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EXERCISE NEW HORIZONS

TRANS-LITTORAL MANOUVRE: AN ESSENTIAL OPERATIONAL ENABLER

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INTRODUCTION

In 2007 the Canadian government purchased four C-17 Globemaster III heavy lift aircraft to enhance the Canadian Forces (CF) ability to deploy and sustain operations globally.[1] The new C-17s have contributed significantly to operations in Afghanistan, but like most aircraft they require a functioning airport on which to land, they are limited in the size of their payload, and they are not as cost efficient as ships in delivering large quantities of personnel and supplies.[2] Thus while the C-17s are useful in delivering smaller quantities of supplies quickly around the world, the CF will likely be reliant upon shipping for the deployment of heavy equipment such as armoured vehicles, and the bulk delivery of supplies.

The CF possesses the ability to transfer items ashore via functioning ports in austere conditions, but when this ability is viewed through the lenses of Operations *Colombie* and U*nison*, the navy does not have sufficient ability to move people, equipment and supplies across the land-sea divide in order to support operations ashore.[3] This deficiency represents a critical vulnerability that could jeopardize the success of future CF operations in the littorals.[4] To mitigate this deficiency the navy needs to improve its boat

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[1] Holly Bridges, "A Proud Day for the Canadian Forces and Canadians: Government of Canada Announces the Purchase of Four C-17 Globemaster III," *Air Force Articles*, 5 February 2007; Internet; available from http://www.airforce.forces.gc.ca/site/newsroom/news_e.aspd?id=2426; accessed 23 April 2009.

[2] Gord Lovelace, "Full-time Charter Key Link in Supply Chain," *Maple Leaf* Vol. 12 no. 9 (4 March 2009); Internet; available from http://www.forces.gc.ca/site/Commun/ml-fe/article-eng.asp?id=5144; accessed 23 April 2009.

[3] The ability to move personnel and materiel across the land-sea divide will subsequently be referred to as *trans-littoral manouvre* (TLM).

[4] While definitions of the littoral region vary, this paper defines the littorals as the coastal sea areas which are susceptible to influence from ashore, and that portion of the land which is susceptible to

carrying capability and augment its precision fires ability in defining the requirements for its next generation of warships whose purchase was announced in the 2008 Canada First Defence Policy Statement.[5] Furthermore, the navy must additionally strive to secure a ship capable of the bulk delivery of personnel, equipment and supplies across the shoreline in order to enable future operational successes.

In order to prove the operational necessity of an improved TLM capability for Canada this paper will summarize contemporary TLM developments; address the importance of the littorals in future operations; identify existing TLM capabilities and deficiencies through an analysis of Operations *Colombie* and *Unison*; and show how the navy could best embody the doctrinal concept of TLM in the design of future ships. Because TLM capability is essential to the mitigation of the operational critical vulnerability identified above I will provide three lines of TLM capabilities that could be pursued, depending on the degree of political and financial will present, but argue that the navy should actually pursue two separate lines concurrently.

CONTEMPORARY TLM DEVELOPMENTS

This section will briefly summarize contemporary Canadian TLM developments in order to provide background and context for future discussions. An improved TLM capability

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influence or support from the sea. While the size of the littoral region will clearly vary depending on the naval capabilities of one opponent and the land-based capabilities of the other, generally the littoral regions can be thought to extend 100 km inland and 200 nm to sea. (Based on the definition found in Department of National Defence, *Leadmark: The Navy's Strategy for 2020* (Ottawa: DND Canada, 2001), GL12).

[5] Department of National Defence, *Canada First Defence Strategy* (Ottawa: Department of National Defence, 2008), 4; Internet; available from http://www.forces.gc.ca/site/focus/first-premier/defstra-stradef-eng.asp; accessed 17 April 2009.

saw short-term political support in the 2005 International Policy Statement (IPS).[6] With the announcement of the Standing Contingency Force (SCF) in the IPS the Canadian government contemplated, for the first time since 1963, the possibility of establishing a sea-borne expeditionary and amphibious capability under a single integrated command structure. With strong departmental support behind it, the staff assigned to the SCF project was able to develop the concept, in a relatively short period of time, to the point where it was possible to conduct a proof-of-concept demonstration. This proof-of-concept was conducted in November 2006 as part of the Integrated Tactical Effects Experiment (ITEE).[7]

In 2007, the momentum of the SCF concept development was lost when the Chief of the Defence Staff (CDS) directed that the SCF permanent staffs and the amphibious sub-component be stood-down. The SCF concept fizzled out, not because the conceived expeditionary concept was invalid nor the notion of employing amphibious forces had some intrinsic flaw. It was stood-down principally due to operational and fiscal pressures.[8] While some amphibious concept development work was completed before the shut down of the SCF, it must be noted that by no means was the subject fully explored.

The incomplete development of a Canadian amphibious operating concept (and related capability requirements) is apparent in most discussions on the subject since authors and

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[6] Department of National Defence, *Canada's International Policy Statement: A Role of Pride and Influence in the World: Defence* (Ottawa: Her Majesty the Queen in Right of Canada, 2005), 13.

[7] General R.J. Hillier, *CDS Direction – Integrated Sea-Land-Air Effects Concept Development & Experimentation* (National Defence Headquarters, 5 April 2007), 1.

[8] Ibid.

speakers normally take a binary position: either Canada requires a *sizable* amphibious capability or *none at all*.[9] The truth is, however, that there is value in whatever scale of ability to move personnel and equipment from ship-to-shore and shore-to-ship.[10] While attaining certain objectives will require a minimum capacity to move personnel and materiel across the littorals, even limited capacities should be seen as an enabler for the success of future CF operations. In the process of proving that Canada requires an improved TLM capability, this paper will additionally fill some of the void between the binary points of view of *sizable* or *nothing*.

DEFINING TLM

Since it is not a doctrinally accepted term, this section will define TLM and provide an example which summarizes its basic capability requirements. A number of the factors derived from the example will then be applied to illustrate the current capability gaps in the navy as well as provide a foundation for discussing how improved TLM could be incorporated into its future ships.

TLM is defined as "*exploiting the littoral battlespace as a manouvre space in order to maximize one's ability to move personnel and materiel across the land-sea divide to*

[9] For example, see Peter T. Haydon, "Canadian Amphibious Capabilities: Been there, Done it, Got the T-shirt!" Internet; available from http://www.navyleague.ca/eng/ma/papers/Canadian_Amphibious_Capabilities%20_PHaydon.pdf; accessed 22 January 2009, or LCdr John Allsopp, "Beyond JSS: Analyzing Canada's Amphibious Requirement" (Toronto: Canadian Forces College Command and Staff Course Master of Defence Studies Paper, 2007), 1-62.

[10] For example, establishing a beachhead and conducting a subsequent breakout in Normandy could not have been accomplished by landing a battalion-sized force in 1944, but this is not to say that having the ability to land approximately 600-800 soldiers, or even a lesser force, on a foreign shore is not a valuable capability; it is a question of scale of capacity in relation to the objective.

operational and tactical advantage." From this definition it should be noted that TLM has a broader scope than the term *amphibious*.[11] Amphibious doctrine focuses upon assaults, raids, demonstrations and withdrawals in hostile or potentially hostile areas. TLM, by contrast, emphasizes the movement of personnel, equipment and supplies from sea-to-shore, shore-to-sea, and even laterally within the littorals,[12] regardless of the threat level. TLM can therefore be viewed as encompassing the set of 'traditional' amphibious missions but also includes other sets of activities such as the administrative delivery of items into friendly countries; shore-to-shore operations; and across-the-shore logistic support, such as the use of sea basing.[13] By taking a broader perspective, TLM can be applied across the entire spectrum of conflict and thus can be seen as an enabler for all types of operations in the littorals, be they domestic operations, humanitarian assistance (HA) or disaster relief (DR), or even kinetic expeditionary operations.

The broad capability requirements for the successful conduct of TLM operations are evident when assessing the costly American assault on the Japanese-held island of Betio in the Tarawa Atoll on 20 November 1943. While the assault on Tarawa was conducted directly against fortified Japanese positions and resulted in a high number of casualties, the lessons learned also apply to trans-littoral movements where an adversary is not expected to be present. Tarawa is therefore a good example to consider because it clearly illustrates a number of critical TLM capabilities required to provide adequate support to

[11] ATP 8 is the NATO doctrine manual for amphibious operations. The definition of the term *amphibious*, and detailed descriptions of the types of amphibious operations can be found therein.

[12] An example of a lateral TLM movement is an assault on a beach which was launched from a different beach; amphibious warfare does not cover shore-to-shore assaults in its doctrine, as this type of operation traditionally falls under army doctrine.

[13] For more on sea basing refer to Wallace C. Gregson and R. V. Dutil, "Sea-basing: Projecting Power and Influence From the Sea," in *The Role of Naval Forces in 21st Century Operations*, eds. Richard H. Shultz and Robert Pfaltzgraff (Washington, DC: Brassey's, 2000).

landed troops in a "worst case" scenario. Although this paper is focuses upon TLM at the operational level it is important to discuss some of the required tactical capabilities from the Tarawa example because, as it will be pointed out in the capabilities and deficiencies section, Canada is severely lacking in a number of tactical TLM capabilities. Without these basic tactical capabilities, the CF would not be able to employ TLM as an operational enabler.

Prior to the assault on Tarawa, the Americans conducted preliminary bombardments of the landing sites with airplanes and naval artillery but the choice of area bombing vice engaging the exact enemy positions directly proved to be ineffective.[14] Furthermore, since the navy primarily fired shells optimized for use against ships (instead of high explosive rounds designed to penetrate concrete), even the rounds that impacted the enemy positions resulted in minimal destruction of Japanese fortifications. As a result, despite the preliminary shaping operations, the Japanese positions on the island remained largely intact and its garrison combat effective when the American Marines arrived.[15]

The naval artillery support for this operation also proved to be problematic during the actual assault on the island. As the landing craft approached the beaches, a communications failure on board the command ship resulted in the supporting naval gun fire being stopped too early. This was problematic because the carrier-borne aircraft which were to engage any remaining Japanese positions, after the naval bombardment

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[14] Colonel Robert D. Heinl, "The U.S. Marine Corps: Author of Modern Amphibious Warfare" in *Assault from the Sea* …, ed. Merrill Bartlett , 193.

[15] Patrick L. McKiernan, "Tarawa: The Tide that Failed" in *Assault from the Sea*..., ed. Merrill L. Bartlet, 216.

was over, arrived late. As a consequence, there was a lull in American bombardment which allowed the Japanese to reposition forces in order to strengthen the defensive positions directly facing the approaching Americans.[16]

A final error which further compounded the Americans' problems that day became evident when a large number of their landing craft grounded upon the coral reefs hundreds of yards from the beaches. These groundings happened because the American prediction of the tidal height was incorrect and therefore there was an insufficient depth of water to allow the non-tracked landing craft to clear the coral reefs. When all of the individual errors of the day were summed up, the result was that many American Marines had to wade through hundreds of yards of surf while under heavy Japanese fire. The American Marines were able to prevail in the end but at the cost of 1,009 killed and 2,101 wounded after seventy-six hours of combat.[17]

Although a very costly operation, the negative American experience at Tarawa provided many positive lessons on how to successfully land troops in disputed territory; lessons which significantly reduced the number of American casualties in subsequent landings. The key lessons were:[18]

1. *Good Intelligence Required*. This extended to not only meteorological and tidal information, but to the exact location of fortifications so that they could be properly engaged.

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[16] Derrick Wright, *Tarawa 1943: The Turning of the Tide* (Oxford: Osprey Publishing, 2000), 28.

[17] Patrick L. McKiernan, "Tarawa: The Tide that Failed," in *Assault from the Sea*..., ed. Merrill L. Bartlet, 216.

[18] For more, see Colonel Robert D. Heinl, "The U.S. Marine Corps: Author of Modern Amphibious Warfare" in *Assault from the Sea* …, ed. Merrill Bartlett, 185-194.

2. *Preliminary Preparation of the Objective*. Enemy fortifications need to be engaged directly (vice area bombardment) in a methodical, and sufficiently long fashion.
3. *Fires in close support of the landing*. Naval fires and air bombardments cannot be lifted too soon. Ideally the troops being landed will be able to follow behind a rolling barrage as they would prefer to do during a land battle. It is important to have precision fires (such as close air support) available to assist the landing troops engage enemy strong points which were not neutralized by the preliminary bombardment.
4. *Logistic support of the landing*. Not only do amphibious ships have to be combat loaded, to ensure that personnel and equipment get landed in the correct order, but a shore party is required to ensure the efficient delivery of supplies across the beach, instead of forming bottlenecks.
5. *Connectors*. Clearly suitable and sufficiently numerous ship-to-shore connectors (such as landing craft) need to be available. The United States Marine Corps additionally began to employ helicopters as an alternate type of connector in the late 1940s, and Landing Craft Air Cushion (LCAC) vehicles, a version of hovercraft, in 1984.
6. *Communications*. Without proper and adequate communications (with sufficient back-ups and redundancies), coordination of forces under fire is highly problematic.

In summary, while the lessons learned at Tarawa pertain directly to assaulting beaches defended by a prepared enemy, the majority of the factors also apply to landings where the enemy is not expected to be in force but yet could still be present in small numbers. In this later case, preliminary bombardment may not take place but all of the other lessons learned at Tarawa must be addressed for the landing force to have the ability to successfully land and to defend itself in the face of any unexpected enemy resistance.

THE LITTORALS IN FUTURE OPERATIONS

Before defining the Canadian TLM capability gaps it is important to recognize why this capability will be of value in future. The ability to operate across the land-sea divide of

the littorals will have growing importance in the decades to come since it is predicted that by the year 2030 up to 75% of the world's population will live within 80 km of the sea.[19] From the expected population density alone, one could predict that it would be useful for the navy to be able to influence events in this portion of the globe in support of Canadian foreign policy objectives.

Along with the concentration of people in the world's littorals, it follows that it is likely that the "…littoral geographical areas will be the probable locus for much of the early 21st century conflict….."[20] Additionally, littoral populations will also have to contend with the risks of sudden and catastrophic effects of rising sea levels and increased hurricane activity, etc., due to climate change. Taken as a whole, the littoral regions of the planet will likely be the central focus of military and HA and DR operations over the lifespan of the next generation of ships. As a consequence, Canada's future fleet must be able to operate in the littorals and cross the land-sea divide to be effective.

TLM offers a wide range of options for policy makers contemplating operations in the littorals. The United States have found that the forward deployment of expeditionary forces in Amphibious Readiness Groups, and sea basing—two major components of TLM—to be the only viable method of demonstrating American presence and sustaining operations around the globe especially when many countries want an American presence without the political or economic repercussions of providing permanent host nation

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[19] Reuven Leopold, "The Next Naval Revolution," *Jane's Navy International* (January/February 1996): 14.

[20] Robert L. Pfaltzgraff and Stephen E. Wright, "The Spectrum of Conflict: Symmetrical or Asymmetrical Challenge?" in *The Role of Naval Forces*…, eds. Richard H. Shultz and Robert Pfaltzgraff, 15.

support.[21] While Canada would not likely require a globally deployable power projection force, many other First World countries find amphibious, expeditionary forces to be very useful in promoting regional stability and could therefore serve as a model for future CF employment.

A sea-borne expeditionary force allows governments to quickly respond to failed or failing states that might be a source of further instability to a region. By quickly inserting a stability force into a failed or failing state during the initial stages of collapse, the expeditionary force can potentially minimize the degree of collapse of that country and reduce the number of refugees that might flood adjacent countries causing greater strain and instability in the region.[22] Thus, by achieving strategic (or operational) theatre entry into a distressed country regardless of the state of its transportation infrastructure and the degree of cooperation by the host nation government (or remnant thereof), sea-borne expeditionary forces can effectively act to minimize the effects of the collapse of governance.

Sea basing also offers an employing country significant advantage when conducting military operations abroad. By conducting as much of the logistical support to land forces from ships at sea, the footprint of the land forces is significantly reduced. In the absence of a sea denial threat,[23] land forces are able to minimize the amount of supplies

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[21] Martin Steele, "Asia and the Pacific Rim" in *The Role of Naval Forces…*, eds. Richard H. Shultz and Robert Pfaltzgraff), 119-120.

[22] The deployment of Australian amphibious forces to East Timor in 2006 is one such example.

[23] Sea denial is exercised when one party denies another the ability to control a maritime area without either wishing or being able to control that area himself. Source: Ministry of Defence, BR 1806 *British Maritime Doctrine 2nd ed*. (London: The Stationary Office, 1999), 35.

and support personnel required ashore which subsequently reduces the force protection requirements of the land-based force. By minimizing the logistical footprint on the ground, stabilization forces can therefore focus on restoring peace and order, and not have to allocate as many resources to the protection of stockpiles and support personnel.

In summary, due primarily to demographics, the littoral regions of the Earth are likely to be the scene of future military operations. Even though these military operations may range from relatively benign HA missions to more dangerous and complicated peace support operations,[24] an improved TLM capability would permit the CF to affect strategic entry into the desired theatre of operations, provide a sufficient level of sustainment for its forces even in the absence of host nation support, and could improve the tooth-to-tail ratio of its land forces. TLM can therefore be considered an important enabler for the success of CF operations during the decades to come.

CAPABILITIES AND DEFICIENCIES

The CF possesses a large capability gap to move personnel and materiel across the land-sea divide which will hinder its effectiveness in future littoral operations if the *status quo* is not improved. From an equipment point of view, the two largest deficiencies that need to be corrected are the navy's lack of ship-to-shore connectors, and the lack of shipborne and airborne precision fires to support landing forces that encounter unexpected armed resistance. These two issues will be addressed in turn.

[24] Peace support operations include conflict prevention, peacemaking, traditional and complex peacekeeping and peace building. Source: Department of National Defence, B-GJ-005-307/FP-030 *Peace Support Operations* (Ottawa: DND, 2002), 2-1.

With respect to connectors, while Canadian warships possess boats with which to transfer personnel and materiel, there is not an adequate carrying capacity for moving people across medium to long distances. Additionally, they possess an insufficient cargo carrying capacity to permit the bulk delivery of goods, or the landing or armoured vehicles, trucks etc., to support operations ashore.

The insufficient number of embarked boats which permit the freedom of movement of personnel to/from warships was highlighted by [at the time] Lieutenant(Navy) Mike McKinley in his article "*Operation Colombie*: Learning from Success."[25] *Colombie* was a RCMP led counter-drug operation in 2004 which seized a vessel of interest (VOI) that was suspected of carrying narcotics. In order to permit the RCMP boarding teams to take-down the VOI at sea, HMCS *St. John's* and the Coast Guard Ship *Edward Cornwallis* were placed in support. While the RCMP officers were berthed in the *St. John's*, the *Edward Cornwallis* was required to carry the two boats that the RCMP would use to conduct their boarding since the boats were too large and too heavy to be embarked in the *St. John's*.

In addition to the two RCMP boats, *St. John's* own rigid hull inflatable boat (RIB) was to be employed during the boarding to provide medical support, and to recover anyone who fell into the water during the take-down. But, planning to use all the suitable boats available to the RCMP-Navy-Coast Guard task group during the boarding led to a critical

[25] Lieutenant(Navy) Mike McKinley, "*Operation Colombie*: Learning from Success," *Canadian Naval Review* Vol. 1 no. 3 (Fall 2005): 4-9.

vulnerability. For, the loss of one RIB due to mechanical problems, etc., would have resulted in only half of the RCMP officers able to board the VOI, or the mission would have to be called off. As Lieutenant(Navy) McKinley identified, "the mechanical failure of a RIB would have resulted in thousands of dollars in man-hours, fuel and other resources being wasted and the mission [potentially] failing. Like the old story goes – for want of a nail, the battle was lost."[26] *St. John's* inability to embark boats used by Other Government Departments (OGD), and the lack of ability to carry spare RIBs clearly illustrated the deficiency in capacity to transfer personnel from the ship.

Even though this example focuses upon a domestic operation, the deficiency in connectors easily extends to the conduct of tactical movements across the littorals, such as the insertion of a NEO company[27] or the provision of HA from a ship. The navy's deficiency in this later case was demonstrated during *Operation Unison* in 2005 when Canada dispatched a composite naval and coast guard task group to assist with the disaster relief in the United States after hurricane Katrina. Canada's involvement in *Operation Unison*, while successful, further highlighted the navy's inability to move useful numbers of personnel across the littorals, but also demonstrated a deficiency in transferring large quantities of humanitarian relief supplies to where they may be needed.

The composite task group sailed from Halifax on 6 September 2005 loaded with stores to assist in the recovery efforts in the southern United States. En route to the disaster area

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[26] Ibid., 7.

[27] NEO operations are performed in order to evacuate Canadian citizens from a friendly host country experiencing civil disorder. Source: Department of National Defence, B-GG-005-004/AF-000 *Canadian Forces Operations* (Ottawa: DND 1997), 11-1

the task group landed its stores at Pensacola Florida, the nearest FEMA logistical hub servicing relief efforts in the South. After offloading their stores, the naval ships proceed to an operating area off of Biloxi where a landing party was to put ashore to assist in relief efforts. The ships, however, had to remain at least 18nm from land since the water depths in general were too shallow to permit the safe passage of the task group nearer to the coast and it was uncertain if the channel normally used for transiting to Biloxi was clear of underwater obstacles, such as sunken vessels. As a result, the Canadian ships had to transfer personnel ashore from a distance that was considerable given the task group's TLM capabilities.

As there were only three RIBs in the task group, and since these boats could only transit at approximately 25 knots when carrying 10 passengers,[28] the transfer of personnel was problematic. Due to the distances involved, the task group could only have landed 30 people ashore roughly every two hours via its organic boats. The task group's three helicopters could additionally have landed six personnel each per sortie, but it is evident that even when operating boats and helicopters in tandem it would have taken a significant amount of time to land the desired 260 workers ashore.[29]

Canada's TLM deficiency was overcome through the use of Landing Craft Utility (LCU), an amphibious landing craft which can hold up to 400 personnel and transit at approximately 10 knots, and Landing Craft Air Cushions (LCAC) which were made

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[28] McKinley, "*Operation Colombie*…, 7.

[29] For more details on Canada's contributions ashore during Operation Unison see Department of National Defence, *Canadian Forces Support to Relief Efforts in Southern United States BG-05.023a - September 16, 2005*; Internet; available from http://www.comfec-cefcom.forces.gc.ca/pa-ap/nr-sp/doc-eng.asp?id=1739; accessed 23 April 2009.

available by the *USS Bataan*. By employing LCUs and LCACs, the Canadian task group commander was afforded a secondary benefit: through the large TLM capacity of the *USS Bataan* the Canadian commander was able to re-embark all of the work party each evening in order to minimize the Canadian footprint ashore. This was beneficial because the Canadians did not therefore need to use tents, field kitchens, and security forces to sustain their efforts when these items were best used to provide assistance to the local population which lacked basic services.

Operation Unison therefore illustrated the navy's inability to move personnel and materiel in bulk across the land-sea divide. While the deficiency in transferring stores ashore was mitigated by delivering them to a fully functioning port, the existence of intact port facilities cannot be taken for granted when responding to island nations or Third World countries. For example, if the task group were attempting to assist an island nation that had been struck by a Tsunami that had damaged all port facilities, the warships might not be able to deliver the aid offered by the Canadian government in a timely fashion, which would likely have a negative impact on the operation.

In terms of transferring personnel during *Operation Unison*, although the Canadian deficiency was mitigated through the use of an American landing craft, one must additionally consider what could have happened had LCUs/LCACs not been available. For, after transiting all the way to Louisiana, the Canadian task group would have either had to reduce its level of assistance on the ground, or else employ tents, and consume stores of food and water ashore which would have better served the victims of the

hurricane. In either case, the TLM deficiency would also have negatively affected operations and public opinion of the navy.

In terms of the second major equipment deficiency, seaborne precision fires, the CF is once again limited in capability. The navy's frigates and destroyer possess 57mm and 76 mm guns respectively which offer a small degree of fire support but due to their sizes they cannot be used to engage targets much further inland than the shoreline.[30] The United States Navy, by contrast, views that a combination of missiles and 5 inch (105 mm) guns as the minimum fires required to support land forces in their conduct of both warfighting and non-combatant evacuation (NEO) missions.[31] Furthermore, unlike the United States Navy, Canada does not have seaborne fixed wing or assault helicopters to provide additional support; the helicopters employed by the navy are armed only with a machine gun mounted as a door-gun.

In general, it can be summarized that Canada does not have the fixed wing, assault helicopter, and adequately-ranged naval fires support to support warfighting or non-combatant evacuation missions as the Americans envision it. In terms of Canadian requirements, since Canada would not likely employ TLM to conduct opposed assaults of fortifications, Canada would not likely need the full range of American capabilities. But,

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[30] The 57 mm and 76 mm guns have a maximum range of approximately 9 nm (17 km). Source: Jane's Fighting Ships; Internet; available from http://www4.janes.com; accessed 23 April 2009.

[31] The United States Navy and Marines would like to have precision fire support available to a distance of at least 40nm inland. Source: United States, General Accounting Office, *Naval Surface Fire Support: Navy's Near-Term Plan Is Not Based on Sufficient Analysis.* Report prepared for the Chairman, Committee on National Security, House of Representatives (Washington DC: GAO, May 2005), 3, 5.

it should be noted that if the *status quo* of naval fires is maintained, the navy would be limited in the amount of support that it could offer to landed forces ashore.

In summary, through the analysis of Operations *Colombie* and *Unison*, it has been demonstrated that while the navy does possess a small degree of TLM capability resident in its RIBs and helicopters it is not of a sufficient capacity to permit the successful conduct of HA and DR missions if either a functioning port is unavailable or a coalition partner is not able to ferry personnel and materiel ashore. As the littorals are anticipated to be a focal point of operations in the future, an inadequate TLM capability will therefore greatly reduce the operational effectiveness and flexibility of the CF in operations in other than austere conditions.

In terms of providing fire support to either assist land forces engaged with an adversary or to provide a strong deterrent posture to intimidate an adversary from engaging in hostilities, the navy will be limited in its ability to provide an envelope of mutually supporting self-defence if the *status quo* is not changed. With regards to these two critical equipment deficiencies, it can therefore be viewed that unless an improvement is made, Canada will have neither adequate TLM throughput nor sufficient supporting ability to succeed in littoral operations without relying heavily on a coalition partner that may, or may not, be able to assist.

THREE POLICY OPTIONS

This section will not discuss the viability of employing existing amphibious ships, such as *HMS Ocean*, *USS San Antonio*, or the *FS Mistral* classes within a Canadian context, nor will it analyze the feasibility of purchasing new hulls from existing naval funding allocated under the Canada First Defense Policy Statement. Instead, this section will provide three potential policy lines for the acquisition of improved TLM capability from a conceptual point of view which can be followed to the degree that policy makers and tax payers are willing to support. Furthermore, by defining Canadian TLM requirements prior to contemplating the purchase of a new ship, policy makers will be able to make a more informed procurement decision, as opposed to the approach of buying new equipment and then determining how the CF could best employ it.

In the spring of 2008, Major Rob Bradford, Staff Officer Amphibious Warfare at the Canadian Forces Maritime Warfare Centre, proposed that the navy could pursue three possible lines of operation in order to improve the CF's TLM capability. The three options were to improve the existing *ad hoc* capabilities of the major surface combatants, pursue an interim TLM-capable vessel, and/or to purchase a purpose-built ship. Some specifics, and the pros and cons for each of these three options will be discussed in turn, and in the end it will be shown that the best policy option will be to improve the organic TLM capabilities of the major warships while concurrently leasing an interim, larger-scale TLM ship in order to permit the CF to successfully conduct HA/DR operations in

the short term. This would allow for capability requirements and proposed doctrine to be refined prior to contemplating the purchase of a purpose-built ship in the long term.

Improved Ad Hoc

To afford the CF the minimum degree of operational TLM capability for peace support and stability operations, the navy needs an improved boat handling capability and short-term troop carrying capacity, and the CH-148 *Cyclone* helicopter requires improved armament. As a purposed operating concept, all future combatant ships should be able to embark a platoon, and all major non-combatants should be able to embark a company's worth of personnel to be transported ashore. It is not proposed that these ships would permanently sail with an augmented 'marine detachment' since soldiers confined to a relatively small ship begin to lose a degree of combat effectiveness soon after embarkation.[32] Instead, it is proposed that the ships possess a capability to accommodate the additional personnel for a duration of 3-5 days. Thus, for example, if forces were to be landed in Haiti, the soldiers could embark the ship(s) at a forward location, such as Norfolk, Virginia or Mayport, Florida to minimize the soldier's time afloat. This operating concept equally applies to the employment of Special Forces as they are a strategically valuable enabler that should retain their freedom of movement as much as possible and should therefore not be confined to a ship for a long period of time.

In order to effectively transport the embarked land forces across the land-sea divide an augmentation in TLM connectors is required. It is purposed that each major warship

[32] C.E. Callwell, *Military Operations and Maritime Preponderance: Their Relations and Interdependence* (Annapolis: Naval Institute Press, 1996), 198.

should have the capacity to transport a platoon's worth of personnel and equipment ashore in a single wave. Thus, in the case of a task group consisting of either an Arctic and Offshore Patrol Craft or an AOR-replacement escorted by two to three combatants, the Canadian ships would have sufficient capacity to land a NEO company in a single wave. With the capacity to land a company sized sub-unit at a time, the soldiers would be able to establish a strong presence early in order to deter would-be aggressors more readily than if they only arrived in platoon-size. To facilitate improved TLM transport, the navy must increase its boat carrying capacity as well as to furnish a robust crane system which would be able to handle a wide variety of boats—ranging from RIBs, to RCMP and Special Forces boats—so that the Canadian warships can perform their missions without having to rely upon Coast Guard ships, as they did during *Operation Columbie*.

In terms of improving precision fire support to either deter would-be aggressors or to provide mutually supporting self-defence to land forces ashore, the navy needs to increase the size of its ships' guns and carry ammunition optimized for support of land forces. Without a larger gun ships will either not be able to support land forces very far inland, or else they will have to operate close to the shoreline which will not afford the ships sufficient battlespace to counter land-based threats.[33] Without suitable ammunition, future naval fires may prove to be as equally ineffective as those on Tarawa, which could result in a number of needless casualties. To further augment the task

[33] In 2006 the Israeli missile ship *Ahi Hanit* was stuck by a land-launched missile while patrolling at a distance of approximately 10nm from Lebanon. At that range a warship would have approximately one minute to detect and engage a missile travelling at the speed of sound, which is a very compressed timeline.

group's deterrence/mutual self-defence capability, the *Cyclone* should be augmented with a forward-firing machine gun and possibly either precision fire missiles or rockets. With this improved capability the *Cyclone* could prove to be as effective a deterrent and support helicopter as the CH-146 *Griffon* is in Afghanistan[34] even though neither of the two helicopters was originally conceived to provide support in that role.[35]

With an increase in the number of ship-to-shore connectors and improved support to forces ashore through precision fires (or the threat thereof), the CF can establish a basic level of TLM capability to be employed either in support of OGDs, Special Forces, or expeditionary operations on the lower end of the spectrum at a fairly minimal cost.

Leased or Purpose-built Ship

While the *improved ad hoc* option would allow for the transport of platoon and company sized sub-units through the littorals, it would still not address the issue of transferring heavy equipment such as armoured vehicles, or large quantities of materiel as was delivered during *Operation Unison*. To achieve this degree of freedom of movement in the littorals, larger connectors such as LCUs, LCACs and/or medium-heavy lift helicopters are needed. To be able to employ these three types of vehicles, a ship larger than that in the Canadian inventory, with a well deck (for LCUs/LCACs) and/or a large flight deck, is required.

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[34] For an example of the *Griffon's* effectiveness see The Canadian Press, *Canadians Launch Airborne Assault on Taliban Centre*; Internet; available from http://www.ctv.ca/servlet/ArticleNews/story/CTVNews/20090308/Canada_Taliban_090308/2009038?hub=CTVNewsAt11; accessed 8 March 2009.

[35] For more see Thierry Gongora, *Aerial Armed Reconnaissance and Fire Support: The Potential and Implications of the Attack Helicopter for the CF*. Report prepared for CFAWC. Defence Research and Development Canada, 2006.

To acquire a large ship to house and transport the TLM connectors there are two options: lease a vessel or buy one. While Canada could progress straight to a purpose-built ship, it would be wiser to first develop a detailed understanding of Canadian requirements through the operation of an interim, leased vessel. This approach has precedent in the CANOSCOM leased ship, the MV *Wloclawek*, which has proven to be a success in economically delivering CF supplies around the world.[36] Canada could therefore fill its TLM capacity gap in the short to medium term through the lease of a vessel with a well and flight deck, and able to operate LCUs and medium-heavy lift helicopters such as the CH-47 *Chinook*. The combination of LCUs and helicopters would allow for the landing of armoured vehicles to support operations ashore, and would allow for troops to operate via helicopter further inshore, travelling directly to their objective and potentially bypassing areas of resistance.[37]

The operation of an interim TLM ship would therefore allow for the refinement of Canada's requirements and proposed doctrine prior to potentially purchasing a new ship. Thus, with greater TLM experience, proven doctrine and detailed requirements, policy makers would be able to make a well informed decision whether to purchase a purpose-built ship, maintain a leased capability, or resort back to the *ad hoc* ability.

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[36] To date it is estimated that the lease of the MV *Wloclawek* has saved the CF over 30 million dollars when compared to the cost of transporting the same amount of materiel via airlift. Source: Gord Lovelace, "Full-time Charter Key Link in Supply Chain," *Maple Leaf* Vol. 12 no.9 (4 March 2009); Internet; available from http://www.forces.gc.ca/site/Commun/ml-fe/article-eng.asp?id=5144; accessed 23 April 2009.

[37] For more see Vice Admiral Frank W. Vannoy, "Where Do the Gators Go From Here?" in *Assault from the Sea*…, ed. Merrill L. Bartlett, 401.

CONCLUSION

Due to the growing concentration of people living within 80 kilometers of the world's coastlines it is reasonable to expect that a large number of future CF operations are going to take place in the littoral regions of the globe. While future operations will likely involve the transfer of personnel and materiel across the land-sea divide, Operations *Colombie* and *Unison* illustrated that if the navy maintains its *status quo* capability, Canada will be reliant upon functioning ports and coalition TLM support to affect operational success. This dependency will remain a critical vulnerability during future CF operations unless the navy's TLM capacity is improved. Without an improved TLM capability, the CF will not be in control of a critical factor that could lead to failure. In the context of *Operation Unison*, had a functioning port and American TLM support not been available, an embarrassing situation could have developed where a task group of ships laden with supplies and support workers were stuck off of a coast, unable to expeditiously deliver the relief supplies to help the needy ashore.

To mitigate the operational TLM critical vulnerability the navy needs to improve its boat carrying capability and augment its precision fires ability in its next generation of warships. Additionally, the navy must strive to secure a TLM ship to allow for the bulk transfer of personnel, equipment and supplies in support of operations in the littorals. While there are existing classes of TLM ships such as HMS *Ocean* or the USS *San Antonio* that could be purchased directly, the navy should attempt to secure an interim

leased TLM ship first. For, even though existing TLM ships offer significant benefits in terms of operational movement, sustainment and flexibility, the capabilities of each of these ships varies widely and it is not intuitive what set of capabilities Canada needs. A leased ship would therefore serve to mitigate the existing critical vulnerability in the short to medium term while concurrently permitting the navy to garner experience, develop its operating TLM concept, and articulate its operational requirements to permit a wise procurement decision for the long term.

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