

## Archived Content

Information identified as archived on the Web is for reference, research or record-keeping purposes. It has not been altered or updated after the date of archiving. Web pages that are archived on the Web are not subject to the Government of Canada Web Standards.

As per the [Communications Policy of the Government of Canada](#), you can request alternate formats on the "[Contact Us](#)" page.

## Information archivée dans le Web

Information archivée dans le Web à des fins de consultation, de recherche ou de tenue de documents. Cette dernière n'a aucunement été modifiée ni mise à jour depuis sa date de mise en archive. Les pages archivées dans le Web ne sont pas assujetties aux normes qui s'appliquent aux sites Web du gouvernement du Canada.

Conformément à la [Politique de communication du gouvernement du Canada](#), vous pouvez demander de recevoir cette information dans tout autre format de rechange à la page « [Contactez-nous](#) ».

CANADIAN FORCES COLLEGE / COLLÈGE DES FORCES CANADIENNES  
CSC 27 / CCEM 27

EXERCISE/EXERCICE NEW HORIZON

**Canadian Forces Rotary Wing  
Force Restructure**

By /par Major Stephen Allan

*This paper was written by a student attending the Canadian Forces College in fulfillment of one of the requirements of the Course of Studies. The paper is a scholastic document, and thus contains facts and opinions which the author alone considered appropriate and correct for the subject. It does not necessarily reflect the policy or the opinion of any agency, including the Government of Canada and the Canadian Department of National Defence. This paper may not be released, quoted or copied except with the express permission of the Canadian Department of National Defence.*

*La présente étude a été rédigée par un stagiaire du Collège des Forces canadiennes pour satisfaire à l'une des exigences du cours. L'étude est un document qui se rapporte au cours et contient donc des faits et des opinions que seul l'auteur considère appropriés et convenables au sujet. Elle ne reflète pas nécessairement la politique ou l'opinion d'un organisme quelconque, y compris le gouvernement du Canada et le ministère de la Défense nationale du Canada. Il est défendu de diffuser, de citer ou de reproduire cette étude sans la permission expresse du ministère de la Défense nationale.*

## **Abstract**

The Department of National Defence (DND) and the Canadian Forces (CF) have been continually eroded for several decades with down sizing of personnel and reduced budgets resulting in fewer capital procurement programmes. Restructuring and smarter business practices are required to deal with the limited assets and personnel.

The air force rotary wing (RW) assets have been reduced to several small sized fleets to support the varying needs of the CF. A review of the current status as well as the command guidance leads to the conclusion that the air force cannot meet extended commitments within its current structure.

This paper develops a force restructure and rationalisation of the CF's RW assets. The intent is to give the air force a revived sense of a combat capable purpose in line with doctrine and guidance while regarding the limited budget restraints imposed by government in a peace time environment.

# Canadian Forces Rotary Wing

## Force Restructure

“THE ROLE OF CANADA'S AIR FORCE is to generate and maintain combat capable, multi-purpose air forces to meet Canada's defence policy objectives. Clearly such an undertaking can only be achieved through the collective efforts of the total air force defence team. Achieving this mandate must now be accomplished within a significantly changed global peace and security environment where Canadian goals have not diminished but rather are now more varied and more complex. These new imperatives require that the Canadian air force be combat capable and able to respond to a wide variety of operational commitments around the world.”<sup>1</sup>

Gen A.M. DeQuetteville

### Introduction

Given the Government's commitment to deficit reduction, it is clear that an increased emphasis on capital procurement will have to be financed by reallocating expenditures within the Canadian defence programme. To this end, the Government, the Department of National Defence (DND) and the Canadian Forces (CF) have undertaken a variety of initiatives: reducing the size of the Forces, reducing the numbers and types of equipment that the Forces operate and rationalizing defence.<sup>2</sup> At the same time, the CF emphasizes a mandate to promote the livelihood of its members and the importance on modernizing its equipment.

Over the past thirty years the air force conducted a number of studies to establish the helicopter requirements for the three services with the intention of rationalizing CF

---

<sup>1</sup> Out of the Sun – Aerospace Doctrine for the Canadian Forces (Craig Kelman & Associates Ltd. Winnipeg MB, 1997) i.

<sup>2</sup> Canada. Department of National Defence. NSA/NSH Defence Policy Basis (Canada: National Defence Headquarters, July 1992) 4.

fleets. Most acquisition projects have been cancelled due to financial constraints while life extension modification programmes often met with the same fate. As a result the number of helicopter fleets and the total number of airframes have been reduced, effecting the support obligation of the air force.

In accordance with directives, the air force falls short on meeting a capability to support the rotary wing (RW) army, navy and Search and Rescue (SAR) commitments, especially within the current fiscal constraints and equipment. With its current helicopter allocation and infrastructure setup, the CF would be hard pressed to meet a limited number of wartime commitments.

### ***Aim***

The CF needs to ask these questions of its air force. What is the aim of the air force's RW assets in the future? How can the units provide a better commitment to SAR, the army and navy while providing the best possible support to its personnel? This paper will focus on a force restructure and rationalisation of the CF's RW assets to give the air force a revived sense of purpose in line with doctrine and guidance while regarding the budget restraints.

### **History / Current Status**

In the early 1970s, the CF helicopter strength was at its peak with three helicopter types in operation supporting the army: the CH136 Kiowa in the scout role, the CH135 Twin Huey as medium utility transport and the CH147 Chinook conducting the medium logistical support lift capability. Naval support was enhanced with capable CH124 Sea King helicopters deploying on destroyers, replenishment ships and an aircraft carrier. The CH113 Labrador helicopter supported the air SAR capabilities and pilot helicopter

undergraduate training was completed on the Kiowa. Since this era military RW assets have been in a continual decline. How have we declined to the state of affairs today?

### ***Tactical Aviation***

Tactical aviation is the helicopter component of air assets in support of the army's fighting capability and mobility, and is considered a fighting arm likened to mechanized support, armor or artillery.

Tactical aviation received ten CH118 Iroquois aircraft in 1967 to initiate the development of tactical doctrine for the larger procurement of the utility tactical transport helicopter (UTTH), the Twin Huey, which was due to come into service in 1970. The original requirement called for a purchase of ninety Twin Hueys, but a defence review in early 1969 reduced this number to fifty helicopters. These UTTH provided limited air mobility and helicopter support to the army's four Brigade Groups. Upon receipt of the Twin Hueys, the Iroquois assumed base rescue duties at fighter and jet training bases.

These procurements were rapidly followed in 1970 with the acquisition of the Kiowa, which replaced the CH112 Nomad light observation helicopter. This helicopter was also procured as the basic helicopter- training vehicle based in Portage La Prairie, Manitoba. The receipt of the eight Chinook medium lift logistic support helicopters in 1975 replaced the CH113A Voyageur.

Updating and replacing the Twin Huey, Kiowa and Chinook helicopters were problematic in the 1980s due to cancellation of programmes out of fiscal restraint. In 1990 due to the lack of funding and the need to control O&M costs, Mobile Command and Air Command jointly recommended reducing the number of RW fleets. This was not a doctrinal or military need only a cost rationalisation in the current fiscal situation. This

resulted in the recommendation to maintain solely a UTTH helicopter by augmenting the Twin Huey with forty-nine newer UTTHs. However a February 1992 DND study concluded that, for the medium term, and the contract was signed in September for a purchase of 100 Bell 412CF (CH146 Griffon), arriving 1994-98, to replace the UTTH fleet. Army Aviation had moved from the three airframes with multi-roles to a single fleet, which resulted in giving up some doctrinal capabilities. The Chinook fleet was retired in 1991 with the Kiowa following shortly thereafter. By the end of the 1990's the Griffon had replaced the Iroquois and Twin Huey fleets.<sup>3</sup>

The latest reduction to tactical aviation has come from the Chief of the Air Staff's (CAS) business plan for 2000/2001. The Griffon helicopters will be reduced from the current ninety-nine airframes to eighty by the year 2003.<sup>4</sup> This has resulted in a reduction of tactical aviation's four fleets with a total of 142 aircraft in the early 1970's, to a proposed single fleet of eighty Griffon helicopters. Of the eighty aircraft six will be allocated to base rescue flights in Cold Lake, Alberta; Bagotville, Quebec; and Goose Bay, Labrador leaving only seventy-four aircraft to support the army's requirements. How have the other helicopter fleets fared?

### ***Maritime Helicopter***

Until the early 1960's all anti-submarine warfare (ASW) aircraft had to be land based or flown from aircraft carriers. In 1963 the Royal Canadian Navy took a leap in technology with the purchase of the forty-four Sea Kings to be deployed on destroyer-

---

<sup>3</sup> Canada. National Defence Headquarters. Canadian Forces Utility Tactical Transport Helicopter (CFUTTH) Acquisition Project Statement of Operational Requirement (Canada: National Defence Headquarters, May 1992) 2.

<sup>4</sup> Active (Resourced) fleet size to be achieved incrementally during the planning period. Actual a/c retained on inventory (storage) may be higher if justified, based on life-cycle fleet management requirements (e.g. attrition, fatigue-life). CAS Business Plan 2000/2001, 22 Dec 1999.

sized ships. With the assistance of the “bear trap” landing system, the Sea King was able to deploy with the destroyers and continue operations in reasonably rough seas.

In 1978 the New Shipborne Aircraft (NSA) Project was registered in the Defence Services Programme with the Statement of Requirements finalized a year later. Unfortunately, the programme did not proceed rapidly; in fact it came to a standstill. Updates to the Sea King airframe or the avionics were stalled, given that a replacement airframe was “imminent”; therefore, updating the Sea King was viewed as wasteful. Finally, a chance for replacement came on 24 July 1992 when the Minister of National Defence (MND) announced that fifty-two EH101 helicopters of the European Helicopters Industries (EHI) would replace the Sea King and the Labradors (Search and Rescue helicopter) with deliveries commencing in 1997.

The demise of the project came when the contract became an issue in the fall 1993 federal election. The Liberals took the reigns of power, and the first item on the agenda was the cancellation of the EH101 contract. Subsequent to this action, the two contracts were separated into two distinct procurement strategies: the Canadian SAR Helicopter (CSH) and the Maritime Helicopter Programme (MHP). The MHP was finally announced for tender by the MND on 17 August 2000. This time, given industry challenges to the procurement process, there are anticipated delays in releasing the request for proposal (RFP) to industry at least one year behind the initial schedule.<sup>5</sup> Although initial announcements call for the new aircraft to be flying in the CF by 2005, it is anticipated that the Sea King will have to continue flying until 2010 when the last replacement is delivered. The Sea King airframes will be 47 years old.

---

<sup>5</sup>“Announcement by the Public Works Minister Alfonso Gagliano to the Commons on 01 March 2001.” Edmonton Journal 02 March 2001.



Of the original 44 Sea Kings purchased in 1963, only twenty-nine remain in active service due to accidents or damage to airframes that were beyond economical repair. In accordance with the CAS business plan 2000/2001, the fleet size will be reduced to twenty-four by 2003 in preparation for a replacement.

To replace the Sea King, the original NSA contract in 1992 was for thirty-five EH101 aircraft, which has been reduced to twenty-eight as indicated in the Letter of Interest (LOI) for the MHP<sup>6</sup>. The replacement aircraft are to provide detachments for naval task group operations on both coasts, support to a Standing Naval Force Atlantic (STANAVFORLANT) ship, as well as training and maintenance needs.<sup>7</sup> This reduced fleet size would necessitate rotating assets between normal and high readiness ships as is currently done with the Sea King, leaving some ships to sail without a helicopter. This new procurement strategy does not account for any attrition aircraft. Similarly, in the purchase of the SAR aircraft in 1997, attrition airframes were not provided.

### ***SAR***

The SAR community received eighteen Labrador helicopters in 1963. Over the years this fleet has had several life extensions to keep it flying into the 21<sup>st</sup> century. In the period of the Labrador to date, the CF has lost six SAR helicopters to accidents.

As previously mentioned the SAR replacement programme was combined with the Sea King replacement in the early 1990s, but was cancelled in 1993. At this point it was separated from the Sea King programme and a contract to replace the Labrador was

---

<sup>6</sup> Michel Lapointe, Letter of Interest: Canadian Maritime Helicopter Project for the Department of National Defence. (Public Works and Government Services, 22 Aug 2000).

<sup>7</sup> Canada, National Defence Headquarters, Maritime Helicopter Statement of Operational Requirement DSP No 00002680. (Canada: National Defence Headquarters, 14 Jul. 1999) APPENDIX 1 to ANNEX A

awarded to EHI for the CH149 Cormorant helicopter in 1997. The delivery of the fifteen Cormorants is to commence mid-2001.

Of the fifteen Cormorants, five are to be located in Comox, British Columbia for operations and specialized search and rescue training; three in Trenton, Ontario; three in Greenwood, Nova Scotia; and three in Gander, Newfoundland for operations; and one scheduled for a maintenance cycle. Command of the assets comes under the transport component of the air staff with Rescue Coordination Centres (RCCs) located at Maritime Command Pacific (MARPAAC), Maritime Command Atlantic (MARLANT) and Trenton. The maintenance for the Cormorant is planned to be contracted out to a civilian organisation through alternate service delivery (ASD) initiative. Aircraft and maintenance for advanced helicopter training in Portage La Prairie, Manitoba is also provided by ASD.

### ***Training***

The content of the basic helicopter training programme has virtually remained unchanged since it was originally designed to meet CF needs with the Kiowa helicopter.<sup>8</sup> Pilots were required to complete the training syllabus on the Tutor jet to wings standard prior to attending the helicopter introductory course in Portage La Prairie, Manitoba. In 1981 the programme changed; pilots were only required to complete 140 hours of the 200-hour Tutor course. At this point the remainder of their training to wings standard was completed on an advanced role-specific trainer, a helicopter or multi engine fixed wing aircraft, if advancing to either aircraft type.<sup>9</sup>

---

<sup>8</sup> Major Ian G. McIntyre, A Separate Helicopter Pilot Training System. (Canada: Canadian Forces Command and Staff College, 1988-89) 1

<sup>9</sup> Major W.A Watt, Helicopter Pilot Training – A Better Way for the Canadian Forces, (Canada: Canadian Forces Command and Staff College, 1987) 3.

Fourteen Jet Ranger helicopters replaced the Kiowa and are currently under contract with Bombardier for the pilot training in which the CF provides the instructors. This course is considered the “advanced phase” of pilot training yet is recognized as only a basic helicopter course. The course syllabus is designed to the 1970’s aircraft technologies with only a simulated IFR training capability, clearly not reflecting the challenges of the modern SAR, Griffon and Sea King replacement helicopters.

## **Doctrine and Guidance**

To suggest changes to the current RW training, force structure and support to the other elements, one must first look at the doctrine and guidance to the CF of its capabilities. Has the decline in the RW assets been the result of the strategic or operational direction and guidance or purely fiscal restraint?

### ***Defence White Paper 94***

The following guidance is provided in the 1994 Defence White Paper with respect to strategic direction for the CF on capabilities, equipment and procurement policy.

- a. “The consensus achieved on the way ahead for an effective, realistic and affordable policy calls for multi-purpose, combat-capable maritime, land and air combat armed forces able to meet the challenges to Canada's security both at home and abroad.”<sup>10</sup>
- b. “The challenge will be to design a defence programme that delivers capable armed forces within the limits of Canadian resources. By making difficult choices and trade-offs, the CF will be able to preserve the core

---

<sup>10</sup> Canada, National Defence Headquarters, 1994 Defence White Paper, (Canada: National Defence Headquarters, 1994) para 4

capabilities and flexibility of a multi-purpose force. This force will enable Canada to attend to its security needs, now and in the future.”<sup>11</sup>

- c. “New equipment will be acquired only for purposes considered essential to maintaining core capabilities of the Canadian Forces, and will be suited to the widest range of defence roles. Emphasis will be stressed on extending the life of equipment. Wherever possible, the Forces will operate fewer types of equipment than is now the case, and purchase equipment that is easier to maintain.”<sup>12</sup>

### ***DPG 2001 / Strategy 2020***

Strategy 2020 states “in preparing for the future, it is essential that the CF seamlessly link the defence policy to its strategy and force planning, capital equipment programmes, performance measurement and the accountability framework. Implementing the department’s strategy through best management practices will ensure the CF deliver best value-for-money.”<sup>13</sup>

The Defence Planning Guidance (DPG) 2001 restates the White Paper’s guidance with an emphasis on being a fighting force. It stresses direction to the Chief of the Air Staff for all aircraft to be combat capable.

Part of the DPG gives direction in shaping the future for the CF with strategic objectives for the Department to guide and direct defence planning over the next twenty years, which is also directed in Strategy 2020. One of the objectives is the modernization of equipment with a “viable and affordable force structure trained and equipped to

---

<sup>11</sup> 1994 Defence White Paper, chap 3 para 26

<sup>12</sup> 1994 Defence White Paper, chap 3 para 58

<sup>13</sup> Canada, National Defence Headquarters, Strategy 2020, (Canada: National Defence Headquarters, 2000)

generate advanced combat capabilities that target leading-edge doctrine and technologies relevant to the battlespace of the 21<sup>st</sup> century.”<sup>14</sup> This change objective further directs the CAS to implement further savings to the CF in item four - the development and implementation of a blueprint to reduce air force infrastructure:

“CAS is to submit a business case to Programme Management Board (PMB) by end April 2001 on the reduction of infrastructure within the air force. The proposal will seek to reduce ten percent of the real property infrastructure currently under the responsibility of the CAS”<sup>15</sup>

Of the \$1 Billion required annually by the Canadian air force and distributed in the 5-year business plan, of note the entire military RW allocation is less than ten percent.<sup>16</sup> This is a good investment for a capability delivered to the army and navy that account for approximately fifty percent of the present air force assets. A restructure proposal identified later in the paper will show greater savings without reducing the current aircraft numbers and an increased capability in an all-combat capable rotary-wing structure.

### ***CAS Planning Guidance***

In accordance with the CF aerospace doctrine, *Out of the Sun*, air forces must be organized primarily for wartime effectiveness rather than peacetime efficiency. Organisational structures, command and control, should be designed to exploit air power’s unique strengths, while mitigating its limitations. Success in war demands an organisational structure in peace that effectively integrates personnel policies, operational

---

<sup>14</sup> Canada, National Defence Headquarters, Defence Planning Guidance 2001, (Canada: National Defence Headquarters, 2000) 2-7

<sup>15</sup> Defence Planning Guidance 2001, 2-7

<sup>16</sup> Major Brian Northrup, “Vision 20/20: In Transition.” 4

and logistical concepts, and equipment procurement decisions. The fundamental criterion for equipping an air force, in peace - for war, is that the unique characteristic of flexibility and versatility of aerospace forces must be preserved so that they can be exploited when required.<sup>17</sup>

### **Tactical Aviation**

*Out of the Sun* specifies tactical aviation's role as directly supporting "land force operations by the provision of aerial firepower, reconnaissance, and mobility support. Tactical aviation units are considered to form part of the land force combined arms team, and must be fully integrated into ground force operations to achieve their full combat potential."<sup>18</sup>

1 Wing, co-located with the Joint Operations Group in Kingston, Ontario, provides tactical level doctrine for the CF tactical air squadrons and coordinates some of their activities. The tactical air squadrons are located in Edmonton, Alberta; Petawawa, Ontario; Valcartier, Quebec; a training squadron in Gagetown, New Brunswick; and two reserve squadrons in Borden, Ontario and St. Hubert, Quebec.

Amplification of tactical operations directive is contained in Canadian Forces Publication (CFP) *Tactical Helicopter Operations*.<sup>19</sup> Although combat development studies and CF doctrine defines the four types of tactical helicopters as attack, reconnaissance (recce), tactical utility and medium lift, this mix is not achievable within current Canadian fiscal realities. The combat and support tasks were divided into priorities to meet the army's needs. Group A, which is considered the priority for the

---

<sup>17</sup> *Out of the Sun – Aerospace Doctrine for the Canadian Forces*, 28.

<sup>18</sup> *Out of the Sun – Aerospace Doctrine for the Canadian Forces*, 90.

<sup>19</sup> Referred to as Tactical Helicopter Operations, CFP B-GA-440-000/AF-000

army's needs, includes the movement of troops and equipment, casualty evacuations (CASEVAC) and logistics support. Group B, consisting of the command and liaison capability, communications assistance, reconnaissance and observation, and direction and control of fire was only considered as secondary priority.

The fiscal realities have resulted in the retirement of the medium lift, Chinook and the Light Observation Helicopter (LOH) Kiowa, in favour of a more fiscally modest single fleet of utility tactical transport helicopters.<sup>20</sup> This has resulted in a capability deficiency in the medium lift support requirement and limited scouting capability with the Griffon. Deficiencies are also apparent in the Maritime Helicopter (MH) fleet.

### **Maritime Aviation**

From the CAS doctrine, *Out of the Sun*, Air/Sea operations are those in which naval and aerospace forces work together to prosecute the maritime campaign. The aim of maritime forces in concert with the air assets is to provide a visible forward deterrence force and to control the seas so that friendly forces can use them, while, at the same time, denying them to the enemy.

Further elaboration on the role of maritime air operations in providing this deterrence is contained in the CFP *Maritime Air Operational Doctrine*.<sup>21</sup> In maritime air operations, air forces work in close cooperation with naval forces to ensure the most effective use of available air assets. To this end, command and control is invariably exercised from a joint or combined headquarters using common procedures to ensure proper coordination of operations.<sup>22</sup>

---

<sup>20</sup>Tactical Helicopter Operations, CFP B-GA-440-000/AF-000, 1-1-3 to 1-1-6.

<sup>21</sup> Referred to as Maritime Air Operational Doctrine – B-GA-470-000/FP-000

<sup>22</sup> Out of the Sun – Aerospace Doctrine for the Canadian Forces, 93.

Maritime helicopters are an essential component of a balanced multi-purpose and combat-capable maritime force. Canada's ships were designed, from the outset, to be complemented by modern embarked helicopters.<sup>23</sup> The area effectively covered by the ship/helicopter combination is ten times greater than that of the frigate or destroyer alone. The MH represents a substantial increase in the overall operational capability of the CF's maritime forces in surveillance and projecting force as a weapons platform. "This capability does not merely enhance the effectiveness of CF naval vessels: it is vital to their self-defence."<sup>24</sup>

MH doctrine is a product of both aerospace and maritime doctrine. The majority of MH doctrinal roles and tasks are related primarily to maritime operations. However, the "inherent flexibility of the MH platform coupled with its ability to be rapidly deployed, either operating from ships or from shore-based detachments, also enable the MH to effectively conduct a variety of non-maritime related aerospace missions."<sup>25</sup>

When shore-based, the MH is a secondary SAR asset and has often been employed to augment or replace CF primary SAR assets when required. The MH is an excellent SAR platform given its rescue hoist, surveillance and navigation capabilities. While deployed at sea, the MH may often be the sole rescue platform that has the capability to respond to a man-overboard, to recovery of downed aircrew or to an open ocean marine distress call. The MH is, therefore, a primary SAR response asset at all times while embarked.

---

<sup>23</sup> Speech Adm G Maddison (CMS) Announcement of MHP go ahead, 17 Aug 2000

<sup>24</sup> NSA/NSH Defence Policy Basis, 6.

<sup>25</sup> Canada, National Defence Headquarters, Maritime Helicopter Statement of Operating Intent DSP No 00002680, (Canada: National Defence Headquarters, no date indicated) para 2.3.1



The command organisation for the Atlantic fleet is based at 12 Wing Shearwater, Nova Scotia, co-located with MARLANT in Halifax. Also located in Shearwater are an operational squadron, a training squadron and an evaluation unit to support the Atlantic fleet. Another operational squadron is stationed in Patricia Bay, British Columbia to meet the needs of the Pacific fleet. A Maritime Air Component group is co-located at the MARPAC for command links.

As the primary employer of the MH, the Chief Maritime Staff (CMS) indicated that in the event of hostilities, or due to a situation in which an operational surge was required, all available MH would be required for deployment. Thus required to fill the additional air detachments, aircrew could be taken from the Operational Training Unit (OTU) and the Helicopter Operational Test & Evaluation Flight (HOTEF). It is assumed that all aircraft, save those in depot level maintenance, could be made ready for deployment on relatively short notice. Those undergoing Periodic Inspection (PI) or Depot Level Inspection and Repair (DLIR) would require weeks or months of effort to be restored to flying status. Currently, Canada's navy has eighteen aviation-capable warships, which could accommodate a total of twenty-six MHs in a surge situation.<sup>26</sup>

## **SAR**

As outlined in *Out of the Sun*, aircraft have certain advantages over surface vehicles for SAR operations, such as relatively high speeds over long ranges and relative freedom from the restrictions imposed by natural surface barriers. These advantages enable aircraft to search, in a relatively short time, large areas and areas denied to other

---

<sup>26</sup> Maritime Helicopter Statement of Operating Intent DSP No 00002680, para 3.1

vehicle types. The SAR air assets may include fixed or rotary wing aircraft and para-rescue force.<sup>27</sup>

As directed in the *SAR Operational Doctrine*,<sup>28</sup> in time of war, the existing SAR organisation would be continued wherever possible; however, greater need would be paid to military requirements.<sup>29</sup> If at war, CF doctrine indicates that a favourable air situation should exist before SAR forces can operate effectively in a hostile environment. CF SAR crews are not prepared or trained to conduct Combat SAR missions and would require extensive training to achieve and maintain a standard. As stated in the SAR operational doctrine “SAR assets not needed during hostilities may be used for light and medium airlift operations.”<sup>30</sup>

In accordance with SAR doctrine, the environment in terms of missions and scenarios should be simulated as often as possible. Experience indicates that both aircrew effectiveness and survivability increase dramatically with actual flying skill. Quality training at the operational and at pre-wings level must be of a high standard to meet the needs of the advancing technology in the newer fleets and the diminishing hours available for training and currency.

## **Training**

The particular pilot skills required upon completion of wings standard is dictated by the operational communities’ needs. The Operational Training Units (OTUs) instruct the pilots on type conversion and mission specific flying skills. Undergraduate pilot training, therefore, is orientated towards producing a graduate with the skill sets required

---

<sup>27</sup> Out of the Sun – Aerospace Doctrine for the Canadian Forces, 110.

<sup>28</sup> Referred to as Search and Rescue Operational Doctrine, CFP B-GA-460-000/FP-000.

<sup>29</sup> Canada, Department of National Defence, Search and Rescue Operational Doctrine, CFP B-GA-460-000/FP-000, (Canada: National Defence Headquarters, 1995) .2-1

to meet the OTU training demands. It is these requirements which determine the type and emphasis of the undergraduate training. “To avoid having the OTUs teaching basic flying skills it is important that training equipment evolves in performance and sophistication to parallel operational equipment.”<sup>31</sup>

The undergraduate training provided in Portage La Prairie requires an advanced airframe to meet the skill set required at the helicopter trainer school. This can be achieved at minimal cost with a rationalisation of the current CF helicopter fleets.

## **Aircraft Fleet Improvements Necessary To Meet CF Needs**

### ***Command and Control***

The two operational helicopter aviation groups are trained for SAR missions in the OTUs and regularly fly simulated missions as part of crew proficiency. The groups have often been tasked to conduct primary SAR standby while Labrador helicopters were grounded and have participated in many searches. A SAR capability was stipulated in the Griffon procurement and is a specification in the Statement of Operational Requirement for the MHP.

The tactical and the MH wings should assimilate the SAR helicopter community as sub-units within a proposed redistribution of helicopter assets (to be amplified). This is similar to the Royal Navy that has embedded their SAR units within its operational communities. Tasking of the SAR units by the Canadian Rescue Co-ordination Centres would remain unchanged. With a closer link for all RW units, a rationalisation of the equipment purchases, training and a redistribution of assets is warranted.

---

<sup>30</sup>Search and Rescue Operational Doctrine, CFP B-GA-460-000/FP-000, 2-1

<sup>31</sup> Major Ian G. McIntyre, 3-4

### ***Fleets Rationalisation***

With the Labrador and Sea King helicopters soon to retire, a common airframe should be considered as a replacement for both aircraft. The life cycle cost savings of a common helicopter fleet, together with the sharing of centralized maintenance and training facilities and equipment, would be approximately \$350 million over the expected thirty-five year service life of the Cormorant.<sup>32</sup> A common airframe fleet with the SAR helicopter should be a compelling factor, as stated in the DPG, in the MHP acquisition. Should the Cormorant not be chosen in the competition to replace the MH, the benefits associated with training and spares would not be realized; however, many of the remaining arguments presented in this paper still remain valid.

For commonality purposes, scheduling of the first major maintenance for the Cormorant should include updating both SAR and MH airframes to a common standard. This action would allow all helicopters to be used as combat vehicles in accordance with CF doctrine and fewer fleets would reduce the number of unique spare parts required in inventory.

“Organisational structures should be designed to exploit air power’s unique strengths, while mitigating its limitations. Success in war demands an organisational structure in peace which effectively integrates personnel policies, operational and logistical concepts, and equipment procurement decisions.”<sup>33</sup> Further savings and increased capabilities could be realized with a redistribution / relocation of the two remaining CF helicopter fleets.

---

<sup>32</sup> Canada, Department of National Defence, “History of the NSA/NSH Project.” NSA/NSH Defence Policy Basis. (Canada: National Defence Headquarters, March 1993) 3

<sup>33</sup>Out of the Sun – Aerospace Doctrine for the Canadian Forces, 28

### ***Force Structure Changes and Redistribution of Assets***

The next decade should see a reduction of the RW assets to two fleets if procurements proceed as proposed. Without any loss of aircraft and a procurement of twenty-eight MH, the total number of aircraft would include forty-three Cormorants and ninety-nine Griffon helicopters. This is quite a reduction in assets to meet the demands for the army, navy, SAR and overseas commitments. Although the Commander of the Land Staff accepted a reduction in the capabilities for the army support capabilities, support identified in CF guidance is definitely lacking.

The following redistribution of the limited assets is aimed at increasing the efficiency of these scarce assets for “best bang for the buck” and may result in overall savings for the CF. The restructure would support the peacetime role of pilot generation and SAR commitments while maintaining the assets as combat capable reserves, especially during surge operations.

With a common airframe for both the MH and SAR units, co-location of the Squadrons in Comox and Greenwood would reduce the support structure on logistics and supply / parts as well as air force infrastructure reductions. The SAR squadron located in Gander, Newfoundland would remain in place. A combined OTU for aircrew and technicians in Greenwood would reduce the requirement of two SAR specific training aircraft currently allocated for Comox. The simulator to be delivered for the MH could be adapted to meet the training needs of the SAR community, increasing their simulation of realistic scenarios. Currently there is no provision for a simulator in the SAR Cormorant procurement.

Another benefit of a common airframe is the exchange of crewmembers between the communities. A posting to SAR would only occur after an operational tour with MH.

This would reduce the requirement on the OTU, as the member would already be qualified on the helicopter. The member would have considerable experience when joining the SAR unit, and as an added benefit this change would decrease the sea-to-shore ratio (more time at home) for the CF member. Members moving between the OTU, operational squadrons and the SAR units would result in fewer moves for the member and family with added cost savings for the CF. As stated earlier, the Cormorant airframes would be standardized. In the event of a surge operation, the OTUs helicopters may be potentially able to deploy to sea with the SAR helicopters then carrying out crew training for sustainment. In the worst situation the SAR configured aircraft could also deploy, although without an acoustic sensor suite. At home SAR would have to be picked up by the Griffon SAR units (to be discussed) or civilian agencies for the period.

The CF has been directed to “contract out” the maintenance of the Cormorant SAR helicopters, therefore, the common training savings would not be realized with regard to military technicians. A review of this contracting process, to propose a military maintenance organisation for the entire fleet with a contracted supply organisation could provide further savings to the air force. The resultant benefits of one training system, local moves between units and an improved quality of life with a decreased sea-to-shore ratio, savings would be similar to the above, mentioned for the aircrew.

Another reallocation of the Cormorant SAR aircraft would be the removal of the three aircraft to be stationed in Trenton. These three airframes plus the two Cormorant helicopters allocated as training assets to the SAR community would be transferred to provide heavy logistics support transport needs for the army. They would be co-located with a 1 Wing Squadron to reduce the infrastructure support in central Canada to meet

the needs of the Brigades. Training for these crews and technicians would be initially conducted with the MH community in Greenwood with specific tactical lift training completed at the unit. Since the loss of a medium lift capability, the Army has been forced to move guns, ammunition and logistic support by road; therefore, limiting the maneuverability of the Army. These aircraft would now fill this void and would also provide a secondary SAR capability when required.

SAR coverage in central Canada would be allocated to the Griffon operational squadrons as dedicated SAR flights similar to the MH Wing. The requirement for the UTTH to be SAR mission capable was stipulated in the CFUTTH SOR.<sup>34</sup> The SAR units would be co-located with 1 Wing squadrons in Petawawa, Ontario and Edmonton Alberta with three aircraft each. Similar to the combined OTU for MH / SAR, SAR units would train within the tactical aviation wing. All of the benefits identified in the MH / SAR system would apply in this situation, including the capability to deploy as a combat aircraft in surge operations with an added benefit of a cost savings per flight hour of the Griffon over the Cormorant.

Although the CAS fiscal year 2000/2001 business plan calls for a reduction of the Griffon fleet to eighty airframes by 2003, a preferred redistribution of the airframes would increase the overall efficiency of the helicopters while maintaining a reserve of combat airframes. The nineteen Griffons forecast to be removed from service would be reallocated to meet the advanced training needs and the SAR incremental increase. As stated, six would be allocated to SAR flights in Ontario and Alberta, the remaining

---

<sup>34</sup> Canadian Forces Utility Tactical Transport Helicopter (CFUTTH) Acquisition Project Statement of Operational Requirement, 16

thirteen would be located in Portage La Prairie, Manitoba with eleven allocated as advanced helicopter trainers and two designated as a SAR flight.

### ***Training***

Although the Jet Ranger, currently used as the advanced helicopter trainer, is not considered as a CF helicopter fleet, it should be retained as a basic helicopter trainer in the training contract with Bombardier. A reorganisation of the helicopter training system as proposed in Major I. McIntyre's paper *A Separate Helicopter Pilot Training System*<sup>35</sup> would meet the needs of the new generation helicopters. This proposal which advocates going directly from the pilot selection aircraft (Slingsby) to a basic helicopter and finally to an advanced helicopter prior to wings certification should be adopted. This system would free up valuable hours required, in the present system, on the advanced fixed wing trainer for more pilot throughput to address the growing pilot shortage. The Griffon helicopter, proposed as the advanced helicopter trainer, is approximately 1/6 of the operating cost per hour of the Tutor.<sup>36</sup> Rough estimates for the Harvard 2 are at least twice the cost of the Griffon. An advanced training helicopter, the Griffon would provide a cost per hour saving, free up valuable fixed wing hours on the Harvard 2 and meet the requirements for the two advanced CF helicopter fleets, the Griffon and Cormorant.

The eleven Griffon aircraft, as advanced helicopter trainers, would meet the deficiencies of basic helicopter training through training in slinging, hoisting, crew co-op, night vision goggles (NVG), glass cockpit awareness, systems management and instrument training (IFR) prior to wings certification. With this advanced training, pilots

---

<sup>35</sup> Major Ian G. McIntyre, 17-18

<sup>36</sup> Canada, National Defence Headquarters, Cost Factor Manual 2000/2001. (Directorate of Managerial Accounting and Comptrollership 2 (DMAC 2). 7 Jun 2000) Table 3-1.



<b>Aircraft</b>	<b>Organisation</b>	<b>Location</b>	<b>Current</b>	<b>Proposed</b>	<b>Type Total</b>
CH 146 Griffon	Tactical Aviation	Edmonton, Petawawa Valcartier, Gagetown Borden, St Hubert Deployed	89	74	<b>99</b>
CH 146 Griffon	Base Rescue	Cold Lake, Bagotville Goose Bay	10	6	
CH 146 Griffon	SAR	Edmonton, Petawawa Portage La Prairie		8	
CH 146 Griffon	Advanced Helicopter Training	Portage La Prairie		11	
CH 149 (SAR) Cormorant	SAR	Comox, Greenwood Gander		10	<b>43</b>
CH 149 Cormorant	Tactical Aviation Medium Lift	TBD		5	
CH 149 (MH) Cormorant	Maritime Helicopter	Comox, Greenwood Deployed		28	
CH 124 (MH) Sea King	Maritime Helicopter	Shearwater, Patricia Bay, Deployed	29		<b>29</b>
CH 113 (SAR) Labrador	SAR	Comox, Trenton, Greenwood, Gander	12		<b>12</b>
<b>TOTAL</b>			<b>140</b>	<b>142</b>	

**TABLE 1 – Current and Proposed Allocation of Helicopter Assets**

would require fewer flight hours at the respective OTU and would be familiar with the airframe type for the tactical aviation wing. Although instructors would still be required in Portage, the savings from reduced training requirements at the OTUs and the savings on fixed wing time could create an overall saving to the air force. If the aircraft were required for combat roles, they would be readily available, but at the loss of training and at worst reverting temporarily to the current level of helicopter training. A comparison of the current allocation of RW assets to proposed is illustrated at table 1.

Loss of any combat or training aircraft would create a shortfall in the system, as procurement projects have not provided extra aircraft due to fiscal restraint. In accordance with the CFUTTH statement of operational requirements “attrition aircraft are considered a luxury which could be addressed (rather quickly with a commercial airframe) on a case by case basis, as the need arises.”<sup>37</sup>

“The level of pilot skills required in the various operational roles is dictated by operational commitments and aircraft in the inventory. This operational standard is the training goal towards which the OTUs direct their efforts. Undergraduate pilot training, therefore, is orientated towards producing a graduate capable of meeting these operational training demands. It is this requirement which determines the type and emphasis of the undergraduate training.”<sup>38</sup>

With a rationalisation to two helicopter fleets distributed from coast to coast, and a modified training system, the benefits are apparent. The changes would mean minimal disruption to the present system with great benefits to the army and navy elements they serve. Additional benefits to the CF in terms of costs and personnel quality of life would also be realized.

## **Conclusion**

Doctrine states the missions that CF Rotary Wing assets could perform, while the Chief of Defence Staff demands that the air force generate and maintain a combat capable, multi-purpose air force. In the mid-1970’s Canada’s military helicopter capability was respected in terms of its equipment and personnel. With the current

---

<sup>37</sup> Canadian Forces Utility Tactical Transport helicopter (CFUTTH) Acquisition Project – Statement of Operational Requirement. 21 Apr 1993) 6

<sup>38</sup> Major Ian G. McIntyre, 3-4

helicopter fleets employed in 2001, Canada should be embarrassed with the limited capability they provide and should promote the livelihood of the CF's RW personnel dwindling human resources.

Are we looking at 20/20 hindsight or Vision 2020? In hindsight, the diminishing air force RW assets have reduced CF's capabilities considerably. Is the CF air force capable of looking forward into the next twenty years with a vision and proposals to increase its output of pilots, increase its service to the army and navy with greater capabilities while serving its own members with modern equipment and better quality of life?

The CF has no choice but to remain within the fiscal boundaries placed upon it. The planned replacement of the Labrador helicopter with the CH 149 Cormorant commencing this year and the announced competition to replace the Sea King are advances for RW capabilities. But this is not enough; it will marginally improve the situation. A change in organisation and a reduction of helicopter fleet types would keep the RW assets within the air force's fiscal budget and increase capabilities without further fleet reductions. This approach would be cost-effective and efficient, while flexible to meet future security needs with modern equipment.

Focused savings would be realized with only two helicopter fleets. Support structure, sparing and personnel training are but some of the savings. Posting of personnel from the tactical/ maritime communities directly to the SAR would alleviate the initial aircraft retraining and cost moves, as many units would be co-located. Only a conversion to primary SAR demands would be required upon aircrew joining the unit. Savings featured in cost per hour on airframes would be realized in SAR units flying the

Griffon and at the pre-graduate wings training unit in Portage La Prairie with the Griffon as the advanced helicopter trainer. Further training savings at the OTUs would be realized with shorter courses.

The proposed changes in force structure and relocation of helicopters would provide a heavy logistics lift capability for the CF, a modern reliable maritime helicopter, an advanced RW pilot training system, capable tactical aviation, and credible SAR coverage across Canada. This would be achieved with overall savings to the air force, and improvements to the quality of life of its members, without a reduction in fleet sizes while maintaining fully combat capable helicopter fleets.

### ***Recommendations***

1. Rationalize the CF helicopter inventory into two fleets – CH 146 Griffon and CH 149 Cormorant.
2. Re-organize helicopter SAR units under the tactical and MH wings.
3. Allocate all Cormorant SAR helicopters to coastal units co-located with the MH 12 Wing squadrons.
4. Transfer five Cormorant helicopters to a heavy logistics lift squadron.
5. Review the requirement for maintenance of all Cormorants to be conducted by the military.
6. Allocate inland Canadian SAR responsibilities to Griffon flights located at Edmonton, Portage La Prairie and Petawawa.
7. Revamp pre-graduate helicopter training to include an advanced helicopter course on the Griffon.
8. Designate all air force helicopters as combat capable assets.

## **Bibliography**

Allward, Major P.S. A Requirement for a Medium Lift Helicopter for the Land Forces.

Canada: Canadian Forces Command and Staff College, 29 March 1993.

Boland, LCol B. An Orphan's Journey. Canada: Canadian Forces Command and Staff College, Jan 2001.

Canada. Chief of the Air Staff. "CAS FY00/01 Level 1 Business Plan" 22 December 1999.

Canada. Department of National Defence. "History of the NSA/NSH Project."

NSA/NSH Defence Policy Basis. Canada: National Defence Headquarters, March 1993.

Canada. Department of National Defence. Maritime Air Operational Doctrine, CFP B-GA-470-000/FP-000. Canada: National Defence Headquarters, 1989.

Canada. Department of National Defence. NSA/NSH Defence Policy Basis. Canada: National Defence Headquarters, July 1992.

Canada. Department of National Defence. "Fact Sheet NSA/NSH Fleet Distribution."  
NSA/NSH Defence Policy Basis Canada: National Defence Headquarters, July 1992.

Canada. Department of National Defence. Search and Rescue Operational Doctrine, CFP B-GA-460-000/FP-000. Canada: National Defence Headquarters, 1995.

Canada. Department of National Defence. Tactical Helicopter Operations, CFP B-GA-440-000/AF-000. Canada: National Defence Headquarters, 1998.

Canada. Department of National Defence. The Aviation Master Development Plan (AMDP). Canada: National Defence Headquarters, May 1995 (4<sup>th</sup> Draft).

Canada. National Defence Headquarters. 1994 Defence White Paper. Canada: National Defence Headquarters, 1994.

Canada. National Defence Headquarters. Canadian Forces Utility Tactical Transport Helicopter (CFUTTH) Acquisition Project Statement of Operational Requirement.

Canada: National Defence Headquarters, May 1992.

Canada. National Defence Headquarters. Cost Factor Manual 2000/2001. Directorate of Managerial Accounting and Comptrollership 2 (DMAC 2). 7 Jun 2000.

Canada. National Defence Headquarters. Defence Planning Guidance 2001. Canada: National Defence Headquarters, 2000.

Canada. National Defence Headquarters. Maritime Helicopter Statement of Operating Intent DSP No 00002680. Canada: National Defence Headquarters, (no date indicated).

Canada. National Defence Headquarters. Maritime Helicopter Statement of Operational Requirement DSP No 00002680. Canada: National Defence Headquarters, 14 Jul. 1999.

Canada. National Defence Headquarters. Out of the Sun – Aerospace Doctrine for the Canadian Forces. Craig Kelman & Associates Ltd. Winnipeg MB, 1997.

Canada. National Defence Headquarters. Strategy 2020. Canada: National Defence Headquarters, 2000.

Davis, Gordon. The Contribution of Aviation To Canadian Maritime Security and the Requirements for the Future. Dalhousie University: Centre for Foreign Policy Studies, 1998.

Lapointe, Michel. Letter of Interest: Canadian Maritime Helicopter Project for the Department of National Defence. Public Works and Government Services, 22 Aug 2000.

Maddison, Adm G. Speech (CMS) Announcement of MHP go ahead, 17 Aug 2000

McIntyre, Major Ian G. A Separate Helicopter Pilot Training System. Canada: Canadian Forces Command and Staff College, 1988-89.

McLeish, Major R. Scott. A Better Approach to Training Canadian Forces Helicopter Pilots. Canada: Canadian Forces Command and Staff College, 29 March 1993.

Nordick, Major G.W. Into the Future: Tactical Aviation. Canada: Canadian Forces Command and Staff College, 31 Mar 1989.

Northrup, Major Brian. “Surviving Pleasantville – In Proper Context.”

Northrup, Major Brian. “Vision 20/20: In Transition.”

Pichette, Major “Jeep”. Does the Canadian Army Have Adequate Helicopter Support to Meet all Assigned Tasks? Canada: Canadian Forces Command and Staff College, 1 May 1997.

Vincent, Major Robert H. Helicopter Fleet Rationalization And Support To The Land Battle. Canada: Canadian Forces Command and Staff College, 2 April 1991.

Watt, Major W.A. Helicopter Pilot Training – A Better Way for the Canadian Forces. Canada: Canadian Forces Command and Staff College, 1987.