CANADIAN NAVAL REVIEW

VOLUME 2, NUMBER 2 (SUMMER 2006)

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- provide a forum for naval, academic and public discussion of all aspects of naval and maritime policy.

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*HMCS **Montreal** in Cumberland Sound (near Pangnirtung), Baffin Island, Nunavut in August 2004 during Exercise Narwhal 04.*
Photo: Master Corporal Charles Barber, Formation Imaging Atlantic

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Photo: Formation Imaging Atlantic

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Maritime conflict is easier to limit and control than it is on land or in the air. It also inflicts less collateral damage. Warships, can pose a threat and sustain it without a single warlike act. They can deploy on the high seas without commitment, wait, gain time for diplomacy. If prospects look poor, warships are easier to withdraw. Warships allow choice, naval force is a flexible instrument.

The late Sir James Cable ended his last book (*The Political Influence of Naval Force in History*) with that conclusion. To those who understand navies this is a self-evident conclusion proved by 500 years of history. This view is not universal though, and many people believe that the primary function of navies is to be an "enabling" capability especially under a joint forces concept. How do we resolve these two solitudes?

One problem is that in emphasizing the positive aspects of sea power, naval people tend to play down its negative aspects, particularly the costs of maintaining the necessary capabilities. That is precisely the problem facing Canada's admirals today: the right ships to do all the anticipated tasks are almost prohibitively expensive, and so it is a question of balancing ends and means in a highly competitive environment. Compromises have to be made.

The view of the navy as merely a supporting force fails

to acknowledge Canadian geography and the political requirement to use the navy to back-up the coast guard and other government departments in maritime security. Unless radical restructuring takes place, the Canadian Navy will always have two distinct political roles – the force of last resort at sea in home waters and an instrument of foreign policy in the rest of the world.

Photo: Internet image

The future? HMLNS ***De Zeven Provincien*** *– greater flexibility but at higher cost.*

This is not a function of the "home" or the "away" game, rather it is a continuation of the fact that a modern warship with adequate endurance, flexibility and capacity to manage vast amounts of information is neither small nor cheap. A warship's ability to influence events in a body of water by being able know what is happening (*surveillance*), by being available as a symbol of its government's authority (*presence*), and by being able to intervene and take action when necessary (*response*) is common for both "home" and "away" scenarios. This approach to sea power (for that is what it is) is not new, but it does call for versatile warships with high endurance – features that invariably determine size and thus cost.

Ask any admiral today what his procurement priorities are and he will give you much the same answer admirals have given for the past 300 years, "Ships and sailors to man them!" This is a reply born of years of experience. The caveat, though, is that those ships must be strategically and operationally useful and not mere tokens.

Experience has shown that a modern, effective navy consists of a balance of capabilities under, on and over the water. Traditionally Canada has been able to do this, but what of the future? It is safe to assume now that the replacement fleet support ships will be built and that they will have greater versatility than their predecessors. New maritime helicopters are on order. The *Victoria*-class submarines, now that their teething problems have been solved, have many years of useful life. Unfortunately, the value of the Aurora long-range maritime patrol aircraft does not seem well understood and this is cause for concern. So the immediate issue in maintaining an appropriate balance of maritime forces is to replace the existing destroyers and frigates. The destroyers must be replaced now because they are at the end of their useful lives and the frigates within the next 15 or so years before they too become too old to be useful.

What should the new ships look like? Before the Battle of the Nile, Nelson reputedly said, "Frigates! Were I to die this moment, *want of frigates* would be found engraved on my heart!" And he was right, had he had enough frigates to determine where the French were, the history of Europe might have been very different. Also, as the newly-born United States Navy discovered very quickly in the early 1800s, frigates provided their government with the flexibility and fighting power needed to support diplomacy and preserve sovereignty at sea. However, technology drove naval policy away from inherent flexibility and back into the clutches of huge battle fleets. Yet, while the great powers built up their fleets, they came to realize, as Nelson had during his Mediterranean campaign, that the capital ships of "the line" were inflexible and too slow to conduct the myriad other tasks naval forces need to do. Today, the frigate is a metaphor for a versatile, combat-capable warship that can equally take its place "in the line" or operate independently.

A good case can be made that the Canadian Navy's basic requirement is for frigate-type ships. This has been well-argued in making the case for the Single Class Surface Combatant (SCSC). But if you go to a naval architect and ask him, or her, to design frigates, you will get a quizzical look in return and be asked to state just what it is that you want those ships to do. The traditional requirement to "float, move and fight" is not enough; today, one must specify a range of different criteria such as endurance and sea-keeping capability, ability to carry and support helicopters, ability to venture into various grades of sea

ice, information handling capacity, interoperability with other warships, and so on. Those are capabilities inherent in today's Canadian frigates and any future design requirements must necessarily consider them all. Better that they all be included in the initial design rather than excluded only to be retrofitted at great expense.

Can such new ships operate in the Arctic? Of course they can if they are designed to do so. And giving the new ships some ice strengthening makes sense. It is important to be able to send a warship into northern waters during the six-week shipping season, but there is certainly no need to send a warship there when the waters are frozen. The coast guard has icebreakers to cover those situations.

Without well-trained and enthusiastic people a navy has no heart. In building new fleets for complex missions in an uncertain world, the recruiting, training and retention of people is as important as building the ships themselves. Ensuring that the right people are always available requires not only a compensation and benefits package that is fair and attractive but also acceptable conditions of service. The thermometer one uses to measure the health of a service, not just the navy but of all services, is the retention rate. If the trained people are staying in the service then the conditions of service are acceptable. If they are not, then measures have to be taken to improve those conditions. Here, it is not always pay that matters – life-style stability is now a huge factor.

Although a call for "Ships and sailors to man them!" may be an eminently sensible statement of future naval requirements, it needs to be translated into specific numbers with precise statements of capability so that a credible force plan can be drawn up and costed.

That plan is eagerly awaited.

Peter T. Haydon

Vice-Admiral Hugh MacNeil receives Admirals' Medal for 2005

Photo: Formation Imaging Atlantic

Her Honour, Honorary Captain (N) Myra Freeman, Lieutenant Governor of Nova Scota and Vice-Admiral Hugh MacNeil on his being presented with the 2005 Admirals' Medal.

Each year the Admirals' Medal Foundation presents a silver medallion to a suitable individual as public recognition of their significant personal contribution to Canadian maritime affairs. Their achievements, whether through science, technology, academic studies or the application of practical maritime skills are considered as worthy of special recognition.

For 2005, the Admirals' Medal was awarded to Vice-Admiral Hugh MacNeil for his contributions to Canada, the Canadian Navy, the province of Nova Scotia, and the naval community in Canada as a whole.

A former Chairman of the Canadian Naval Memorial Trust (CNMT) from 2000 to 2004, Hugh MacNeil was instrumental in forming a Naval Heritage Committee in 2001 with Mr. Bob Geharty as its Chair. This committee oversaw a feasibility study sponsored by the Waterfront Development Corporation, which overwhelmingly supported a new Waterfront Naval/Maritime Heritage complex at Queen's Landing in Halifax. As Chairman of the CNMT, Admiral MacNeil was instrumental in ensuring that HMCS *Sackville* would be featured in the proposed complex. Final approval rests with the Waterfront Development Corporation and is expected in summer 2006. He remains an active member of the Naval Heritage Committee and is the Canadian Naval Memorial Trusts representative on the Museum Associations and the Waterfront Corporation. Thanks to Hugh MacNeil the project will ensure that the Trust's mandate to preserve *Sackville* in perpetuity will become a reality. Through Admiral MacNeil's leadership, Canadian naval heritage has been assured a prominent place in Halifax's new waterfront development.

Transformation and Technology for Medium Navies

Norman Friedman*

Photo: Formation Imaging Atlantic

NATO ships during ***Operation Apollo****.*

This is Part One of the keynote paper presented at the conference "Transformation and Technology," hosted by the Centre for Foreign Policy Studies, Dalhousie University, June 2006.

What follows necessarily focuses on US developments, because the United States Defense Department was the first to insist that the post-Cold War world required some sort of transformation. However, the need to transform transcends the United States and its current administration. Moreover, the transformation now in train in the United States greatly increases the importance of medium navies and other medium forces because of the way in which the world has changed since 1991.

It may be argued that it is odd to look back 15 years when describing current and future military forces. However, the Cold War lasted so long that it will be a long time before its effects are gone – and before the habits of thought consistent with Cold War conditions are gone as well. This situation is exacerbated by the very long development time of modern weapons and platforms. Partly because development slowed dramatically after the end of the Cold War, most systems currently in production were conceived in the 1980s or even earlier. It also seems fair to say that the very long development times we have come to accept were themselves a consequence of Cold War conditions. First, the international situation (and thus the scenarios envisaged) was remarkably stable. Second, nuclear deterrence made war unlikely enough to make lengthy development tolerable. Neither condition has survived.

One of the great problems of the medium NATO navies is that, having specialized during the Cold War, they found their ships largely irrelevant to what followed. That is why the Royal Navy and the Royal Netherlands Navy have been discarding excellent Cold War anti-submarine warfare (ASW) frigates in recent years, well before

Photo: Formation Imaging Atlantic

Multinational cooperation: the way of the future.

their lifetimes were up. Yet in both fleets the successor ships are also creatures of the Cold War, designed to deal with Soviet-style massed air attacks rather than with the limited attacks to be expected in the Third World. They were clearly designed before there was much interest in projecting power ashore, yet such projection is likely to be the main post-Cold War naval function.

The most profound post-Cold War change is that the clock of international affairs seems to be running much more rapidly....

The most profound post-Cold War change is that the clock of international affairs seems to be running much more rapidly, so that the future is far less predictable. It is not only that the world seems to have been considerably less peaceful over the last decade, but much more that the kinds of crises which arose were far more unexpected. September 11, 2001 was a genuine surprise to the US government. It had many contingency plans in hand but not to deal with a sub-national force wielding weapons of mass destruction from a base buried in Afghanistan. Even the basic forces of international affairs seem different – the classic logic of realpolitik does not seem to apply to organizations like Al Qaeda. Thus the calculus of deterrence, which formed the basis of policy during the Cold War, seems far less meaningful.

If this very brief summary of changes is valid, then what happens to military forces? At the very least, flexibility becomes much more important. On one level, that should mean much shorter procurement cycles. On another level, for navies with large fixed investments, it should mean much greater interest in open architecture. Is it too much to remember that the most open architectures available to navies now are in aircraft carriers and their ilk? For aircraft, it suggests that the ability to carry the widest variety of stores is probably much more important than stealth because the latter is probably perishable while the former makes a long-lived platform enduringly useful. Transformation in procurement practices and philosophy is probably the most important requirement for a post-Cold War world – and the most difficult to put into place.

Much has been made of transformation in recent years, but it has never been very consistently defined. It has been espoused by the US Defense Department, which created an Office of Force Transformation both to encourage new thinking and to review service plans for transformation. Whence the urge to change forces which, after all, had proven very successful in the first Gulf War?

The central driver was the sense that the world had changed, and that the forces built to win the Cold War were no longer appropriate. They might not even be adequate. For decades the assumption had been that any local war could be treated as a lesser included case of the big war that might have been fought had the Cold War suddenly become hot. That was never entirely realistic, and a cynic would say that it had always been a way of avoiding increased expenditure for tactical forces.

At the very least, a protracted conventional war, even on a small scale, would stress forces quite differently from the short sharp war imagined during the Cold War. It would, for example, require a much greater investment in spares and in maintenance. Consider attack helicopters as an example. Fighting a one-month NATO war with 600 such aircraft would involve 600 helicopter-months of operation. Policing (say) Kosovo for five years with 50 helicopters would use up 3,000 helicopter-months. Similarly, protracted operations use up far more munitions over time than the short sharp war. Survivability, however, becomes much more important as in a protracted war a ship or airplane can return to participate after extensive repairs. Any given war may well not be protracted but in a very unstable world there will probably be many minor wars, and in effect they add up to protracted low-level conventional war. Incidentally, living conditions in armies and air forces change dramatically in this kind of situation, and military personnel now see far more action during their service careers than they did during the Cold War.

The US Navy has made the change explicit in its reference to a "3-1 strategy" – the navy must be able to handle three different kinds of contingencies, without any hope

Photo: Internet image

Power projection: the USS ***Nimitz****.*

that forces built for one can necessarily do the others. The three are peacetime operations (such as presence and support), local war and major war. The problem is that the country cannot afford three fleets. The art of fleet design is to develop a single fleet which can shift from one sort of operation to another at minimum cost. In fact the Cold War US Navy developed such a fleet because it espoused more open architecture than did other navies, both in the form of its carriers and in the surface combatants with vertical launchers. Who would have imagined, when the *Arleigh Burke*-class was designed, that the ships would have spent much more of their time firing land-attack Tomahawks than defending carriers with their Aegis systems?

The change in the world was not merely that the Soviet empire collapsed, but rather that the security problems which remained were quite different from those of the Cold War. In effect the Cold War froze most local rivalries, because those on both sides usually became clients of superpowers nervous about undue provocation, for fear of touching off some uncontrollable war. As an aside, it could be noted that Vietnam might seem to have violated this reasoning. In fact it illustrated that the Cold War was often triangular rather than simply bipolar. As ruler of the Soviet Union and, until the Sino-Soviet split, ruler of the world Communist movement, Nikita Khrushchev tried to forbid local movements from armed action, precisely for fear of nuclear war. Mao Zedong used his caution against him in an attempted takeover of the world movement. The Vietnamese Communists exploited the tension between the Soviets and the Chinese to gain the resources they needed to fight their war. No one else took that chance, and Khrushchev demonstrated his priorities when he removed Soviet missiles from Cuba in 1962 without consulting the Cubans. It now seems that the Cubans, rather than the Soviets, were the prime movers in the African adventures of the 1970s. It can be speculated that Fidel Castro wanted to make it appear that any deal undercutting him would seem to be a betrayal of the larger world movement, hence unacceptable in view of the Chinese rivalry with the Soviets for leadership of the world movement. The irony of the Soviet invasion of Afghanistan in 1979 was that the Soviets considered their operation defensive, and an extension of a presence which an earlier Afghan government had requested. It was their misfortune that most of the world saw the invasion as the first step in a strategic move towards the warm waters of the Gulf, which Russia had long coveted.

One interesting feature of the Cold War, in retrospect, is that even when countries acted entirely independently the side against which they acted tended not to imagine that they were other than puppets. Each superpower thus had an active interest in reining in its supposed clients. In cases such as the former Yugoslavia, the fear of attack by one superpower (the Soviet Union) united otherwise fractious groups. The current world disorder has, of course, other causes, but it can be argued that many would have gone relatively unnoticed had the Cold War continued.

None of this is to say that any government will feel compelled to become involved in all international crises. The great relief from Cold War days is that no current crisis is likely to escalate into a thermonuclear war capable of wiping out much of our populations. To some extent we can choose our engagements, although some, such as the current terrorist war, are inescapable. Moreover, there are still crises which can escalate into major disasters but not into the sort of disaster that we faced during the Cold War. The negative side to this is that the nuclear deterrence which proved so useful during the Cold War has

Photo: Formation Imaging Atlantic

HMCS ***Frederiction****: designed for ASW but with a general-purpose capability. These frigates continue to serve Canada and its allies well through the post-Cold War era in a wide range of capacities around the world.*

largely been lost which is why crises are so frequent, and so often escalate into war.

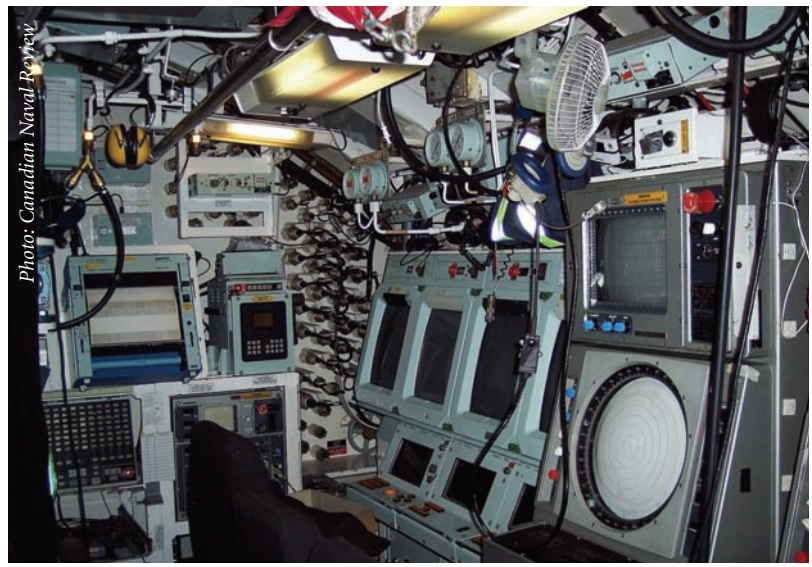
> *The great relief from Cold War days is that no current crisis is likely to escalate into a thermonuclear war capable of wiping out much of our populations.*

One very important question for the future is whether the current war against Islamic terrorists will be seen as equivalent to the Cold War (that is to say that the West will consider this enemy primary), or whether this war will be seen as one of several which have to be faced. One problem is that the enemy we face is not very well defined. Three possibilities come to mind. One is that the war is against Al Qaeda and its equivalents. A second is that Al Qaeda is only one of several groups competing for power in the Muslim world, and that 9/11 was due to its perception that attacks on Americans and other Westerners were an excellent way of gaining credibility. In that case it is very likely that other groups seeking power in the Muslim world will at least consider terrorist attacks in the West, and Al Qaeda will become one of several very distinct enemies. A third possibility, related to the second, is that 9/11 and subsequent attacks are symptoms of a much deeper turmoil within the Muslim world, perhaps comparable to the Reformation in Europe about 600 years ago. We should remember that the Reformation led to the Thirty Years' War which essentially destroyed Central Europe. In this case, the terrorist part of the war may seem trivial compared to the big intra-Muslim war which follows. At the least, we may find ourselves defending enclaves within the Muslim world. Access to oil may become a crucial problem whether or not we take current depressing production forecasts seriously. Each of these three possibilities demands a very different approach. Unfortunately, there seems to have been remarkably little public discussion of this.

Problems of definition help explain why the point of the war in Iraq, for example, was not made altogether clear. The United States and Britain were fighting a low-level war against Saddam Hussein before 2001. One reason for overthrowing him was that the war against terrorists would, at the least, require forces to move elsewhere, and thus continued containment might become impossible. In that case Saddam would soon regain the power needed to seize Kuwait and probably Saudi Arabia, undoing what had been fought for. Although army forces are now tied down in Iraq, the air and naval forces formerly used to contain Saddam have indeed been freed to fight elsewhere. A second reason is the perception that instability in the Middle East, out of which the current terrorists arise, is due to the failure of Middle Eastern regimes to create decent conditions for their populations. Opening Iraqi society, which is relatively well educated by regional standards, might trigger a democratic revolution across the region, which in the end would solve the terrorist problem. Clearly any such hope would be speculative, but 9/11 seemed to show that doing nothing at all would be disastrous.

Other kinds of war still loom. For the United States, for example, before 9/11 it seemed quite possible that the country would be drawn into the war against narco-terrorists in Colombia. That war, which is still raging, has little if anything to do with the struggle against Al Qaeda and its ilk. Where does the rise of a potential peer competitor, China, fit into the current situation? To what extent do governments feel compelled to help the United Nations stabilize countries – like Sierra Leone or Sudan – which are collapsing into anarchy? Is involvement a necessary alternative to allowing organizations like Al Qaeda to exploit that anarchy?

Perhaps the most important feature of the post-Cold War world is that problems, when they do occur, generally are not correlated; several crises can easily pop up simultaneously. Moreover, they seem to be unpredictable. It is



*The Control Room of HMCS **Windsor**. Submarines such as Canada's **Victoria**-class have changed roles from ASW to intelligence, surveillance and reconnaissance (ISR).*

Photo: Internet image

Global Hawk: the way of the future?

now impossible to plan for a very limited series of operations, as in the Cold War. The sort of naval specialization common during the Cold War, when the Canadian Navy became a centre of ASW excellence, would no longer make much sense.

As well, nearly all warfare will be expeditionary. There is little point in building up garrisons in specific places because they probably will be nowhere near where they will be needed. In the wake of 9/11, the US Navy circulated a set of slides arguing for a new distribution of naval power, built around a description of a 'bad day in 2003.' That slide showed four entirely independent crises, each of which would have to be dealt with. No one could guarantee that they would not be simultaneous. Indeed, if all US forces were tied down by any one crisis, those interested in operating freely elsewhere might well do so before they had to face those US forces. The conclusion was that the US Navy would have to distribute its strength much more widely. This conclusion explains the current substantial LCS program, which is intended to underpin a much more dispersed fleet containing new formations such as the Expeditionary Strike Group and Surface Action Groups. It also explains, perhaps paradoxically, why the US Navy has abandoned forward carrier deployment in favour of surge deployments.

If crises are likely to be both simultaneous and widely dispersed, then forces despatched to deal with them cannot be very massive. Ideally, they must accomplish their missions relatively quickly, because other crises may very well arise. Such forces cannot mass conventional weapons. In the past, many in NATO saw tactical nuclear weapons as a way to deal with the overwhelming numbers the Soviets could bring to bear (at least until the Soviets, too, had large numbers of such weapons). Now, at least until some nuclear-armed adversary arises, it seems unacceptable to use tactical nuclear weapons. Such weapons can probably still be imagined as a means of dealing with enemy weapons of mass destruction (e.g., to destroy them in deep bunkers), or for interceptions in space (among other things, to neutralize chemical or biological weapons), but that is very different from destroying massed troops. If we can no longer deploy massed weapons, and we can no longer deploy weapons of mass effect, is there a viable substitute?

Dispersion of the US fleet makes the forces available to medium navies much more comparable to those which the US Navy can deploy in any one contingency, or on a sustained basis. That raises an interesting point. Navies, like other armed forces, are quite expensive. In a post-Cold War world, are they still a worthwhile investment for governments which have many vital social needs to meet, particularly as the baby boom generation ages? During the Cold War, one argument often used was that contributing to NATO earned a voice in what the alliance did – what the British sometimes called "a vote in the end of the world." The forces involved were often quite small relative to those wielded by the United States, but they were still valued. What may now be happening is that the same small forces are not merely still valued, but proportionately a lot more valuable. That has certainly been the case with special forces in Afghanistan.

A second driver behind transformation was finances. By the end of the Cold War, individual platforms were becoming more expensive, and their unit costs seemed likely to rise faster than inflation. By the late 1990s, there was a widespread perception that increases in the US defence budget were unlikely to permit anything approaching one-for-one replacement of existing ships and aircraft. A 'train wreck' was predicted for the early 2000s. The enormous increases in spending during the current administration have put off the evil day, but they cannot eliminate the problem. To some extent the problem has been perceived, at least outside official circles, as one of gross gold-plating. If there is no current peer competitor on the Soviet scale, do we really need to press the state of the art in areas like stealth?

When President George W. Bush took office in 2001, he did not expect to increase the defence budget. He promised instead that by transforming the military to a post-Cold War configuration he could make it both effective and affordable. This promise was why his new Secretary of Defense began his term with a series of committees to examine current programs for their transformational qualities, and also why an Office of Force Transforma-

Afloat and ashore, information processing is the lead activity in modern operations at sea. Shown here are (left) the Operations Room of a Canadian frigate and (right) the Marine Security Operations Centre in Halifax.

tion was created. What was not asked at the time was whether the US military had already changed in response to the end of the Cold War. It seems arguable that the US Navy was already largely in a post-Cold War posture, having shed much of the specialized ASW strength needed to deal with a large Soviet submarine force. The rest of the fleet was well adapted to power projection. Its main weakness was in numbers – the opposite of what would have saved money by change. The most important change currently in train is an attempt to solve the numbers problem.

The army and air force, however, were still in much their Cold War postures, ill-adapted to quick deployments and concentrating on the sorts of weapons needed to deal with peer competitors. It seems at least arguable that transformation still has not taken hold in the air force, as the current overriding priority is the F-22 air superiority fighter. Congress recently had to forbid the air force from retiring some existing aircraft, such as B-52s, which seem particularly well suited to the current kinds of non-Cold War warfare.

Part of the problem seems to be that the post-Cold War world has not really been well-defined for planners. Is Iraq an aberration or is it the future? How should Afghanistan be viewed? How important is the peer competitor problem? Iran? What are the priorities?

For navies, an important solution to the financial problem has been modularity in some form or other. An example would be to design a ship to be fitted 'for but not with' – i.e., to go to sea without some expensive elements. Another is to provide space for later additions, as in the US *Spruance*-class ships. Quite aside from its direct financial advantages, modularity allows for surprises during the life of a ship. The number of ships a navy can operate is, in the simplest calculation, the number which can be bought each year multiplied by their lifetime. The first number is falling. The second depends both on wear and tear and on how expensive it is to adapt a ship to changing circumstances. The more modular the ship, the easier the adaptation. It might be added that sheer size makes for easier adaptation and also for greater durability against the stresses of the sea. These points of course contradict the popular idea that smaller is cheaper, both at first and in the long run.

Another way to approach the financial problem is to change the terms of procurement. If particular platforms are becoming very expensive, then perhaps it would be better to look at different ways to achieve desired overall capabilities, such as the capability to occupy territory or to deny an enemy airspace. This type of analysis is inherently joint, so at least in theory it reduces duplication among the services. The idea is not really new; it was pioneered in the early 1960s under Secretary of Defense Robert S. McNamara. Now it is coming back as the Joint Capabilities Integration and Development System (JCIDS). At the least, in theory JCIDS or something like it can encourage the development of new ways to do what we already do, e.g., encouraging the use of robotic systems to replace manpower. That connects finances with the potential of new technology.

A third driver, and perhaps the solution to the problems of the first two, was changing technology, particularly information-processing technology. Information processing seemed to be the engine driving Western economies. It could be imagined that the sort of warfare planned during the Cold War was a creature of the late manufacturing age, just as the mass armies of World War I had been creatures of mass transportation and mechanized

Both photos: Formation Imaging Atlantic

agriculture. What would an information age military look like? It might be much lighter and much more agile. If it could exploit the civilian information economy, it might also be a lot more affordable. Perhaps Cold War militaries had been horribly expensive because they had required so much specialized hardware. Past militaries used far more of the ordinary products of their supporting civilian economies. An example which comes to mind is troop transport. The US Army mechanized successfully for World War II by using mainly civilian-type trucks to move its troops (outside battle). After the war, armies adopted specialized armoured personnel carriers, which cost far more because they were not simply adapted civilian vehicles. The high cost of such vehicles per soldier helps explain why post-1945 armies were far smaller, in terms of units, than their pre-1939 counterparts. Another factor was the need for much larger logistical tails to service and maintain the specialized vehicles. About 1960 the US Army, for example, needed more than three backup personnel for every man in each division.

We are certainly seeing a reversion to civilian technology in the form of commercial off-the-shelf (COTS) electronics because the military can no longer afford to develop its own computer hardware. One problem in embracing COTS is that the commercial development cycle is so much faster than that of the military, at least for the present – the commercial cycle is something like 18 months. Beginning with the submarine A-RCI program, the US Navy has adopted a policy of replacing shipboard servers every two years to maintain equipment at the 'state of the art.' Replacement is possible because the application software on the server is portable, having been written in high-order language. It is hoped that all other platforms will ultimately be similarly equipped.

For US allies like Canada, there is an additional factor. To the extent that allies wish to retain interoperability with US forces, or the ability to mobilize with US support, they find themselves adopting a changing US style of warfare whether or not they might independently wish to do so. One important question for such allies – which in practice includes the medium navies – is where the current US transformation is going.

Thus, with the end of the Cold War it could certainly be argued that the military should change. However, it could also be argued, particularly in light of the success against Iraq in 1991, that the existing systems worked. Change might seem attractive in theory, but it would certainly not be attractive if it cost lives in combat. In effect change became inevitable because existing equipment had to be replaced, and because the planned replacements were unaffordable. A move towards a more information-based military system was attractive. It remains to be seen whether this particular transformation met the first two requirements. One problem in the process, at least in the United States, has been a lack of articulated reasoning explaining what is or was needed, and why. Because of this lack, any paper like the current one is more deduction from observed practice than exposition of current philosophy and doctrine.

* All opinions expressed in this paper are the author's own, and should not necessarily be attributed to the US Navy or to any other organization with which he has been associated.

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(The second part of this article will appear in the Fall issue of ***CNR****.)*

British Columbia Ports Booming

Jan Drent

Photo: Formation Imaging Atlantic

The modern container ship: the heart and soul of trade.

Canada's West Coast ports are on a roll. Vancouver handles $43 billion worth of waterborne trade each year, and the other mainland ports are also handling record cargoes. There are two causes: the surge towards "Consumerland North America" of cheap manufactured goods from China and southeast Asia; and the huge demand for Canadian raw materials abroad.

In fact, overseas trade through Vancouver jumped by 11 per cent in 2004, the largest increase in a decade. Roughly one-fifth of total traffic was with mainland China. The three main growth areas were potash, sulphur and containers.

Eighty per cent of Vancouver's cargoes are still bulk commodities, but increasing container traffic represents the best chance for higher revenues. Container traffic has almost doubled in five years. In 2005 Vancouver handled 1.7 million TEUs ("20 foot equivalent units," the industry standard because that was the size of the earliest containers; nowadays containers are increasingly 40 feet or 13 metres long). Incoming containers carry goods consigned to Canadian destinations – only two to three per cent go across the border to the United States.

Container traffic handled through American and Canadian West Coast ports has been growing at a rate equivalent to more than the entire capacity of Vancouver every year and is projected to *triple* over the next 20 years. Vancouver plans to increase capacity to four million TEUs by 2012 and five million TEUs by 2020 at a cost of $1.4 billion. Several of the port authority's five terminals are involved. Vancouver has three container terminals, two in the inner harbour and Deltaport at Roberts Bank. All three terminals are being upgraded, and Vanterm received new gantry cranes in 2005.

*Container traffic ... has been growing at a rate equivalent to more than the entire capacity of Vancouver every year and is projected to **triple** over the next 20 years.*

Throughput at Deltaport – Vancouver's busiest container terminal – will increase by one-third. It is sobering to note that, despite their annual throughput today, some of these facilities have not been in existence for very long. Indeed, Deltaport started operations only in 1997, and the adjacent coal facility (known as Westshore Ter-

minals) is only marking its 30th anniversary. Lynnterm, which includes the old naval supply depot at Lynn Creek in North Vancouver, also continues to flourish. It handles non-containerized forest products, steel and "breakbulk" general cargoes such as machinery.

One of the inner harbour terminals is now operated by P&O which has shed its deep-sea shipping interests to concentrate on operating port terminals. P&O, which also operates terminals in several key ports on the US eastern seaboard and Gulf coast, has just been purchased by Dubai Ports World which triggered a storm of protectionist rhetoric in the United States.

Containers arrive from Asia filled with manufactured goods, and roughly four-fifths of outbound containers now also move full. The rest are either specialty containers or are stacked on upper tiers on deck. Forest products now account for 40 per cent of all containerized exports from Vancouver. Of the forest products shipped by sea, roughly two-thirds of all lumber, approximately 80 per cent of Canadian panel board and 40 per cent of wood pulp is now going out in containers.

The increased traffic through Vancouver is a positive change, but the burgeoning traffic has exposed deficiencies in Vancouver's port infrastructure. Congestion in particular threatens further growth. Transport Canada estimates its cost in the Vancouver area as over $1 billion a year. Retailers such as Sears and Sony which purchase about 80 per cent of their merchandise from China, Hong Kong and Taiwan now have to wait up to 15 to 17 days for imports to reach eastern warehouses after landing in Vancouver, twice as long as in former years. This is a problem. If Vancouver – Canada's busiest port – is going to remain competitive and capable of handling growing traffic, congestion must be relieved. Some corporations have already sought alternatives to shipping through Vancouver. Thus, Hudson's Bay Company, Canadian Tire and La Senza all imported goods from Asia through East Coast ports in 2005 when Deltaport became gridlocked because there weren't enough trains to handle incoming containers. If Vancouver proves unable to cope, containers could be routed via Seattle and Tacoma and then trucked across the border.

Improvements in the lower mainland transportation infrastructure face jurisdictional problems – there are seven municipalities that surround the port – and this can mean delays in decisions and disputes about responsibility. The port authority uses land owned by the federal government and pays $5.5 million in municipal taxes.

The transfer of containers for their transport inland has been somewhat problematic at times. More than 70 per cent of all containers passing through Vancouver go from ship to rail and bottlenecks caused by inefficient separations of road and rail lines contribute to gridlock. Episodes such as the 47-day labour standoff which ended in August 2005 involving truckers are bad news for competitiveness of the "Gateway." The dispute involved a seemingly intractable disagreement between truckers and shippers. The truckers have historically operated individually and are being squeezed by rising fuel costs. Governments (federal, provincial and municipal) were painfully slow to intervene but mediator Vince Reddy,

Photo: Internet image

The Port of Vancouver.

BC's ubiquitous labour dispute resolver, was eventually called in, and has made recommendations to solve the long-festering issues.

The federal and provincial governments along with various stakeholders have developed a "Gateway Strategy" to improve transportation links. The provincial government estimates that $2.5 billion will eventually be required to expand BC ports, roads and railways. A significant amount of money has finally been allocated to upgrading the facilities on the West Coast and making them more efficient. The Liberal government introduced the *Gateways Act* in Parliament in October 2005. It committed $590 million over five years, while the province allocated $125 million in matching funds for infrastructure projects. It should be noted, however, that the federal funds were to be allocated to infrastructure projects in all of western Canada.

The Gateways legislation died when Parliament was dissolved but during the January 2006 federal election campaign the Conservative Party promised to follow through on the "down payment" promised by the Martin government. The fact that David Emerson's title in the

Cabinet is "Minister of International Trade, the Pacific Gateway and the Vancouver-Whistler Olympics" is seen as a positive omen.

Ottawa has long focused on north-south transport links from Ontario and Quebec to the United States. The Windsor-Detroit connection in particular comes to mind. The Pacific Gateway initiative is a welcome sign of interest in Vancouver's future as a key factor in developing more trade with Asia.

Ottawa has long focused on north-south transport links from Ontario and Quebec to the United States.... The Pacific Gateway initiative is a welcome sign of interest in Vancouver's future....

Meanwhile, the Canadian Pacific Railway (CPR) is separately spending $160 million in 2006 on expanding its western track network. Canadian National (CN) and CPR are rationalizing the crewing of trains into the lower mainland – CN will crew trains from both railways going in north of the Fraser and CP will crew all trains moving on the south bank.

How Vancouver stacks up against other American West Coast ports and Canadian container ports is shown below. The figures for California are staggering and it's worth noting that 50 per cent of all container shipments to the entire USA come through those ports.

Comparative Number of TEUs Handled in 2004

Port	TEUs Handled in 2004
Vancouver	1.7 million
Fraser Port	0.32 million
Montreal	1.2 million
Halifax	0.52 million
Tacoma	1.8 million
Seattle	1.77 million
Oakland	2.0 million
Long Beach	5.8 million
Los Angeles	7.3 million

While dwarfing other Canadian West Coast ports, Vancouver is not alone in expanding to handle the increased traffic from the other side of the Pacific. Prince Rupert may finally cash in on its favourable location and become a significant port. A major new conversion of the Fairview Terminal to make it a container handling facility is underway. The federal and provincial governments plus CN (which plans to move containers to the northeastern USA by this route) have each contributed $30 million. Work started on a new wharf in January 2006. According to the plan, the first phase of the new terminal, opening in 2007, will handle 500,000 TEUs a year. The target for 2010 is an astonishing two million TEUs – more than what Vancouver handled in 2004.

In order to attain its full potential, the Prince Rupert facility must first come to an acceptable solution to a dispute about the land on which it is located. Negotiations with the Coast Tsimshian – a local First Nations population – continue. The Coast Tsimshian maintain that the existing terminal is built on the site of former native winter villages and shellfish harvesting beds. They fear that further expansion will have a negative impact.

The main benefit of Prince Rupert is its location. It is 340 nm closer to Asian ports than the Strait of Juan de Fuca. The shorter passage could cut the voyage to Vancouver, Seattle and Tacoma by 24 hours, and to Long Beach by 60 hours. With charter rates for container ships currently $18,000 (US) a day or more, plus fuel, a savings of 60 hours could obviously be attractive for a ship operator. Advocates of Prince Rupert point out that rail connections to Chicago will avoid the delays in Vancouver. They figure that the entire trip from a Chinese factory to the US Midwest can be reduced from the current 35 to 40 days to 20 by shipping through Prince Rupert. That would be a major time saving.

Port expansion cannot be discussed without noting the trend to building and operating much larger container ships. The trend is to use larger vessels with larger beams to achieve economies of scale. This means that the cranes which load and unload containers need ever-increasing reach, and terminals need to be able to process larger quantities of containers. The largest container vessels which can squeeze through the Panama Canal are classed as "Panamax" ships and can carry slightly over 4.500 TEUs. Over the past nine years a new generation of jumbos have been built with beams of 40 m (131.24 feet) – referred to as "post-Panamax" ships. These 67,000 deadweight tonners carry 5,000 or 6,000 TEUs. Even larger 7,500 and 8,000 TEUs vessels with a beam of 43

Photo: Canadian Naval Review

A typical, modern container facility.

m (141.08 feet) are now in service. These giants displace 100,000 tons, more than an aircraft carrier, and draw 14.5 m.

Thus far Vancouver is still largely being serviced by Panamax vessels but all three container terminals – two in the inner harbour plus Deltaport – now have "Super Post-Panamax" cranes to handle ships with 40 and 43 m beams. The largest ships now calling at Vancouver carry 7,000 and 7,500 TEUs. Prince Rupert will also have Super Post-Panamax cranes and one of its potential advantages is a depth alongside of 16 m (55 feet). Deltaport has depths of 15.85 m (52 feet), compared with 12.2 m (40 feet) to 15.5 m (51 feet) for the inner harbour terminals. As well, Fraser Port has two deep-sea terminals – the Annacis vehicle unloading facility and the Surrey Docks opposite New Westminster. The Surrey Docks handle containers and can berth Panamax-size ships. In 2004 320,000 TEUs passed through the terminal. There are plans to double this capacity in five years.

Port expansion cannot be discussed without noting the trend to building and operating much larger container ships.

Non-container traffic is also significant. British Columbia has two ports that are important for purposes other than container traffic – Kitimat and Victoria. Enbridge (formerly Interprovincial Pipelines) has just selected Kitimat as the terminal for two 1,200 km pipelines from Alberta, one to carry oil for export and the other to carry natural gas condensate inland. The condensate will be pumped from tankers and is used to dilute heavy oil produced from tar-sands to make it more easily transportable. Overall cost will be $4 billion.

In Victoria the cargo nowadays tends to be barge loads of aggregates and scrap steel to and from the upper harbour. The only deep-sea vessels now using the port are cruise ships, the bulk of which are on an Alaskan run (although the itineraries are diversifying). This is not an insignificant use of the port, and cruise ship traffic is increasing. In 2005 142 ships brought 292,000 passengers, compared with 139 ships and 262,000 passengers in 2004. The projection for 2006 is 330,000 passengers. These are impressive figures. There is also the long-established cruise traffic through Vancouver, which handled 280 ships with 930,000 passengers in 2004.

Conclusion

BC ports, Vancouver in particular, have long been important ports but for many decades their main role was raw material exports. But that has changed. Globalization has been facilitated by the container revolution which has inexorably funnelled traffic into fewer ports with the necessary large infrastructure.

Vancouver is now Canada's western gateway to our ever-growing trade with Asia. It is important, not just to British Columbia but to all of Canada, that the overlapping layers of government plus CN and CP work together to keep Vancouver competitive. The promised federal funds and the provincial money allocated for specific infrastructure projects have been described as a welcome "down payment." But more will need to be done. Meanwhile, Prince Rupert and CN are working on realizing the potential of its location as the North American container port closest to Asia.

This article has not even mentioned the security implications of increasing volumes of high-value vessels and high-value cargoes in BC waters. Clearly much more must be done to ensure that the cargo entering and leaving through BC ports is secure. Enhancing security is, however, the subject of another article. Interesting times.

During his naval career Jan Drent commanded three ships and retired in the rank of Commodore. He now lives in Victoria, BC, where he pursues interests in naval history, maritime affairs and languages.

An Amphibious Task Group for the SCTF

Major R.D. Bradford, C.D.*

Photo: Formation Imaging Atlantic

A Canadian Amphibious Task Group?

The Standing Contingency Task Force (SCTF) initiative is now over a year old and progressing steadily. At the heart of that force and serving as its crux will be the Amphibious Task Group (ATG), although to date most effort has been given to the SCTF's role, overall configuration and ground elements. With the exception of some preliminary work on shipping and landing craft, the ATG awaits its turn as the main effort of force developers. This is perhaps appropriate, as it allows prior and relatively unfettered development of the embarked forces (of which the ATG is the principal enabler) on the basis of the force commander's desired effects ashore. The ultimate reconciliation of these elements with the ATG can then follow in a controlled fashion. However, it is certainly not too early to look at the role and character of the ATG and its key aspects and issues. This article reflects on the current thinking about the ATG from the perspective of the senior staff officer, expeditionary and amphibious warfare.

The Force

Before proceeding, it is necessary to place the ATG in the context of the SCTF. Conceptually, the SCTF is a tool that allows the Canadian government to exert influence in the formative stages of a crisis in failed and failing states. As such, it is a rapid-response formation with global reach, intended for limited duration "full-spectrum" operations ranging from presence and stability activities to limited war-fighting. Physically, the SCTF is a seaborne, sea-based, integrated joint task force, optimised for operations in littoral regions, and it has an amphibious warfare capability. Being seaborne, the entire force is moved in and projected from ships. Being sea-based, the formation is designed to operate and be supported from these ships, with minimum displacement of command and support elements ashore. It is a joint task force, comprised of command, maritime, land, air, support and special operations units, but in contrast to past practice, these are integrated as a single formation for unified operations. It is not a national command element and national support element presiding over tactical-level units embedded in allied formations.

The littoral focus is also noteworthy. The SCTF is commonly assumed to be an amphibious force, but although partly true this is misleading. Paralleling the emergence of the Expeditionary Strike Group in the United States, the SCTF is centred on the littoral region and has two "hemispheres" – seaward and landward. To seaward, it can exercise sea control and other maritime missions, primarily using naval forces and maritime aviation but capable of exploiting less traditional means available elsewhere in the force. To landward, it adopts a new Canadian concept known as joint littoral manoeuvre in order to fuse maritime, land and aviation elements into a force capable of exerting influence ashore. Amphibious warfare is part of joint littoral manoeuvre. What must be understood is that the force can configure itself as an amphibious task force to conduct amphibious operations, but this is not its exclusive character.

In the force organisational concept, the ATG forms part of the maritime "component."[1] This always includes the ATG (comprised of specialist amphibious and support ships) and could include a naval task group (akin to the

well-established Canadian task group developed in the 1990s and comprised of surface warships, a task group support ship and possibly a submarine). The two may be quite discrete, as when the naval task group is conducting distant maritime interdiction or other sea control tasks, and the ATG is inshore providing support to landed forces. However, there is also a degree of mutual support and combination. For example, in landing operations, the ATG will form the basis of the "naval force" (the sea counterpart to the landing force (LF)) and its surface warship requirement would be provided by the naval task group. There will be occasions when it is not desirable or practicable to provide a separate naval task group to the SCTF, in which cases the ATG would be provided with one or more surface units and assume the broad naval responsibility in the force. For this reason, the ATG must always retain a solid, general-purpose naval outlook in addition to its amphibious specialty. Nonetheless, it is the joint littoral manoeuvre capability that shapes the ATG.

Joint littoral manoeuvre is an overarching concept that governs and synthesises specific capabilities of the maritime forces to allow their effective and systematic application directly to operations on land at the operational and tactical levels. It is not unique to the SCTF but will reach its highest state of development in it. Joint littoral manoeuvre is comprised of two branches, one concerned with the seaborne movement and delivery ashore of a land element (and its subsequent support from the sea) and the other with warship support to forces ashore. The first branch consists of three sub-branches – littoral mobility activities, amphibious operations and riverine/estuarine/coasterine operations – all using the "amphibious warfare toolbox" of doctrine, procedures, tactics and techniques.

Littoral mobility is the movement of a fully intact land element by sea and its delivery ashore through normal or expedient terminals. The latter includes delivery across a water gap to degraded ports or beaches. In littoral mobility activities, the embarked force is delivered administratively (with due regard for security) and a formal landing operation is not required. Littoral mobility can be a tremendous virtue since an intact unit – command, personnel, equipment and supplies together – can exploit sea space for manoeuvre, poise offshore in sight of land or over the horizon to assert presence in varying degree, and undertake precision-timed entry, requiring only minimal shake-out before proceeding inland to conduct operations. Littoral mobility requires a benign

Photo: Formation Imaging Atlantic

A Chinook helicopter: the prime heavy-lifter.

and secure entry zone in which to effect delivery. The land element, although it can be configured at sea prior to landing to suit the ultimate operation inland, lands in a relatively permissive environment ashore and then proceeds to the operation. An amphibious force can conduct littoral mobility activities.

The SCTF is intended to be more than an amphibious force, but it nonetheless is an amphibious force when required, being designed to conduct unopposed landing operations as part of tactical manoeuvre from the sea. The unopposed landing is the present norm in Western amphibious practice and it is essential that it be understood. An unopposed landing operation is "manoeuvre" – i.e., the melding of movement and fires by a tactically-configured and disposed force ready for engagement under its own terms but prepared to meet unexpected opposition. The premise is that the landing force will land where the enemy "ain't" and move to where the enemy "is" to engage on its own terms. It is not the same as an opposed landing, where entry zones are deliberately defended by capable military forces and where the landing force has to fight for its entry zones as it lands. (The opposed landing is sometimes mistakenly called "forcible entry.") Nobody, even the Americans, really has an opposed landing capability at this time. Some forces, such as the United States and certain Mediterranean forces, retain the ability to fight a "beach skirmish" using armoured amphibious vehicles against minor opposition, while the British eschew even this capability and place greatest reliance in stealth, speed, surprise and agility. The SCTF aspires to the British model.

Riverine, estuarine and coasterine operations are an extension of the principle of the fluid flank – i.e., using ships and watercraft to extend the manoeuvre capability of a force ashore. The SCTF will have platforms and systems capable of operating in these ways, but the ca-

Photo: Formation Imaging Atlantic

*Canadian **Victoria**-class submarines have an important intelligence-gathering, surveillance and reconnaissance role in the SCTF as well as being able to support beach parties and special operations and provide force protection.*

pability is adaptive in nature and anticipates making use of means acquired primarily for landing operations and ancillary duties. However, ideas are still percolating and we will have to see if riverine warfare assumes a higher profile in the future.

The Amphibious Task Group

So what will this Amphibious Task Group look like? As noted, there has been only tentative discussion of the details of the ATG, but it is possible to characterise and discuss it in terms of four main elements: the command element; the ships; the assault flotilla; and the tactical watercraft and amphibious diver flotilla.

The Command Element. The ATG is a permanent subordinate formation within the SCTF and will have its own commander and staff. At the time of writing, this staff remains almost completely a blank slate. This is due in part to the prior necessity of determining the overall SCTF command-and-staff organisation and process. Presently, it appears that the "central staff" concept is in the ascendant, which would centralise all staff functions and duties – joint, maritime, land, air and support – in a single shared staff. However, this approach would recognise the necessity of leaving the subordinate commanders with small permanent unit or formation staffs, primarily to assist the subordinate commander in the "formulation" aspects of the planning process while the central staff absorbs most of the "facilitation" tasks and staff duties.

The overall force command-and-staff complex is an absolutely critical issue for everyone, and its resolution is of extreme importance to the ATG. However, the scope of the ATG staff's interest is clear: first, the generic functions of the ATG as a maritime task group; second, the specific functions of the ATG as a specialised task group (i.e., as a naval amphibious organisation and system); third, additional specialised functions arising when the SCTF as a whole is configured as an amphibious task force; and, fourth, additional functions when operating as part of an allied or multinational force in a joint littoral manoeuvre capacity.

The ATG developers will have three main focus points: the ATG staff; the system of combined "agencies" within the force; and the amphibious manoeuvre cell. The staff has already been discussed. "Agency" refers primarily to a recognised function and usually to an analogous facility. For amphibious purposes, these include the Joint Intelligence Centre, Supporting Arms Coordination Centre, the Tactical Air Coordination Centre, and a host of others. Linked to these is a network of more specialised functions and cells, including employment and coordination cells for helicopters and landing craft, the Tactical-Logistics Centre (TACLOG) for sustainment, the primary control ship managing inshore waterspace and ship-to-shore movement, and so on. In a conventional amphibious force, these functions would be represented in agencies bearing those exact names, but in the SCTF many such functions will be subsumed in standing force operations centres and cells. The synthesis of the general and the amphibious will be a major challenge.

The amphibious manoeuvre cell will concentrate landing operations expertise in an advisory, planning and coordination cell embedded in the ATG. This follows the British practice.

Ships. The "Gators," as our American allies call them, are the heart of the ATG and, indeed, of the SCTF. Present discussion of the SCTF is premised on a two-ship group, comprised of one amphibious ship (the "A" Ship) and one supporting ship (the "B" Ship, primarily with cargo capacity). This is unusual, as the overwhelming norm for an amphibious force with a battalion group-sized landing force is a minimum of three ships. The Canadian landing force is based on a hybrid battle group of approximately battalion size and is comprised of medium-weight armoured vehicles, light-weight vehicles, and a large combat service support element. Additionally, the ATG is expected to embark the SCTF command element, as well as an aviation group and sometimes a special operations element. In other words, at the time of writing we have more people and things to fit into fewer ships.

This is not necessarily an insurmountable challenge, but it requires a fine appreciation of the need to balance certain sophisticated capabilities with brute capacity. In the early days of SCTF discussion, it was handy to refer to the two-ship group in terms of a "flat ship" and a "fat

ship," as these conveyed this essential idea of sophistication versus capacity. This construct must be superseded by one that both highlights the major traits and allows for different combinations of them. Thus, it is more helpful to think in terms of the following four capability areas: (1) afloat command and control; (2) primary aviation platform; (3) primary surface projection platform (i.e., a well deck); and (4) transport and cargo (i.e., carriage of personnel and materiel). Thus, in an effort to resolve the two-ship limitation, one might propose a combination of a mid-sized amphibious assault ship (LHD), such as the French *Mistral* or the Spanish *SPS*, with the Canadian Joint Support Ship (JSS). Clearly the LHD accommodates areas #1, #2 and #3, leaving the JSS to shoulder the majority of the area #4 responsibility. On the other hand, if one doubts the JSS (particularly in its revised form) can effectively handle area #4, one might suggest an LHD accompanied by a converted commercial ship, the sophistication of the former contrasting with the crude but immense capacity of the latter. A third observer might suggest a converted commercial ship with a flight deck and hangar capability added so that it could take on areas #2 and #4. This would allow large-sized amphibious transports (dock), or LPDs, to enter the picture. The aviation capability of these ships is usually limited, but if area #2, the primary aviation platform, can be accommodated in the other ship, the LPDs can offer excellent capability in areas #1 and #3.

This article can barely scratch the surface of the amphibious ship question, and does not discuss warships in the fast assault role (critical to shaping operations and advanced force activities). However, awareness of the issue and of its crucial importance is the first step to balanced consideration of ATG development.

The Assault Flotilla. "Assault" is a key word in amphibious concepts and doctrine, and refers to the actual projection of a landing force from the sea onto the land to engage the enemy. The assault flotilla provides for such projection across the water gap between the ships and the land. It is characterised in functional terms by "ship-to-shore movement" and in material terms by "lighterage" – i.e., landing craft and floating pontoon causeways, such as the British Mexeflote. Additionally, it includes a naval beach party, which is the final link in the ship-to-shore chain and the first link in the beach-to-inland chain. The assault flotilla requires landing craft capable of supporting both the assault and the sustainment phases of an operation and useful in a variety of ancillary roles (such as riverine warfare). In order to satisfy both roles, it seems inevitable that a high-low mix of landing craft will be required – i.e., a large one capable of carrying one or more units of the landing force's largest pieces of equipment, and a small one suited to manoeuvre and initial assault of surface entry zones.

The lighterage issue is crucial and merits attention. The proper balance of craft capacity, craft performance (e.g., speed, sea-keeping) and number of craft must be calculated, and this must take into account a compatible mother ship. Additionally, with the advent of over-the-horizon manoeuvre and assault, the relative merits of displacement versus air-cushioned craft must be considered. The difficulty inherent in all this is exacerbated by the two-ship limit presently implied for the ATG. We cannot afford a larger number of diverse means, and therefore have to ensure that the smaller number we do acquire offer maximum capability and flexibility.

The Tactical Watercraft and Amphibious Diver Flotilla. Rubbing shoulders with the assault flotilla is a small boat group and an amphibious diver capability (i.e., navy clearance divers with enhanced training for amphibious reconnaissance duties). This capability is still in the embryonic stage. The tactical watercraft are required for a range of specific duties and activities, including raid company insertion, amphibious reconnaissance insertion, general insertion (including special operating forces if required), and waterspace security (including escort and port security). The enhanced clearance diver capability will provide a mine counter-measures capability in very shallow water, provide the seaward side of amphibious reconnaissance, enhanced port security inspection and clearance, and conventional task group diver capability.

Conclusion

This article has left only the faintest scratch on the surface of SCTF challenges and issues but if it informs the reader about the development of the ATG concept, it will have served its purpose.

Notes

* The opinions expressed in this article are those of the author and do not necessarily reflect the views of the Canadian Armed Forces or the Department of National Defence.

1. "Component" in present SCTF development refers to conventional capability and service generation, not actual organisational elements with a distinct command. Thus, in speaking of the maritime component, we mean the maritime forces generated by the navy and entrusted with naval functions, not a Maritime Component with a Maritime Component Commander.

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Blueland versus Orangeland: Exercise Mohawk, April 1964

Ken Reynolds

One of the stories in the June 1964 edition of *The Crowsnest* dealt with a subject of interest to Canadian military planners then and now. Published under the dreary title "Joint Army-Navy Exercise Held," the story discussed Exercise Mohawk. It noted:

> The object of the exercise was to transport by sea sufficient Army personnel and equipment to practise protection of military installations in certain Canadian areas. Other objects were to practise the Army force and ships in [the] problems of loading, unloading, approach and landing, to provide naval logistic support for land forces and to practise a company group in combating a small enemy operation.[1]

This was the dull description of a very interesting joint exercise at a time of transformation in the Canadian military.

Rear-Admiral Jeffry Brock, Flag Officer Atlantic Coast, Royal Canadian Navy (RCN), issued the instructions for Exercise Mohawk on 4 March 1964. The second in a series of joint exercises designed for navy and army forces to practise combined operations, the scenario called for the town of Shelburne, NS, to act as the main harbour on "Gull Island," part of the fictitious state Blueland. Gull Island was much desired by neighbouring Orangeland, which, it was feared, might try to take it, possibly through aggressive means. Blueland was to place an infantry company group on the island to protect its military installations and deter any Orangeland military assaults.

Orangeland was known to have a few modern aircraft and one submarine, which Blueland feared might be used to attack a Blueland naval force heading to Gull Island or to land a party of saboteurs. Blueland's own forces assigned to the mission included an infantry 'Iron Force,' a naval task group, and a possible aerial component. Blueland's Task Force 301 (under command of Rear-Admiral Brock) consisted of an amphibious force under the command of Commander A.H. Rankin (HMCS *Cape Scott*). The Atlantic Coast escort maintenance ship, *Cape Scott* was the headquarters ship for the mission and was accompanied by a support force consisting of five frigates – HMC Ships *Fort Erie*, *Outremont*, *Buckingham*, *New Waterford* and *Lanark* – under the command of Commander E. Petley-Jones (*Fort Erie*). The landing force was commanded by Lieutenant-Colonel P.V.B. Grieve, Royal Canadian Dragoons, and included an Iron Force headquarters, an infantry company group from Gagetown and a logistics element from 3 Service Battalion.

Photo: Author

*A Royal Navy **A**-class submarine.*

Exercise Mohawk's objectives were clear: first, army personnel and equipment would be transported by sea to protect Gull Island (HMCS *Shelburne*) against expected Orangeland commando landings; second, the Iron Force was to practise unopposed landings and combating a small covert operation; and, third, naval units were to gain experience in the logistical support of land forces. All units in the exercise were to make use of the "Doc-

Photo: Author

*Sailors from HMCS **Cape Scott** and soldiers from the Royal Canadian Army Service Corps working on the vehicle ramp on Shelburne beach.*

trine for Amphibious Operations" then in use by the US Army, Navy and Marine Corps.

Rear-Admiral Brock and Major-General Robert W. Moncel, General Officer Commanding the Canadian Army's Eastern Command, announced Exercise Mohawk would be held 14-17 April. In addition to the military assets, the Royal Canadian Mounted Police (RCMP) had also promised to take part. RCMP personnel from "H" Division and the patrol boat *Adversus* would join in, mainly to help with local information gathering and coastal patrols.

Saint John, NB, was the staging port for the exercise, where the infantry company group and its vehicles were loaded on board the ships for the trip to Shelburne. The amphibious force commander's operation order called for the loading of the army's vehicles into *Cape Scott* and *Lanark* on April 11. The 42 officers and men comprising Iron Force's headquarters were also to be loaded on board *Cape Scott* that day, followed by the main body of the infantry company group two days later. The company group would be loaded aboard the various ships participating in the exercise, with *Cape Scott* taking on an additional 40 officers and men. Three frigates were each to embark 37 officers and men. Overall, 193 officers and men were to be spread out amongst the ships.

As planned, the Iron Force headquarters staff and the army's vehicles were embarked on *Cape Scott* on 11 April, the loading being quickly and easily accomplished. Six jeeps, four trailers and seven 3/4 ton trucks were loaded on the ship's fore deck, another five jeeps and five trailers on its aft deck.

> *The navy concluded that "While a frigate is not a very suitable vessel for the transport of vehicles, in an emergency there is no doubt they can do the job."*

Fort Erie, *Outremont*, *Buckingham* and *New Waterford* arrived in Saint John on the 11th. *La Hulloise* replaced *Lanark* at the last minute, and was ordered to join the other ships off Shelburne. Of greater concern than loading *Cape Scott*, a vessel that was well equipped for such a task, was the loading of vehicles on board a frigate. Secured alongside *Cape Scott*, the loading of *New Waterford* was much easier than expected. Three jeeps were embarked and the drivers got the vehicles into place in about an hour. The navy concluded that "While a frigate is not a very suitable vessel for the transport of vehicles,

in an emergency there is no doubt they can do the job."[2]

Iron Force arrived in Saint John on the 13th and was loaded within half an hour, with 20-25 troops on each frigate. Personnel on board *Cape Scott* later noted that there were no difficulties and that up to 50 soldiers could probably be lodged on a frigate for up to 10 days. Early that afternoon the support force sailed out of Saint John Harbour in order to sweep the approaches and then formed an anti-submarine screen around *Cape Scott* as she left the harbour entrance.

During the voyage to Shelburne the frigates conducted various drills for their army passengers, including a jackstay transfer and a live firing of Squid anti-submarine mortars. *Outremont*'s commanding officer wrote: "Fortunately the weather was calm for our guests and the epicurean highlight of the day for them was 'Tot Time.'"[3]

The amphibious force anchored off Shelburne around 0900 hours on April 14, and *La Hulloise* arrived soon after. The base's report of proceedings noted that "Throughout the day, the presence of the Naval Force at anchor and the hustle and bustle of small craft associated with the landing force was reminiscent of World War II activity in Shelburne harbour."[4] Some of that hustle and bustle came from preparations made for the landing of the soldiers and vehicles. Commander Rankin dispatched a perimeter guard of soldiers to protect the landing beach, followed by another party tasked with preparing the site for the army's arrival through the erection of wheel ramps for disembarking vehicles onto the beach.

By 1210 hours the vehicles stored on *New Waterford* and the after deck of *Cape Scott* were sent towards shore on the scow, guided by the ocean tug *Riverton*. Unfortunately, the tug was unable to beach the scow and naval cutters and a landing craft, vehicle, personnel (LCVP) attempted, and finally succeeded, in beaching the scow. As a result of this experience, Rankin ordered the second load of vehicles to be landed by ramp, but at the government wharf instead of on the beach to keep the exercise moving. All of the vehicles were landed by 2200 hours.

Meanwhile, the amphibious force became the target of an attack by low-flying enemy aircraft, disrupting the landings and the gunfire support exercises the frigates were conducting. *New Waterford* reported that a Royal Canadian Air Force (RCAF) F-86 fighter jet made passes over the ships in the anchorage. *Cape Scott* later reported that although very little notice was given and the aircraft only flew over the group for about 10 minutes, the frigates got to practise their anti-aircraft tracking abilities. The report from *Buckingham* was a little less optimistic, recording that the frigate practised using its close-range weapons in a futile exercise as none of the frigates or *Cape Scott* were capable of throwing up an effective air defence.

Photo: Author

*The ocean-going tug CNAV **Riverton** attempting to guide the scow loaded with army vehicles to the vehicle ramp on Shelburne beach.*

The Royal Canadian Dragoons called the arrival of its troops on the beach an assault landing. Parts of that regiment, plus members of the 1st Battalion, The Black Watch (Royal Highland Regiment) of Canada, and other elements of 3rd Canadian Infantry Brigade Group were also landed early on the morning of the 15th from *Cape Scott* and the frigates. By 0800 hours the amphibious force had assumed a defensive position around HMCS *Shelburne*.

Cape Scott later noted that ac-

Photo: Author

Guiding an army jeep and trailer ashore from the scow.

tivity on shore on the 15th was minimal despite reports from the RCMP of sightings of unknown individuals in the area. *Shelburne* reported the Iron Force in position around the base's perimeter at first light that morning. Unfortunately, the weather rapidly worsened. The Report of Proceedings noted that "by nightfall a steady drizzle accompanied by intermittent fog made life uncomfortable for the Army troops bivouacked in the area. My ship's company were generally agreed that it was fortunate that implementation of complete integration of the Armed Forces of Canada was not yet upon us."[5]

Blueland army personnel, meanwhile, believed that an Orangeland raiding force had landed in the night of the 15/16th after a series of red flares were observed around midnight. Nonetheless, little indication of anything unusual could be found after sunrise on the 16th and *Shelburne* concluded the raiders had not been able to gain entry into the base.

Back on the water Commander Rankin received another report at about 2300 hours on the 15th that two vessels were making their way towards Shelburne Harbour. He believed the Orangeland submarine was trying to slip quietly into the harbour behind a fishing vessel in order to fire torpedoes at the anchored Blueland warships. *New Waterford* was immediately sent off to investigate. The frigate identified one of the vessels as the RCMP patrol boat *Adversus* on duty at the harbour entrance. Another vessel was leaving, but was identified as the enemy submarine *Alcide*. *New Waterford* was ordered to establish a patrol line off the harbour entrance.

HMS *Alcide*, a British submarine on loan to the RCN for training purposes, had spent the day before in Bedford Basin on final pre-exercise training. In addition to its Royal Navy crew, 11 soldiers from The Black Watch were on board as a raiding party. *Alcide* left for Shelburne early on 15 April and, after arrival, used its periscope at depth to examine the shoreline. Although the weather made conditions difficult, the raiding party was at least able to view their objectives before the boat left for more open water.

Due to mechanical problems and the poor weather, *Alcide* made its approach towards shore that evening on the surface. Six foot swells on the water made the loading of the Zodiacs difficult and their outboard engines had difficulty starting. Nonetheless, both dinghies were off by 2250 and *Alcide* departed. Fifteen minutes later the British submarine sighted a series of red flares, and turned around. It soon spotted one of the Zodiacs, which had developed a serious leak, and the damaged dinghy and crew were recovered. The other dinghy continued on with its clandestine raiding operation.

Alcide had again turned to seaward by 0020 hours on the 16th but was closely followed by *New Waterford* and was caught at 0107 hours. The Royal Navy crew acknowledged the frigate's signal and asked it to go away, but *New Waterford* remained, insisting the submarine admit to being her "old friend *Thrifty Stress*,"[6] *Alcide*'s call sign for the exercise.

On board the frigates sealed orders were opened, tasking them with setting up an anti-submarine patrol off the coast. All five frigates were on patrol by 0230 hours, and they conducted anti-submarine exercises with the assistance of naval and air force aircraft until the evening of the 16th. Meanwhile, *Alcide* dove to 100 feet at 0258 hours and (mostly) remained there until the end of the exercise at 2100 hours when she surfaced within sight of

the amphibious force, proudly noting she had remained undetected throughout the day.

Cape Scott, *Fort Erie*, *La Hulloise* and *New Waterford* embarked their wet and tired troops from the beach in about 20 minutes. All of the army's vehicles were loaded on the scow and removed, stowed away on *Cape Scott* and *New Waterford* by the early hours of 17 April. The troops which had been landed from *Outremont* and *Buckingham* were embarked on board *Cape Scott* for the trip home, as those two frigates immediately returned to Halifax. Before leaving, the two warships retrieved the members of the Orangeland raiding party landed by *Alcide* on the 15th as the previous plan to have them retrieved by the submarine was cancelled.

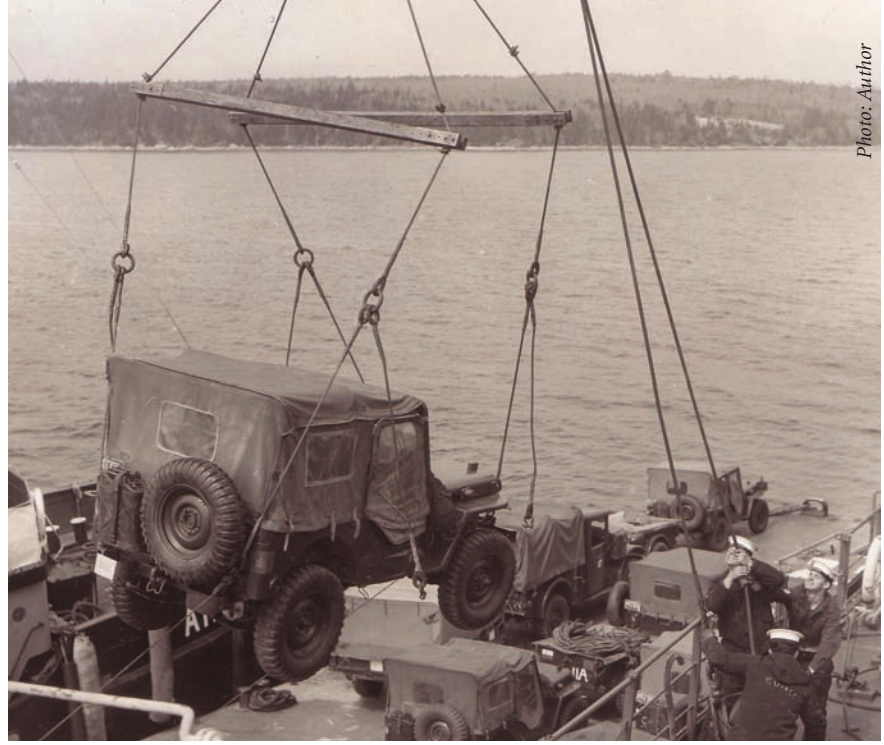

Photo: Author

*Sailors from HMCS **Cape Scott** and soldiers from the 1st Battalion, The Black Watch (Royal Highland Regiment) of Canada loading a jeep by crane onto the scow.*

As the amphibious force prepared to return to Saint John early on the morning of 17 April, the three frigates positioned themselves to protect *Cape Scott* as per pre-exercise instructions. Around 0900 hours the frigates began conducting an anti-submarine search of the area, exchanging that role for an anti-submarine screen around *Cape Scott* at 1300 hours when she left the harbour.

> ***Alcide** dove to 100 feet . . . and (mostly) remained there until the end of the exercise when she surfaced within sight of the amphibious force, proudly noting she had remained undetected throughout the day.*

HMS *Alcide*, in the meantime, had dived at 0433 hours in order to make preparations to launch an attack against *Cape Scott*. At 1315 hours she carried out an attack on *Cape Scott* firing from a distant range of 4,300 yards, but reporting a good firing line. The frigates continued their anti-submarine searches, but were never able to make contact. About an hour after the end of the exercise *Alcide* rose to periscope depth and saw the amphibious force sailing away to Saint John. The submarine headed for Halifax.

The ships arrived off the harbour at Saint John on the morning of the 18th. Because of the prevailing tide conditions, the warships were unable to berth for several hours. Forty-six soldiers from *Fort Erie* and *La Hulloise* were transferred to *New Waterford* and the other two frigates went on their way. By mid-afternoon *Cape Scott* had been docked and *New Waterford* was close behind. All of the army personnel and vehicles were landed.

Exercise Mohawk was certainly not the first, nor the largest amphibious exercise carried out by the peacetime Canadian military, nor was practice of using RCN vessels to transport the army revolutionary. Although not common, navy vessels had done this before – HMCS *Magnificent* in 1956 and HMCS *Bonaventure* in 1964 to transfer army vehicles and equipment for peacekeeping missions – and there had been study into the possible use of a *Cape*-class ship to sail up the Congo River in 1960. But Exercise Mohawk, as a small-scale landing exercise, was far more typical. It would seem, then as now, that naval transport of army assets is a relevant issue. As a result, the experience of Exercise Mohawk is still of interest to the Canadian Forces.

Notes

1. "Joint Army-Navy Exercise Held," *The Crowsnest*, Vol. 16, No. 6 (June 1964), p. 3.
2. Directorate of History and Heritage (DHH) 81/520/1650, Box 80, File 5, Operations and Plans – General – Ship's file from HMCS *La Hulloise*, report, HMCS *Cape Scott*, "Exercise – "Mohawk," 4 May 1964, Annex A, "Vehicle Loading – Frigates – *Cape Scott*."
3. DHH 81/520/8000, Box 77, File 5, HMCS *Outremont* 8000, Reports of Proceedings (1955-1964), HMCS *Outremont*, "Report of Proceedings for April 1964," 3 May 1964.
4. DHH 81/520/8000, Box 156, File 7, HMCS *Shelburne* I (Base), Reports of Proceedings (1961-1964), HMCS *Shelburne*, "Report of Proceedings for April 1964," 7 May 1964.
5. *Ibid.*
6. HMCS *Cape Scott*, "Exercise – "Mohawk,"" 4 May 1964, Annex D, "Exercise Mohawk – HMS *Alcide*," 4 May 1964.

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Continuing Canadian Naval Officer Training in the 21st Century

Lieutenant-Commander Brian Costello

Introduction

On 30 September 2005 at CFB Esquimalt, Chief of the Maritime Staff Vice-Admiral Bruce MacLean presided over a ceremony at Work Point Barracks to open the new accommodation block and a galley/dining facility for junior officers. With this occasion, an important step was taken in the evolution of junior officer training in the Canadian Navy at *Venture*, the Naval Officers Training Centre (NOTC). The new construction is innovative and modern – the entire construction project earned CFB Esquimalt the Esquimalt Chamber of Commerce's 2005 award for Best New Development – adjectives which also reflect the training for Canadian naval officers in the 21st century.

The accommodation block was named after Admiral Sir Charles E. Kingsmill, a Canadian-born "forgotten father" of the Canadian Navy.[1] At the ceremony was a polished sterling silver cup originally presented by Admiral and Mrs. Kingsmill to the Royal Naval College of Canada (RNCC) in 1916 (arriving via RNCC's move to Esquimalt in 1918-1922, thence to Royal Roads Naval/Military College, 1940-1995), and a bronze plaque bearing details of the dedication. A large HMCS *Venture* crest was mounted on the plaque, carrying on a proud association with junior officer training. In the central plaza of the block is a bronze statue of a *Venture* cadet circa 1954, which was commissioned and donated by the *Venture* Association.

These details remind us of the challenge for *Venture* as it continues its mission of training Canada's naval officers – the challenge of embracing the potential of the future, while never losing touch with the past that defines both the school and the profession itself.

History

The roots of *Venture* are found in the establishment of the *Venture* Plan in 1954 to address critical RCN officer shortages that were not being addressed by existing intake plans.[2] Thus, HMCS *Venture* was commissioned as the RCN Junior Officer Training Establishment and located in the Esquimalt dockyard on the site of HMCS *Givenchy*, a speciality school that ran 1943-45 for naval gunners crewing civilian vessels in World War II. It consisted of a parade square surrounded by buildings housing administration, accommodation, classrooms and a chapel, as well as a playing field, a gymnasium and a boat shed. The role of HMCS *Venture* was to train junior naval officers of the executive, engineering, fleet air arm and naval supply branches during a two-year term of academic education. After that basic training the various branches received different professional and educational training appropriate to their branch. The *Venture* motto was "A New Undertaking, to Dare and Not to be Afraid."

In September 1963, the *Venture* Plan was superseded and intake shifted to the Short Service Officer Plan (SSOP) for maritime officers. The curriculum was reduced to 16 months at the same time. In 1968 with the adoption of integration, the Canadian Forces Officer Training Establishment (CFOTE) was founded and *Venture* was phased out. Responsibility for training naval officer cadets shifted to the Officer Training Division (OTD) at the Fleet School (CFFS) in Esquimalt. The OTD, through the Fleet School, was responsible to, and reported to, the newly established CF Training Command Headquarters in Winnipeg, Manitoba.

Photo credit: Author

Vice-Admiral Bruce McLean, CMS, and Rear-Admiral Roger Girouard, Commander Maritime Forces Pacific, with members of the Venture Association Executive at the opening of the Kingsmill Building.

Subsequent to the recommendations of the Maritime Officer Production Study (MOPS), the Naval Officer Training Centre (NOTC) was established from the OTD at CFFS Esquimalt in September 1976. NOTC was then relocated back to the former HMCS *Givenchy*/HMCS *Venture* dockyard complex in September 1977 and approval given to re-use the name *Venture* thus giving the school ties to a long line of historic vessels. There *Venture* continued its work through the 1980s and into the 1990s with little change in infrastructure or curriculum.

While the training system was effective, it was tenaciously holding on to a curriculum designed when computer technology for training was not readily available, and dedicated destroyer (DDE) and ex-minesweeper (PB) bunks were abundant. But neither of these were to remain true for much longer. In fact, pressures had already led to a change from a training stream that produced fully qualified officers-of-the-day (OOD)/watch (OOW), to one producing an OOD with only a 2OOW qualification, and finally to producing only a 2OOD/2OOW. Furthermore, while the 1992 Nason report on the way ahead identified a transitional plan to take maritime surface/subsurface (MARS) training into the Canadian patrol frigate (CPF) age, it required a commitment of at least two DDE/FFHs to training at least through 1997 that was already proving problematic in 1994.[3]

Transformation

The impending de-commissioning of the last DDEs and subsequent loss of the West Coast training squadron in the early 1990s provided added impetus for change in naval officer training. The navy conducted a trial of a virtual reality simulator (VRS) at *Venture* in 1993. As a low-fidelity proof-of-concept system, the VRS was never intended for production, but it did prove that simulation could be an effective training tool in a modernized curriculum without dedicated sea-going platforms. This was followed with a trial teaching students in a leased high fidelity full-mission simulator (FMS) in St John's, Newfoundland, with a control group maintained in DDEs. At roughly the same time, a NOTC Facilities Upgrade Project, established in the Defence Services Program in the late 1980s, was solidifying its Statement of Requirements in terms of supporting physical infrastructure and providing modern facilities for this key naval training establishment.

The forces for change reached critical mass in a fortuitous coincidence with the army's withdrawal of the 3rd Battalion, Princess Patricia's Canadian Light Infantry (PPCLI) from CFB Esquimalt's historic Work Point Barracks property.[4] Plans for *Venture* were reviewed in light of the opportunities presented. Rather than constructing comprehensive new facilities for NOTC at CFB Esquimalt's Naden property, the school could be relocated from its antiquated and dispersed WW II-vintage facilities at Dockyard to several of the ex-PPCLI buildings at Work Point. This move occurred in the fall of 1994 and *Venture* inherited many of the buildings that had been occupied by the PPCLI. However, while a new lecture/training building built by the army in 1988 gave *Venture* contemporary classrooms and instructional spaces that had not been available in Dockyard, there was still insufficient room for the staff, and the building did not accommodate all the required training functions.

Furthermore, the administrative, dining and sport facilities into which NOTC had moved were still somewhat dispersed, and in many ways were little better than the facilities left behind at Dockyard. Moreover, the 1950s quartering facilities available at Work Point provided a mixed standard of accommodation which did not conform to the norms espoused by the Department of National Defence (DND).

Based on the success of the FMS experience in Newfoundland and the navy's commitment to a future including simulation, a separate $10 million capital construction project was initiated to construct the navy's own Junior Officer Bridge Simulator (JOBS) at Work Point. Built as an extension to the existing training facilities, the complex now houses the re-named Navigation and Bridge Simulator (NABS) as well as a facility with a computer-based training lab, two multimedia theatres, numerous classrooms and offices for all training officers.

The school's flagstaff which now stands in front of the

Venture cadets at divisions in the 1950s.

Work Point Barracks.

building was originally the mainmast of the training schooner *Venture*. The mast had previously become the flagstaff for the newly opened Naval Training Base, HMCS *Cornwallis* in 1943. With the imminent closure of CFB Cornwallis in September 1994, concerted efforts by many retired and currently serving *Venture* officers ensued that this naval artefact was preserved at NOTC on the West Coast. The mast came down in Cornwallis in April 1995 and was delivered to Halifax for transfer to Esquimalt in HMCS *Huron*. The mast was refurbished at CFB Esquimalt and NEU(P) in the Dockyard, and was set in concrete in November 1997 shortly after the NABS opened. The entire facility was dedicated as the Vice-Admiral A.L. Collier Building on 12 December 1997 by Vice-Admiral Maddison.

Meanwhile, a phased development plan had been initiated in 1995 to provide a more cohesive *Venture* campus while meeting the requirement to tailor the inventory of buildings at Work Point to meet the needs of CFB Esquimalt and to reduce annual operating and maintenance costs. Plans were approved for the $4.575M Phase One of the NOTC Facilities Upgrade Project, a multi-functional training support facility, and ground was broken on 15 October 1998. A completely new structure was situated on a site, across the street from the Collier Building's lecture/training facility, that incorporated office space for command, departmental heads and an orderly room, a specialized seamanship classroom, a cadet gunroom mess, a multi-purpose gymnasium and drill deck, change rooms with showers, and a sport field was adjacent. The new building opened in October 1999. Dedicated as the Commander E.A. Nixon Building, it honours the memory of Commander Edward Atcherley Eckersall Nixon, RCN (1878-1924) who, as Commandant of the Royal Naval College of Canada, was the heart and soul of junior naval officer training in Canada during the early years of the Royal Canadian Navy.

Plans for the $18.2M Phase Two of the NOTC Facilities Upgrade – including a dining hall/galley and new junior officer accommodations – were approved in April 2002 and ground breaking followed on 3 July 2003. Construction continued throughout 2004 and the new buildings were handed over to DND on 31 January 2005. The new six-storey Kingsmill Building provides 86 double occupancy 'cabins' and a duty officer's cabin. The cabins have two bedrooms with closets, TV/phone/internet service, a common living area, small kitchenette and a common washroom with shower. The adjacent single-storey dining/galley building was designed to provide seating for a minimum of 250 persons. It has been set up with 296 seats and can handle a larger number if necessary. The galley provides a functional work-environment for the staff, and has the capacity to produce meals for twice the occupant loading of the dining room, over two sittings. The appealing dining room overlooks Victoria Harbour through floor-to-ceiling glass and has remarkable acoustic qualities.

Worthy of particular note is the fact that both of the new structures can be considered to be "green" buildings since numerous, innovative, sustainable design features have been incorporated. For example, the roofline of each building features large "solar chimneys" which have been designed to facilitate natural ventilation, thereby reducing the dependency on mechanical systems and improving the energy consumption of these new facilities.

Today

Venture has a new motto – "To Learn, To Serve, To Lead" – but it continues to execute its main mission which is to provide initial training of all MARS Officers destined for the fleet. In addition to the officer-of-the-watch and navigation skills of basic MARS occupational training, *Venture* also delivers the naval environmental indoctrination course (which succeeded the old MARS 2 course) to all naval engineering and sea logistics officers prior to their own occupational training, and hosts the CDA-directed N-OPME courses (which succeeded the OPDP) for the professional development of junior officers. At the senior level, *Venture* conducts advanced navigation training for the fleet's navigation officers, trains cadet instructor cadre and non-commissioned members to operate the YAG tender class vessels, conducts blind pilotage training for ship's command teams, and hosts the Command Qualification Pt 2 Boards twice yearly for prospective commanding officers.

The jewel in the crown of all these efforts remains the NABS facility, the larger of the navy's two state-of-the-art visual and radar simulators built by Kongsberg Nor-Con-

Artist's impression of the new Kingsmill Building.

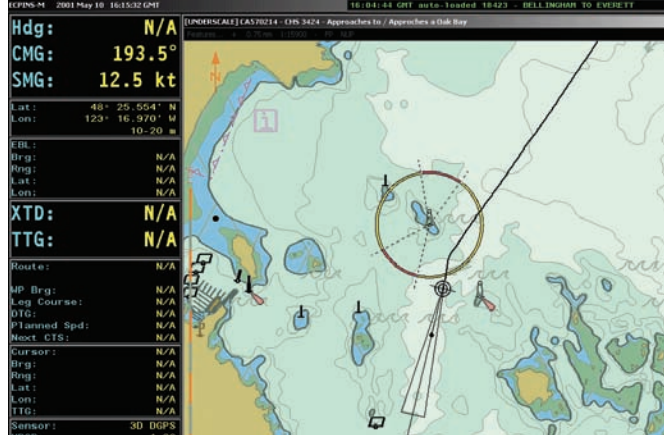
trol (KMSS) of Norway. Built to assume some of the sea-going role of the former training squadron's destroyers by providing accurate, challenging and realistic scenarios in support of OOW bridge and navigation training, the NABS has not only satisfied the navy's demanding training provisions, but proven an incredibly cost-efficient and flexible resource. In fact, the annual cost of running the simulator is estimated to be equal to the monthly amount of running just one destroyer. With its four visual and four blind bridges, NABS remains not only the largest KMSS has ever built, but also the largest marine simulator of this type in the world. Further, through a continuing in-service support relationship, the simulator and its supporting geographic databases have kept pace with the spectacular advances made in the underlying civilian commercial off-the-shelf computer technology. One can imagine the dimension of these changes if you consider that the standard computer when NABS was designed was an Intel 286 – now each screen's image generator runs on a Pentium 3, with more upgrades on the horizon. Where once there were crude-shaded polygons for scenery, the shading and textures are now extremely sophisticated.

The NABS has two types of bridges. One, a visual bridge, has a 360-degree panoramic view of what you would normally see from a bridge of a naval ship. The other, a blind bridge, has all the same electronic equipment as a visual bridge but with none of the visuals. These blind bridges are used for anti-collision training and radar passages as would be conducted from the operations room or in zero visibility and can be run either independently from or slaved to a visual bridge. Both kinds of bridges have the same working equipment as Canada's naval warships, including the modern *Halifax*-class frigates and maritime coastal defence vessels (MCDVs).

The bridges can be configured to emulate any of the major platforms in the Canadian fleet as well as various commercial platforms. Each platform incorporates an accurate physical and hydrodynamic model so as to respond realistically to steering orders and environmental conditions like tide, current and wind. Ship equipment defects such as steering gear breakdowns and navigational aid faults may also be entered for more rigorous scenarios. The NABS operators can also introduce other ships, land masses or obstacles into the scenario at any time from their workstations. Or they can also expose NABS participants to many types of visual impairment, such as rain, fog and darkness. To ensure high-quality training and continuity amongst staff, the NABS operators are all ex-naval officers of senior rank with at least one command tour. This allows them to supplement the efforts of the course training officers with mentorship and objective assessment in place of the captains of the training destroyers.

In addition to the original NABS full-mission simulator, *Venture* has recently adopted a specialized part-task trainer to support the MARS curriculum. A training analysis was conducted by NOTC as experience was gained in the full potential of, and how to properly utilize, NABS in training as opposed to simple transposition of the previous sea-going program from DDEs. It revealed a need that was already well-established – that of part-task training to build smaller individual skills after classroom theory but before full job performance on a bridge in NABS or at sea. In the naval part-task trainer (NPTT) course, each student can concentrate individually on radar operation and plotting, navigation and fixing, conning and manoeuvring etc., in a series of tailored lessons linked to a learning management system that tracks and records performance. With the power now resident in desktop computers, NPTT runs software, visual databases and scenarios identical to the parent NABS and emulates the look, feel and functionality of every piece of equipment that will be encountered in the fleet. The development of this system in early 2001 led to a wave of similar requirements emerging from the civilian marine training and certification field and, with its pairing of NABS and NPTT, the navy installation at *Venture* remains a proud flagship for KMSS.

Composite of NABS image and the real world of a frigate alongside in Halifax.



SHINPADS screen shot.

The Future

For the near future (10+ years), the Canadian Navy will remain committed to the progress made at *Venture*'s Work Point campus in supporting the development of future generations of Canadian naval officers as they prepare for their careers at sea. Notwithstanding the substantial changes of the past 10 years, more is yet to come for NOTC. After all, training should be evolving at a pace equal to the profession itself and the navy's personnel demands. *Venture* has already assumed responsibility for providing a basic officer training course (BOTC) for naval reserve officers in the only CDA-accredited program outside of CFLRS St Jean. This mandate will remain as a minimum, and may well provide a valuable foothold in light of forecast CF recruiting requirements. As a result, one more phase of improvements remains outstanding in the DSP construction program – another $2.15M project for the classroom, office and related ancillary storage requirements for the BOTC division of *Venture*.


NPTT work station.

The face of the sea-phases for MARS courses will also see changes. Having already shifted from DDE/FFH to the MCDVs for their final assessed phases, the earlier developmental MARS phases in the YAG tender class will take on a whole new dimension with delivery of the first *Orca*-class YAG 300 replacement forecast for September 2006. A $69.7M project will see Victoria Shipyards Co. Ltd. build a minimum of six vessels of approx 110 ft overall and displacing 210 tonnes, with a top speed of 20kts with twin inboard diesel propulsion. With modern crew spaces for four plus 16 students and including a briefing area, the ships will have a modern enclosed bridge, remote machinery control, ARPA radar and a standard navy electronic charting system.

This last item hints at another monumental change coming soon to the MARS curriculum itself. With delivery of the final version of the SHINNADS Dual-M ECDIS system, every ship in the fleet is expected to have been fitted and certified for its use in 2006. As a result, *Venture* will have to revise its training stream to reflect this change in imparting the operator skills particular to the system, but also in teaching the underlying fundamentals in a truly paperless navigation environment. Students will walk to and from class clutching their notebook computer instead of their training folio.

Advances in modeling and simulation technology will likely see a convergence of the many stand-alone systems currently populating the naval training system. It will not be long before high-level architectures will permit the networking of the various trainers through common protocols such that an OOW in NABS would report to an ORO in the ORTT in Halifax regarding the joining of a CP-140 Aurora TACNAV working in an AIMP trainer in Greenwood while they conduct a search for a submarine being run from the SCTT in Halifax. The possibilities are amazing.

It is true that *Venture* is less visible to the bulk of the navy working in the Dockyard or at Naden since NOTC's shift to Work Point in 1994. Graduates from the school a little over 10 years ago would hardly recognize the training stream of today. They would see broad changes in the waterfront with new classes of ships entering service, upgrades to weapons and sensor systems, new jetty construction, a new FMF complex and myriad new high-tech trainers at CFFSE in Naden and CFNOS in Halifax. However, they can rest assured that out of sight has not meant out of mind – at Work Point, NOTC has undergone its own dramatic changes in keeping pace with the times, and will continue to do so in times to come.

Notes

1. Admiral Sir Charles E. Kingsmill Kt, RN, RCN (1855-1936) was a Canadian-born Royal Navy Flag Officer commanding the fledgling Canadian Marine and Fisheries fleet when he proposed the framework that led to the establishment of the Canadian Naval Service in 1910, of which he served as the first Director until his retirement in 1920.
2. The *Venture* Plan was succeeded by the navy's Short Service Officer Plan (SSOP), which then evolved into the CF's Officer Candidate Training Plan (OCTP). Briefly retained in 1998 under the OPD 2020 vision of a degreed officer corps as the transitional Continuing Education Officer Training Plan (CEOTP), the non-university intake stream was wholly eliminated in 2001. The CDS re-established CEOTP in 2005 given the inability of the DEO and ROTP programs to meet intake requirements.
3. CTGP: 4840-1 (Comd) Dated 11 April 1994; the COMTRAINPAC Report on the Integration of Simulators into MARS Officer Training.
4. The Work Point Barracks site claims a military history dating to 1888 when "C" Battery, Regiment of Canadian Artillery was stood up at Victoria to meet constitutional commitments to protect the fledgling province of British Columbia (along with building a railroad) and counter Russian imperial interest in the area.

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Making Waves

No, That Wasn't How We Really Got Here

Michael Young

In "How We Really Got Here" in the Spring 2006 issue of *Canadian Naval Review*, Ken Hansen comments on the naval fire support (NFS) issue and other things. There are a couple of points in his response to "Artemis" that I believe are misleading and need challenging. I was the Operational Requirements Coordinator for surface ship programs in NDHQ during 1977-1980 and my section looked after CPF, the Tribal Modernization Program and the NATO program that eventually led to the NATO Frigate Replacement 90 (NFR 90) project. I know what went on, and why, in the CPF gestation and the start of the modernization program of the *Tribal*-class ships.

Cdr Hansen states that the CPF was born at the end of the Cold War. While this may be true if 'birth' is considered as the first ship commissioning, the ship was conceived and had all the essential genetic material in place long before President Reagan defined the USSR as the evil empire. So the factors influencing the operational requirement for the ships were mid-1970s Cold War reality not the later, and in my opinion unsound, concept of battle group incursions into the Norwegian Sea. My ship, HMCS *Ottawa* (III), was part of the *Nimitz* Battle Group in Exercise Teamwork in the fall of 1980 when the carrier and her missile cruiser detached and raced off in the night across the Arctic Circle off northern Norway. That exercise was one of the early tests of the new strategy and it was not impressive.

Cabinet approved and announced the CPF program in late 1977 (not 1983). By that time certain parameters for the ship had been decided so that Cabinet could have an idea of what sort of ship it was being asked to approve. The smaller, less capable options were all looked at in the studies of the early to mid-1970s and justifiably rejected. Publicly, the ship was described as 'combat capable,' and slightly smaller than the *Tribal*-class (which were of about 4,500 tons displacement). Their principal missions were listed as 'sovereignty' protection and fulfilling Canada's NATO commitments. The crew size, including the air detachment, was firmly fixed at 225 – smaller than those of the ships they would replace. The project cost was also established.

Primarily, the NATO commitment involved the reinforcement and re-supply of Europe and Canada's role was the protection of the shipping involved in that task. The justification for the size of the ship was sustained by seakeeping requirements in the North Atlantic (and North Pacific) winter. So to contend, as Cdr Hansen does, that the *Maritime Strategy* helped Canada to build what have turned into superb general purpose warships is just not supportable.

However, he is correct in noting that the CPF was not designed as a general purpose ship – she was, as I wrote in *Maritime Affairs* back in 2001, designed for Cold War, open ocean anti-submarine warfare. One of the reasons for the capabilities inherent in the ship is the philosophy espoused by the naval leadership of the time – build in the capability to do the most demanding tasks and you can do almost all of the others easily. That was done to a great extent in the frigate and that is why they have turned out to be such good general purpose ships when so employed.

Another point that is often overlooked but is vitally important as to how and why the CPF design evolved is that the navy was forced to do business differently from previous ship acquisition processes. Instead of 'brochure' shopping and making wish lists of equipment for the ship, the navy was effectively forbidden to design the ship. Instead we had to state in output terms what it was the ship must do for both *essential* and *desirable* capabilities. That is what the Statement of Operational Requirements (SOR) does. The Technical Statement of Requirements translates it into engineering terms. The consortium that built the ships designed to these standards and selected equipment that met or exceeded the requirement unless a waiver was granted. The resulting ship is the product of long and careful analyses supporting a sound case based on the realities and the threat assessments of the time.

Cdr Hansen is correct about the need for the frigates to have good anti-air warfare (AAW) protection since their employment would displace them from the main body of the convoy by as much as 40 miles. Since they could not offer any protection from air attack to others, this fact substantiated the need to give the modernized *Tribal*-class the capability to do so. Similarly, a CPF deployed on an outer screen is not a suitable place for a task group (TG) commander especially as the accommodation and planned communications fit in the frigate would not eas-

ily support such a role. Thus the *Tribal* modernization included the TG command capability as well.

To return to the issue of NFS or NGFS (G for gunfire) as it was known in the 1970s, I recall we did ask the army casually about it but got no positive response. Since the ship would likely never get near enough to land to lob shells at Soviet troops in support of a Canadian Army driving tanks on the plains of Central Europe, the requirement became a desirable capability rather than an essential one. Nowadays the army is in Afghanistan and I wonder how useful a ship-mounted, large calibre gun (greater than 76 mm for example) with a ballistic trajectory would be to them.

High velocity, flat trajectory weapons such as the 3-inch guns carried in the steamers were not bad in direct fire support missions but not very good at indirect fire – usually what the troops on the ground really needed. In other words, if you could see the enemy you could shoot at them but if they were behind the hill or sand dunes it was a difficult problem. And a 3-inch or 76 mm shell bounces off tanks. A 57 mm gun fired from a frigate offshore is basically an anti-personnel weapon which may be all that is necessary for landing troops against lightly defended, insurgent-held beaches. But are we seriously expecting our new army to invade seaside, strong defences and take on tanks in any future conflict? Only such a requirement could justify the kind of weapon (a gun, naturally – surely we are not thinking cruise missiles?) needed to perform such a task and I doubt that even the wildest eyed army planner is considering such an operation.

Comment Re "The Fleet We Never Had"
Terry Ko

I'm an editorial staff clerk in one of the local newspapers in Vancouver, BC, and although I am not trained as a journalist I am nonetheless very impressed with the quality, layout and freedom of this [Vol. 2, No. 1] and your previous issue. I find Commander M.D. Tunnicliffe's article, "The Fleet We Never Had," quite illuminating. Previous material I've read did not split Canada's decision to build a navy into two components: operational and training. I was led to believe that HMCS *Niobe* was turned into a training ship due to having been worn out by Atlantic patrols during the Great War.

Commander Tunnicliffe mentions HMS *Niobe* was launched in 1898 but did not go further to state this ship was obsolete and was a vessel with a short life expectancy when purchased by Canada in 1910. I believe Britain's policy at the time was that no other nation would be sold a top-of-the-line British naval ship with the latest technology, and that the Royal Navy would maintain a fleet at least twice the size of the nearest competition's. Also, it was regular practice to refit a ship after five years of service then sell it off to another navy. It appears things haven't changed much in a hundred years. Of course, the above details are likely commonly accepted by naval historians, personnel and enthusiasts. Commander Tunnicliffe's observations on the hidden agendas of the Royal Navy/British government was for me a reminder, with mixed emotions, of England's Imperial ambitions at the time.

Again, *Canadian Naval Review* is a great publication. Hope to see more of it.

In Response
Mark Tunnicliffe

The terms "training navy" and "operational navy" were not used specifically. However the designation of *Rainbow* and *Niobe* as training ships is explicitly mentioned in contemporary Canadian discussions concerning the reason for their acquisition. The Admiralty had offered to loan Canada two *Apollo*-class cruisers for training purposes while the fleet that Prime Minister Laurier decided to acquire was being built. For some reason the loan offer became a decision to buy one *Apollo*. Funds for a second ship initially seemed to be unavailable but this quickly changed and on 11 November 1909 Kingsmill cabled the Admiralty inquiring into the feasibility of purchasing a *Spartiate*-class cruiser in lieu of a second *Apollo*.[1]

When the Admiralty countered with the offer of a much older *Hawke*-class vessel, Kingsmill noted that this class of ship, with its old marine boilers, "would not give sufficient training to the Stokers or Engine Room Ratings."

And, as they had "two 9.2-inch guns, a class of gun which will not be used in our new Cruisers," he suggested that such a vessel would not be as suitable as a *Spartiate* for training purposes. This clearly indicates that the prime purpose of this cruiser was for training (in a follow up memo he noted that the *Spartiate* offered more accommodation as well).

Niobe did get involved in sea control operations off North America in 1914 – the RN was short of ships in this area and the RCN had, because of the inaction of the Borden government in 1911-1914, nothing else to offer. Both "training ships" were pressed into operational service with *Rainbow* being the most powerful Imperial unit in the northeast Pacific for the first few weeks in the war.

As the dominion navies came under Admiralty control in wartime, the RN was quite interested in seeing that their operational units were as modern and capable as possible. The *Chatham*-class variants of the original *Bristol* design that the Royal Australian Navy (RAN) purchased were the most modern variant of the *Town*-class cruiser series and their *River*-class destroyers were similarly up to date. Canada would have had the same. Indeed, when the RCN finally did contract to build new warships from the UK in 1929, it selected the new RN *A*-class destroyer design and added upgrades to their habitability standards to suit them for Canadian waters. Consequently HMC Ships *Saguenay* and *Skeena* were nicknamed the Rolls Royce destroyers – upgraded versions of the latest RN design. Britain was always willing to make some money selling the latest technology to her friends.

Interestingly, the term "HMCS *Niobe*" was used in some official correspondence (and in *Rainbow*'s log) even before *Niobe* was commissioned in the UK. G.N. Tucker makes the rather misleading statement that she was "commissioned in the Canadian Service at Devonport 6 September 1910."[2] She was not. Rather *Niobe* and *Rainbow* were commissioned "as a ship of war of the Royal Navy for the passage from England."[3] And in the case of *Rainbow* the Admiralty used both HMS and HMCS in different correspondence when referring to her during the period of her refit and transit to Canada.

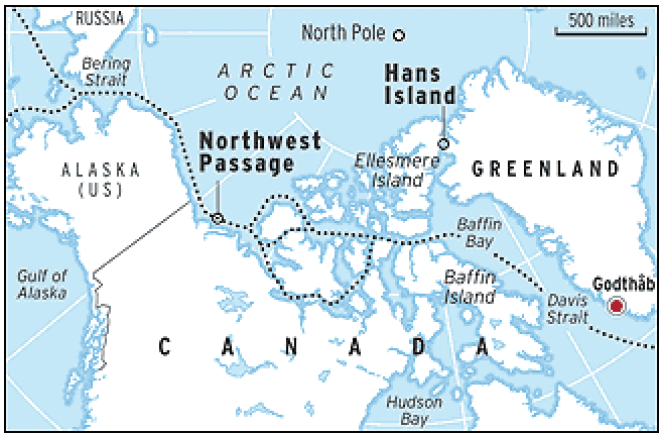
Notes

1. LAC RG 24 Vol 5587 N.S.S. 2-1-1. A *Spartiate* was a *Diadem*-class cruiser with slight modifications to the engineering layout.
2. G.N. Tucker, *The Naval Service of Canada, Volume 1: Origins and Early Years* (Ottawa: King's Printer, 1952), p. 142.
3. Statement made in an Admiralty memo 5 September 1910 with respect to *Rainbow* (LAC RG 25 Vol 1105 File 735). The Admiralty refused to recognize Canadian jurisdiction for naval discipline outside Canada's three-mile limit. Consequently *Rainbow* and *Niobe* were not handed over to Canada until after they arrived in Canadian waters.

The New Arctic Security Policy: Some Thoughts

Peter Haydon

The government's emerging concept for Arctic security is reason for both hope and apprehension because it seems based on a puzzling mix of common sense, opportunistic politics and misinformation. While it makes infinite sense to beef-up Canada's ability to know what is happening in the Arctic and to increase the government's ability to respond to any future crisis in those waters, some of the arguments and rationale being offered make less sense. As presented, some of the government's ideas seem a little short of input from those people who have experience in the region and in related security issues.



Source: Internet

Map of the Arctic showing the Northwest Passage.

Part of the problem lies in the fact that few Canadians really understand the Arctic or the complex interaction of security, sociological, environmental and economic issues. The reasons for this are no less complex: few Canadians have been there and most are ambivalent about the region. As well, the media have generally done a poor job of explaining the issues including the implications of current global warming trends – indeed, some wild assertions have been made and publicized without a sound foundation of good science.

What we don't know is whether the present warming trend is truly unique or merely another part of the cycle of "freeze and thaw" that has gone on for thousands of years. Without adequate scientific proof, it may be premature to claim that the Northwest Passage will be open to shipping within a couple of dozen years. A key question should be "What is the rate at which the Arc-

tic shipping season will lengthen?" At the moment the season is only about six to eight weeks; an increase of one or two days a year would mean that the Northwest Passage might be open for year-round shipping in about 100 years. If the rate of change is about a week a year, then the passage could be open in about 50 years. Somewhere in between there may be a period when it could be used commercially. Even then, the critical issue is one of safety. Several routes exist through the passage and some go through areas of now-permanent ice (old ice) while others make use of open leads along the shoreline. The real issue is not the reduction of the ice, it is the opening of those waters for *safe* navigation. Purpose-built vessels with the necessary reinforced hulls are expensive, and so viable economic use of the Northwest Passage is likely to remain impractical for many decades.

Another problem is that Canadian claims of sovereignty over Arctic and northern waters are not set in concrete. In the wake of the 1985 *Polar Sea* transit of the Northwest Passage, the issue of the legal status of the Canadian claim was debated publicly and inconclusively. Some legal scholars argued that Canada's claim was questionable while others argued that the claim was sound. Most agreed, though, that submitting the matter to arbitration might incur risks that were politically unacceptable. In contrast, the Nares and Jones Straits are accepted international waterways and no prior approval of Danish or Canadian authorities is needed for warships or any other vessel to conduct an innocent passage.

Despite the January 1988 bilateral agreement on the use of Arctic waters, the United States still does not recognize the Canadian claim beyond environmental concerns but has agreed to consult on its use of those waters on that basis alone. From an American point of view, the precedent of accepting sovereign rights over an international strait runs contrary to the US "freedom of navigation" policy. The process leading to the 1988 agreement was largely one of damage control from the *Polar Sea* incident in which the media blew the situation out of all proportion and caused a political flap. It is a matter of public record that the Department of Transport had known about the trip several months before it took place.

The 1988 agreement did not mention submarine transits because there was no need; an effective bilateral consultation process has been in place since 1961. Initially, the entire SUBICEX program, as it was then known, was handled through the Permanent Joint Board on Defense (PJBD) under one of the 100 or so Memoranda of Understanding dealing with sensitive bilateral military activities. All this is a matter of public record. When Canada put a submarine commander into the US Navy's Atlantic Submarine Force HQ (COMSUBLANT) in the early 1980s as a liaison officer, the concept of international water space management became a reality. This too is a matter of public record.

Under this concept, information on submarine operating areas is exchanged in a way that prevents mutual interference. Canada has always been privy to information concerning US submarines venturing into the Arctic, but it is usually highly classified. When the US Navy shifted away from operational trips to scientific Arctic deployments (known as SCICEX) Canadian scientists often went along and the Canadian Navy was given operating area information. Once again, this is a matter of public record.

*USS **Skate** at the North Pole.*

The USS *Charlotte*, which made the recent transit from the Pacific to the Atlantic through the Arctic Ocean surfaced at the North Pole and conducted scientific experiments under the ice. The actual route through the Arctic is not known and it is pure speculation that she may have entered Canadian waters. The use of the polar route was likely a function of the need to shift the submarine from the Pacific to the Atlantic to undergo a major modernization at the Norfolk Naval Shipyard, Portsmouth, VA. The polar route is shorter than either of the southerly routes.

Operating under the ice exposes a submarine to considerable risk. Arctic ice is a major challenge to submarine operations and thus they are only conducted when operationally necessary or in the interests of science. American and British submarines conducted under-ice

operations during the Cold War to show the world that they could do it and to prevent the Arctic from becoming a Soviet strategic enclave. Operating in the open sea under ice one thing, operating under the ice in confined waters such as the Canadian Archipelago or in the Nares and Jones Straits is infinitely more dangerous and would only be done today if there was an urgent operational requirement or, as in the case of the USS *Sea Dragon*, as a voyage of exploration. There is simply no point in needlessly hazarding a nuclear submarine and its crew. There is however, a far safer under-ice transit route under the Pole using the Bering Strait and the Greenland Sea that would be preferable for non-strategic transits. This does not go through Canadian waters.

The idea of an Arctic underwater surveillance system is not new. It is a matter of public record that Canada was involved in such research in the 1980s and that the research continued for several years. Apart from the engineering problems associated with installing and maintaining such systems, there is good reason to doubt the operational value of them. As several scientists have stated, the underside of sea ice is incredibly noisy: ice grinding against itself and against the shore produces


Photo: Internet

Shore leads near Grise Fjord.

very high noise levels which are often exacerbated by fish noise. Even with real time detection and reporting, it is a very expensive option that can be done far better by another submarine. In the case of static arrays, the frequency analysis process is likely to be time-consuming, so even if a possible submarine signature can be extrapolated from the background noise, the information will be many hours, if not days, old. Again, that information on its own will not be proof positive that a submarine was ever there. At best, such systems could only tell the history of who actually used those waters; they have no preventive value and little deterrent value. In view of the likely future usage of the Canadian Arctic waters by foreign submarines – there are few navies with the capability to do it and those that can only have a few submarines capable of those operations – the huge investment in an under ice surveillance system hardly seems worth it.

This is why continued Canadian involvement in the international water space management process makes sense: it is the primary and most reliable source of information on the movement of foreign submarines in Canadian and adjacent waters. However, Canada only belongs to that system because it operates submarines; without the submarines there is no access to the information. Thus, Canadian submarines have an inherent strategic value besides the various other unique capabilities they provide.

All that said, a clear need exists to improve the surveillance coverage of the Arctic and northern waters during the times they are open to shipping, but an appropriate system to cover those waters should be developed on the actual need to gather information and respond to potential security and safety challenges. All too often people and governments tend to overlook the fact that few of the new security issues are really new. In many cases, such as the Arctic, we have been down that road before and learned a great deal. There is absolutely nothing wrong in learning from experience and asking questions of those who hold that experience.

The US Navy's Expeditionary Combat Command

Doug Thomas

> *We cannot sit out in the deep blue, waiting for the enemy to come to us. He will not. We must go to him. We need a green-water capability and a brown-water capability.... I want the ability to go close in and stay there. I believe our Navy is missing a great opportunity to influence events by not having a riverine force.... We're going to have one.*
>
> *Admiral Michael G. Mullen, USN (Chief of Naval Operations), Naval War College, 31 August 2005*

The United States Naval Institute holds an annual Applied History Conference in April on the grounds of the Naval Academy in Annapolis, Maryland. I attended this past April, the second such conference I have had the privilege of attending. There are great benefits to be derived from a forum which looks at events and lessons of the past, and links them to the present and near future. This year's conference was devoted to riverine warfare

– a topic that could have great relevance for Canadian defence initiatives, particularly the Standing Contingency Task Force (SCTF), a sea-based and sea-supported light multi-effects force, as that concept and capability matures.

Riverine warfare has been discussed in the past – for example, during the US Civil War, the Yangtze Patrol in China in the early 20th century and World War I Royal Navy river gunboat operations on the Tigris and Euphrates Rivers against the forces of the Ottoman Empire. A more recent experience, and one that is not well recognized even within the USA, is the involvement of the navy and coast guard in Vietnam War operations on the inland waterways of that country during the 1960s and 1970s. Having spent seven months in Cambodia in 1992, I am well aware of the importance of the Mekong River and other rivers as water highways, particularly during tropical rainy seasons, both for smuggling soldiers and weapons, and also to penetrate deep inside enemy lines. There were many naval and coast guard veterans of the Vietnam War in attendance at the conference, representing some of the 14,000 sailors who fought in Vietnam, not counting those in larger ships that operated well offshore.

One of the issues of concern to the current US Navy is what role it should play in Iraq. The USN is certainly a fighting service and does not wish to be left out of the global war against terrorism or "The Long War" as it has recently been called. One could be cynical and say that the USN will miss out on appropriation money if it is not involved, but I believe the primary concern is a belief that it is not carrying its share of the load, especially as the US Marine Corps (part of the US Naval Service) is heavily committed. At the moment over 8,000 USN personnel are in Iraq, and that number will swell with the arrival of forces from the new Navy Expeditionary Combat Command (NECC).

Small Unit Riverine Craft (SURC). *Photo: SAFE Boats International*

NECC, headed by Rear-Admiral Bullard (who attended the conference) includes Naval Construction Forces, Expeditionary Logistics Support Group, Explosive Ordinance Disposal, Naval Coastal Warfare, and the Navy Riverine Force. The first squadron will be composed of 224 officers and men. One of the first things squadron members will do is undergo three months of training at the Camp Lejeune Marine Infantry School, to enable the squadron to take over some of the security duties now performed by the USMC and the US Army in Iraq. Initially Riverine Squadron One will be formed in Norfolk, Virginia, composed of three squadrons of river patrol boats. The intent is to deploy them to Iraq in early 2007, primarily for vital point protection on internal waterways. They will be part of the Maritime Component Commander's force and will guard a strategic dam on the Euphrates River. Boats employed include the small unit riverine craft (SURC). A similar force is being stood-up in San Diego.

The intent is for NECC to be a permanent organization. This means it will not be disbanded after withdrawal from Iraq, as was the "Brown Water Navy" after the Vietnam War. The USN future strategy mandates a seamless presence from the blue water (deep sea), though the green (coastal) water and into and along the brown water of the major rivers and lakes. There are 113 major rivers in the world, some of them thousands of kilometres long and forming many of the world's major shipping ports where they empty into the sea.

In conclusion, there are many places in the world where harbours, rivers and lakes are natural highways, and where naval personnel manning small, fast patrol boats are the best choice to perform transport, presence and security operations. I believe that the Canadian Navy should look closely at the template being developed by the USN's NECC, and consider whether we need this type of capability for future Canadian peace support and expeditionary operations. I contend that there will be some interesting lessons for us to learn from this American initiative.

Plain Talk – Who Decides?

Sharon Hobson

So the new Defence Minister, Gordon O'Connor, got his way on strategic air transport – reportedly over the objections of the Chief of the Defence Staff, General Rick Hillier. Why was O'Connor fixated on getting heavy airlifters? Who was advising him and to whom was he listening?

We all know that in a democracy the civil authorities have the final say in what the armed forces do and what equipment is bought. But politicians do not operate in a vacuum. They have their own staff, public servants and senior military officers to advise them. Add to that industry representatives, foreign ambassadors and military attachés, other politicians and the media, and it is clear that Cabinet ministers are subject to many influences. No decision is going to satisfy them all.

Too often decisions are made on the basis of short-term political opportunism without a view to the long-term implications for the Canadian Forces and the Canadian public. One has only to think of the EH-101 cancellation or the drastic defence budget cuts of the Chretien government to understand the impact of such short-sightedness.

But while much can be laid at the feet of politicians when it comes to questionable defence decisions, it is important to recognize that not everything is their fault. Certainly the bureaucrats, who remain in their positions long after politicians have moved on and military officers have been posted elsewhere, bear much of the responsibility for defence decisions. It's not possible for an outsider to know exactly what deputy ministers are advising their ministers, but anecdotal evidence suggests that some of what goes on may have to do with the personal biases and agendas of the public servants, rather than the wishes of politicians.

Anyone who has watched the BBC series "Yes, Minister" or "Yes, Prime Minister" would be correct in surmising that the battle of wills between the elected officials and public servants depicted in those programs comes uncomfortably close to reality. Politicians with their eye on re-election can be swayed by arguments citing "poor political timing," forgetting their mandate requires them to lead not to follow.

Beyond the shadowy bureaucrats, however, the military also shares responsibility for decision-making. Too often the military is happy to blame politicians. So we have the Mulroney government disposing of the military's

Photo: DND Combat Camera

Prime Minister Harper addresses Canadian troops in Afghanistan.

CH-147 Chinook transport helicopters, former Defence Minister Marcel Masse buying Bell helicopters, and former Foreign Affairs Minister Lloyd Axworthy getting rid of anti-personnel mines.

It's important, however, to look behind the scenes. With the dangers of ground transportation in Afghanistan, the Chinook decision has come back to haunt the army, and everyone who mentions it remembers it as a Mulroney government choice. But who was really responsible for that decision? Did Mulroney suddenly decide to get rid of some equipment, throw a dart at a list and hit helicopters? Or did then-Defence Minister Bill McKnight have a bad ride in one of them and decide they had to go?

No, it was the air force leadership. In the post-Cold War climate, budgets were falling, roles were being redefined and the air force, wanting to protect its precious fighter planes, opted to discard the Chinooks. Was it a bad decision? There were certainly good reasons for it. The small size of the fleet – seven helicopters – and their wide geographic dispersion (Edmonton and Ottawa) made them less than cost-effective and less than fully useful. Also if the Chinooks were to remain operational, they would need some expensive upgrading to convert from the "C" to the "D" model. So the air force, looking for ways to save money as budgets were reduced, chose to give them up.

One could legitimately argue that in 1992 it should have been clear to the senior brass that the Canadian Forc-

es might be more frequently used in peace support missions than in air-to-air combat, and that it might therefore be useful to hang on to army transport helicopters. In fact, then-CDS General John deChastelain said as much to the Standing Committee on External Affairs and National Defence on 8 October 1991:

> Part of our new policy was to limit the degree to which we centered our operational capability around the high-intensity battlefield, to adopt a general purpose capability that was much more attuned to sending troops anywhere in the world under the aegis of the United Nations or any other organization.

Why that argument didn't hold sway when it came to the Chinooks, we don't know. We only know that in 1991 the Chinooks were taken out of service and sold to the Dutch the next year.

It's the same story with the purchase of 100 Bell civilian helicopters for army support. Yes, the military was in the market to buy 40 helicopters to replace the C-Twin Huey, but hardly anyone was prepared when Defence Minister Marcel Masse announced that the Canadian Forces were going to buy 100 CH-146 Griffons. This was ostensibly done to reap the economic benefits of using one type of helicopter to replace four different types – the light observation Kiowa, the transport CH-135 Twin Huey, the base rescue CH-118 Iroquois, and the heavy-lift Chinooks.

The Griffon helicopter has become almost a laughing stock. It is underpowered for the transport role the army needs it to play, and it's too big for a reconnaissance role. At a time when the Canadian Forces are thirsting for equipment, it's telling that about 20 of the Griffons have been parked.

So who decided to buy the Griffons? Certainly Masse had political reasons to favour a deal with the Quebec-based Bell, but he would not have proceeded without the support of the top brass. And they probably took the view that something was better than nothing. But does that rationale serve the military's long-term interest? Shouldn't the army and air force senior leadership stand up to the politicians and say "no, this won't work"? That's what Vice-Admiral Chuck Thomas did in April 1991 when he resigned as Vice-Chief of the Defence Staff in protest over the department's policy proposals to the government.

Photo: Master Corporal Charles Barber, SNMG1 Staff Photographer

Chief of the Defence Staff, General Hillier, on the bridge of HMCS ***Athabaskan*** *in 2006.*

Sometimes the military blows a perfect opportunity to make its case because it gets sidetracked. The decision about anti-personnel mines provides a good example. There was a political push to get rid of these but the military was given a chance to present its case. A very intelligent and articulate colonel was prepped for the task but at the last minute the army decided a general should make the presentation. The general did not use any of the carefully thought out arguments and took the paternalistic stance of "we know best and we say we need them" in a presentation that failed to convince anyone, least of all the minister.

Then of course, there's the case of the submarines. Yes, Chretien is to blame for not moving sooner on the acquisition project (although it would be interesting to know exactly who was advising him on this), but the navy cannot escape blame either. The navy badly wanted the submarines and it was responsible for the technical evaluations and subsequent optimistic scheduling. Yes, there were unexpected events – *Operation Apollo* and the *Chicoutimi* fire – that caused delays in the schedule, but the four years that the navy was sitting and waiting for a government decision should have been included in, and used for, a more realistic reactivation assessment.

As for the strategic air transports, O'Connor didn't just dream up this idea. The air force has wanted heavy airlifters for years, and even after former Defence Minister John McCallum vetoed them, the air force never gave up hope. It kept its plan alive, waiting for a new minister who might be more inclined to listen to the arguments.

Whether buying strategic transports is a good decision or not, O'Connor will wear it, most especially if it turns out to be a bad one.

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

The Day We Shot the Jeep

Robert H. Thomas

In the 1950s and 1960s, the *St Laurent*-class vessels on the West Coast each had a jeep assigned to them. The jeeps were used for general administrative purposes in home ports, often to pick up the Commanding Officer in the morning (and woe betide the poor officer of the watch if the jeep was late!). The jeep was also carried on foreign deployments, secured between Y mounting and the mortar well, and was used to carry out routine business during port visits. There are many stories about these primitive blue ATVs – some of which may even be true.

One of my most memorable jeep experiences occurred in the summer of 1960. *Saguenay* had deployed to Hawaii in support of cadet training. Part of this involved exposing cadets (including myself) to the firepower of this then-modern warship. The mortars were fired and an AA shoot was conducted with impressive results. Then came the *pièce de résistance* – a surface shoot! On a closing run A mounting engaged then we turned away to give Y mounting a turn. Unfortunately, at the order "Engage," we had turned a little too far. After the broadside was fired, "Check, check, check" was heard from the

*HMCS **Saguenay**'s gun and the ill-fated jeep (note the "jeep" symbol on the gun mounting).*

mounting. As we discovered, the muzzle blast had just blown out the seats and interior fittings of the jeep, rendering it unusable.

Traditionally, small emblems of RADOPS and target sleds were painted on the mounting to signify successful shoots. In this case, a small jeep emblem was rapidly applied to the gun. It didn't last long – the Captain, the Executive Officer and the Weapons Officer were not amused!

Book Reviews

Commanding Canadians: The Second World War Diaries of A.F.C. Layard, edited by Michael Whitby, Ottawa: UBC Press, 2005, 383 pages, photos, bibliography.

Reviewed by Robert H. Thomas

If there was one book I wish I had had the chance to read early in my career, this is it. *Commanding Canadians* is a gripping history of a small part of the Battle of the Atlantic, a fascinating picture of the realities of life at sea and ashore through extended periods of operations and, most valuably, a wonderful case study of leadership.

Layard, a passed-over Lieutenant Commander, was sent from the Royal Navy (RN) to command a Canadian escort group and the book consists of his highly illegal personal diary from September 1943 to the end of the war. He wrote daily and was remarkably candid in his observations as well as revealing his own doubts, fears and weariness in the face of the unrelenting pressure of command. Although he had not succeeded in climbing the rank ladder in peacetime, he was a highly experienced officer with 25 years service at the start of the war, including command of six destroyers and two minesweepers prior to arriving in Canada.

The title is a bit misleading as much of the diary deals with the mundane day-to-day details of operations and there is little to suggest that Layard's experience was significantly different because of the nationality of the force he commanded. Although it is clear that he was not impressed by the standards of the RCN and even less impressed by the conduct ashore, he did not go into much detail. His perspectives on Canadian standards and how they operated were not unique and far less scathing than those of Captain Donald Macintyre. This was not just characteristic of the navy – virtually every British Army commander, especially Montgomery, commented disparagingly on the "Canadian way of war," and it was no different in the air force.

Layard's oft-expressed concern about the conduct of Canadian sailors is intriguing, given the constant references to heavy drinking by Layard, his fellow commanders and his officers. Although he kept ships' companies busy at sea with a varied program of training, he did not do much to provide good R and R for them in port. He

took care of himself with leave, when available, and long walks ashore, but it was almost always alone.

Ultimately, Layard became protective of the RCN and complained about the lack of interest and support from senior RN authorities. His change in perspective was reflected in other theatres. Thus Robert Farquharson, in *For Your Tomorrow*, noted that complaints were lodged about 436 RCAF Squadron arrangements in Burma.

The greatest strength of the book is Layard's self-examination of the challenges of command. The accounts of the inshore campaign are highly instructive, with the constant contacts necessitating classification and attack after attack. Layard's frustrations were evident – inexperienced, poorly trained and ill-disciplined officers and men (according to RN standards), frequent equipment problems and conflicting orders from headquarters ashore with no explanation – and had him doubting his competence and ability to persevere. And yet, he did.

Layard's personal sense of great responsibility is a recurrent theme in the book. He reflected on the impact of inadequately trained personnel and their varying levels of personal responsibility. The unending pressure of command exacerbated by constant fatigue weighed heavily on him. As noted by Michael Whitby the editor of the book, this pressure caused many of his contemporaries to suffer from ulcers and other medical conditions and ultimately killed some, including the famous Captain F.J. Walker (himself a passed-over commander at the start of the war). Despite his extensive command experience, Layard's confidence fluctuated and he seemed surprised when his personnel expressed their support and admiration of his efforts.

Whitby introduces each chapter with excellent short essays that succeed in providing the context for the diary entries that follow. He effectively describes the impact of the personalities of the senior leaders, especially Admiral Sir Max Horton and Commodore Simpson, setting the scene for Layard's comments on his relationship with them and his concern about their lack of direct contact with the Canadians under their command.

Let me make three further observations about the book. First, Layard named names and Whitby has included them along with accompanying, often unflattering, comments. This is fine while dealing with naval personnel and the impact of their personalities and conduct on the war at sea, but the comments about the social graces and appearance of individuals (and their wives) will probably lead to some unhappy grandchildren. Second, the book would be much improved if the extensive endnotes were converted to footnotes. And finally, on the map of the Canadian northwest Atlantic, how did Cape Spear end up southwest of Sable Island?

All that aside, any officer preparing for responsibility at sea (and anyone wanting to understand what it was *really* like) should read this book. Technology may change but the personal challenges faced by those in command are quite consistent over generations. This book is a fascinating read and an interesting guide for personal examination and reflection.

Wolf Pack: The Story of the U-Boat in World War II, by Gordon Williamson, Oxford: Osprey Publishing, 2005, ISBN 1-84176-872-3, 272 pages, photos, index, appendices, US$29.25

Reviewed by Peter Haydon

For those interested in the Second World War at sea, Gordon Williamson's book *Wolf Pack* will be a delight. It is a fascinating collection of photographs, drawings, technical explanations and general information on the U-boats, their crews and the war they waged from 1939 to 1945. Those who harbour hatred of submarine warfare will find *Wolf Pack* deeply disturbing because it portrays the U-boat officers and men as ordinary human beings subject to the same fears as their counterparts in other submarine services. Apart from the one incident where survivors were shot (for which Kapitänleutnent Eck was subsequently tried, found guilty of war crimes, and executed), Williamson believes the U-boat captains behaved with "an admirable degree of chivalry towards their foes" – more so perhaps than some of their opponents (144). If such "humanizing" of a vanquished elite force bothers people, then I suggest they not read the book. For those with open and enquiring minds, *Wolf Pack* is thought-provoking and informative reading.

Williamson assumes that his readers either have or do not need a basic understanding of how the modern submarine evolved and how it operates under water. He begins, perhaps controversially, with the Treaty of Versailles which emasculated Germany at sea and prohibited it from building major warships and submarines. In those heady days when the "war to end all wars" had just been won, the idealists of the post-war naval disarmament regime failed to comprehend that treaty constraints do not necessarily prevent people thinking about, or actually doing, things that have been prohibited.

It is hardly surprising, therefore, that German naval architects and mariners quickly and secretly began planning for a return to shipbuilding. Although they could not build submarines in Germany, they could do so in other countries, and did. The Anglo-German Naval Agreement of June 1935 (not 1934 as stated in the book) allowed Germany to legally build a modest submarine capability. The steps taken secretly in 1932 to re-establish a U-boat capability became open and then-Fregattencapitän Karl Dönitz began to create the elite service.

The story of how Dönitz built that remarkable force is well told by Williamson as he takes the reader systematically through the evolution of the various types of U-boat. The U-boats began as small (around 300 tons displacement) coastal vessels until the larger ocean-going submarines came into operational service in the late 1930s, and evolved into the Type XXI and Type XXIII at the end of the war. That technology was epoch-making and was widely exploited in Britain, Russia and the United States in building their submarine fleets at the beginning of the Cold War. Had those designs of submarines been available earlier in the war, the outcome might have been different, or certainly taken longer to accomplish.

Wolf Pack describes how new submarines were designed, built, taken to sea on trials and then improved – the German technological accomplishments were amazing. Under the prevailing political and technological circumstances, Dönitz's accomplishments probably rank on a par with those of Admiral Hyman Rickover. Both drove the development of submarine fleets that made a huge impact on the world.

People tend to be quick in categorizing Dönitz as the "Last Führer" and the mastermind of an evil form of warfare. In reality, as Williamson makes absolutely clear, Dönitz was not only an organizational genius, but also a very principled naval officer who insisted that his U-boat commanders do everything possible to aid survivors. It was only after the 1942 *Laconia* incident when an Allied aircraft attacked U-156 and U-506 as they attempted to rescue survivors that the order to provide assistance was rescinded. That Admiral Chester Nimitz spoke on behalf of Dönitz's operational integrity at the Nuremberg Trials is telling.

Many became less critical of the U-boat crews as a result of the movie *Das Boot* and came to realize that it took a very dedicated individual to endure the rigours of that existence. Much the same story was available in books and movies about British and American submarine operations during the war, but many people have been raised believing that the U-boats were fundamentally evil. From the perspective of a besieged Britain during WW II, the U-boats were a significant threat to survival, but so were the German bombers during the Blitz. The point here is that the war truly was "total war" – civilians, factories, infrastructure were all legitimate targets in the quest to beat the enemy. U-boats were merely political instruments in the waging of that war in the same way that modern submarines are politically-controlled instruments.

Wolf Pack is an excellent presentation showing how Dönitz brought the U-boat fleet from obscurity and turned it into one of the most effective instruments used in the Second World War. It tells the technical story, it explains the concepts of operations and it offers a fascinating view of the men who sailed those submarines. In many ways, *Wolf Pack* tells you what the internet (especially U-boat.net) doesn't say about the war waged by the U-boats from 1939 to 1945. Above all, it shows the crews as brave men serving their country in time of war in exactly the same way that Allied submariners endured the discomforts and terrors of war under the sea.

Historic Moments

Photo: British Columbia Archive A00253

*Historic moments: HMS **New Zealand** in Esquimalt Harbour with HMCS **Rainbow** in the foreground during the British battle cruiser's 1912-13 pre-war Empire cruise. (Submitted by Mark Tunnicliffe)*

CANADIAN NAVAL REVIEW

Bruce S. Oland Essay Competition Winners

We are pleased to announce the prize-winning essays from our Bruce S. Oland Essay Competition. The winners are:

First Prize ($1,000)
Commander Kenneth Hansen (Ontario), "The "Destroyer Myth" in Canadian Naval History"

Second Prize ($500)
Brian Nicholson (Alberta), "Mending Fences: Assessing the Canadian Decision to Expand NORAD"

Third Prize ($250)
J. Matthew Gillis (Nova Scotia), "Viable Options for Securing Canadian Arctic Sovereignty"

Congratulations!

The essays we received were all of good quality and extremely interesting. It was very difficult to pick just one winner. The judging process was anonymous and comprehensive. The identities of the authors were known only to the person who received the submissions. All submissions were read by a panel of four judges who narrowed the field to five essays. These five essays were then passed to three other judges for a final decision.

We would like to thank everyone who contributed. And we would also like to thank our judges for donating their time to help us make a decision.

We will be publishing the winning essays in subsequent issues of the *Canadian Naval Review*, starting with the Fall 2006 issue.

Time to start writing your essay for the 2007 competition!

Photo Contest Results
(Vol. 2, No. 1, Spring 2006)

While there were several people who correctly identified all the photos on the back cover of the Spring 2006 issue of *Canadian Naval Review*, Cdr. Tom Tulloch of Victoria, BC, is the contest winner. In addition to identifying the ships that were the subjects of the photos, Cdr. Tulloch went above and beyond the call of duty and also cleverly identified both *Protecteur* and *Preserver* nested at the dock in Halifax. Thank you to all of you who sent in replies, good work.

Correct responses:

1. FGS Niedersachsen (*Bremen*-class frigate)
2. HNLMS *Evertsen* (*Van Speijk*-class frigate) with HMCS *Protecteur* and *Preserver* alongside in Halifax
3. HMS *Nottingham* (Type 42 Batch 2 destroyer)
4. FGS *Spessart* refuelling HNMLS *Jacob van Heemskerck* to starboard and FGS *Niedersachsen* to port
5. NRP *Vasco da Gama* (Meko 200 type frigate)
6. HMCS *Haida*

What Do You Think of *CNR*?

The *Canadian Naval Review* is now in its second year of publication. How are we doing? We want to know what you think. Please go to our website (www.naval.review.cfps.dal.ca) and fill out our questionnaire. Thank you.

A collection of photographs from Master Corporal Charles Barber, Staff Photographer SNMG1

Clockwise from top left:

HDMS *Peter Tordenskiold* (front) and SPS *Admiralte Juan Borbon* (behind); HMCS *Athabaskan* in a towing exercise; HDMS *Peter Tordenskiold* leaving Praia Cape Verde; HMCS *Athabaskan* leaving Las Palmas.

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