operations Relex I, Relex II, Cranberry, Gabardine* and *Mellin*. In July 2006 this plethora of smaller operations were, along with *Operation Mistral* (which coordinated the defence of Australia's interests in the Southern Ocean), rolled into a single, ongoing operation designated *Operation Resolute*.⁹ Under the operational command of a newly-established Border Protection Command (BPC), *Resolute* involves RAN surface patrol vessels, Orion aircraft conducting aerial surveillance and army provision of surveillance patrols in Australia's north, and boarding parties embarked aboard RAN patrol boats. Hence *Resolute* has been inherently joint from its outset. Furthermore,

Resolute has an interagency aspect, with the Australian Defence Force (ADF) frequently working in cooperation with elements of the other Australian government agencies mentioned above.

Despite their similar operational approaches, a significant difference exists between Canada and Australia at the strategic policy level. Specifically, Australia has a more coherent policy for coordinating its northern defence efforts. The recent combination of several smaller operations into a single larger, ongoing one, centrally coordinated by BPC (which, importantly, has operational control over the tactical deployment of ADF and other agency assets) is merely the latest result of ongoing Australian strategic policy development. Canada, on the other hand, has not at the time of writing developed a detailed, overarching northern security strategy. As a result Canadian efforts to defend its north occur on a largely ad hoc basis and individual operations have often been separated by lengthy periods of insufficient or no activity.

The good news is that the recent creation of Canada Command means there is now a high-level joint command in Canada capable of coordinating ongoing northern operations. Already, Joint Task Force North (JTFN) has been established as a component of Canada Command and naval patrolling of Canada's Arctic has become more frequent than at any other time since the conclusion of the Cold War.¹⁰ Although this constitutes a big step towards enhancing Canada's northern security, at the time

of writing JTFN only has operational control over CF assets and does not have the scope to direct interagency operations to the extent that Australia's BPC can. As a result, the Australian model may provide a valid paradigm for the further development of the interagency aspects of Canada's northern security strategy.

Conclusion

Despite several environmental and historic differences, the security challenges facing Canada and Australia in their northern regions have converged in recent years. As a result, Canada and Australia are for the first time adopting similar strategies to defend their 'empty north.' Owing to the diverse nature of contemporary security challenges – which vary from illegal fishing to sovereignty concerns – effectively overcoming them requires an approach that is both joint and interagency. The implications of this requirement are that defence forces in both countries must now be capable of operating alongside organisations with which they have traditionally had little or no involvement.

Increasingly this is likely to involve (at least temporarily) surrendering operational command to other government agencies that may be better capable of coordinating the overall response to security challenges. Nonetheless, defence forces (and navies in particular, owing to the maritime nature of the northern regions of Canada and Australia) will continue to play an indispensable role in implementing northern security strategies as they maintain unique enforcement capabilities. Crucially, however, in the contemporary environment these capabilities alone are no longer enough to implement a robust, wide-ranging northern security strategy.

For this reason the recent shift in Canada and Australia towards a joint and interagency approach to overcoming their northern security challenges has not only been essential but, thus far, it has also been fairly successful. If Canada and Australia are to maintain their northern security into the foreseeable future this approach will, by necessity, continue. 🇺🇦

Notes

1. For a detailed comparison of Canadian and Australian similarities, see John Blaxland, *Strategic Cousins: Australian and Canadian Expeditionary Forces and the British and American Empires* (Kingston: McGill-Queen's University Press, 2006), Appendix 8.
2. The term 'empty north' was first used in reference to Australia, but it applies equally to Canada. Note also that herein, where the term 'northern territories' is used in reference to Australia it is referring in general to all of Australia's northern regions (including the Pilbara region of Western Australia and Far North Queensland), as opposed to referring to the Northern Territory specifically.
3. Peter T. Haydon, "Editorial: Arctic Sovereignty," *Canadian Naval Review*, Vol. 1, No. 4 (Winter 2006), p. 4.
4. *Ibid.*
5. Paul Dibb, *Review of Australia's Defence Capabilities: Report for the Minister of Defence* (Canberra: Australian Government Publishing Service, 1986), p. 1.
6. See "Timor Sea Oil and Gas – Too Valuable to Ignore?" *Semaphore: Newsletter of the Sea Power Centre Australia*, No. 6 (June 2003).
7. The 'Booth Model' has been embraced by both the Canadian and Australian Navies as a model for explaining their roles and activities. See *Leadmark: The Navy's Strategy for 2020* (Ottawa: Directorate of Maritime Strategy, 2001), p. 31; *RAN Doctrine 1: Australian Maritime Doctrine* (Canberra: Defence Publishing Service (Australia), 2000), p. 57.
8. See Amanda Slaunwhite, "Arctic Insights: Changing our Notions of Canada's North," *Canadian Naval Review*, Vol. 1, No. 4 (Winter 2006), pp. 16-17.
9. *About Operation Resolute*, Department of Defence (Australia), available at <http://www.defence.gov.au/opresolute/default.htm>.
10. Department of National Defence, "News Release: Joint and Integrated CF Operation in Canada's Eastern Arctic," available at http://www.forces.gc.ca/site/newsroom/view_news_e.asp?id=2023.

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Photos: Royal Australian Navy (left), Sub-Lieutenant Fraser Gransden, 2007 (right)

The environmental differences are extreme. HMAS Townsville at speed in Australia's northern waters (left) and the edge of the Arctic ice (right).

The Honour to State

Mark Tunnicliffe

*Dost think in a moment of anger,
'Tis well with thy seniors to fight?
They prosper, who burn in the morning,
The letters they wrote overnight;
For some there be, shelved and forgotten,
With nothing to thank for their fate
Save that on a half-sheet of foolscap,
Which a fool "had the honour to state."*¹

Introduction

Many years ago as a callow young naval officer I encountered an article published in the *Canadian Defence Quarterly* addressing some issue on naval requirements. Penned by an air force officer, it was naturally nonsensical, so I drafted an erudite reply setting the issue to rights. While I had been brash enough to draft an opinion, I was sufficiently cautious to pass it by my Commanding Officer (CO). This was the last I saw of my 'half-sheet of foolscap.' My CO took it upon himself to destroy it, advising that debate on Canadian naval requirements policy in a public forum was wide open – almost. Air force and army officers, retired service personnel, civilians, foreign naval officers, journalists, the general public, and one Canadian naval officer were all free to engage the issue with a will. That solitary naval officer was, of course the Commander, Maritime Command – the remainder were to keep their opinions indoors. Such was my introduction to the famous Canadian Naval Debating Society.

The Debate about Debate

The rules of that Society are legendary: have a shouting match amongst naval professionals in a closed room, somehow arrive at a consensus, and emerge with the agreed answer, like cardinals from a conclave. The answer, like the results of the conclave, is considered to be without error, never to be challenged again. This is an overstatement of course, but there is an element of truth to it. While Canadian naval officers and sailors are never without an opinion on most topics (particularly those relating to their profession), they are remarkably reticent to put their opinions on paper – at least in any open forum. Such is the Canadian naval culture.

There is some merit to this approach as decisions developed in this manner assume the status of an option already enjoying the unanimous support of the naval subject matter experts. There are disadvantages too. Not all the naval community gets its chance behind those doors and exposure to the debate, the issues raised and their resolu-

tion. Sure, the rest of that community can be advised why the decision was taken but this is never as satisfactory to them as observing the process itself. As a result, questions often remain. The façade of unanimity may not be as solid as it seems.

Similarly the 'outsiders,' whether soldiers, politicians, journalists or the general public, do not get the opportunity to observe the policy evolving either and consequently miss an opportunity for an education. That education can be a valuable means of gaining support for the decision – particularly if the decision involves asking the public for money. A proposition developed in open debate by credible people will raise relevant objections, and those that can be refuted or managed will be knocked down. A decision-making process conducted (or mirrored) in an open forum will result in proposals that are more readily accepted by the non-expert community. The enthusiastic British public response to a dreadnought-building program at the turn of the last century developed in an atmosphere of vigorous and knowledgeable public debate conducted in the newspapers of the day. Is today's Canadian public as ready to support our next building program?

There are risks to the open approach however – risks that touch on the nature of debate itself. Debate is a continuum of discussion that can range from options exploration, hypothesis testing, and exploring counter-arguments, to challenging decisions and finally to challenging authority itself. Indeed in an organization like the military in which authority must ultimately rule, uncontrolled debates that degenerate to a challenge are more than useless – they become destructive.

The need for a control on debate becomes crucial when the issue at hand moves beyond fine points of naval tactics or acquisition options to substantive issues that fall within the realm of government policy. The need for caution is obvious. Militaries are organizations intended to change (or prevent the change of) governments by bullet, not ballot. Within the state they have no force peer and without some kind of effective control, the step beyond debating government policy to making it, is for a state's military, a potentially easy one. Either a state has an effective mechanism for limiting military debate on policy or its head of government wears a uniform – eventually.

Democratic Debate

The issue is particularly bedeviling in a democracy in which the indigenous values and culture are antithetical to the autocratic nature of an effective military. The most

practical means a democracy has to control its standing forces is to build the control into the military itself. The question remains how much control is sufficient and at what point does the control become so strict that it acts to the detriment of not only the military but of the larger society as well?

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This is an issue not peculiar to Canada, and many other societies (even some not considered particularly democratic) have encountered and successfully addressed it. The experience of other states is instructive, where many of the classic debates of naval policy have been conducted in open fora by the public and serving officers alike. For instance, the debate on the role of commerce warfare in the late 19th century French Navy found its roots in that state's class conflict. The debate between the upstart *Jeune École* and the traditional French Navy officer class, spilled over into the public domain with toxic effects and with both sides enlisting the support of the people in vociferous argument conducted in public journals. The discussion quickly mixed technology, personalities, opinion and politics generating such chaos that French naval policy-making degenerated to the level described by one observer as equivalent to the behaviour of a "decorticated pigeon." Similarly the inter-war public debate between Admirals Erich Raeder and Wolfgang Wegener² on the operating concepts for a revived German Navy threatened to undermine the reconstruction of the German fleet and the morale of its officer corps. While Wegener's ideas probably had some merit, the debate he tried to encourage was more damaging to the revival of the German Navy than it was worth and his superior, Raeder, quickly shut him down.

Wegener had the misfortune to engage his senior in a debate on naval policy in a public forum and lose. Perhaps a greater sin for a junior officer engaging a superior in a public debate is to win. A classic example of this was the discussion on battleship designs engaged by Lieutenant-Commander William Sims against the redoubtable Rear-Admiral A.T. Mahan in the pages of the US Naval Institute *Proceedings* in 1906. At the end of that exchange of articles and letters, Mahan's arguments against all-big-gun ships were demolished and his intellectual standing amongst his peers in the navy and with the White House compromised.³ Sims survived (he eventually achieved flag rank) because he not only understood the technology of gunnery far better than Mahan but more significantly because of

the behind-the-scenes support of Theodore Roosevelt. While Roosevelt had exploited Mahan's reputation to build political support for the development of the US Navy, his desire to see the all-big-gun ship adopted in the USN was threatened by Mahan's poorly conceived writings on the matter. Using Sims to develop a rebuttal, Roosevelt stayed out of the debate but steered it in the direction he wanted.

The Royal Navy also had its classic public disputes with newspapers serving as favourite venues for naval enthusiasts, journalists and some naval officers to comment on naval policy, ship design and tactics. For the well-spoken the most definitive platform was a letter to *The Times*, with this venerable organ hosting the memorable conflict between Admiral Charles Beresford and Admiral Jackie Fisher, the First Sea Lord, over the latter's policy of concentrating the fleet. Beresford carried the debate on in letters, a book, and into the House of Commons and while it exposed Fisher's policies to a public whose support was necessary for the spending program it entailed, it encouraged factionalism in the navy and insubordination at the highest level.

Professional Fora

Clearly the last century's experiments in public debate on naval policy have yielded a mixed result. While the public in France, United States and England were engaged and enlightened by the discussions that unfolded in the media, the damage to the naval establishment was often considerable. Careers were destroyed, morale assaulted and respect for professionalism and discipline often compromised.

What is needed is a mechanism for moderating debate that allows an unfettered exchange of ideas and arguments but with a filter enforcing a standard for discussion. Such standards include an acceptable level of scholarship and literacy and, most importantly, a professional level of civility. A better option than trusting this to a general circulation popular press, is a journal established for the purpose of exploring naval issues and policed by a knowledgeable and professional editorial board. That board must not only manage the issue of the subject of the debate (vetoing obvious issues such as classified subjects) but the more vexatious problem of managing the level of criticism without compromising either independence or discipline. The decision on where to draw such a line is a highly situational one and to some extent depends on the degree of independence of the journal itself. Should the journal then be a fully independent organ sponsored by a professional association or a publication produced by the navy itself?

Interestingly, it is not necessarily true that naval-sponsored journals cannot be highly critical of policy. One such

publication is *Morskoi Sbornik* founded by the Tsarist Navy in 1848 and which is probably the oldest professional naval journal still in production today. Over its long career *Morskoi Sbornik* has not shied away from attacking the conduct of Russian naval affairs or proposing change (though in the Soviet era suggestions for reform often had to be couched in terms of reporting and commenting on “Western thought”).

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The United States took a different approach and in 1873, a group of naval officers founded an independent association for the promotion of naval discussion. The next year this US Naval Institute published a journal (*USNI Proceedings*) as a debating forum for serving naval and marine personnel of all ranks, active and retired and interested civilians. Although the Chief of Naval Operations is the chairman of the institute, it is a non-governmental organization that fiercely defends its editorial independence from the US Navy.

While the British had similarly established the Royal United Services Institute in 1831 as its forum for sponsoring professional discussion amongst the services, it was not perceived as particularly friendly to the participation of junior ranks. Consequently Captain Herbert Richmond founded the *Naval Review* in 1912 to stimulate intellectual development and training of junior officers though written debate. As a condition of Admiralty approval, the *Review* was (and still is) published under fairly strict editorial control and distributed to a restricted membership society with limited exposure to the exterior press.⁴ These controls have resulted in stimulating some lively discussion in the Royal Navy although they have occasionally prohibited some writing of significant merit from migrating beyond its covers.

Canadian Discussions

So how does Canada manage this issue of conducting useful, free and public debate amongst naval professionals? Quite simply – by forbidding it. Under the provisions of QR&O 19.36 “no officer or non-commissioned member shall ... publish in any form whatever any military information or the member’s view on any military subject to unauthorized persons.” This direction applies to any “paper or script on any military subject for delivery or transmission to the

public” or the publication of the “member’s opinions on any military question that is under consideration by superior authorities,” and prohibits any form of public discussion on a “subject of a controversial nature ... pertaining to public policy” without express permission of the Chief of the Defence Staff (CDS).

Such definitive direction throws a lot of very cold water over any tendency to public debate in Canada on naval policy and decision-making. While maintaining standards of decorum, professionalism in conduct, and apparent unity of purpose, it inhibits much opportunity for the public to gain insight into how defence-related public policy decisions are arrived at. Eventually, of course, the public can gain access to some of the decision-making documentation through requests made under the *Access to Information Act* (ATI) but the military has little opportunity to present such information in context and the public has to know it exists to make the request in the first place. Worse, the ATI process places the state’s navy and its citizenry in a *de facto* adversarial relationship.

Communications confined exclusively to members of the CF are exempt from QR&O 19.36 provisions, permitting the existence of in-house organs like the *Maritime Warfare Bulletin* published by the CF Maritime Warfare Centre, and the *Maritime Engineering Journal* (by DGMEPM). Such journals largely confine themselves to the technical or professional issues falling within the mandates of their sponsors and tend not to welcome contentious policy discussions.

This was not always the case. Prior to World War II, the *Canadian Defence Quarterly*, then supported by the Department of National Defence, provided military officers a forum for public intellectual debate without fear of censure. However the *CDQ* lost its support after the war. Continuing as a privately-funded enterprise in an atmosphere of increasing anti-intellectualism in the CF, it evolved largely into a platform for discussion of Canadian military affairs mostly by academics rather than by military professionals.

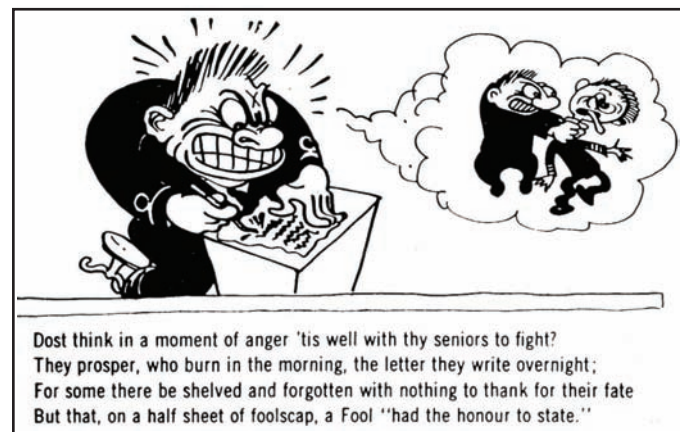


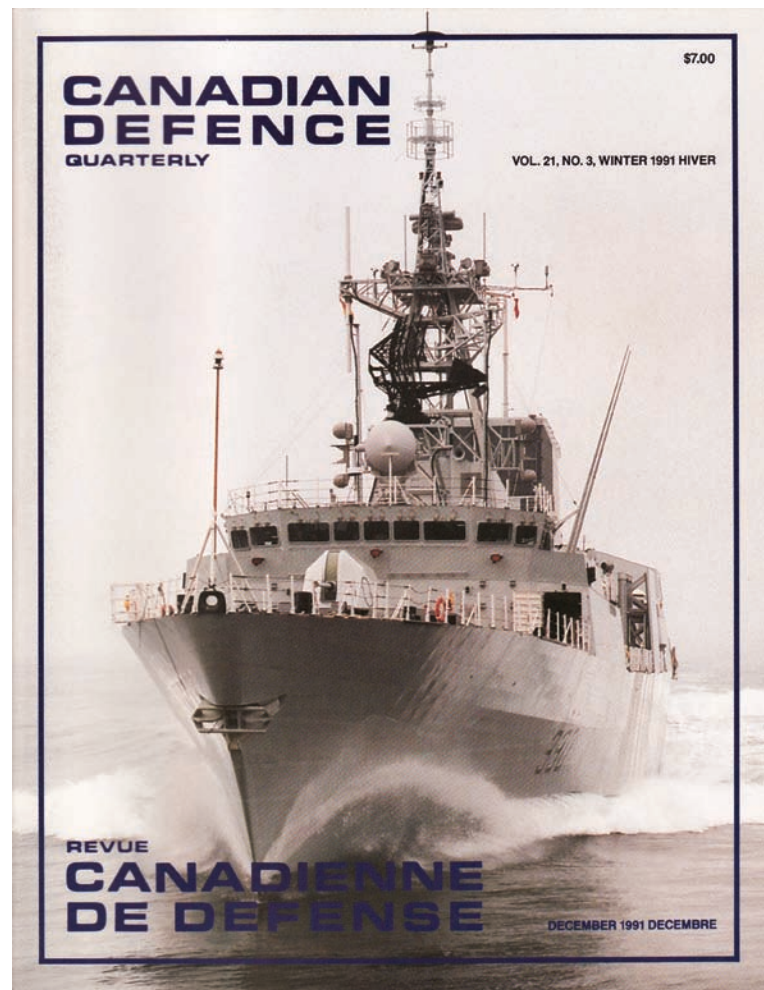
Photo: From *Crowsnest*, March 1957

As part of the investigation of the Somalia affair, the intellectual development of the officer corps was questioned⁵ resulting in the direction by the Minister of National Defence to develop a CF-sponsored journal for scholarly debate.⁶ The consequent establishment of the *Canadian Military Journal* in 2000 made for an uncomfortable fit with the precepts of QR&Os. The inaugural issue contained a welcoming note from the CDS encouraging the kind of open debate that the journal was intended to sponsor, promising that the provisions of QR&Os would be changed to permit members of the CF and public service to “express informed personal views and opinions on defence issues.”⁷ These changes have yet to be made and *CMJ* relies on its presumed delegated authority to print opinions and debate. While the quality of the writing in *CMJ* is excellent, most of the more ‘edgy’ criticism and commentary still emanates from civilian, retired and academic contributors. Additionally, the policy content is generally (and not surprisingly) CF generic rather than service specific – at least in terms of developing a service-oriented discussion over a series of issues.

The Canadian Army has recognized the need for service-level debate and its solution offers a model to Maritime Command. Stung by post-Somalia accusations that its officer corps was the least educated of all the services, the army has over the past decade encouraged active and open debate as part of its policy and personnel development. Part of this process included the evolution of the *Army Journal* – “a refereed forum of ideas and issues” on training, doctrine, ethics, leadership, technology and history in the Canadian Army. Produced under the authority of the Chief of Land Staff, it is considered an essential tool for the intellectual development of the leadership of the army and part of its concept development mechanism. Widely distributed to foreign militaries, members of the press and academia, it makes no attempt to hide its opinion-development process from the public.

The Canadian Naval Debating Society – Revisited

The Canadian Army has incorporated disciplined public debate into its concept-development process and the results are starting to show. Can the navy now get its debating society out from behind locked doors, discipline the discussion, and derive similar benefit from the intellectual horsepower of the entire service? With a much lower manning level, the navy does not have the personnel resources to duplicate the army’s in-house approach. However, leaving it to an outside agency to handle lends neither the authority of CMS to the process of debate nor the confidence amongst serving naval members that they are free to raise controversial policy-related issues in an



Cover of the Winter 1991 edition of the *Canadian Defence Quarterly*.

open forum. It has rarely happened in privately-sponsored journals in the recent past and, quite frankly, is not happening in *Canadian Naval Review* (CNR) today as recent articles (from retired officers) attest. Nevertheless CNR has resources and experience that would be invaluable to establishing a public forum that encourages serving naval personnel to express and develop their opinions. There is potential benefit in adapting the army’s approach and turning *CNR* into a journal published under the authority of CMS with an editorial board that includes the expertise of both senior maritime and Dalhousie University staffs.

The conversion process would not be instantaneous, and confidence amongst the partners, contributors and readers would have to be earned over time. Most importantly, an active effort to enlist and reward interest from the lower decks would be essential to success – an officers’ debating society would largely be irrelevant to 75% of the navy and cut off a valuable source of ideas and experience. The process of naval concept and capability development has to be a function of every service member.

The navy is too short of people these days to leave any of its

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Ports and Security

The Honourable René J. Marin¹

To my knowledge, Canada was the first country to have been exposed to a major disaster in a seaport. On 6 December 1917, a collision occurred between the *Mont Blanc* and the *Imo* in the Port of Halifax, Nova Scotia. The collision triggered the explosion of 3,000 tons of picric acid, dynamite and cotton. The result was 1,600 dead and 9,000 persons severely wounded. Jetties and ships were lost, and most of Halifax was wiped out by the subsequent fire. In 1917, the population of Canada was approximately eight million so you can imagine the impact of the catastrophe on a relatively small population.

The *Mont Blanc* was in port as part of a convoy of ships, in the context of the allies' participation in World War I. The Port of Halifax was a regular stop. Needless to say, the danger represented by the cargo was unknown to the port authorities. Had they known about the cargo, the ship would never have been allowed to penetrate through the port to Bedford Basin. If it had, I am sure all navigation would have been suspended.

The Modern Context of Safe Ports

Is such a disaster likely and possible today? Have port authorities put in place mechanisms to avoid such a catastrophe? Have the governance principles of the port authorities charged with evaluating risks shown sufficient insight and authority so that the possibility of such disasters can be avoided? One must examine how decisions are made by port authorities, how port authorities weigh budget requirements against security needs. We must ask whether, in some cases, security has not been sacrificed on the altar of expediency to present a better balance sheet in an Annual Report. In a good governance model, evaluation of risks is constantly kept in mind to ensure decisions are not only proper but enlightened and for the greater good of not only the enterprise but everyone associated with it. Due diligence is required.

The Halifax Explosion places in context the challenge we still face today as we not only look at the new International Ship and Port Facility Security Code (ISPS Code) but reflect on lessons learned from history. The most important question is whether a Canada-wide agency ought to have responsibility for port security. The issue of port security is far too important to be left to individual ports, which is currently the case. It is a national issue!

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In an age where terrorism is a constant threat, US legislators have been busy enacting laws in relation to safe ports for the United States. The September 11 Commission provided the impetus for change. When legislation comes into effect, no ship will enter a US port without that port having full knowledge of its contents. All containers will have to be screened before entry into a US port. The US House of Representatives and the Senate will pursue that goal aggressively. The Department of Homeland Security (DHS) has the mandate to apply the legislation, and both Houses will monitor its application.

According to the new legislation, most screening by US authorities or persons approved by the United States for that purpose would take place at the departure point of containers. They would be pre-approved for onward shipping to the United States. Some would be equipped with monitors to detect tampering, seals would be installed, scanning could include imaging, radiation detection, optical container recognition (OCR) and tracking by global positioning system (GPS). Any suspicious container on a ship could result in the entire shipment being returned to its port of origin. Ports of call, for ships whose ultimate destination is a US port will have the responsibility to meet DHS guidelines before the departure of visiting ships.

How many countries have ports equipped with the facilities to do this or are even remotely preparing for this requirement? Countries face the choice of accepting these new requirements or suspending maritime trade with the United States. The challenge is mind-boggling; container ships can carry from 500 to 1,500 20-foot containers. At one point, in the not distant future, our ports will have to face the changing reality of maritime security.

In Canada, almost 450 million tonnes of cargo move

Photo: Maritime Museum of the Atlantic
<http://museum.gov.ns.ca/mma/Atoz/1halexpl.html>



The SS *Imo* aground in Halifax Harbour after the December 1917 explosion.

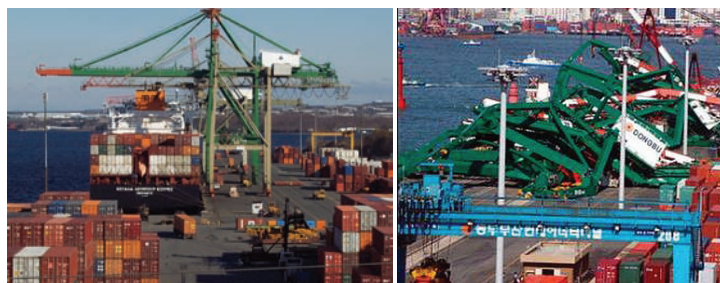
through Canadian ports each year. One-third of this is domestic trade, one-third is trade with the United States and the final third is for the rest of the world. It must be kept in mind that 90% of global commerce moves by sea. It is an absolute necessity that we have a strong navy to keep our sea lanes accessible for our trade.

In this context, is the ISPS Code sufficient to ensure a state of increased security that would make us all comfortable? Will the code be enough to meet US requirements? In what way will the code be applied? What are the minimal standards imposed? Are they sufficient? Who will enforce them? Are they compatible with US legislation on safe ports? Who will review changing risks in a changing context? What will be the dispute-settling mechanism? What will be the chosen forum? The International Court of Justice is too slow and cluttered to accept this additional role.

The French author, Maurice Sachs, said “*l’univers entier se conduirait par une seule loi, si cette loi était bonne.*” Does this reflection apply to the new maritime and port security measures? In 1992, I was asked by the Board of Directors of Canada Ports Corporation to review the security of ports within Canada. I reached the conclusion that existing financial and administrative tensions inevitably collide with the requirements of security in our seaports. I made several recommendations; few were implemented in Canada although some US ports took notice and changed their security system. Individual ports cannot be allowed to apply unsupervised security standards – maritime security is too important to be left without national standards.

A seaport is too often perceived solely as a business. Spending large amounts on prevention and security measures does not rank at the top of its concerns, as yet! After all, a port is a place where trade flourishes, where the country’s business is paramount since we need goods to arrive and leave the country quickly for a healthy economy. Yet, in this age of terrorism security will inevitably delay ships and inconvenience many. Think of the delays now encountered in air travel; yet it is a microcosm of what our ports could inevitably become. However, this is the cost of the threat of terrorism. We must be aware of the risks and adopt adequate measures.

We must recognize that each port is in competition with a neighbouring port. All ports have the same objectives and face the same risks. I am not faulting the financial objectives of ports. The fact is that the less costs associated with entering and leaving the port, the more ships will use it, and the more affluent the port will become. This is, naturally, the first concern of a port authority. Yet in the new world order, security will displace these considerations. One



Order can quickly become chaos. Fairview Terminal, Halifax (left) and an unidentified Asian port (right).

Photo: Peter Haydon (left),
Internet photo (right)

central Canadian agency must assume full responsibility for security in our seaports just as it has in airports.

Without appropriate security mechanisms container ships would have no choice but to avoid our ports, unload their containers elsewhere and ship to Canada by rail. The infrastructure exists to do this – each port in Canada has its US twin.

Recently, a Canadian newspaper noted that a port was hesitant to install facilities capable of examining containers to determine the safety of incoming cargo, a process which takes a few minutes per container. It reported that the port authority was concerned about the delay to shipping, the economic loss and the impact on productivity if this machine was installed. The concern is legitimate but misplaced; it is out of focus with the legislation enacted in the United States and now applied by the Netherlands, Belgium, Israel and other countries, sometimes much less affluent than Canada. We are lagging behind the rest of the maritime world. When will we catch up?

The human element is often the Achilles’ heel of maritime security.

A decision not to install adequate security mechanisms must only be reached following a complete evaluation of risks assumed. Where there is an opportunity to improve safety but someone, with full knowledge, makes the decision not to take such steps, there are legal consequences. Damages, loss of life, injuries and other consequences will inevitably be visited upon the port in the event of legal action taken for a claim in damages. Each decision, in the context of maritime security, must be taken at a cost. Each decision must be guided by proper principles of governance and evaluation of risks. When risks are assumed as a result of cost-cutting, the inevitable occurs. A port is a high-risk operation – one accident, one death, one collision, one loss of cargo may not only affect its profits.

Ships in Port or at Sea

Navigation is part of the phenomenon of globalization. Ships have mobility and inevitably may place several countries at risk unless there is firm control placed upon ports and ships at sea to ensure national security.

Protection of ports and our seas, however, is not just about terrorists, it also includes protection against pollution. Our seas are becoming more and more polluted as a result of irresponsible carriers sometimes totally unconcerned about polluting our water.

The human element is often the Achilles' heel of maritime security. Do we know who is employed in our ports, onboard our ships, or visiting as passengers on our ships? Do we know what passengers bring onboard? Does a port authority know enough about its employees, their legal/criminal backgrounds, possible association with terrorist or criminal groups or whether they are under police investigation? What exactly is known? How current is this knowledge? We do not yet have national standards in place.

Regrettably, I have concluded from close examination that most port and shipping authorities know little about their own employees. There is often resistance by unionized employees to provide such data. Should this be an individual decision? I think not!

It is not only port authorities that are ignorant about employees, and thus vulnerable. This can also be true of shipping lines. The captain of a ship carrying passengers or merchandise often has no specific knowledge of the background of personnel. Reliability is a necessity when it comes to personnel onboard ships. Without strict control measures, users of a port and the security of ships are at risk. It is the obligation of the port authority to control access to ports, ships, merchandise, entry and exit points of a port, including the departure and arrival of ships. Reliability and full knowledge are indispensable. Without full reliability of staff in maritime establishments, users and ships will be at risk. Elaborate mechanisms of control must be imposed and soon.

At sea, on a passenger ship, the reliability of the personnel is even more important since the risk is higher. However, I have to ask whether this aspect has been sufficiently examined. Has it been the focus of sufficient risk assessment? One or two members of a ship's company onboard a passenger ship can create, and indeed on occasion have created, total chaos.

In terms of passengers, do we carry out the kind of personal and baggage search we need to implement proper security on a national scale? Have we sufficiently considered that, once passengers are in port for a visit, they can bring back dangerous goods or prohibited weapons and possibly escape observation? This is an important concern. In some ports, ships will do their own security screening; in

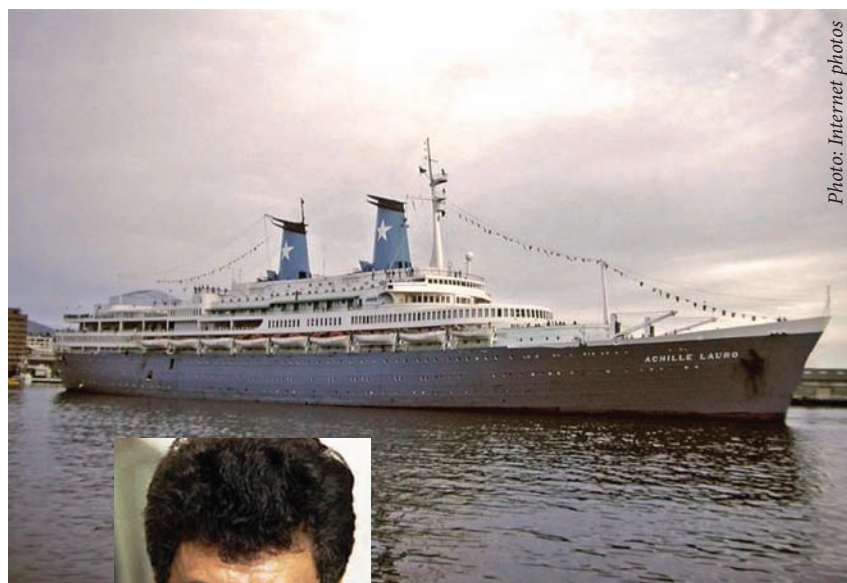


Photo: Internet photos



SS *Achille Lauro* and the terrorist Abu Abbas who orchestrated the hijacking.

other cities such as Vancouver, the Cruise Ship Association will use private security to scan passenger hand luggage. Metal detectors may be used although standards vary. The Port of Halifax, through the Canadian Sailing Association (with funding assistance from Transport Canada) has promised screening and scanning of 'large' bags and carry-on luggage for the summer of 2008; however, it proposes to limit the measure to 'homeporting' – i.e., passengers boarding (excluding passengers returning to the ship after shore leave). There does not appear to be any systematic process of checking longshoremen or officials boarding at dock level; the only control is a member of the crew at the gangplank. Why do we not have national standards?

Have we forgotten the *Achille Lauro* incident which occurred on 7 October 1985? The horror of this incident, the brutal loss of a life, the ensuing terror onboard the ship cannot be forgotten. We must rededicate ourselves to greater diligence and prevention. I note that some passenger ships retain the services of the local constabulary. Do they know enough? Do they understand the risks sufficiently? They may be peace officers, but are they qualified to assess the risks of returning or homeporting passengers? The showing of a ticket is surely not, to my mind, sufficient to ensure security. It is but an acknowledgment that the fare was paid. Once again, for economic reasons and in order not to delay the departure, both port and ship security are often reduced to little more than a police presence.

There can never be proper port policing without a dedicated port police with special skills. Using regular constabulary forces to police a port facility is inconsistent; municipal officers often lack the skill to deal with smuggling, illegal port activities, stolen goods, protection of passengers, containers and theft. Private security in many cases is less

effective because of the absence in many cases of strict provincial (or federal) standards, poor pay, poor training, attrition and lack of interest. Many US ports have doubled their policing in recent months – Los Angeles has doubled its port police to 200 – while the Port of Vancouver, one of its competitors, has no dedicated port policing. The same comparison can be made between the port of Halifax and the port of Boston.

In the past 13 years, as many as 14 passengers have gone missing from passenger ships. No independent investigation has ever taken place! There is no independent public accounting.

Cargo ships have increased in tonnage. Yet more and more they rely on electronics to perform many of the onboard tasks and the number of personnel aboard has decreased. The officers usually have the training and professionalism required but the same cannot always be said in relation to all crew members who are often recruited without much concern as to their background. Shippers often resort to the lowest paid available labour. Reducing cost is paramount. Aside from permanent crew, others are often not subject to background checks and assessment of reliability.

Mechanisms, guidelines and electronic devices must be developed to protect these ships. But even if this is done, these same mechanisms are not sheltered from abuse by unscrupulous crew members. A GPS system can be invaluable to the captain, especially if it is situated in more than one location onboard ship but an ill-intentioned crew member could locate and disable these systems. The criminal element can and, in some cases will, infiltrate the crew. What, if any, steps are being taken to prevent this? We must ensure that crews have the required reliability. All electronic systems are subject to tampering, including the most sophisticated protection systems.

It seems to me that two important elementary steps are required to ensure maritime security. First, there must be increased responsibility taken by countries which flag ships. And, second, shippers, must pay special attention to the reliability of crews.

Lessons Learned

It would be totally illusory to speak of maritime security without speaking of our environment. I respectfully suggest transportation of fuel, toxic material and, yes indeed, nuclear waste and material must be the focus of further reflection. The danger of pollution in our ports, our water, our oceans is of capital importance. Yet, during my review of Canadian ports, I have often noted ships polluting the port in transferring fuel, adjusting ballast and in some case flushing waste carelessly in a port. Can we continue to allow these activities to occur?



Photo: Internet photos



Accidents happen!

I invoke the regrettable incident of the *Exxon Valdez*. On 24 March 1989 the *Exxon Valdez* crashed on reefs off Alaska and lost 41 million litres of crude oil in Prince William Sound. This happened notwithstanding the fact that the owners of the 'supertanker' had earlier solemnly given US authorities their assurances that the company was ready at all times with a specialized crew of more than 100 persons to clean up in the event of a disaster at sea. Yet, over the years, the crew had been reduced to a few hands for economic reasons. These few persons were unable to cope. The reaction of the owners of the *Exxon Valdez* was slow.

The initial risk associated with the construction of the supertanker had been forgotten. Someone failed to carry out regular risk assessment; once the risk was evaluated, it was filed away as a concern and not revisited on a periodic basis, as required. Risk assessment must be a constant re-evaluation on a recurring basis.

This accident was a catastrophe of unprecedented dimension – 2,500 kilometres of coastline were polluted. Several other coastal countries have suffered the same fate; ships were off course as a result of storms or other elements, and crashed on their coasts. In the case of the *Exxon Valdez*, the owner had to pay \$2.5 billion to clean the water and coastline. Yet, it was not to the satisfaction of those affected. In addition, its owner paid a fine of \$1 billion and \$15 million in punitive damages to 10,000 commercial fishers. These amounts are still under appeal in the Supreme Court of the United States by the ship owner. A captain in a state of intoxication caused this ecologi-

cal disaster. One is justified to ask about the duty of care practiced by the owner and put the issue in the context of the need to know shipboard personnel.

Again, how well do we know the personnel onboard each ship, including officers? How often are captains scrutinized for behaviour problems and prohibited practices? To my mind, a strong set of regulations is not only required but realistic. For the protection of all maritime countries, regulations must be promulgated by a world organization and supervised by an international body with the obligation to exercise due diligence in its assessment of risks at sea and in port in a worldwide context. I respectfully suggest that such an organization should have the exclusive right to inspect and control all ships that access our ports and navigate our oceans. Ships should only be licensed after periodic examinations, and only those licensed would have the right to enter a port or navigate our seas. Without authorization, the ships would simply not be able to go to sea. Is this utopia? No, it must be our long-term objective. We must strive to rid the maritime world of unseaworthy ships.

Ships should only be licensed after periodic examinations, and only those licensed would have the right to enter a port or navigate our seas.

With some hesitation, I approach the danger of terrorism. Sandia National Laboratories has predicted that a terrorist attack on a liquefied natural gas-carrying vessel passing Boston Harbor, producing a hole in the side of the tanker's hull, would if ignited create a thermal blast that would set a fire in Boston which could melt out to 1,281 feet, inflicting second-degree burns up to 4,282 feet away. Transpose this to many North American ports and risk assessment is real in that context! Think of the loss of life and damage which could be caused in the ports of Halifax or Vancouver in a similar scenario!

Let me mention other incidents of maritime terrorism. On 12 October 2000, the USS *Cole* stopped to refuel at the port of Aden in Yemen. A handful of terrorists were regrettably allowed to approach *Cole* and attack it. The result was 17 deaths, 39 wounded. I note in passing that Aden is no longer an authorized port for Western navies. In October 2002, the French oil tanker *Limburg*, was rammed by a small craft carrying TNT, killing one crew member and spilling 90,000 barrels of oil into the Gulf of Aden. In the Philippines an Al Qaeda-linked terrorist group claimed responsibility for the bomb which sank a ferry claiming 116 lives in January 2004.



The French tanker *Limburg* on fire after the terrorist attack in October 2002.

Our naval forces have now taken increased security to avoid such tragedies. The Canadian Navy has substantially increased its security measures when approaching and while in port. Yet, it is not totally protected from container ships entering our harbours with unknown cargo.

Conclusions

In conclusion, I again respectfully suggest that port and maritime security is too important to be left to cost-conscious port authorities. There should be a single Canada-wide authority responsible for this. As well, there should be neutral international and independent oversight of all aspects of maritime security. Each country should have a Maritime Security Agency to oversee the administration of international maritime requirements and exchange views with other countries on a regular basis through a central international body.

It would be unfortunate, however, if before we implement any measures, we did not look back upon lessons learned, experiences collectively lived, and translate these lessons into concrete preventive measures. I trust we will individually and collectively approach our challenges, with vision, caution and enlightenment. In the name of humanity, we have no choice! 🇨🇦

Note

1. This article is based on the text of an address to the First International Conference on Maritime Security in Nantes, France, in 2005. This text was written originally in French and translated to English, and has been updated for publication here.

The author is a Visiting Professor at the Faculty of Law at the University of Ottawa and the author of several publications in Canada and Australia on the subject of security; he is an honorary life-member of the International Association of Airports and Seaports Police.

Implications of Climate Change on Eastern Canadian Waters

M.R. Morgan, PhD, FRMetS¹

Any increase in the amount of open water in the Canadian Arctic as a result of extensive melting of glaciers and polar sea-ice is unlikely to occur in an orderly or convenient fashion. In fact, an interim period of environmental chaos is more likely, with the Greenland and Labrador Currents carrying massive amounts of Arctic ice debris and ice water southwards. This will present a significant threat to the marine environment of the Scotia Shelf and quite possibly result in a diversion and an accompanying decline in the effectiveness of the Gulf Stream.

This article will show how the IPCC assessments of climate change fail to provide reliable marine operational guidance in Canadian waters.

The prevailing global warming hypothesis, which was created mainly by atmospheric scientists and meteorologists, is being challenged by researchers in centres of expertise in oceanography, solar physics, geophysics, and various palaeo-sciences. The climate predictions of these scientists differ widely from those of the Intergovernmental Panel on Climate Change (IPCC), and this presents problems for marine policy-makers and planners. This article will show how the IPCC assessments of climate change fail to provide reliable marine operational guidance in Canadian waters. This will be done by examining five factors:

1. deficiencies in the IPCC database;
2. the ice-melt enigma;
3. the influence of the Thermohaline Pump;
4. rising sea levels; and
5. solar variability predictions.

Climate is always in a state of change as it endeavours to maintain balance in a complex, solar-driven geo-dynamic system. Since the 1970s, evidence of current global warming has been apparent in the satellite database, and some anomalous temperatures and ice-melt conditions have been recorded locally and regionally. Recent recalibration of the satellite data by the NASA Goddard



An ice lead in Grise Fjord.

Institute of Space Studies (GISS) has found that global warming in the 1990s has been no greater than that of the 1930s. This means that assessments issued by the IPCC have been based on data of dubious scientific accuracy. Further, attributing human activity (qualifying it by the rise in CO₂) as being the major contributor to climate change is far too simplistic.

The Earth has been subjected to several Ice Ages, the last ending about 12,000 years ago when the Sun, as the dominant but variable influence on the Earth's climate, entered a period that provided the current climatic conditions for human habitation (the Holocene). Based on historical records and proxy evidence (tree rings, ice cores, etc.) from before the Industrial Age, natural climate variations show periods of warming and cooling. These suggest changes in global temperature similar to, or even greater than, those experienced in the last 200 years of instrumentally recorded data.² In 1990, an international group of researchers from many scientific disciplines came to a consensus that the definable cycles in solar variability responsible for climate changes during the past millennium still exist today. In particular, they agreed that the Gleissberg and Suess solar cycles, of approximately 80 and 200 years respectively, would determine the longer-term changes.³ Although this carefully considered opinion was



Photo: Formation Imaging Atlantic, 2005

An Arctic reality; one of hundreds of icebergs in the Davis Strait.

available to the IPCC for its climate assessment investigations, the solar cycle components were never thoroughly examined because the desired objective of the IPCC was to establish that greenhouse gases (GHGs) were the main components of climate-change and that GHGs from fossil fuel emissions were going to increase rapidly as a result of population expansion and industrialization. Consequently, alarming changes in our environmental habitat would be inevitable unless drastic measures to reduce such emissions were instituted.

No instrumental database covering the last 200 years is available except from Western European astronomical observatories and geophysical research centres. Those records demonstrate cooling by the Gleissberg Cycle, in 1810-25, 1880-1895 and 1960-75 and warming by the Gleissberg Cycle in conjunction with the Suess Cycle during 1975-2000 as the primary cause of current warming trends. Moreover, the linear trend in temperature during the 19th century was minus 0.7C which matches the positive trend of the last century and suggests that this may be typical of the natural variability in temperature. The period between 1600 and 1800 (which includes the Maunder Minimum cooling anomaly) supports this hypothesis by proxy data and a few instrumental reports.

Deficiencies in the IPCC Database

The main scientific deficiency in the instrumental database since 1900 is the quality of the data. In this, the lack of standardization in observations and global coverage, as well as the prevalence of observation and communication errors by reporting ships lead one to question the reliability of global data used by the IPCC. For instance, ship reports provide measurements of sea temperatures at, or just below, the surface while over the land, air temperatures are measured 2.0 metres above the surface and thus lack homogeneity. Only over the past 30 years has a reasonably homogeneous surface temperature database been available derived from a satellite equispacial-reporting network. Researchers at the Hadley Climate Centre (UK) estimate this lack of conformity in the IPCC temperature

base has lead to over-estimated global temperature predictions models by as much as 40%.⁴ Contrary to some of the alarming predictions in IPCC models, this finding leads to predictions of warming now expected to be less than 0.15C per decade this century. But this premise has not been accepted by the IPCC or been widely publicized.⁵

The Ice-melt Enigma

Ice concentrations, even when observed by satellite, have errors with respect to open water. In winter, open water pools (*polynyas*) and leads can be short-lived occurrences. In summer, layers of melt water on multi-year ice surfaces can be erroneously recorded as open water, often making reports unreliable during this season.⁶ Many polar regions actually experience little precipitation, but the IPCC expects that warming will give rise to more cloud, rain, and snow in higher latitudes. One has to ask whether the implications of this 'feedback' premise have been fully recognized? For instance, more snow will insulate the ice from melting, change the nature of the surface so that it will be more reflective of warming, and will then be compacted and increase the ice depth. Already this is being recorded at most coastal stations around Antarctica, on the Greenland plateau and high Alpine peaks in Europe.

Variability in the Arctic ice cover is both regional and global. Regionally, there are two circulations that dominate ice movements. The Beaufort Sea Gyre in the western Arctic and the Transpolar Drift in the eastern Arctic. These diverge near the North Pole and create areas of thin ice and open water around the northern Greenland coast. This permits Russian icebreakers, with satellite guidance, to function as cruise ships and reach the Pole in summer, taking advantage of the natural seasonal variability in the ice cover of this region. The Beaufort Sea Gyre and Transpolar Drift oscillate, causing periods to occur when the Gyre is forced towards the Alaskan Coast. This closes the entrance to the Northwest Passage and opens up the Northeast Passage across the Siberian coast. Recently this situation has been in the reversed phase with open water on the Alaskan coast.⁷

The Arctic ice melt comprises fresh ice water, remnants of first year ice sheets, broken multi-year ice packs, icebergs, and bergy bits, all of which are carried into the North Atlantic via the coastal currents off Greenland, Baffin Island and Labrador. Some of this ice may have been circulating for two years, or more, before exiting into the warmer waters of the North Atlantic. Even the worst ice conditions along these coasts can occur during periods of regional warming. For instance, during the warm decade of the 1990s four periods of ice cover at the end of the summer melt were above 30 year average levels. In 1993 the ice was so heavy around the southern coasts of Greenland that the summer re-supply operations by sea were restricted. During the seal hunt in 2007, ice off Newfoundland made operations unusually hazardous and some boats were ice-bound and lost. Local ice cover is often there by advection from a remote source and not directly related with regional climatic conditions.⁸

Media opinions surmise that open water will soon permit shipping throughout the Northwest Passage in summer. At a recent conference at Dalhousie University on this subject, an experienced Arctic pilot was more cautious. Not only is the Northwest Passage likely to have ice choke points during most summers, but areas of navigable first year ice usually contain embedded multi-year ice which is a hazard to navigation virtually equivalent to an uncharted submerged rock. Further, open water is short-lived and not necessarily completely free of ice hazards.

The Arctic Sea and Canadian sea areas that are ice covered in winter extend over an area of about 10 million sq/km., which some IPCC modellers have predicted could be

ice-free by 2050. It is foolish to presume that all this ice is going to disappear into the water column *in situ*. Most of it will take the same path as decaying ice today via the Greenland, Baffin and Labrador Currents which are loaded with decaying ice sheets, melt-resistant multi-year ice, and icebergs.

The Labrador Current is normally turned by the Grand Banks into the North Atlantic, but if doubled in volume, increased in speed and over-loaded with ice it would turn at Cape Race and flood the Scotian Shelf. The cold coastal current, which exists from Nova Scotia to North Carolina in winter, could be increased in volume and intensity, turn at Hatteras and affect the departure point of the Gulf Stream into the North Atlantic. This current, which is of great climatic significance, would be weakened and diverted into the Bay of Biscay. The Atlantic and Norwegian extensions of the Gulf Stream would cease to warm the UK and Norway and the Irminger tributary would no longer affect Iceland, southern Greenland and the Davis Straits (as shown in Diagrams A and B).

The Greenland Sea and the Barents Sea would be ice covered in winter and the Northern Hemisphere would experience cooling similar to the minimum cold periods of the last millennium. Charts of the North Atlantic, based on ships' logs during the severely cold Maunder Minimum era 1650-1710, show the Gulf Stream flowing eastwards across the North Atlantic to the coast of Portugal and not through the Faeroes Gap. Ice extended from Greenland to the Faeroes, there was fast ice around the Orkneys and Shetlands, the North Sea was frozen in winter, and the Baltic was completely closed.⁹



Diagram A. The strong Thermohaline/Gulf Stream surface current alignment.

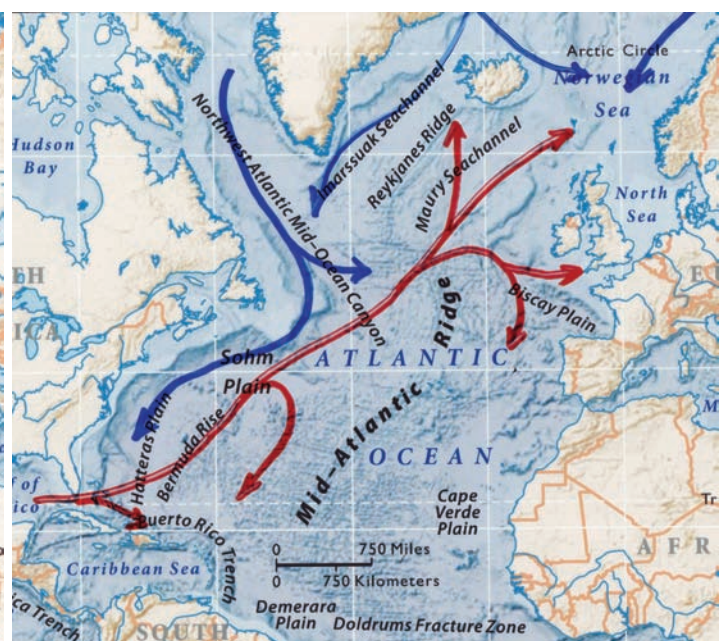


Diagram B. A weak phase alignment.



HMCS *Fredericton* near the entrance to the Northwest Passage.

The Thermohaline Pump¹⁰

In the 1980s, bathythermograph deep-ocean research led to a theory that a global deep-current system was formed by the convection of highly saline surface water undergoing evaporation in polar seas. This was indeed the case in the Greenland and Labrador Seas where warm tributaries of the Gulf Stream were present. Evaporation in these areas caused cooling of highly saline surface layers that would sink until in density balance with the ambient North Atlantic deep water (NADW). The NADW moves slowly to the tropics, where the warm water it displaces is blown by the trade winds into the Gulf of Mexico to form a head of high water that exits through the narrow gap of the Florida Straits, thus creating the fast-moving Gulf Stream. It is the priming of this polar seas pump, in both hemispheres, which is the principal determinant of climate over the 71% of the globe covered by seawater. Moreover, because the Northern Hemisphere is more land covered and heavily populated, it is the Atlantic pump which is vital to climate change affecting the habitat of so many humans.¹¹

This natural thermostat of the Holocene returns the globe back to a cooler period when it gets over-heated and the polar ice caps and glaciers melt excessively. If the polar seas are covered by too much buoyant ice melt (fresh water covering the denser saline water), then convection is reduced and the Gulf Stream pump weakens. The warming of the 1930-50 period and ensuing ice-melt conditions, weakened the Gulf Stream for the next 25 years and lowered the Northern Hemisphere temperature by 0.2C during the 1950-75 period.¹²

Major centres of oceanographic research in the USA and UK have been issuing warnings to governments and the media that the Thermohaline Pump is currently in a critical condition. Should ice melt occur at the rate forecast by the IPCC, then the pump will fail and this century will experience a Little Ice Age cooling event. The IPCC is

aware of this possibility but prefers to consider it unlikely.

Rising Sea Levels

Historical records of sea level derived from tide gauges indicate that there has been a rise in the order of 2-3 mm per year over the past 100 years with no apparent acceleration. This suggests that the rise is mainly due to isostatic changes in ocean bottom topography, tidal effects, relative speed of rotation of the Sun/Earth or some other such natural cause.¹³ Currently glacier melt is believed to be in balance with increased snowfall in

some parts of Greenland, Norway and more generally in the Antarctic. Precipitation is inadequate in many regions and terrestrial water sources are under stress to meet the current global demand for water. The rising population, increasing industrialization and the need to irrigate more semi-desert areas for agricultural purposes, will inevitably require more potable water to be derived from the ocean in coastal cities and littoral areas. It is unrealistic to anticipate that a civilization with outstanding engineering and management expertise is going to stand by and watch the sea inundate its habitat when any ocean rise can be off-set terrestrially to meet essential beneficial ends, by osmosis conversion to potable water. In the Mediterranean and Middle East this practice is already in operation where needed.

Solar Variability Predictions

Solar variability has long been recognized as the main contributor to climate change but is now relegated, in some IPCC models, as subordinate to the effects of GHGs. Centres of solar science expertise are in agreement that the solar variability cycles are prominent in the temperature trend over the past 200 years and a cooling phase of about 60 years' duration due to reduced solar activity is imminent. A research team at the Bedford Institute of Oceanography in Dartmouth, NS, issued this premise a decade ago, and it has been recently confirmed by the Harvard Smithsonian Center for Astrophysics, NASA GISS, the Pulyanskaya Observatory in St. Petersburg, and accredited individual researchers in Europe and Australia. However, the IPCC has yet to accept and include such a major amendment to its climate change models.

Conclusions

Sound scientifically-based climate change prediction models are in their infancy. Another 20 years of correctly calibrated homogeneous satellite data are needed to

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Here Comes the Age of the Arctic – Ready or Not!

Rob Huebert



Photo: Sub-Lieutenant Fraser Gransden, 2007

Arctic dawn.

Canada is becoming aware of the Arctic – again! While our national anthem may talk of standing on guard for ‘the true north strong and free,’ the reality is that Canada prefers to be strong in the north as long as it can be done for free!

Canadian politicians have followed a path of developing innovative and groundbreaking policy for the protection of ‘their’ Arctic, but only when those policies and actions do not cost real resources. Canada only becomes protective of its north when responding to the actions taken by the United States and/or Russia. All this is about to change. Canada will have to deal with a much more internationally active north. It will need both good ideas and resources. In particular, it is going to need to give substantially more thought and effort to what it needs to do to protect its Arctic waters.

Doing nothing will soon be a luxury that Canada can no longer afford. The entire Arctic is undergoing massive transformation that is both physically and literally redrawing the map. Central to this is climate change. Although

northerners and scientists began to notice changes in the early 1990s, it is now widely recognized that the Arctic is experiencing much higher rates of warming than anticipated. This trend was confirmed in 2005 by the Arctic Climate Impact Assessment. Satellite imagery of the north this past summer showed that the Arctic ice cap is melting at a rate not seen before, and the world is now well aware that the Arctic is about to become a far more accessible and busy location.

At the same time, the price of oil continues to rise. At over \$100 a barrel and with growing concerns over the stability of Middle East resources, alternative sources of supply are being sought. This would drive a renewed interest in Arctic oil and gas even if the ice was not melting. The Arctic is also a growing area of interest internationally; for instance, the Russian government under President Vladimir Putin is more assertive than in earlier years, especially in the Arctic where territorial claims are being made. Concurrently, the impact of the United Nations Convention on the Law of the Sea is now being fully felt by all Arctic states. Article 76 allows the four Arctic states to claim almost all of the



Photo: Internet image

Adventure tourism is not without risk! Here, the M/S Explorer sinks in the Antarctic in November 2007 after hitting ice.

seabed of the Arctic Ocean for their own national use. The net result of these factors is that even if the Canadian government wanted to ignore the Arctic, the Arctic is not going to ignore Canada!

Further, interaction between Canada and its northern neighbours has expanded. The activities of the Russians, Americans and Danes as well as the increasing activity of non-Arctic states such as China and the United Kingdom present Canada with new challenges. Perhaps even more importantly, this increase in activity means that old disputes (mostly maritime) that had been ignored in the past now risk being re-ignited.

The Canadian dispute with the United States (and more quietly the Europeans) over the status of the Northwest Passage is well known. The Americans claim that it is an international strait, while Canada maintains that it is internal waters. The core issue is the control of international shipping. Canada wants to set the rules for any international shipping using the passage, and wants to decide who can enter those waters. Conversely, the Americans contend that the rules are set by the International Maritime Organization (IMO) and Canada cannot stop any ship meeting IMO standards from transiting those waters. While ice conditions remained severe there was almost no international shipping in the region and the issue remained dormant. But, as the ice melts, it is only a matter of time before the dispute is re-energized by a ship passing through without seeking Canadian permission.

At the same time Canada also has maritime boundary disputes with the United States in the Beaufort Sea and with Denmark in the Lincoln Sea. In both cases the dispute is over the means by which the respective exclusive economic zones are divided. Unlike the dispute with the the United States, the dispute with Denmark is not significant politically. Within the zone disputed with the Americans are

potentially substantial oil and gas reserves. Now that the ice is receding and the price of oil high, exploration in difficult locations is economically viable, and it is merely a matter of time before the dispute over this boundary re-ignites.

Canada is also likely to face challenges from the Americans and Russians (and maybe the Danes) in its claim to its Arctic continental shelf. While Canadian scientists are still trying to determine the outer limits of the Canadian claim in the Beaufort Sea, it may well overlap those of Canada's

neighbours. It is also not at all evident that the Canadian northern claim needs to stop at the North Pole; in which case Canada will be in a dispute with the Russians.



Photo: DND Combat Camera

An Inukshuk, the symbol of the Arctic.

If these older disputes were not creating enough challenges for Canada, there will also be other challenges especially from various economic interests seeking to take advantages of the 'new' north. These will include a cruise ship industry that is increasing its voyages to waters off both poles, fishing operations and energy development.

The challenge for Canada lies in meeting both the new and the renewed problems. It can choose to ignore these problems as it has in the past, but this only avoids the inevitable and ensures that Canada must deal from a position of weakness. Alternatively, Canada can be proactive by acting now. But it must also decide how it is going to act, and this requires that Ottawa decides what it wants to do in the Arctic and how much it is willing to pay.

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Anti-Piracy Operations

Doug Thomas



Photo: http://www.navy.mil/search/display.asp?story_id=33869

A boarding team from USS *Whidbey Island* (LSD 41) closes the tanker *Golden Nori* shortly after it was released by the pirates who seized the vessel on 28 October 2007.

There have been many media reports during the past several years of a troubling trend of increased piracy off the east and west coasts of Africa. For example, Somalia, deprived of a central government since 1991, has gained a reputation for piracy. It does not possess a navy or coast guard capable of controlling its own waters. In order to counter such attacks, US Navy and NATO warships have been conducting operations along the East African coast, pursuing pirates inside territorial waters (with the permission of a weak Somali government) and freeing some of the captured vessels and their crews. The Standing NATO Maritime Group 1 (SNMG1) squadron, which included HMCS *Toronto*, circumnavigated Africa in mid-2007 with the deterrence of piracy as one of its responsibilities.

Recent incidents have included the attempted boarding by pirates of a cruise liner, the *Seabourn Spirit*, the capture of ships taking UN food aid to Somalia, capture of fishing vessels and the capture of the tanker *Golden Nori*. *Golden Nori* was seized on 28 October 2007 with 23 crew members and a cargo of tens of thousands of tons of highly-flammable benzene. Pirates hold the ship and its crew for ransom, a process that can take many months. And it is not unusual for crew members to be killed as an object lesson, to 'encourage' the speedy payment of ransom.

Another concern is the possibility that captured vessels might fall into the hands of terrorists. In cases such as *Golden Nori*, which could have been used as a floating bomb, there are urgent reasons to procure the release

of the vessel quickly and alleviate this potential threat. The pursuit of *Golden Nori* continued unabated from its capture. US naval forces cornered the pirates 6 December, blocked re-supply to the vessel, and demanded that the vessel and its crew be released. Some 60 heavily armed pirates were in control of the ship at the time.

The *Golden Nori*, including the crew, was released from the control of pirates off the Somali coastline in December, as was the Comoran-flagged cargo merchant vessel *Al Marjan*. But ships in the area must remain vigilant. Intelligence information would normally forewarn a warship's Commanding Officer to the possibility that a suspicious vessel might already be in the hands of pirates or terrorists.

Piracy can range from robbery of vessels laying in harbour to possible terrorist action, and the threat is one that is well understood by navies and coast guards. Indeed, the Standing Naval Force Atlantic under Canadian Commodore David Morse in 1999/2000 conducted anti-piracy training in the Caribbean and *Maritime Affairs* – a predecessor publication to *CNR* – published that story.

The article by PO1 Peter Augustus about naval boarding party operations describes how naval personnel are trained to board other vessels. Given the possibility of pirate or terrorist attacks at sea, these operations will be of increased relevance for naval operations in the future. 🇺🇸

Naval Boarding Party Operations

PO1 Peter Augustus

One of the primary roles of the navy during operational deployments in recent years has been maritime interdiction operations (MIOs). MIOs involve “the surveillance, interception and, if necessary, boarding of commercial vessels to verify, re-direct or impound their cargoes in support of the enforcement of economic sanctions.”¹

The ever-changing dynamics of today’s world, coupled with existing threats, reinforces the need to ensure security on the high seas as well as coastal areas. It is evident that there is a need to train and deploy a highly effective and capable boarding party – an extension of force from its parent ship – to ensure that weapons or terrorists are not being smuggled to locations where they will do harm. While these are the principal missions of the naval boarding parties in the current MIO environment, many other tasks are possible.

Naval boarding parties (NBP) are not a new concept. They date back to the days of sail when vessels would engage in a broadside gun battle designed to disable the other ship so that a boarding party and prize crew armed with cutlasses and flintlock pistols could capture and control the enemy vessel. Since those days, the team has evolved into a select group of highly trained and disciplined personnel with the necessary skills, knowledge, leadership and rules of engagement to ensure effectiveness in conducting maritime interdiction operations.

NBP Training and Operational Experience

The Naval Boarding Party Basic Course is an 18-day training course required by all those performing NBP duties, including officers and petty officers. All students are instructed on various aspects of boarding procedures and strong emphasis is placed on personal conditioning and weapons proficiency, and most importantly, on safety. Students receive live hands-on training in proper weapons handling, use of force, container inspections, rappelling, tactical search and sweep procedures, lectures on ship safety and hazardous material awareness. During basic NBP course, students are instructed on the various weapon policies and operational states. Each state reflects the immediate threat level and the preparedness for the use of force.

The operational states are:

- OPS Green
- OPS Yellow
- OPS Red



Photo: Master Corporal Doucet, Formation Imaging Atlantic.

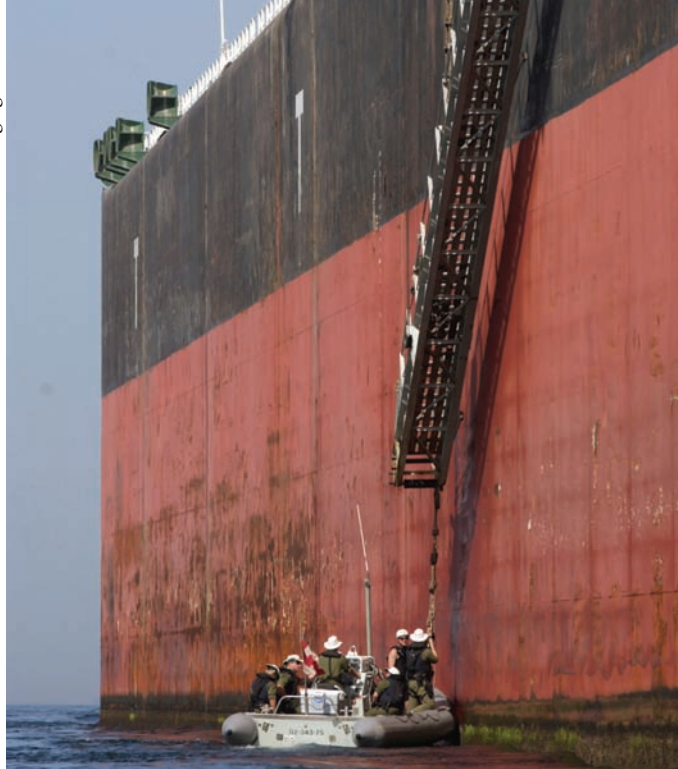
RHIBs are the primary means of transportation for a naval boarding party.

OPS Red has the highest weapons policy. It can only be initiated by the Boarding Party Team Commander (A1), or by the ship’s Captain. All weapons are loaded and ready for use at all times. Emergency breakaway is the executive order by A1 to evacuate the ship by the quickest means.

The Naval Boarding Party Supervisor Course is an additional eight-day course, which provides boarding party supervisors (officers, petty officers) with the necessary instruction to execute continuous training exercises. This includes orders, communications and search plans, intelligence gathering, examining ship’s documentation, legal aspects and liaising with command, as well as leading a boarding party in conducting actual boardings.

The Naval Boarding Party Team training is a five-day course, which works-up a ship’s existing boarding party team into a cohesive and effective unit. The team receives refresher training and is then monitored and assessed during numerous boarding and jetty exercises that provide diverse opportunities to challenge the team and provide reality-based training. Each member re-qualifies on the various weapons used during boarding operations.

During numerous operations abroad, NBP teams have boarded foreign vessels in varied states of repair, which has complicated operations because of safety issues. Teams are often subjected to health, safety and hygiene standards well below our own maritime standards. For example, it is common to find vessels in the Middle East carrying large numbers of livestock to Gulf states.



Not always an easy job! A Canadian naval boarding party begins to board a tanker.

When deployed, most NBP teams carry out daily training to hone their skills and to maintain a high operational readiness. This training incorporates live tactical shooting with the Sig Sauer pistol, MP5 machine pistol and R870 shotgun. Close encounter techniques are practiced, such as the tactical baton, 'empty hand control' and mechanical restraints (handcuffing).

Physical fitness is very important in such a demanding environment and therefore PT is regularly scheduled. Some ships' teams have carried out such training during the forenoon and then work for their department during the afternoon. These schedules allow NBP members to continue to conduct the fitness training necessary to maintain a high standard as well as continue to enhance their trade skills.

Deployment Scenario

Prior to a team being deployed to a vessel of interest there are a number of behind-the-scenes steps that are essential to ensure the safety of the team.

A standard courtesy hailing is conducted to assess the threat and the likelihood of a boarding. Once it is determined that an inspection is required and the ship's Captain is confident the team can deploy safely, the ship is brought to boarding stations. This brings the ship's team and weapons to a heightened state of readiness.

Within 30 minutes the team should be dressed (dark blue coveralls, with tactical vest or belt and upper body armour, tactical helmets, baton, handcuffs and personal weapons: all carry a Sig Sauer 9mm pistol and either an MP5 machine pistol or tactical shotgun) and briefed, ready to board the vessel of interest. Once on board with the crew safely



Members of HMCS Algonquin's boarding party exercising.

secured, the boarding party officer makes an assessment of the situation and prepares to carry out his mission. This could range from a documentation search through to full search and seizure of the vessel.

The Way Ahead

While the role of the modern NBP has not changed significantly in the last several years, advancements in equipment and tactics have necessitated changes in how training and operations are conducted. The procurement of new equipment and training support systems allows for the most realistic training possible. Some of the updates in training we expect to implement in the next year are:

- use of simulated ammunition ('simmunition') to allow for reality-based weapons training in a controlled environment using scenario-based training;
- expansion of rappel training;
- acquisition of a trainer simulating a shipboard environment for both weapons and search tactics training;
- inclusion of 'conduct after capture' training; and
- inclusion of training on the handling of detainees.

NBP teams currently deployed throughout the fleet are better trained and equipped than ever. They are more than capable of executing critical maritime interdiction operations. Operational feedback remains essential and to date has provided positive information. Canadian teams are able to execute fundamental skills on the world stage, establishing Canada as one of the leaders in boarding party operations. 🇨🇦

Assistant Editor's note: Readers may remember the incident in March 2007 in the Persian Gulf, in which a Royal Navy boarding party was captured by Iranian Revolutionary Guard forces. There are a number of lessons to be learned from that experience, but an obvious conclusion is that the parent vessel must remain near its deployed boarding party so that the ship can provide support if that becomes necessary. As a matter of policy, Canadian warships remain close for mutual support and have done so for many years.

Notes

1. *Leadmark, The Navy's Strategy for 2020*, Directorate of Maritime Strategy, 2001.

PO1 Peter Augustus is Senior Naval Boarding Party Instructor at the CF Naval Operations School.

Making Waves

Comment on the Perkins and Webster Articles Commander Michael Craven

I read the Fall 2007 edition of *Canadian Naval Review* with great interest, in particular the articles submitted by Captain (N) Phil Webster (“Arctic Sovereignty, Submarine Operations and Water Space Management”) and the late David Perkins (“Submarines and the Canadian Navy Today: One Man’s View”).

Captain (N) Webster’s article goes to the core of the submarine requirement, not just in Canada but also for any state with an interest in asserting sovereignty in the maritime dimension. Clearly, any such assertion is incomplete if only ‘on and above’ aspects are considered. Captain (N) Webster decisively makes the point that Canada has a variety of proven tools to assert maritime sovereignty throughout the water column. Submarines are a crucial element in this equation. As Assistant CMS Cmdre Kelly Williams has said in the past, “if they’re not our submarines they’ll be someone else’s.”

David Perkins writes convincingly of the nervousness which successive Canadian governments, or federal governments at any rate, have accorded the question of submarines. However, I suggest he went too far in suggesting that this nervousness has led to a sacrifice in submarine combat capability “in the name of politics, unrealistic fiscal restraints and lowered expectations.”

With respect to acquisition of the *Victoria*-class from the United Kingdom, and as evidence to support his thesis, Mr. Perkins cited the decision not to acquire the Royal Navy Harpoon surface-to-surface missile capability, as well as decisions to replace the original electronic countermeasures (ECM) outfit and fire-control system with “20-year old refurbished equipment recovered from the obsolescent O-boats.” I wish to offer my own observations on this.

The decision not to acquire Royal Navy Sub-Harpoon (RNSH) was part of the original determination of Submarine Capability Life Extension (SCLE, the CF *Oberon* replacement activity) Project scope, and was a military and not political exercise. Early on, and after energetic debate, it was decided that only capabilities already resident in CF O-boats would be included in SCLE. While the Canadian Navy did in 1998 (and does now) have Harpoon anti-ship missiles in inventory, CF O-boats never implemented a capability to employ these weapons. Accordingly, Harpoon was not included in SCLE scope. This logic did not just apply to Harpoon; for similar reasons the Special Operations Forces (SOF) swimmer lock-out chamber



Photo: Dan Middlemiss

Three of the Canadian Navy’s now-retired Oberon-class submarines lying in Halifax Harbour awaiting their fate. Hopefully one will soon become a museum ship.

capability, with which *Victoria*-class subs were originally and are still equipped, was not reactivated but instead was placed at 180 days’ notice for readiness.

With respect to Canada’s decision not to stick with the RN original-fit (and, according to Mr. Perkins, “state of the art”) ECM suite, the author seems to have had the wrong end of the stick. Strictly speaking, *Upholders* did not have an ECM suite, but a radar electronic support measures (RESM) and warning outfit. This was removed at the time the boats were deactivated by the RN. Its re-installation would have resulted in additional cost to the SCLE Project. Like much of the original *Upholder* combat system (including the torpedo fire-control system) the RN RESM fit was dated by the time Canada announced the SCLE Project in 1998. The replacement equipment Canada installed, the Sea Search II RESM outfit, was not “recovered from the obsolescent O-boats” but brand new kit at that time slated for our *Iroquois*-class destroyers. It was, in 1998, amongst the most modern equipment available, with significant additional classified capability. Further, it enjoys commonality with systems in *Halifax*-class frigates and, after some initial teething troubles, is delivering satisfactory performance.

The situation was similar with respect to the *Upholder*-class DCC torpedo fire-control system. The submarine fire-control system (SFCS) originally installed in CF O-Class submarines was arguably, in 1998, more advanced than DCC – in some crucial respects perhaps markedly so. It was for this reason that the CF SFCS, with the benefit of yet another upgrade, was retrofitted to the *Victoria*-class in preference to DCC. A system that is described by Mr. Perkins as “[giving] the *Victorias* a limited combat capability” is in fact very much state-of-the-art, with sufficient



margin for growth to incorporate an upgraded heavy-weight torpedo and a surface-to-surface missile capability, should the navy decide to move in that direction in future. In short, SFCS remains a very cost-effective and capable fire-control system. A measure of its success and high esteem is its selection for service in new Spanish submarines and as a contender in a combined Brazil/Ecuador submarine upgrade program.

In conclusion, it is in my view more accurate to say that the Canadian federal government has quite rightly taken the leading role in deciding whether or not Canada has submarines. And to their credit, governments of differing stripes have decided in the affirmative. However, decisions with respect to the combat capability of those same submarines are more properly credited to the naval, and not political, enterprise. This, I believe, is as it has been in the past, is today, and (I hope) shall be in future.

Thank you and please accept my congratulations on the excellence of CNR. 🇨🇦

We Stand Ready CPO1 R.J.A. Cleroux

The Canadian Navy is about to embark on a massive rebuilding phase with the introduction of the Joint Support Ships, Arctic Offshore Patrol Ships and the modernization of our 12 *Halifax*-class frigates. Hopefully in the near future there will also be the replacement of the *Iroquois*-class destroyers along with the continued re-introduction of the *Victoria*-class submarines upon completion of the refits. In a recent editorial in the *Canadian Naval Review*, Peter Haydon asked: “is naval modernization the impossible dream?” He concluded that the dream is possible provided the government makes a serious commitment to a comprehensive modernization program. As the Maritime Command Chief Petty Officer I felt there was one point missed in an otherwise very well written editorial.

The navy obtains a hull from a shipyard and it is just that until it gets a good Captain and a crew. The ship’s company is what brings a ship to life. In my opinion the navy has some serious challenges ahead. Our authorized strength is at 8,550 but our total strength as of September 2007 is 8,310. Worse yet is our trained effective strength it is down to 6,898 and predicted to continue to decline to 6,750 by next September. The personnel issues unfortunately do

not end there as we have an aging work force, which is set to depart the Canadian Forces (CF) in the coming years. This year we predict that 670 sailors will leave the CF and we will hire approximately 650 and not necessarily in the right trades. The naval electronic trades for example are down to 70% of trained effective strength. I have coined a term lately that I call ‘true effective strength,’ which is a number you get when you take factors in like medical, coursing, maternity, compassionate leaves, etc. – the Combat Systems branch of the navy is down to about 55% employability.

The ships of the fleet are sailing 15% to 25% below preferred manning levels. On any day there are approximately 300 sailors who cannot deploy for various reasons. The army likes to call this ‘the Hollow Army,’ and I would echo this by saying we have the same problem, exacerbated by the fact that we only make up 15% of the CF. At this moment we have 657 empty billets and we are about to create new billets to staff the various naval acquisition projects. With undermanned ships, additional training required for the new classes of ships and sailors being pier-head posted from ship to ship to ship, it is difficult to imagine any improvement in our attrition rates.

Since its creation in 1910, the Canadian Navy has served Canada with professionalism, pride and distinction. We as sailors want to serve Canada, connect with Canadians, and try to make them understand that Canada is a maritime country. The Canadian Navy has contributed to the welfare and defence of this country through two World Wars, the Korean conflict, the Cold War, both Gulf Wars and the war on terrorism. When sailors stand on the shores of Halifax or Esquimalt we know why we need a navy and what we contribute to the security and prosperity of our country.

Being a sailor today has changed immensely since the day I first reported to HMCS *Provider* in 1978. Most, if not all, of these changes have resulted in a much better quality of life and increased effectiveness of the navy. What hasn’t changed is the reason young people continue to join the navy. They join for the adventure, for the travel, for the opportunity to make a difference and see the world. What hasn’t changed is that we need sailors to make a ship come to life. We need sailors to be our ambassadors afloat, to go to rescue stations, to board the ship that is running drugs or contravening UN sanctions. We need sailors to fight to be a navy.

The point I'm hoping to make is that with the support of the government the navy is about to embark on an unprecedented phase of modernization and capital acquisition. We have a huge challenge ahead of us not only to cut steel, build ships, increase our mandate and accept new missions and capabilities, but to protect our most important asset – the sailors who will form the ship's company of these ships. We stand ready, confident that the navy of tomorrow will be delivered but we also have expectations that our sailors will remain at the forefront of every decision. Recruiting, retention and training will be as important over the next 10 years as building the navy of the future because sailors are the navy of the future. 🇨🇦

Nanisivik Bound!

Sub-Lieutenant Fraser Gransden

Canadian Arctic ice is melting at an alarming rate and shows no signs of subsiding. Consequently, international interest in the use of the Northwest Passage as a gateway between the Atlantic and Pacific Oceans is increasing and the Canadian government is putting new focus on the national sovereignty implications.

The Canadian Coast Guard (CCG) is active in our territorial waters, including the north. Nevertheless, the achievement of a comprehensive understanding of maritime activity in all three of Canada's ocean approaches, a critical aspect of sovereignty, is a complex business that falls outside of the CCG's area of expertise. Maritime domain awareness (MDA) requires the integration of intelligence, surveillance and reconnaissance assets to build a detailed picture of activity on, under and over these waters. This falls into the area of expertise of Canada's navy and, in conjunction with other government departments, we have stood up Marine Security Operations Centres in Halifax and Victoria to create MDA. From this picture, we look for anomalies that may pose a security, defence, safety or environmental threat and then facilitate a response from the appropriate authority. As our northern waters become more pliable with global warming, Canadians will expect us to keep pace. Recently, Prime Minister Stephen Harper announced the building of six to eight new Arctic Offshore Patrol Ships that will be capable of increasing the navy's presence in this important region of our dominion.

Although current naval ships deliver exceptional warship capability, fleet experience in Arctic operations and ice navigation is limited despite several multi-ship deployments in recent years. Among measures to increase naval experience in the Arctic was an August 2007 opportunity for a junior naval officer to sail in one of Canada's Coast Guard icebreakers, the CCGS *Terry Fox*. I was the officer selected for this week-long voyage. This article details my observations.

The journey commenced from the small town of Salluit, Quebec, and concluded in an old mining town on Baffin Island, a place called Nanisivik. There were many facets of the short voyage that I think will prove to be useful considerations for future operations in the Arctic. The most important concerns ice analysis and its derivations. During normal operations onboard *Terry Fox*, a person designated for ice analysis – appropriately named 'ice pick' – provides information to the Captain and bridge watch keepers on present and forecasted ice conditions, possible routes of evasion and expected ice movements. The 'ice pick' makes extensive use of satellite imagery and analysis to determine the safest and most practical route for the ship.

Photo: Sub-Lieutenant Fraser Gransden, 2007



Sub-Lieutenant Fraser Gransden at Nanisivik with the CCGS *Terry Fox* in the background.

One aspect of sailing an icebreaking platform is that although the vessel is highly capable of transiting ice several feet thick and of varying densities, the desired path is one that is ice-free. Similar to trailblazing a dense forest, pushing through the ice is more or less on a 'need-to-do' basis. After all, hitting anything but the next wave is something most mariners try to avoid. Therefore, an applicable adage to sailing the north is 'to take the path of least resistance' – a seemingly more tedious passage but one that most happily accept.

The reality is, despite more than adequate living conditions onboard a Coast Guard icebreaker, transiting ice is not comfortable. Sailing through varying forms and densities of ice is something most people would rather not endure. Any sea-goers would undoubtedly find the thunderous sounds pounding off the ship's hull a little unnerving. Needless to say, it takes some getting used to. To minimize discomfort for the ship and her crew, the helmsmen, directed by the watch keeper, meanders through ice-cluttered waters, no doubt in hopes of maintaining good relations with everyone onboard. There are times however, that the might of a Canadian icebreaker are revealed and the ship's ability to transit unavoidable ice is put to the test. Taking a blow from the 'shoulders' or bows of the ship happens on occasion but should be avoided as much as possible as it is a more vulnerable aspect of the ship. Head on is much more conducive for safe passage, especially for the more threatening ice forms.

There is more coordination than simply ramming every piece of ice that comes in the way of the breaker. Speed is an aspect of icebreaking that is extremely important not only for transit timings but also for the impact it has on ship-to-ice collisions. When the ship confronts a piece of ice that is too large to take on at light cruising speed, the ship's way is taken off so as to comfortably snug up to the ice formation. After initial contact, it is full speed ahead on all engines. This gives the ship the power it needs to ride up the ice and either push it aside or pierce it with the ship's heavy mass. This can make for an exciting watch but it is no race – traveling through moderate to heavy ice fields is typically a slow process.



Nanisivik is a bleak place amid a bleaker landscape.

Photo: Sub-Lieutenant Fraser Gransden, 2007

The frequency at which the ship encountered ice was significantly less than anticipated, but that was largely due to the expertise of the 'ice pick.' Ice conditions can vary quite a bit from one area to the next. Common sense would seem to dictate that the more northerly the transit, the more difficult ice conditions become. However, this voyage was largely ice-free and, even in areas where ice was present, it was not as thick as one might expect at that latitude. Regardless, navigating even that far north requires a vessel of suitable strength and loosely defined timings.

Overall, this opportunity was extremely worthwhile and educational, both as an individual and as a member of the Canadian Forces. Encouraging a stronger naval presence among the Coast Guard fleet would truly take advantage of the expertise it offers. Gaining a more thorough understanding of ice navigation in this manner is important when adapting to global changes, and may even affect how we define doctrine and requirements of future Arctic operations.

Understanding different ice forms and how they affect ships is integral to icebreaking operations, and understanding ice influences and routing around ice is essential to Arctic operations. As our Coast Guard is the repository for this knowledge and experience in Canada, it is important that the navy take advantage of its northern know-how. In doing so, both organizations can build seamless relations that will pay dividends in future operations.

In August, the Prime Minister announced that the former mining site in Nanisivik would be the future deepwater Arctic docking and refueling facility for naval and civilian vessels. Sailing in *Terry Fox* into the newly declared naval facility, I was delighted and honoured to be the first among many naval officers who will visit the site. 🍷

Comment on the Allan Article in the Fall Issue Commodore (Ret'd) Mike Cooper

Observant readers of *Canadian Naval Review* may have already brought this to your attention, nevertheless there is a statement made by Laura Allan in an otherwise excellent article about the WRCNS in the Fall 2007 issue that shouldn't pass unchallenged. The author states that "no woman has been promoted beyond the rank of Lieutenant-Commander." This is false. While the navy, and indeed the Canadian Forces as a whole, has nothing to be proud of when it comes to the promotion of women, in that there are barely enough female senior and flag officers to form a corporal's guard, a few have made it to relatively senior rank.

In the navy, for example, Commodore Jennifer Bennett was promoted to that rank 1 December 2007 on assuming command of the Naval Reserve becoming the first female officer to command a naval formation in the Canadian Forces. (This promotion, of course, happened after the Allan article was written.) Margaret Kavanaugh and Lorraine Orthlieb also served with distinction as commodores. There are also two Regular Force women of whom I am aware currently serving as captains (N), both logisticians, and a few commanders. However, were Laura Allan to state, "No woman has been promoted beyond the rank of Lieutenant-Commander in the Maritime Surface/Sub-surface or Maritime Engineering classifications," she would be entirely correct.

This is a shameful situation. Surely there is *one* deserving candidate for promotion? There are arguably few more macho organizations than the United States Marine Corps, yet at least 17 years ago I had the pleasure of meeting a female Marine Corps brigadier general in Washington. Perhaps enlightened minds will prevail in the Canadian Forces in due course.

By the way, you are doing a fantastic job in producing CNR. It's truly a professional periodical in every way. 🍷

Mark Tunnicliffe, "The Honour to State" Continued from page 13

intellectual capacity shut up behind closed doors pursuing sterile argument seeking an elusive consensus. The authority to implement most of the necessary decisions affecting the future of the navy isn't in the room anyway. It lies with the broader naval community, our colleagues in the other services, politicians and, most importantly, the Canadian public. They will have to be part of the decision-making process – and the debate. Let them in on it.

So, at least, this fool has the honour to state. 🍷

Notes

1. From "The Laws of the Navy" by RAdm R.A. Hopwood, first published in *The Army and Navy Gazette*, 23 July 1896.
2. See Cdr Kenneth P. Hansen, "Raeder versus Wegener," *Naval War College Review*, Vol. 58, No. 4 (Autumn 2005), pp. 81-108.
3. See R.S. Seager, *Alfred Thayer Mahan: The Man and His Letters* (Annapolis, MD: Naval Institute Press, 1977), pp. 524-538.
4. See the "Regulations of the Naval Review" printed in every copy.
5. Minister's report to the Prime Minister, "A paper Prepared for the Minister of National Defence," by D.J. Bercuson, 25 March 1997, pp. 15-17.
6. Minister's report to the Prime Minister, recommendation #63, "Create a Department funded military journal with its own editorial board..." which would publish articles on Canadian security and defence, proposing a suitable editorial policy.
7. Gen. J.M.G. Baril, "Message from the Chief of the Defence Staff," *Canadian Military Journal*, Spring 2000, p. 4.

Mark Tunnicliffe recently retired after 35 years with the navy (mostly keeping his opinions to himself) and has commenced a second career with Defence R&D Canada in Ottawa.



Photo: DND Combat Camera

Sunset over Afghanistan? A public relations rather than an operational failure!

Plain Talk: Canadian Forces, Inc.?

Sharon Hobson

The Department of National Defence (DND) is trying to figure out how to pay its mounting bills. With the mission in Afghanistan, the government's 'Canada First' priorities, \$20 billion worth of major acquisition and in-service support programs, and infrastructure requirements, the military is juggling numbers big time. Now a recent news story has appeared that says things are about to get worse because the government will not be increasing the defence budget sufficiently in 2008 to cover the costs of the Afghanistan mission.

This is not that much of a shock. Most observers have been expecting the government to turn off the tap and now that it is happening DND will be faced with hard choices as the planners attempt to reallocate funds internally. During that process, as they try to salvage the current list of priorities without shortchanging the military's future, perhaps they should consider a slightly unorthodox solution to their financial dilemma.

What usually happens when the requirements outstrip the finances is that capital equipment programs are delayed or cancelled. But it is personnel costs that are exacerbating the military's budgetary problem. The Canadian Forces are in the midst of a significant expansion, but it has been slowed or 're-profiled' because of inadequate resources. Expansion plans must take account not just of the long-term salary costs of new recruits, but also the medical coverage, pensions, relocation, continuing education, infrastructure expansion, equipment and, most importantly, the training. In other words, with this expansion, personnel costs are ballooning.

Perhaps it makes sense, therefore, to look at reducing some of the costs by turning to civilian contractors. For the past decade, DND has been increasing its reliance on industry and the use of civilian contractors to support the Canadian Forces at home and abroad, as well as for some training and all third line (and some second line) equipment maintenance for all three services. For deployments, the Canadian Forces Contractor Augmentation Program (CANCAP) has, after an initial learning curve, "proven its worth as a viable support option for consideration by military leaders against other options such as employing military personnel, locally engaged employees, host-nation support or shared multinational logistics," says a 2006 report by the Chief Review Services.

But putting civilians on a military base in a stable area behind the front lines is different from placing civilians on board naval vessels. Canadian surface ships may be tasked with an operation in friendly waters, but they must be prepared to sail into an area of conflict at a moment's notice. Having civilians on board in a war zone raises questions about their legal status, and is often cited by navies as a reason for not employing them.

Still, it's not unheard of. The United Kingdom's Royal Fleet Auxiliary (RFA) and the US Navy's (USN), Military Sealift Command (MSC), for example, employ civilians in their ships. The RFA operates replenishment and supply ships to support the Royal Navy, as well as amphibious landing ships. The MSC transports equipment, fuel, supplies and ammunition to sustain US forces anywhere in the world. In addition to moving military equipment and supplies, and replenishing USN ships, the MSC also maintains strategically positioned combat cargo ships at sea all year round.

Since 2004, the USN has placed civilians in USS *Mount Whitney* which is 'owned' by MSC, but is also a USN command, control, communications, computers and intelligence (C4I) ship. The crew is approximately 50 per cent civilian mariners, and they perform supply, repair, maintenance, engineering, navigation, food services,



The way of the future perhaps? The civilian-manned Royal Fleet Auxiliary Tanker Gold Rover.



Photo caption: DND Combat Crew

Some functions aboard modern warships are still labour-intensive and require teamwork and coordination.

damage control, flight-deck and replenishment operations. Not only do they cost less, but they free up uniformed personnel to fill critical positions aboard warships.

The Canadian Navy is currently short about 800 personnel. It has a current strength of approximately 8,200 but needs 9,000 to carry out all its tasks. The former Chief of the Maritime Staff, Vice-Admiral Bruce MacLean, made the case for an increased naval establishment in his Strategic Assessment 2006.¹ He noted:

Previous correspondence requested some retention of HMCS *Huron*'s establishment (totaling 108 positions) based on the introduction of the Victoria class submarines, reinstatement of a west coast capability, and the requirements of the MASIS project. These requirements remain unresolved and since that time considerably greater demands have been placed on the Navy. An additional 168 positions have been identified that includes crew for force protection vessels; support to Maritime Security issues; project staff for the HCM [*Halifax*-class modernization], SCSC [Single Class Surface Combatant], and JSS [Joint Support Ship] projects; and an enhanced C4ISR [command, control, communications, computers, intelligence, surveillance and reconnaissance] capability.

So this would appear to be a good time to investigate the option of employing civilian mariners in order to free up more career naval personnel to take on other roles as well as to reduce training requirements and costs.

The navy has already decided it wants to buy purpose-built Joint Support Ships and man them with full naval crews, but for future acquisitions of a small number of a

single class of ship – such as the amphibious transport ship needed for the Rapid Effects Projection (formerly the Standing Contingency Force) or the Arctic/Offshore Patrol Vessel – it makes sense to examine the leasing option. A shipbuilder could supply a modified vessel, with crew, for use by the navy for as many years as it needs it. The navy would significantly reduce its training and certification challenges, and be assured of having sufficient crew members available at all times. Furthermore, by contracting out to industry for trained engineers and technicians, the navy would have another pool of manpower to call upon during times of high operational tempo, thus reducing the stresses on its Regular Force members and their families.

There are obviously objections to placing civilians on board navy ships, including concerns over the difference in culture between a civilian mariner and a navy sailor. Would they be expected to handle operational roles such as casualty clearing or action messing (distributing food to sailors who are on watch at their action stations)? Would civilians be paid overtime? As well, there are questions over whether civilians could opt out of a deployment to a war zone. (This, however, could be solved by offering sufficient remuneration for the increased risk.)

If both the Royal Navy and US Navy have found it cost-effective and useful to rely on civilian mariners, then the problems are not insurmountable. Shouldn't Canada at least look at the option for future classes of ships? 🇨🇦

Notes

1. Despite numerous requests under the *Access to Information Act*, the 2007 Assessment – which would have been finalized over a year ago – has not yet been released. My ATI request from May 2007 sits in the Privy Council Office waiting for someone to decide whether or not to release it.

Sharon Hobson is an Ottawa-based defence analyst and Canadian correspondent for *Jane's Defence Weekly*.

Submarine Developments: Air-Independent Propulsion

Doug Thomas

Although there is a (mis-informed) view within Canada that submarines are yesterday's news, or relics of the Cold War, many countries are rushing to buy modern submarines as a major component of their maritime security force. In this article, I will discuss the air-independent propulsion (AIP) diesel-electric submarine and the ultimate AIP vessel – a modern nuclear-powered attack submarine (SSN).

Nuclear submarines are very expensive, not only to build the boat (yes, submariners refer to their vessels as 'boats'), but the extensive infrastructure required to support them – a nuclear industry with all of the necessary safeguards, advanced training for all members of the crew, isolated high-security bases, etc. At the moment these boats are operated by just five states: USA, Russia, UK, France and China. All five countries possess both ballistic missile submarines (SSBNs) and SSNs, indeed all but Russia and China now operate only nuclear-powered vessels.

Other states are interested in joining this nuclear club, especially India and Brazil. The quickest way of gaining admission to this elite group is by purchasing or leasing a nuclear sub: during the period 1988-91, India leased a *Charlie I*-class SSGN (the 'G' standing for a submerged launch anti-ship missile capability). The expertise gained in operating that submarine must now have been lost, but there are persistent reports that India will lease one or two Russian *Akula*-class SSNs, in order to develop the capability to operate such vessels, while it works on an indigenous design.

A nuclear propulsion system allows a submarine to remain submerged for extended periods. As an example, the USS *Triton* circumnavigated the world submerged in 1960 – travelling a total of 41,500 nautical miles at an average of 18 knots. Most diesel-powered submarines are really submersibles rather than true submarines, and have to put up a snorkel-mast – a WW II German development – to run their diesels when dived if they wish to achieve a faster transit, or recharge their batteries so that they may loiter submerged and silent on electrical power in a given patrol area, and then only for a few days and at speeds of 2-4 knots. Faster submerged speeds would quickly expend all of the stored electrical power in their batteries. For example, a modern diesel-electric submarine, like the Australian HMAS *Collins* or Canada's



U-32, a new German Type 212A submarine underway.

HMCS *Victoria*, is able to achieve a submerged speed of 20 knots, but only for an hour or two.

In recent years there have been a number of experiments with air-independent propulsion (AIP) systems by submarine-building states, principally France, Germany and Sweden, that permit diesel-powered boats to operate submerged and virtually undetectable for as long as two weeks at a continuous speed of five knots. The German Type 212A, the most advanced of the current AIP generation, is built of non-magnetic steel which makes it more difficult to detect and impervious to magnetically-initiated mines and torpedoes. It is propelled while in the mission area by hydrogen fuel cells, is highly automated with a crew of 27 including eight officers, and equipped with long-range wire-guided torpedoes and submerged-launch anti-ship missiles. Type 212A submarines are being equipped with new communications systems to integrate fully into net-centric operations with other forces, including supporting the deployment of Special Forces.

The Type 212A, in comparison with the conventionally-powered Type 206A boats which comprise most of the German submarine flotilla, has a greatly increased operational radius. The second of class U-32 set a record in April 2006 when it conducted an uninterrupted dived transit from the Baltic to Rota Spain, a distance of 1,500 nautical miles in two weeks. These vessels are very stealthy by virtue of their lack of a need to snorkel and are much more habitable than their predecessors: the accommodation improvements have enabled the abandonment of



Photo: Internet image

USS *Virginia* underway.

the German practice of hot bunking for the first time and there are now dining and working spaces separated from the sleeping quarters.

AIP propulsion systems are being installed in new submarines of other navies – at the moment these include Greece, India, Italy, Japan, Malaysia, Pakistan, Spain and South Korea. AIP may be retro-fitted into older submarines as well: some years ago there was discussion about putting an AIP ‘plug’ into at least two of the Canadian Navy’s *Victoria*-class SSKs during their mid-life refit. This now seems very unlikely, but if a new generation of submarines should ever be built for the Canadian Navy, the inclusion of some type of air-independent propulsion system would be included in the design.¹

The most modern submarine in the US Navy is the *Virginia*-class SSN. It is interesting that these vessels are named after states: *Virginia*, *Texas*, *Hawaii*, etc. For many years, battleships – then the most powerful, prestigious vessels (capital ships) – were named after states. In the past few decades, that honour has been conferred on the *Ohio*-class ballistic missile submarines, arguably modern strategic-deterrent capital ships, and now this powerful new SSN continues that trend.

Virginia-class submarines are capable of submerged speeds of 34 knots, have a reactor designed to last the life of the vessel, are armed with 12 Tomahawk land-attack cruise missiles in launch-tubes outside the pressure hull, and internally with wire-guided torpedoes, anti-ship cruise missiles, and mines. They can also launch and recover unmanned underwater vehicles (UUVs) to conduct reconnaissance, find minefields, etc. Another feature is the ability to reconfigure the torpedo room to carry up to 40 Special Forces personnel and their equipment. They have also been designed to operate as a key element of a fully networked naval force. *Virginia*-class submarines are thus uniquely equipped to wage multi-dimensional warfare in the farthest reaches of the globe, providing the US Navy with continued dominance in coastal waters or the open ocean. These submarines can travel submerged at high speeds, undetected, independent of sea state or logistic support and arrive on station ready for action.

Virginia-class submarines are the US Navy’s first major combatant ships designed with the post-Cold War security environment in mind. Approved nearly four years after the fall of the Berlin Wall, they embody war-fighting and operational capabilities required to dominate the littoral areas while maintaining undersea dominance in the open ocean.

These are much bigger submarines than the German *Type 212-A*-class: more than twice as long at 377 feet, more than

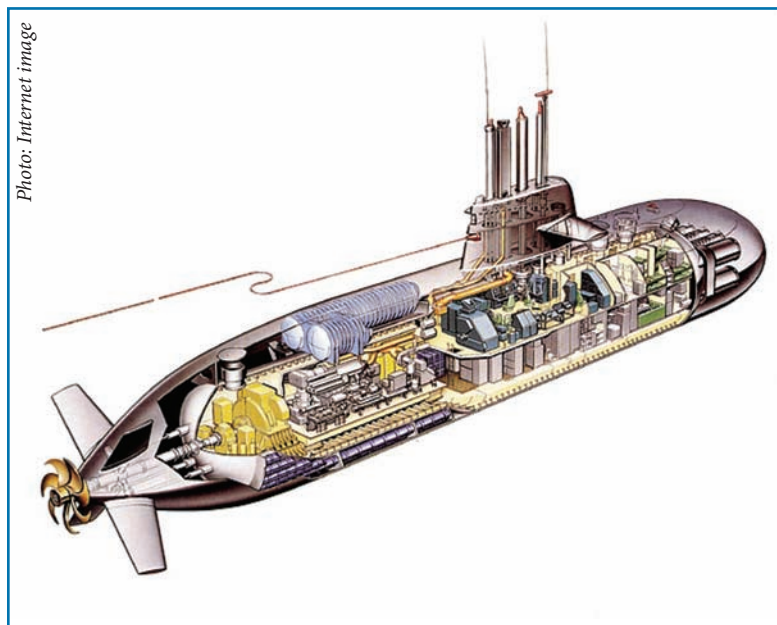


Photo: Internet image

Cut-away drawing of a *Type 212A* submarine.

five times the dived displacement at 7,800 tons, and with a crew of 134 officers and men. From that one could conclude that the German boat will likely operate for shorter periods of time in Baltic or other coastal waters, while the *Virginia*-class could deploy for much longer periods and be more independent of external support. However, both types of submarine represent a formidable deterrent and offensive capability – after a submarine leaves harbour and dives, its position remains a mystery to unfriendly states until it returns to homeport! 🍷

Notes

1. For more details on AIP, see the CNR Backgrounder, available at http://naval.review.cfps.dal.ca/pdf/AIP_Backgrounder.pdf.

Book Reviews

Witch Hunts from Salem to Guantanamo Bay, by Robert Rapley, Montreal: McGill-Queen's University Press, 2007, 311 pages, bibliography, ISBN 978-0-7735-3186-4.

Reviewed by Ann Griffiths

In early 2007, the news in Canada was filled with discussion about the treatment of prisoners handed to Afghan authorities by members of the Canadian Forces. There were questions about whether these prisoners were being tortured after the handover. This is a subject that has often come up in the years since 9/11.

Another question – perhaps a more fundamental question – has arisen about the guilt of people caught in counter-terrorism operations. This is where *Witch Hunts from Salem to Guantanamo Bay* comes in. Robert Rapley examines historic examples of witch hunts in Germany, France and the United States, and twentieth century examples in the United States (Alabama, 1930s) and Britain in the 1970s. In all cases the witch hunt occurs in a climate of fear. From these examples Rapley creates a list of characteristics of witch hunts. His list includes: judge a person guilty before seeking evidence; apply whatever pressure necessary to obtain confessions and information; accept any incriminating evidence; ignore inconvenient evidence; use/create false evidence if necessary; threaten people supporting the defendant as accessories; use secret evidence in secret hearings; expand the hunt for other supporters; and justify errors by appeal to national security/good of the state.

Having looked at historic cases, *Witch Hunts* then moves to post-9/11 United States. The author argues that there are clear parallels between the witch hunts of the past and the hunt for terrorists in the post-9/11 world. The book includes chapters on legislation passed after 9/11, the increased powers of the President, the Muslim community, Guantanamo Bay, torture and rendition, and the case of Maher Arar.

Rapley argues that one of the most important factors determining how widespread, long-lasting and destructive a witch hunt will be is leadership. Leaders can put a stop to the spreading fear. They can insist that legal and political structures be respected and that rights are protected. But if leaders are as afraid as the population, if they are distracted, if the witch hunts serve their purpose or if they are afraid to be caught up in the controversy, then a witch hunt may get out of control and claim innocent people.

Witch Hunts is very critical of the Bush administration in

the post-9/11 world. Rapley notes that instead of minimizing the fear, it has fanned the flames. Unlike in Britain where government officials stress that terrorism will not destroy the legal and political traditions developed over the centuries, the Bush administration has repeatedly stated that terrorism threatens the country, its institutions and the 'American way of life.' Rapley argues that Bush has created a feeling that he is a 'war president' and thus needs extraordinary powers, that this is a war of 'good' against 'evil' in which 'good' *must* triumph, and that the system of rights that has characterized the United States for so long must be set aside to protect national security. By doing so, Rapley argues that Bush has established the framework for a witch hunt.

The book makes it clear that those who conduct the witch hunts are not evil people. They are generally people who believe that society is threatened. Indeed, in most (but not all!) cases, their motives are pure – they want to protect society. The problem is that their methods are not pure. They are willing to abandon rights, use torture, ignore exculpatory evidence, assume guilt, refuse to admit error, all in order to protect society. They miss the irony of abusing rights to protect a rights-affirming society. Rapley does not condemn the security officials (*aka* witch hunters) as harshly as he does political leaders who perpetuate the fear that leads to abuses, and then do not punish people who act in a reprehensible manner.

Witch Hunts is an interesting book, and it raises some excellent parallels between the post-9/11 world and historic cases when the effort to root out evil was over-enthusiastic, brutal and had widespread negative societal implications. Certainly many Muslims in the West must feel that they are in the midst of a witch hunt. They are seen as guilty by many regardless of what they have (or have not) done, their rights appear to be fewer, and they can be caught in a situation in which they cannot remove the suspicion from themselves (as Maher Arar would probably attest).

Rapley makes an important point that civilized societies must be on the lookout for witch hunts. In times of fear, we must guard that the rights and checks on power developed over the centuries are not thrown out the window. It is alarming, as Rapley points out, that most Americans seemed unconcerned with the legislation passed in the wake of 9/11, and the way it concentrated power and invited abuse.

I have, however, two complaints with the book. First, Rapley tends to beat the reader over the head with some points. The witch hunt characteristics are repeated many times. The point that witch hunts occur in climates of fear is an excellent one, but it need not be made 10 times! Second,

Rapley does not seem to acknowledge that the climate has changed in the years since 9/11. In the immediate aftermath, fear and uncertainty were predominant, legislators were cowed and passed legislation without comment, the media was censoring itself, and civil liberties organizations were silent. But these groups have all awakened – power has been questioned, the US Congress and judiciary are attempting to rein in the executive, the media are back on their game, and civil liberties organizations are vocal about abuses in the name of national security. Rapley does not acknowledge this.

He is right, however, to note that if a second major attack happens, the climate will be exactly right for a full-blown witch hunt. 🍷

Commodore John Rodgers: Paragon of the Early American Navy, by John H. Schroeder, Gainesville, FL: University of Florida Press, 2006. 320 pp., maps, photographs, notes, bibliography, index. US \$59.95, cloth; ISBN 0-8130-2963-5.

Reviewed by Kenneth P. Hansen

Professor Schroeder takes a chronological approach in tracing Commodore John Rodgers' distinguished, but largely unknown, 40-year career. At sea by the age of 13, Rodgers (1773-1838) became the master of a merchant ship in only six years. Rodgers joined the US Navy in March 1798 during the French Quasi War, along with many of the early navy's legendary heroes: Thomas Truxton, Stephen Decatur Sr., Edward Preble, William Bainbridge and David Porter. The highlights of his career at sea included first lieutenant of the frigate *Constellation* when she captured the French frigate *L'Insurgente* in 1799; command of the frigate *John Adams* as part of the six-ship Mediterranean Squadron during the Barbary War; four cruises during the War of 1812 as commodore of a small force and commander of the frigate *President*; and commodore of the four-ship Mediterranean Squadron in 1825-27. Unfortunately for Rodgers, his part in the capture of *L'Insurgente* provoked a self-professed thirst for glory by victory at sea that he was never able to satisfy.

The private insights provided by the steady exchange of letters between Rodgers and his wife, Minerva Denison, are a major strength of this book. Throughout Rodgers' many sea appointments, he confided with his wife extensively, lamenting particularly about not winning a major sea battle. Unfortunately, insights into Rodgers's later career are absent as his administrative duties ashore ended their correspondence.

Schroeder reveals that Rodgers proved not to have the necessary flare for battle at sea. His inherently conservative nature was at odds with the daring essential to achieve victory against long odds. His most noteworthy wartime accomplishment occurred on land; organizing and leading naval forces in the successful defence of Baltimore in 1814. Rodgers' public acclamation as a hero resulted in an invitation from President James Madison to become Secretary of the Navy. Rodgers declined, claiming that his habits, temper and education did not suit him for the job.

Rodgers' skills lay in naval diplomacy. His exploits during the Barbary War make an excellent case study on the early coercive uses of sea power. Rodgers' close cooperation with Consul Tobias Lear ensured that the naval methodology matched the tone of the diplomatic exchanges which, in the end, was successful in achieving a negotiated peace with favourable terms to the United States. His subsequent service in the Mediterranean was equally impressive. With the powerful new ship-of-the-line *North Carolina* as his flagship, Rodgers set about compelling the attention and respect of all European navies by the exemplary seamanship of his force and the propriety of his character.

Rodgers served two terms as the chief administrator of the USN, known then as the President of the Board of Navy Commissioners (1814-24, 1827-37). In his first term, Rodgers made great improvements in the regulation of the young American navy. Drawing upon his wealth of practical experience and personal reputation, he set standards, established processes and brought stability to the institution. However, by his second term, the new age of steam was dawning, something to which Rodgers was adamantly opposed.

Rodgers contracted Asiatic cholera and died in Philadelphia in 1838, after serving for nearly two decades as the navy's senior officer under a succession of five Presidents and nine Secretaries of the Navy. His record shows that he was a cautious and prudent sea commander, and an efficient administrator. Having gained all his professional acumen through sea service, his outlook was that of a conservative traditionalist. While he undoubtedly enhanced the credibility and capabilities of the navy, Rodgers was not suited to lead it into an age of technological revolution. His self-assessment was accurate; his traditional habits, seaman's temper and practical education would have been of little value in the new naval era that lay ahead. While he never earned the immortal fame he craved, Rodgers laid a solid groundwork for the phenomenal growth of the USN. For that reason alone, the author's claim that John Rodgers was a paragon of the American navy is well made. 🍷

Inside the Danger Zone: The U.S. Military in the Persian Gulf 1987-1988, by Harold Lee Wise, Annapolis, Maryland: Naval Institute Press, 2007, 272 pages indexed, ISBN 978-1-59114-970-5.

Reviewed by Brent Hobson

On 17 May 1987, the USS *Stark*, on patrol in the Persian Gulf, was attacked by an Iraqi fighter jet. The *Stark* was severely damaged and 37 crew members were killed. In *Inside the Danger Zone*, Harold Lee Wise claims that this incident marked the beginning of increased US involvement in the Middle East and was the first link in a chain that continues to be forged today.

Inside the Danger Zone details the events leading up to the attack on the *Stark*, the US reaction and the events that unfolded in the next year. While it seems strange that the book covers such a short period, Wise contends that this period stands out for a number of reasons. This was the first large-scale military engagement for US forces since Vietnam, the US faced tricky diplomatic situations, its military required new strategy to operate in the Gulf, and the American and Iranian forces engaged in the largest naval battle since World War II.

For many years Iran and Iraq argued over religious and ethnic matters. In 1980, after two assassination attempts on Iraqi cabinet ministers, Saddam Hussein attacked Iran. Initially, the war was fought on the ground and in the air, but in 1984 the focus broadened to the Gulf when both sides began attacks on tankers and merchant shipping. This phase became known as the Tanker War and it attracted world attention as it threatened oil shipments. Wise notes that Kuwait felt pressure from these tanker attacks so in November 1986, it approached Washington about tanker protection. In response, the US military tasked its Middle East Force ships to begin patrols, the Kuwaiti tankers were re-flagged as US ships and escort plans were developed. Then the USS *Stark* was attacked.

Though generally accepted as an accident, the Iraqi attack on the *Stark* captured the attention of the American public and seemingly justifying the US decision to take a role in the conflict. With the stage set, Wise engages the reader in the human-interest aspects, devoting two chapters to the actions of *Stark's* crew before, during and after the attack. His description of the fight to save the ship is gripping.

However, the real value of the book is in the subsequent chapters which detail the critical events of the year on the strategic, operational and tactical levels. In each chapter, Wise blends historical fact with anecdotal information taken from hundreds of interviews. Through this the

reader is given an excellent insight into the problems the United States faced as it became involved in this area. The problems included potentially dangerous choke points, mines and high-speed patrol boat attacks.

On 22 July, the first escort mission began. As the convoy approached Kuwaiti waters, one of the tankers struck a mine and Washington knew that deterrence alone would not work. As a result, the United States began to rush more assets into the area. Having limited minesweeping capability, it decided to shut down the mine-laying operations. In late September, the United States captured the Iran mine-laying ship *Iran Ajr*. In retaliation, Iran launched a missile attack on Kuwait Harbour, and one of the US re-flagged tankers was damaged.

Wise states that Washington considered this attack an escalation in the conflict and in retaliation on 19 October US forces destroyed the Rostam offshore gas-oil separation platform (GOSP) that was being used as a staging base for mine laying. This led to a brief quiet period until 14 April when the USS *Roberts* struck a mine. Wise again provides an excellent description of the ship's struggle to stay afloat. This was the first Iranian attack on a US warship. US retaliation materialized as *Operation Praying Mantis* that targeted two more GOSPs and the *Salaban*. By the end of the operation, the US assets had destroyed the two GOSPs, the *Salaban*, the *Joshan* and the *Sahand*.

Wise contends that *Operation Praying Mantis* was a success on many levels. It was the largest US engagement since Vietnam and the largest sea-air battle since WWII. It was the first live proving ground for a new generation of high-tech weapons, and it was the first operational test of satellite communications. Now confident in its ability to handle the escort requirements in the Gulf, Washington announced that it would protect all vessels flying non-belligerent flags. This effectively ended the Tanker War.

To complete the coverage of this period, Wise provides details of the most publicized event of the entire war, the USS *Vincennes* mistakenly shooting down an Iranian civilian airbus. In the same fashion as the rest of the book, Wise provides factual detail mixed with personal anecdotes. While of great interest, the only link to Wise's central theme is the statement that Iran, unable to drum up any world outrage, now realized it was completely isolated. Thus on 20 July 1988, Ayatollah Khomeini agreed to a cease-fire with Iraq and the war was over.

In his final chapter Wise notes that the US force levels went back to pre-*Stark* levels and the Persian Gulf disappeared from the US media. This quiet was not to last as a mere two years later Saddam Hussein invaded Kuwait. The lessons

from the Tanker War were fresh, and the United States followed the military success of *Praying Mantis* with the overwhelmingly successful *Desert Storm*. Wise contends that the US experiences of 1987-1988 would continue to be invaluable in dealing with the new threats and the new politics in the post-Cold War era.

This book provides excellent coverage of the discussions, decisions and actions from the strategic level to the tactical engagements between the United States and Iran. The anecdotal narratives allow the reader to see the consequences strategic decisions have on the people at the fighting edge. Wise's combination of fact and anecdote make the book an exceptionally enjoyable read. He is also successful in supporting his central theme that the events of this brief period were pivotal in shaping the actions of the United States after the Cold War. Twenty years after the attack on *Stark*, the links in the US chain continue to be forged in this complex and volatile area. 🍷

Rob Huebert, "Here Comes the Age of the Arctic – Ready or Not!"

Continued from page 24

The government is developing a plan to enforce the Canadian will – i.e., sovereignty – in the Arctic and has recognized the need for improved surveillance and enforcement capabilities. It has also announced plans to build six to eight Arctic Offshore Patrol vessels, build port and refueling facilities at Nanisivik, and construct a military training base in Resolute. The launch of Radarsat II will allow for a vast improvement in Arctic surveillance and some (but not all) of the long-range patrol aircraft will be re-furbished. But the government has remained silent on the Coast Guard's dire need for new icebreakers. Despite the inclusion of the Arctic in the last Throne Speech, it is too soon to see whether these promises will be fulfilled.

It should be obvious to all that the problem is political/strategic with a maritime focus. Canada must take action that will ensure that its vision of the north is protected. It can rely on its diplomats to develop a strong set of international rules and governance systems in the north, but it will still need to rely on a whole-of-government approach to monitor what is happening there and take appropriate action. And as the ice melts, this will increasingly take on a maritime nature. Canada is about to become a truly three-ocean country whether it likes it or not. Let us hope that we now start thinking in terms of a three-ocean navy and Coast Guard! 🍷

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M.R. Morgan, PhD, FRMetS1, "Implications of Climate Change on Eastern Canadian Waters" **Continued from page 22**

provide a more reliable database. Marine operations policy and planning for hazardous waters have always been based on a concept of 'flexible response,' and this will continue to be a wise approach. The probability is low that throughout the Northwest Passage hazard-free open water is soon going to be available to commercial shipping, even during the summer months, particularly if continuing Arctic warming causes multi-year ice to move from the high Arctic into the channels of the archipelago and plug the narrow entrance to the Bering Strait.

If the IPCC prediction is correct, more multi-year ice, icebergs and bergy bits dangerous to shipping will exist not only in Arctic waters but also in the Labrador Current and possibly extend into the Scotian Shelf. Moreover, researchers at major oceanographic institutes believe that the Thermohaline Pump will weaken and cause the Gulf Stream to fail thereby adding to an overall North Atlantic cooling. If the solar physicists are correct in their belief that a period of global cooling is about to occur through decreasing solar activity, then all premises point toward more ice being present in Canadian waters. The addition of ice-strengthened naval vessels to Maritime Forces Atlantic would thus be most appropriate and opportune. 🍷

Notes

1. The author wishes to thank Captain (N) Frank Hope, OMM, CF (Ret'd) and Captain Alex MacIntyre, an experienced Arctic pilot, for their advice and comments which have been helpful in completing this article; also Dr. Charles Schafer of Bedford Institute for his scientific assistance.
2. H. Ellsaesser, "Global climate trends revealed by recorded data," *Review of Geophysics*, Vol. 24, No. 4 (1986).
3. J.-C. Pecker and S. Runcorn, "The Earth's climate and variability of the Sun over millennia," *Phil. Trans. Royal Society*, London A 30, 1990.
4. J. Christy, "Differing Trends in Tropical Sea Surface and Air Temps since 1979," *Geophysics Research Letters*, Vol. 28, No. 1 (2001).
5. Not only have contemporary climate models been based on the foregoing suspect data, but they also have no well-founded integers in their regression equations with regard to the contributions of water vapour and clouds, sunspot and cosmic rays incidence, luni-solar tidal effects, or solar precession. Only the carbon derivatives are handled in reasonably accurate absolute units, but even these are not examined with regard to their feedback effectiveness as catalysts in biota and forest expansion and growth, which may induce cooling in some regions.
6. P. Gloersen. *Arctic and Antarctic Sea Ice Atlas* (Greenbelt, MD NASA, 1992).
7. I. Polyakov, "Variability in trends in air temperature and pressure in the maritime Arctic, 1875-2000," *Journal of Climate*, 15 June 2003.
8. J. Marko, "Iceberg severity off Eastern North America," *Journal of Climate*, September 1994.
9. H. Lamb, *Climate History and the Modern World* (New York: Methuen, 1982).
10. There are three main processes that make the oceans circulate: tidal forces, wind stress and density differences. The density of sea water is controlled by its temperature (*thermo*) and its salinity (*haline*), and the circulation driven by density differences is thus called the thermohaline circulation.
11. T. Broecker, "The Great Ocean Conveyor," *American Institute of Physics Conference Proceedings*, 1994, p. 247.
12. T. Kushnir, "Interdecadal variations in North Atlantic sea temperatures and associated atmospheric conditions," *Journal of Climate*, July 1994.
13. H. Ellsaesser, "Global climate trends revealed by recorded data."

Dr. Morgan is an eminent Canadian climatologist who has worked with the Canadian government, NATO and the Royal Navy.

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Photo: Dan Middenmiss



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3. Essays must contain appropriate citations in any acceptable format. Citations, however, should be kept to a minimum.
4. There is a limit of one submission per author.
5. Manuscripts must include name, address, phone number and email address.
6. The decision of the judges is final. The essays will be judged anonymously – at no point during the judging process will the judges know who the authors are.

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