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EXERCISE/EXERCICE

New Horizons

The Maritime Helicopter must break from the traditional focus of ASW to become a truly joint platform with the ability to not only operate on the seas but from the sea.

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ABSTRACT

The contract for the Maritime Helicopter (MH) project was signed in November 2004 to conclude an extended process for the replacement of the CH-124 Sea King helicopter. The Statement of Requirement for the program was prepared in the 1990s, a contract was signed in 2004 and the first aircraft will be delivered in 2008. The lengthy procurement process was not capable of reflecting the changing MH employment during the 1990s and more importantly to the changing security environment resulting from the terrorist attacks of 11 September 2001. The traditional focus of the MH, Anti Submarine Warfare, must be altered to respond to future instability and ensure that the MH will have the capabilities to support joint force operations within the littoral region. This paper will examine: the background of CF maritime aviation; government defence policy as it relates to MH; future security concerns and locations of instability; and, expanded roles for MH. It will be concluded that the MH must break from the focus of ASW and through an expansion of roles provide a truly joint capability to not only operate on the seas but from the sea.

The signing of the contract for the Maritime Helicopter (MH) replacement in November of 2004 signalled the end to an extended contracting process and resolved the capability replacement challenge of the present MH, the CH-124 Sea King Helicopter.[1] The program to replace the Sea King helicopter has received extensive reporting in the media due to the delays in the process and the increasing challenges faced by an aging aircraft to carry out its missions while remaining relevant in the modern maritime battlespace. The traditional focus of the MH on Anti Submarine Warfare (ASW), developed and mastered during the Cold War, remained its primary mission until the early 1990s. The post Cold War period and the evolving security environment in the aftermath of the September 11, 2001 terrorist attacks in New York has required an expansion of the roles performed by MH. The period of high operational tempo from 1990 to 2004, in support of Canadian Forces (CF) operations of peacekeeping and peacemaking, has seen particular emphasis for MH toward Maritime Interdiction Operations (MIO) in coastal regions and also some employment overland. The move away from ASW indicates the need to examine in more detail missions such as Anti-Surface Warfare (ASuW), overland assignments and operations in coastal regions to respond to global trends in instability. An expanded mission envelope will be critical in the future with an increasing focus on inshore and land operations and the requisite capabilities necessary in the fulfillment of those missions. This paper will examine future roles for MH by providing a brief historical background and related defence policy, a description and examination of future threats, recent operations and roles and will discuss

[1] Department of National Defence, News Release: Government of Canada Awards Contracts to Sikorsky for New Canadian Forces Maritime Helicopter (Ottawa: Public Works and Government Services Canada, 2004) http://www.forces.gc.ca/site/newsroom/news_e.asp?cat=&y=&m=&page=1; Internet; accessed 04 February 2005.

the capability and flexibility of MH to provide military options for future security challenges. It will be concluded that MH must break from the traditional role of ASW to provide a truly joint resource that supports the Joint Force Commander over the sea and land.

An aircraft capable of lifting vertically was first described by Leonardo da Vinci in the 1480s but it was not until WW II that Igor Sikorsky's helicopter design was produced for U.S. and Royal Air Forces, signalling the arrival of the military helicopter.[2] As technology progressed and overcame issues of stability and payload the full utility of the helicopter was recognized. The use of helicopters to carry weapons was first employed by French forces in Africa: "The French proved in Algeria (1954-62) that helicopters armed with machine guns, free flight rockets and guided missiles could make a marked impact on a guerrilla campaign."[3] Helicopter employment evolved rapidly in the Vietnam War, sometimes referred to as "The Helicopter War" where over 19 types and variants contributed to many roles supporting land and maritime missions in all four U.S. services.[4] The combination of weapons and helicopters has now developed to the point where attack helicopters such as the AH-64D Apache Longbow are used extensively by land forces. The function of the Apache is very specific: "…the Apache Longbow was designed to operate and survive in high intensity conflict and destroy large

[2] E.J. Everett-Heath et al, Military Helicopters, Royal Military College of Science (London: Brassey's 1990), 1,6.

[3] Ibid., 77.

[4] John Guilmartin, Jr. and Michael O'Leary, Helicopters: Illustrated History of The Vietnam War (Toronto: Bantam Books, 1988), 21, 152.

concentrations of mechanized and armoured forces."[5] It is therefore important to differentiate between armed and attack helicopters. Attack helicopters have significant firepower that makes them an integral element of the modern battlefield. Due to its design and role this highly specific aircraft is often limited in employment and would be difficult to describe as multi purpose.[6] The arming of utility helicopters is less expensive and permits greater flexibility of employment allowing for roles such as "…troop and equipment movement, casualty evacuation and airborne command posts."[7] The CF has used helicopters extensively as weapon and sensor platforms in both the land and maritime environments; the focus of this paper, however, is on the evolving roles of the MH. A brief discussion of the history and leading role that Canada has had in developing the use of naval helicopters will provide the backdrop for an examination of future MH roles.

The CF has operated Maritime Helicopters for over fifty years starting with the Bell 47 in 1951 that deployed on the icebreaker HMCS Labrador for reconnaissance, light utility support and transport.[8] In 1952 the Royal Canadian Navy took delivery of the Sikorsky HO4S-2 (Horse) initially for use as plane guard off the aircraft carriers and later, when more helicopters were acquired, for the anti submarine role. The CHSS-2 Sea

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[5] Hugh M Dimmery, The AH-64D Apache Longbow Weapons System; Advisory Group For Aerospace Research & Development (Neuilly-Sur-Seine: North Atlantic Treaty Organization, 1997), 7-1.

[6] E.J. Everett-Heath et al, Military Helicopters, Royal Military College of Science (London: Brassey's 1990), 88.

[7] Ibid., 88.

[8] Aaron P. Plamondon, Political Parrying: The Sea King Helicopter and Cancellation of the New Shipborne Aircraft Program http://www.naval.ca/article/Plamondon/Sea_King_&_Cancellation_of_NSA.htm; Internet; accessed 5 February 2005, 2.

King, later designated the CH-124, began replacing the Horse in 1963 and was a significant improvement due to its speed, range, payload and night capabilities.[9] The Sea King operated off both carriers and destroyer escorts in the ASW role. The day and night operation of large helicopters from destroyer sized ships was a distinctly Canadian idea that would become an extremely effective capability now used by many other navies.[10] There were refinements such as a hauldown and rapid securing device that provided an operational capability during rough weather, especially for flight operations in the North Atlantic. The impact of this capability was significant.

> "Canadian ingenuity influenced naval doctrine and, as a testament to this, the RN and the USN copied the DDH concept soon after the success of wedding the Sea King to Canadian destroyers."[11]

The Sea Kings remain an integral element of maritime operations, in spite of outdated technology and serviceability issues, participating in numerous operations around the globe through their ability to deploy and operate in support of maritime forces. The present Iroquois, City and Protecteur class ships were designed with helicopter operations in mind and today represent a globally deployable force. The operations of the 1990s shifted the focus away from ASW to include: sanction enforcement; over-land surveillance; tactical lift; land support operations; peace support operations; counter-drug

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[9] Colin Curleigh, The New Maritime Helicopter: Reliability Will Be Crucial (Canadian Defence Quarterly: Summer 1997), 27.

[10] Ibid., 26.

[11] Aaron P. Plamondon, Political Parrying: The Sea King Helicopter and Cancellation of the New Shipborne Aircraft Program http://www.naval.ca/article/Plamondon/Sea_King_&_Cancellation_of_NSA.htm; Internet; accessed 5 February 2005, 3.

operations; monitoring of illegal immigration; pollution; environmental control; and Search and Rescue.[12] The ASW role will continue to play a factor in operations but MH will likely be increasingly involved in MIO and overland roles in coastal regions when responding to future threats. This is recognized in naval doctrine, where "Maritime air platforms have witnessed a broadening of their employment away from the traditional tasks of anti-submarine warfare and ocean area searches."[13] However, the conduct of a wider spectrum of roles by the future MH may be limited due to an extended acquisition process that froze the Statement of Requirements (SOR) in the late 1990s.[14] The MH Concept of Operations (COP) written in March 2001 incorporates the realities of present and future MH employment; however, these aspects could not be incorporated into the SOR approved two years earlier in 1999. This is very evident in the disparity between the surface weapon capability described as critical in the MH COP[15] when compared to the SOR where it is stated as desirable.[16] To permit a determination of the most suitable future MH roles an overview of the present government direction for defence, as it relates to MH, will be undertaken and then put in the context of the forecasted future security environment.

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[12] Department of National Defence, Leadmark: The Navy Strategy 2020 (Ottawa: Chief of the Maritime Staff, 2001), 65.

[13] Ibid., 65.

[14] Department of National Defence, Statement of Operational Requirement: Maritime Helicopter (Ottawa: Vice Chief of the Defence Staff, 1999), ii.

[15] Department of National Defence, Maritime Helicopter Concept of Operations (Winnipeg: 1 CAD HQ, 30 March 2001), 4.

[16] Department of National Defence, Statement of Operational Requirement: Maritime Helicopter (Ottawa: Vice Chief of the Defence Staff, 1999), Table 2 B-4/9.

The 1994 White Paper on Defence was the primary government direction related to Canadian Defence until the release of the Foreign and Defence policy reviews in March 2005. The White Paper signalled a period of downsizing for the CF in response to the fiscal challenges of Canada.[17] In this document the terms that have defined defence policy since 1994 are "the maintenance of multi-purpose, combat capable forces".[18] The benefits of multi-purpose forces have permitted a level of flexibility and adaptation for aging aircraft such as the Sea King, allowing it to continue to contribute to operations. The challenge becomes more of the maintenance of combat capable forces during periods of change. The White Paper stipulated the need for a naval task group with appropriate maritime air support. Further, the need to replace the Sea Kings was mentioned as an "…urgent need for robust and capable new shipborne helicopters".[19] The cancellation of the New Shipborne Helicopter program in 1993 set in motion over a decade of delays during which time the SOR remained relatively constant notwithstanding the changing world security environment.[20] The arduous process of producing a SOR and an expectation of a timely approval for a new contract limited the ability to respond to developments such as the evolving security landscape after the terrorist attacks in New York in 2001. The focus of military activities has shifted as a result of changes to international security created by asymmetric threats from state and non-state actors. The

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[17] Department of National Defence, 1994 Defence White Paper (Ottawa: Canada Communications Group, 1994), 9.

[18] Ibid., 13.

[19] Ibid., 46.

[20] Aaron P. Plamondon, Political Parrying: The Sea King Helicopter and Cancellation of the New Shipborne Aircraft Program http://www.naval.ca/article/Plamondon/Sea_King_&_Cancellation_of_NSA.htm; Internet; accessed 5 February 2005, 1.

2005 Defence review identifies new threats to global security and commits resources to respond to the significant changes taking place around the world by stating "It will mean introducing new capabilities, while using existing ones in different and innovative ways."[21] To execute this direction an assessment of the sources and areas of future volatility are necessary so that the MH may fully respond and contribute to future security operations.

The events in New York at the commencement of the 21st century have demonstrated the rapid changes to global security that are currently underway. The military threats of the Cold War were much clearer and were confronted over a number of years by traditional military forces. The new asymmetric threats to international peace continue to morph and challenge the current western military dominance, particularly on the part of the United States (U.S.). The development of non-state actors who may or may not be state sponsored and rogue states are of significant concern due to their ability to cause death and destruction throughout the world through their terrorist activities.[22] As described in the Strategic Assessment 2004, "The pursuit of al-Qaeda and its jihadist affiliates, and regime change in Afghanistan and Iraq are only the early campaigns in a war that will last for many years to come."[23] Rohan Gunaratna, a research fellow at the Centre for the Study of Terrorism and Political Violence, highlighted this in his book *Inside Al Qaeda*: "The global fight against al Qaeda will be the defining conflict of the

[21] Department of National Defence, A Role of Pride and Influence in the World: Defence Policy Statement, http://www.forces.gc.ca/site/reports/dps/main/toc_e.asp; Internet; accessed 24 April 05, 4.

[22] Department of National Defence, Strategic Assessment 2004 (Ottawa: Directorate of Strategic Analysis 2004), 12.

[23] Ibid., 11.

early 21st century".[24] The breeding grounds for terrorist organizations have originated in failing or failed states that are incapable of providing for their citizens.[25] These citizens serve as the recruiting pools for the radical elements that seek out the support of the disenchanted members of the population. The counter terrorist activities in Afghanistan and currently in Iraq have been the major focus of world leaders but other countries and regions such as Iran, North Korea, Taiwan, South Asia and Latin America could potentially jeopardize international security.[26] The relatively widespread instability will continue in the near term, as opined in the operational research paper Future Security Environment 2025: "…there is a genuine possibility that the world of 2025 will be a much more dangerous place than it is today".[27] The question of how the CF prepares for such circumstances will be the subject of lively debates but the need to contribute positively to world security is without question. This was a key tenet of the 1994 White Paper in the "Contribution to International Peace and Security"[28], reiterated in the 2004 National Security Policy "Contributing to international security"[29] and reinforced in the

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[24] Rohan Gunaratna. Inside Al Qaeda: Global Network of Terror (New York: Columbia University Press, 2002), 221.

[25] Department of National Defence, A Role of Pride and Influence in the World: Defence Policy Statement, http://www.forces.gc.ca/site/reports/dps/main/toc_e.asp; Internet; accessed 24 April 05, 5.

[26] Department of National Defence, Strategic Assessment 2004 (Ottawa: Directorate of Strategic Analysis 2004), 160-162.

[27] Department of National Defence, Future Security Environment 2025 (Ottawa: Operational Research Division, 2003), 49.

[28] Department of National Defence, 1994 Defence White Paper (Ottawa: Canada Communications Group, 1994), 27.

[29] Government of Canada, Securing an Open Society: Canada's National Security Policy (Ottawa: Privy Council Office, 2004), 5.

2005 Defence review "Contributing to a Safer and More Secure World".[30] The western dominance of the world economy and rapid globalization have created a chasm between well off countries and poorer nations.[31] The level of competition within the global economies for resources such as oil, water and minerals will certainly exacerbate this state of affairs and could also be a source of future instability.[32] The global security environment will remain an unsettled and complex entity such that the government of Canada must have options to fulfill its stated mandate of contributing to international peace and security. In the military context the CF will face worthy opponents capable of considerable destruction that is asymmetric in nature and which operates outside the acceptable norms of international conventions and law. The flexibility of future forces must include the capability to rapidly deploy worldwide and operate for extended periods in distant theatres throughout the entire spectrum of conflict. As stated in the Future Security Environment 2025, " Global mobility, the ability to deploy forces and humanitarian aid to the various regions of the globe, will be an essential requirement for advanced wealthy countries in order to bring humanitarian relief, restore order or, when called upon, to engage adversaries".[33] This forecast would seem to be the basis for the CF Land Forces transformation to what is being described as the Three Block War.[34] The ability of MH to contribute to this concept in support of maritime and land forces is

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[30] Department of National Defence, A Role of Pride and Influence in the World: Defence Policy Statement, http://www.forces.gc.ca/site/reports/dps/main/toc_e.asp; Internet; accessed 24 April 05, 24.

[31] Department of National Defence, Future Security Environment 2025 (Ottawa: Operational Research Division, 2003), 15.

[32] Ibid., 49.

[33] Ibid., 50.

[34] Department of National Defence, Army Transformation: Soldiers Guide http://www.army.forces.gc.ca/lf/English/5_4_1_1.asp?FlashEnabled=1&; Internet; accessed 02 April 2005.

essential to meeting the security goals of Canada. The forecasted instability must be studied to determine where, geographically, the security challenges will arise from terrorist activities, rogue states and failing or failed states and also examine how MH roles must change to respond to these threats.

The circumstances leading to potential conflict have been defined above but the location of that instability and the general environment is important in the identification of future military capabilities. This region can be defined in relation to the location of the world's population that is increasingly located along nations' coastlines. This was estimated in 1998 at 3.2 billion people, over 50% of the global population, located within 200 kilometres (kms) of a coastline, and increased to 66% within 400 kms.[35] Therefore, the concentration of population, urbanization and globalization and their effects, as factors in human hostilities, will make it likely that instability and conflict will take place within coastal regions. The population concentration on the coastlines makes it an important issue both internationally and domestically for Canada. The immense size of our country in terms of landmass often decreases the importance of the maritime dimension for Canada. The Canadian Senate Committee on National Security and Defence reported "the Committee believes it is fair to define these coastlines on the Atlantic, on the Pacific, and in the Arctic as the longest under-defended borders in the

[35] Don Hinrichsen, Coastal Waters of the World: Trends, Threats, and Strategies (Washington D.C: Island Press, 1998), 27. http://www.oceanservice.noaa.gov/websites/retiredsites/natdia_pdf/3hinrichsen.pdf; Internet; accessed 04 March 2005.

world."[36] The Senate's report focused on the challenges of exercising sovereignty and is an example of the importance to all nations of coastal regions. The findings of the Senate committee highlight the need for forces capable of operating within these vast domestic coastal regions. It is therefore reasonable to conclude that both domestically and overseas the coastal regions of the world have strategic importance.

The potential for coastal regions to develop into the landscape of a future battlespace focuses on the geographical area referred to as the Littoral, defined in Leadmark as:

> "…coastal sea areas and that portion of the land which is susceptible to influence or support from the sea, generally recognized as the region which horizontally encompasses the land-watermass interface from 100 kilometres ashore to 200 nautical miles at sea, and extending vertically into space from the bottom of the ocean and from the land surface."[37]

From the military perspective this complex region encompasses the full range of threats not seen in the more traditional settings of open ocean ASW. This field of operations will include mine countermeasures, countering small boats, shore based aircraft and weapons systems, and more recently a renewed ASW threat posed by diesel submarines; all these threats potentially make the littoral a very dangerous and complicated region for

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[36] Standing Senate Committee on National Security and Defence, Canada's Coastlines: The longest Under-Defended Borders in the World (Ottawa: Senate, 2003), 7. http://www.parl.gc.ca/37/2/parlbus/commbus/senate/com-e/defe-e/rep-e/rep17oct03vol1-e.pdf; Internet; accessed, 05 March 05.

[37] Department of National Defence, Leadmark: The Navy Strategy 2020 (Ottawa: Chief of the Maritime Staff, 2001), 3.

military operations.[38] The ability to carry out operations in even a low threat environment will necessitate a revised assessment of the MH and its capabilities, as stipulated within the SOR. As detailed in British Maritime Doctrine, "… surveillance and weapon systems must be capable of dealing with the more complex littoral region and confronting the particular problems encountered when crossing environmental boundaries."[39] The United States Navy (USN), as part of their Sea Power 21 vision, addresses their concerns in the littoral region with the Littoral Combat Ship, a concept vessel being developed by the Naval Warfare Development Command.[40] The motivation for this ship, which includes helicopters and Unoccupied Aerial Vehicles, will be to address the many challenges and the complexities of operating within and against a multi-threat coastal environment. The challenges of the littoral are significant and demand a military platform that can rapidly respond to multiple threats. The ability to obtain and maintain sea control may not always be achievable creating risk for the operation of either military or civilian high value surface ships in coastal regions. "If there is any risk to freedom of action, some degree of sea control is necessary."[41] The ability of MH, as an airborne platform, with the means of manoeuvre across the environments provides substantiation for adjusting MH roles by arming it with air to surface weaponry to support of maritime and land forces operating within the littoral.

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[38] Ibid., 89.

[39] Ministry of Defence, British Maritime Doctrine, Second Edition, Royal Navy (London: The Stationery Office, 1999), 22.

[40] Department of Defense, United States Navy, Littoral Combat Ship: Concept of Operations (Newport, Rhode Island: Navy Warfare Development Command, 2003). http://www.nwdc.navy.mil/Concepts/Sea_Shield/LCSCONOPS.aspx#TOC; Internet; accessed 05 March 05.

[41] Canadian Forces Command and Staff College, Maritime Studies: Naval Doctrine Manual (Toronto: Deputy Director of Maritime Studies, 2002), 4-19/39.

One of the serious maritime threats within the littoral comes from the terrorist and state use of the small boat or Fast Attack Craft (FAC). The use of this tactic is consistent with the methodology of low technological requirements and cost combined with the ability to defeat, under the correct circumstances, highly capable military units. This method of attack is employed by rogue states and terrorist organizations due to the relatively simplistic means and willingness to use suicide bombers for the attack. The extensive use of car bombs by individuals and terrorist organizations has caused considerable carnage, killing hundreds of victims around the world and frequently gaining sensational media coverage.[42] In the face of the overwhelming superiority of modern militaries the use of suicidal attacks has been a common weapon for terrorist organizations. An analogy of the car bombing tactic can be transferred to the maritime setting as occurred in the attacks against the USS Cole in October 2000 that killed 17 sailors and the French tanker Limburg that discharged 90,000 barrels of oil into the Arabian Sea in October 2002.[43] An additional attack was attempted in the port of Aden, previous to the USS Cole but was unsuccessful due to the arrangement of the load in the small boat.[44] The recognition of this threat was recently highlighted in an interview of the United Kingdom (U.K.) Chief of Naval Staff: "I am also extremely worried by the threat posed by a single fast craft, packed with explosives, ramming a ship or being

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[42] Wikipedia, the free encylopedia. Car Bomb. http://en.wikipedia.org/wiki/Car_bomb; Internet; accessed 05 March 05.

[43] Raymond J. Brown, Get the Terrorist Threat Right, United States Naval Institute Proceedings Magazine, January 2003, 112.

[44] Ibid., 112.

blown up alongside."[45] Although terrorist attacks against maritime targets are not as common as car bombs due to increased security and limited sensational impact the threat remains very real to maritime forces and commercial ships. In particular when multiple small boats attack the result could be very devastating. This threat becomes more complex when large surface ships are within confined waters and crowded shipping lanes where the ability to manoeuvre is extremely restricted.[46] In this situation warships could become vulnerable to attack by multiple small boats where their ability to defend themselves could be hampered due to non hostile surface contacts, geographic features and territorial waters. The history, employment and response to this tactic will be discussed to ascertain how MH roles need to be adjusted to address this threat.

The tactic of ramming and exploding ships was documented as early as 800 BC and after refinement was used in the Peloponnesian War.[47] The use of suicide and small boat tactics by several countries can be traced back to WW I and II but it was the Japanese in World War II who had extensive plans to use suicidal attacks from small boats.[48] To repel the expected invasion of the main island Japan was prepared with thousands of motorboats loaded with explosives.[49] Although the suicide boats were not

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[45] Richard Scott, Defending the defenders: Boosting force protection capability, Janes Defence Weekly Issue No. 47, 24 November 2004, 24.

[46] Richard Scott, Ship Self Defence – In harm's way, Janes Defence Weekly Issue No 43, 27 October 2004, 22.

[47] Nadia El-Sayed El-Shazly, The Gulf Tanker War: Iran and Iraq's Maritime Swordplay (New York: St. Martin's Press, Inc., 1998), 265.

[48] Richard O'Neill, Suicide Squads: W.W. II Axis and Allied Special Attack Weapons of World War II:their Development and their Missions (New York: St Martin's Press,1981),76-103.

[49] World War II in the Pacific, Japanese Suicide Attacks at Sea. http://www.ww2pacific.com/suicide.html; Internet; accessed, 05 march 05.

as extensively employed as the kamikaze aircraft, had Operation Olympic (the invasion of Japan) been attempted the results would have been severe since the primary targets were the Landing Ship Troops (LSTs).[50] It is of interest in the modern context that this method of attack has been resurrected when belligerents are confronted by superior forces and still represents a challenging tactic to address today.

> "OLYMPIC also highlights the lesson that FAC warfare is a timeless "asymmetric" strategy for those smaller navies who are willing to confront opponents possessing overwhelming naval and maritime power."[51]

In the case of Operation Olympic the concern over losses during the invasion was one of the factors that led to the bombing of Japan to obtain their surrender.[52] The present day recognition of this threat can be found in British Maritime Doctrine which articulates the concern: "With the bulk of maritime military operations likely to be concentrated in the littorals, small, fast vessels armed with relatively unsophisticated surface to surface missiles can complicate sea control calculations."[53] In a more recent example, the Islamic Revolution Guards Corps Navy (IRGCN) of Iran employed the small boat tactic of swarming during the tanker war in the Arabian Gulf in the 1980s. The fleet of 800 boats and 80 interceptor craft were capable of high speed and agility with simple low cost

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[50] John Ray Skates, The Invasion of Japan: Alternative to the Bomb (Columbia: University of South Carolina Press, 1994), 122.

[51] Owen Sirrs, Operational Art Can Neutralize the Asymmetric Small Boat Threat in Major Operations (Newport, RI: Naval War College, 2002), 4.

[52] Sheldon M. Cohen, Arms & Judgement: Law, Morality and the conduct of War in the 20th century (Boulder: Westview Press, 1988), 131.

[53] Ministry of Defence, British Maritime Doctrine, Second Edition, (London: The Stationary Office, 1999), 19.

weapons.[54] The small boats were used in the littoral waters of Iran to harass U.S. warships and target stray tankers.[55] This use of asymmetric force such as FAC is identified as a serious security concern when applied within a littoral environment. The response to this method of attack requires the careful and prudent use of air and maritime assets; therefore it is necessary to explore how the MH could respond to this threat.

The flexibilities of MH to deploy and operate in distant and austere locations make it a valuable asset in fulfilling the national interests of Canada.[56] As an extension of maritime power MH is included in the characteristics described in the Navy's strategy Leadmark, which states "Freedom of seas gives navies mobility and the capability to deliver force on, over, under and from the sea, anywhere in the world."[57] The capabilities of maritime power are improved by the addition of air power that brings speed and agility in addition to the flexibility and versatility of air forces.[58] The attributes of aerospace power are further described by Stuart Peach in his essay on Coalition Air Operations, where "Air power's comparative advantages such as speed of response, global reach, flexibility, versatility, interoperability, and the ability to switch tempo and pace allow air power to operate free from the zonal and territorial constraints

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[54] Nadia El-Sayed El-Shazly. The Gulf Tanker War: Iran and Iraq's Maritime Swordplay (New York: St. Martin's Press, Inc., 1998), 264-265.

[55] Ibid., 265.

[56] Department of National Defence, Maritime Helicopter Concept of Operations (Winnipeg: 1 CAD HQ: 3255-4 (A3 MH RDNS), 30 March 2001), 1.

[57] Department of National Defence, Leadmark: The Navy Strategy 2020 (Ottawa: Chief of the Maritime Staff, 2001), 30.

[58] United States Air force, Air force Basic Doctrine (Maxwell AFB, Alabama: Air Force Doctrine Center, 2003), 30-31. http://www.e-publishing.af.mil/pubs/speclist.asp?puborg=AFDC&series=dd; Internet; accessed 04 March 05.

that may limit maritime or land forces."[59] Although the general description of air power is not totally applicable to MH in itself, such as in global reach, as a component of maritime forces this becomes achievable. The doctrinal attributes of Sea Power are equally attributable and complementary to maritime organic aviation in their mobility, ability to poise, versatility, leverage, sustained reach and adaptability.[60] In particular, the challenges of forward basing and host nation issues are not a factor for MH and provide a significant operational advantage in restricted regions of the world where aircraft land basing can be problematic. The combination of air and maritime capabilities described by their principal doctrinal fundamentals will allow MH to operate in the anti-submarine, anti-surface and overland role within the littoral environment and make it a valuable asset. To fully exploit this resource through the entire spectrum of conflict, in the present and future battlespace, greater emphasis on joint operations within the littoral is necessary and an air to surface weapon is essential. In so doing the MH will be permitted an increased ability to operate within and through the littoral and operate from the sea onto the land to support joint operations.

In examining future MH roles it is importance to review the recent employment of MH that has included mainly MIO but also humanitarian relief assignments. The high operational tempo includes routine operations such as the Standing Naval Force Atlantic and several deployments to the Arabian Gulf during the 1990s (including Gulf War I),

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[59] Stuart Peach, Coalition Air Operations: Perspective on Air Power (London: The Stationary Office, 1998), 49.

[60] Canadian Forces Command and Staff College, Maritime Studies: Naval Doctrine Manual (Toronto: Deputy Director of Maritime Studies, 2002), 4-16/17.

Somalia, Haiti, the Adriatic for the former Yugoslavia conflict, East Timor and domestically for the Winnipeg floods and Swiss Air 111 crash.[61] Most recently, the deployment of maritime forces on Operation Apollo from 2001-2003, as the CF response to the terrorist attacks, represented a significant undertaking. Throughout the deployments the vast majority of missions were surface search in support of the Real Maritime Picture (RMP). The total commitment included 14 Air Detachments, more than 1800 air sorties and 6,500 hours flown, all generated by the MH squadrons which comprise 12 Wing.[62] The Operation Apollo contribution demonstrates clearly the change in focus away from the traditional MH raison d'etre of ASW to the focus of OP Apollo, MIO. Additionally, one of the most challenging tasks was dealing with the threat of "go-fasts" or small boats. The Sea King helicopter played a key role in keeping the small boats away from high value surface ships.[63] This task was again highlighted in the recent Iraq conflict where U.K. Merlin and Lynx helicopters were valuable force protection assets in combating the threat of small boats.[64] The immunity of the helicopter from the asymmetric surface attack by small boats and basic surface to air weapons, when using appropriate stand off distances, modern self defence suites, speed advantages and an air to surface weapon make it a superior platform in confined and complex littoral environments. The ability to work within and transit through the littoral to support land

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[61] Department of National Defence, 12 Wing Shearwater: About Us, http://www.airforce.forces.ca/12wing/about_us/about_e.asp; Internet; accessed 2 April 2005.

[62] Department of National Defence, Operation Apollo: The Canadian Forces Contribution to the International Campaign Against Terrorism http://www.forces.gc.ca/site/newsroom/view_news_e.asp?id=490; Internet; accessed 5 February 2005.

[63] Richard Gimblett, Operation Apollo: The Golden Age of the Canadian Navy in the War Against Terrorism (Ottawa: Magic Light Publishing, 2004), 98.

[64] Richard Scott, Defending the Defenders: Boosting force protection capabilities, Janes Defence Weekly, Issue No. 47 24 November 2004, 24.

forces is key to the ability of projecting influence ashore. The focus on ASW, while important, has limited the development and identification of roles for MH in contributing to the littoral dimension of the Joint Force Commander.

The operations in the 1990s demonstrated the effectiveness of embarked naval helicopters on humanitarian relief operations. The deployment of HMCS Preserver to Somalia in 1992-1993 showed the versatility of the Sea King in the movement of over 300 tonnes of supplies ashore to support land operations. In the words of the Commanding Officer of HMCS Preserver "…the operation would have been impossible without the presence of the three Sea King helicopters."[65] The Sea Kings were also used in support of the Joint and Combined Forces gathering intelligence on the Somalia militia movements.[66] Another humanitarian mission in East Timor in 1999 saw the dispatch of HMCS Protecteur to assist in the Australian led International Force East Timor (INTERFET). Once again the helicopters were used to project influence ashore: "INTERFET land forces were also supported by Protecteur's embarked Sea King helicopters, which provided reconnaissance, VIP transportation and replenishment flights." The most recent Tsunami natural disaster in South East Asia saw extensive use of helicopters in support of relief efforts. [67] The use of helicopters in humanitarian and disaster relief efforts has been effective and these littoral operations in low threat environments clearly demonstrate the utility of helicopters. The MH ability to provide

[65] Laura J. Higgins, Canadian Naval Operations in the 1990s: Selected Case Studies (Halifax: Centre for Foreign Policy Studies Dalhousie University, 2002), 54.

[66] Ibid., 54.

[67] Rebecca Ford Mitchell, Number of U.S. Helicopters Aiding Tsunami Victims to Double. http://tokyo.usembassy.gov/e/p/tp-20050105-07.html; Internet; accessed 3 April 2005.

assistance from the sea into failed states or disaster areas, where infrastructure has ceased to function, will be a valuable tool in future operations.

The involvement of helicopters in combat operations within the littoral has shown them to be valuable against surface combatants. Naval helicopters were used in Gulf War I to neutralize the Iraqi navy. Royal Navy Lynxes working with a USN SH-60B helicopter were described by Anthony Cordesman in his book, *The Lessons of Modern War*, "It is clear, however, that the combination of SH-60s and Lynxes with Sea Skuas was highly effective. The Lynxes fired 26 missiles and seemed to have damaged or sunk a total of 10-15 Iraqi ships".[68] In the grouping of combat employment for helicopters the Special Operations Forces (SOF) mission must be considered when looking at future MH roles. The use of SOF has increased remarkably in response to the asymmetric threat due to the repercussions of 9/11. As opined by Bernd Horn in the Canadian Military Journal "…SOF have evolved from a force of desperation born in the initial crisis of the Second World War to the force of choice in the aftermath of 9/11."[69] In May 2000 U.K. forces deployed to carry out a non-combatant evacuation operation and stabilize Sierra Leone that was teetering on the verge of civil war.[70] These expeditionary forces included SOF and maritime forces containing a naval aviation component with helicopter support.[71] As the situation deteriorated in September 2000 U.K. SOF and marines were employed for

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[68] Anthony H. Cordesman and Abraham R. Wagner, The Lessons of Modern War: Volume IV (Boulder, Colorado: Westview Press, Inc., 1996), 805.

[69] Bernd Horn, When Cultures Collide: The Conventional Military/SOF Chasm, Canadian Military Journal (Kingston: Royal Military College of Canada, Autumn 2004), 14.

[70] William Fowler, Operation Barras: The SAS Rescue Mission, Sierra Leone 2000 (London: The Orion Publishing Group Ltd, 2004), 78.

[71] Ibid., 90.

Operation Barras to rescue hostages held by a rebel group in Sierra Leone. In this successful action armed helicopters and transports were used to attack, insert forces and evacuate individuals and casualties to ships waiting offshore.[72] The use of helicopters by SOF with specially trained crews and equipment can be very effective as was witnessed in Sierra Leone. As described in *Chariots of the Damned,* "Helicopters have been associated with special operations since their introduction into aviation."[73] This role for MH would require the additional weaponry already mentioned and specific cabin configurations to carry SOF or other personnel. However, the SOR requirements include cabin seating for only 6 passengers and does not mention a rear ramp, although the future MH is designed for one.[74] The need to correct the weapon and cabin configuration issues is key to role flexibility for the MH; to not only project force in the maritime environment but from it for the protection of Canadian citizens and interests overseas.

The traditional MH combat mission of ASW is currently undergoing a shift in focus. The ASW emphasis has shifted from open ocean operations to the littoral where present and future threats are predicted to originate. The ASW role has varied since the end of the Cold War, with the traditional Soviet submarine threat diminishing rapidly in the early 1990s, but has seen renewed attention with the diesel electric submarine threat in coastal regions. In a statement to the U.S. House Committee on Resources in 2003, the Deputy Chief of Staff for Operations testified that over 380 submarines of which 300 are

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[72] Special Operations, Operation Barras: http://www.cowell.org/~andy/min/pk/barras/; Internet ; accessed 24 April 2005.

[73] Mike McKinney and Mike Ryan, Chariots of the Damned (London: Harper Collins Publishers, 2001), 1.

[74] Department of National Defence, Statement of Operational Requirement: Maritime Helicopter (Ottawa: Vice Chief of the Defence Staff, 1999), B-9/9.

quiet diesel submarines operated by over 41 countries, not including the U.S., Canada, U.K. and Australia, creating a resurgence of interest in ASW.[75] This has been recognized with the stand up of an ASW Task Force in the fall of 2004 by the U.S. Chief of Naval Operations to examine future ASW challenges.[76] The move of ASW to the littoral provides for a very complicated scenario to plan for and operate within as recognized in Leadmark, "… conducting ASW in the littoral environment is much more likely and much more difficult than in the open ocean".[77] This will necessitate weaponry to support ASW in the shallow waters and on the surface in the littoral.

> "Combat operations at sea emphasize the offensive situation. The ability to synthesize information, intelligence and tactical initiative, and then employ the appropriate mix of weapons against an adversary is critical to success."[78]

The extensive experience and capability of MH in the ASW role permits independent actions from detection to localization to attack of sub surface contacts. However, as previously described the potential danger resident within the littoral makes surface threats a major concern. The lack of a MH air to surface weapon will limit the independent prosecution of hostile surface combatants whether on the water or the shore and will be restrictive in future roles for the MH.

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[75] Robert T. Moeller, Rear Admiral, Deputy Chief of Staff for Operations, Statement before the House Committee on Resources, 6 May 2003. http://www.chinfo.navy.mil/navpalib/testimony/readiness/moeller030506.txt; Internet accessed 11 April 2005.

[76] United States Navy, Chief of Naval Operations: Guidance for 2005 http://www.chinfo.navy.mil/navalib/cno/clark-guidance2005.pdf; Internet; accessed 3 April 2005.

[77] Department of National Defence, Leadmark: The Navy Strategy 2020 (Ottawa: Chief of the Maritime Staff, 2001), 154.

[78] Department of National Defence, Statement of Operational Requirement: Maritime Helicopter (Ottawa: Vice Chief of the Defence Staff, 1999), 17.

The selection of the MH replacement, the Sikorsky S-92 Cyclone, represents a quantum leap in technology over the present MH. The incoming Sikorsky S-92 will be far superior due to dramatic increases in onboard system performance for conducting ASW and ASuW functions. This is particularly noteworthy in the ability to contribute to the RMP as described in the SOR: "In the surface surveillance role, for example, a helicopter equipped with modern radar can cover more than 25 times the area capable of being searched by a frigate alone.[79] This factors into the Naval doctrine of defence in depth where adversaries are located, prosecuted and engaged at a distance to ensure the safety of higher value units.[80] However, the MH will be limited in this role due to the lack of an air to surface weapon to address developing threats particularly within the littoral environment. This requirement is articulated in the MH COP that states,

> "An MH surface weapon capability is critical in littoral waters where traffic congestion, the requirement for positive visual identification and archipelago/land mass obstacles render heavier ship's systems either ineffective or prohibitively expensive when target versus weapon pay-off criteria are considered."[81]

It is not intended that this newly acquired platform be represented as an attack helicopter that clearly operates in a much different domain. The arming of the S-92 is essential for the future employment of MH to maximize its capacity to operate where future instability occurs. The S-92 must have an increased emphasis on the littoral and over-the-beach

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[79] Department of National Defence, Statement of Operational Requirement: Maritime Helicopter (Ottawa: Vice Chief of the Defence Staff, 1999), 47.

[80] Canadian Forces Command and Staff College, Naval Doctrine Manual (Toronto: Deputy Director of Maritime Studies, 2002), 4-25.

[81] Department of Defence), Maritime Helicopter Concept of Operations (Winnipeg: 1 CAD HQ: 3255-4 (A3 MH RDNS), 30 March 2001), 4.

operations to support the Joint Force Commander. The requirement to rapidly change roles was identified in the MHP SOR which states "The MH must be able to conduct a variety of missions in support of their ship or TG, and should be able to change mission objectives while airborne."[82] This is achievable for traditional ASW and ASuW maritime tasks but may be challenged when conducting inshore or overland missions requiring different cabin configurations and weapons. The arrival of the first S-92 in 2008 will see the next generation of maritime aviation for the CF with many capabilities applicable to all missions such as a communication and navigation suite, remote operating capability and night vision goggle ability to name a few. Additionally, the arrival of the Joint Support Ship to address the CF need for sealift will only accelerate the transformation of MH as there will be a requirement to support land forces when transiting through and operating within the littoral region.

The utilization of helicopters in military applications as enablers and force multipliers has progressed remarkably since their first employment in WW II. In particular the CF have developed significant expertise in MH operations from frigate sized ships. Despite technological and serviceability shortfalls, the present MH has maintained relevance in current operations due to the fundamental doctrinal principles of air and maritime power. Although these principles will certainly serve the new MH well, the extended procurement process for the MH replacement has resulted in an inability to keep pace with the evolving global security environment. This was the result of a SOR prepared and approved in the 1990s, a contract signed in 2004, and a first aircraft

[82] Department of National Defence, Statement of Operational Requirement: Maritime Helicopter (Ottawa: Vice Chief of the Defence Staff, 1999), 17.

delivery expected in November 2008. An examination of future global instability highlighted several potential sources of conflict such as terrorist and rogue state activities, globalization and the competition for resources, urbanization, environmental changes and natural disasters. Several countries have recognized the littoral in their doctrine as a geographical region of concern due to the complex military challenges of operating within this zone. The littoral is identified as a dangerous region for future operations due to population density, multifaceted geography and urban landscapes that will cause significant challenges in combating an asymmetric threat. The ASW role for MH must be maintained but should not overshadow other roles that will optimize the new helicopter's full potential to contribute to joint operations within the littoral. The future roles for MH require a range of capabilities that enable a wider spectrum of employment, from combat to peace support to humanitarian operations in what is referred to in the army transformation and in the 2005 Defence review as the Three Block War. The versatility and flexibility of MH to accept these expanded roles in the littoral make it a valuable and versatile tool in support of Canadian security interests both domestically and abroad. The global deployment and multi-purpose employment of MH are critical elements for a country such as Canada to operate on the international stage. To ensure that the CF has the ability to operate within this region the future MH must be optimized with aircraft configurations, weaponry and training to function across a spectrum of operations in support of the Joint Force Commander. To achieve this goal the MH must break the traditional focus on ASW and expand its roles to be a fully joint aircraft with the capability to not only operate on the seas but from the sea.

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