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Ready Aye Ready?

An Examination of the Canadian Navy's Command and Control Architecture

Capt(N) M.F.R. Lloyd

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ABSTRACT

Since 1990, the Canadian Navy's command and control (C2) architecture has evolved significantly. Prior to 1990, the focus of the Navy was the recapitalization of the fleet which was nearly obsolete. As the Navy began accepting these new capabilities, there was a requirement to focus on force generation (FG). As the budgets were reduced, the operational tempo of the Navy increased in a turbulent and less stable security environment that emerged in the wake of the Cold War. As the Navy's C2 was predominately NATO centric, there was a necessity to implement a structure that would better serve the Navy, and the country, on UN operations or in "coalitions of the willing". In order to address these challenges, the Navy had to direct further resources towards FG activities.

The unintended consequence of the Navy's C2 evolution since 1990 is that it is no longer in balance. This paper will examine the Navy's C2 evolution and conduct an analysis of its current construct using existing C2 models and a theoretical framework. Four command and control options will then be examined. As a result of a number of constraints, the preferable option may not be feasible for implementation. As a result, a phased and flexible way ahead is recommended that better balances force generation and force development activities by redistributing the flag officers to establish Asst CMS as a Rear Admiral, to create a new Training and Doctrine Command under the command of a flag officer, and to establish DGMFD as a commodore. This strategy will better ensure that the Navy is Ready Aye Ready to successfully execute the significant recapitalization program recently announced in the Canada First Defence Strategy.

INTRODUCTION

During the 1980s, the operational capabilities of the Canadian Navy were in a significant state of decline. There was little doubt that the fleet was in a desperate state and in dire need of replacement. In 1985, the situation was so bad that "four fifths of [the] fleet would need an escort in wartime".[1] By the end of the decade, the Canadian fleet had "reached an all-time postwar low."[2] As the fleet steadily deteriorated in capability, the naval leadership was actively engaged in attempting to deliver the Canadian Patrol Frigate, which had been announced in 1977. Although initial estimates were that the first frigate would be operational in 1985, the first of class, HMCS HALIFAX, was not commissioned into the fleet until June 1992, 15 years after the project was announced.[3]

The Halifax class frigate was the central element of the recapitalization of the Navy. There were also two other projects delivered in the early 90s that were essential to improving the overall state of the fleet, the Tribal Update and Modernization Program (TRUMP) and the Maritime Coastal Defence Vessel (MCDV) project. The delivery of these three projects was no small task and required a coordinated effort of the naval leadership at all levels. Today, the leadership of the Navy is confronted with similar challenges as it looks forward to delivering to the fleet the Joint Support Ship (JSS), Halifax Class Modernization (HCM), the Arctic Offshore Patrol Ship (AOPS), Cyclone helicopters, and initiating a Surface Combatant project to replace the destroyers and eventually, the frigates.

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[1] This is a quote from the Commander Maritime Command of the day provided in: Marc Milner, *Canada's Navy The First Century* (Toronto: University of Toronto Press, 1999), 291.
[2] *Ibid*., 294.
[3] *Ibid*., 277.

The enormity of delivering these projects is fully appreciated by the Navy and it was fully captured in the Chief of Maritime Staff's (CMS) "Maritime Commander's intent for 2009 to 2012":

> [p]ut succinctly, our challenge ***is to position the navy to successfully deliver on the most comprehensive and compressed program of fleet renewal it has faced in its history from within the smallest establishment it has possessed since the post-Korean conflict build-up, all while continuing to successfully generate maritime forces for operations***.[4]

Not only has the naval establishment shrunk, but the naval command and control (C2) architecture that successfully delivered the fleet in the early 1990s, has evolved considerably, both in terms of responsibilities and priorities.

Since 1990, the naval command and control has undergone significant changes as a result of internal Navy pressures. It has also evolved as a result of Canadian Forces (CF) initiatives such as the Management Command and Control Restructuring Initiative, of the mid 1990s, and CF transformation, initiated in 2005. What is clear about transformation is that the Environmental Chiefs of Staff (ECS) are responsible for force generation (FG) to succeed on operations today, and for environmental specific force development (FD) to succeed on operations in the future. In the wake of transformation, and prior to embarking upon "the most comprehensive and compressed program of fleet renewal" in the Navy's history, now is the ideal time to validate the command and control architecture of the Canadian Navy to ensure it is optimized and balanced across all force generation activities and force development.

The aim of this paper is therefore to conduct an analysis of the Navy's command and control architecture against three other C2 models using a theoretical framework that will highlight its strengths and weaknesses, as well as demonstrate that there is a

[4]Canada. Department of National Defence. *Maritime Commander's Intent For 2009 to 2012*. 3371-1948-1 (DMSC – RDIMS 136353) 12 March 2008, 2. Note: the bold italicized portion of the quote reflects the original document.

command and control imbalance in force generation and force development. In order to accomplish this aim, it will be necessary to begin by defining what is meant by the term command and control. From the various definitions, a set of principles will be articulated in order to assess the various strengths and weaknesses of a command and control construct. An examination of the terms force employment (FE), force generation, and force development will also be provided. Having established a solid theoretical framework, four different command and control models will be introduced.

The Canadian Navy model will be examined in detail to provide a better understanding of the factors and events which shaped its evolution into a force generation centric model. This examination will serve to ensure that lessons are learned from previous experiences. Next, an examination of the two other Canadian models, the Army and Air Force, will demonstrate that they have also undergone a significant evolution since 1990. A brief comparison of the Australian and Canadian Navy will be conducted, in order to establish that it is a useful fourth model to be used as part of the analysis.

The four models will then be analyzed against a set of command and control principles to determine their various strengths and weaknesses. Next, the best attributes of the various command and control constructs will be incorporated into a number of recommended options. Finally, a way ahead will be recommended for further examination and implementation by the Canadian Navy as it prepares to enter its second century of service to Canada.

COMMAND AND CONTROL ORGANIZATIONAL PRINCIPLES

The biggest challenge to conducting an analysis of different command and control models is the fact that command and control organizational principles simply do not exist

in CF doctrine.[5] However, an examination of CF command and control definitions and a review of key CF command and control documents, provide a set of principles worthy of consideration. CF doctrine defines command as:

> "[c]ommand can be described by two closely intertwined definitions. First, as a noun, it is defined as the authority vested in an individual of the armed forces for the direction, coordination and control of military forces. Second, as a verb, it entails the action of *exercising* that command. This makes it uniquely human and highlights the importance of the commander in all activities within a military force relating to its employment. Therefore, the commander has a unique responsibility to the military force assigned and for this reason, CF doctrine espouses a command-driven philosophy in all aspects of Force Employment."[6]

Control is defined as:

> "that authority exercised by a commander over part of the activities of subordinate organizations, or other organizations not normally under his command, which encompasses the responsibility for implementing orders or directives. All or part of this authority may be transferred or delegated."[7]

Command and control is defined as:

> "[t]he exercise of authority and direction by a properly designated commander over assigned and attached forces in the accomplishment of the mission. Command and control functions are performed through an arrangement of personnel, equipment, communications, facilities, and procedures employed by a commander in planning, directing, coordinating, and controlling forces and operations in the accomplishment of the mission."[8]

In addition to these definitions, the Chief of the Defence Staff (CDS) has also provided three command and control organizational principles.

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[5] G.E. Sharpe (BGen Ret'd) and A.D. English, *Principles for Change in the Post-Cold War Command and Control of the Canadian Forces* (Winnipeg: Canadian Forces Leadership Institute, 2002), xvi.

[6] Canada. Department of National Defence. *CF Operational Planning Process*. B-GJ-005-500/FP-000 (Ottawa: DND Canada, 2003), 1-1. Note this is the definition currently being used in the current draft of the CDS directive *CF Command and Control and Delegation of Authority to Operational Commanders for Force Employment.*

[7] Canada. Department of National Defence. *CF Operations, Chapter 2 – Command and Control of CF Operations*. B-GJ-005-300/FP-000 (Ottawa: DND Canada, 2003), 2-1- 2-2.

[8] Canada. Department of National Defence. Draft CDS directive on "*CF Command and Control and Delegation of Authority to Operational Commanders for Force Employment*". Feb 2008, Annex F 1. Although the definition in the draft document indicates the source as B-GJ-005-500/FP-000, the definition could not be found in the publication.

In the CDS's planning directive he articulated six principles to guide transformation. Of the six principles, two were explicitly command and control related and a third principle was implicitly command and control related. The three principles were:

a. "the C2 structure must shift from a staff-centric to a command-centric construct,

b. the C2 structure must transform from a staff matrix to a chain of command empowered with authority, responsibility and accountable to a higher commander, and

c. the chain of command must shift from a risk-averse approach to an empowered mission command approach."[9]

What is particularly remarkable about the principles articulated by the CDS, is how similar they are to those derived from a completely different theoretical framework.

During the last decade Ross Pigeau and Carol McCann, two CF Defence scientists, have worked extensively in the re-conceptualization of command, control and command and control. In 2003, they published *Analysing Command Challenges Using the Command and Control Framework: Pilot Study Results*. In their technical report they provided completely different definitions than those used in CF doctrine. Pigeau/McCann define command as "the creative expression of human will necessary to accomplish the mission".[10] Their analysis supports the thesis that a military individual's command capability is a function of that person's competency, authority, and responsibility (CAR). They define control as "those structures and processes devised by

[9] Canada. Department of National Defence. *CDS Action Team 1Report Part 1,* (Ottawa: DND Canada, 2005), 3/10.
[10] C. McCann, R. Pigeau, and A. English, *Analysing command challenges using the command and control framework: Pilot Study results* (Defence R&D Canada – Toronto, 2003), 2.

command to enable it and to manage risk".[11] Finally, they define command and control as "the establishment of common intent to achieve coordinated action".[12]

Although Pigeau/McCann have not provided a set of command and control organizational principles, Brigadier-General (retired) G.E. Sharpe and Dr. Allan English have built on the exceptionally solid foundation provided by Pigeau/McCann to provide a set of principles. In their book *Principles for change in the Post-Cold War Command and Control of the Canadian Forces*, Sharpe/English provide a well researched, documented and convincing argument that the work of Pigeau/McCann should be adopted as CF doctrine. Sharpe/English also argue that until such time as the CF adopts the Pigeau/McCann concepts, any changes to CF command and control should consider the following principles:

a. people first – empowering subordinates or mission command,

b. command capability – is defined as a combination of competency, authority and responsibility and it should be adopted as the standard method of examining command and control,

c. effective command demands a balance between competency, authority and responsibility,

d. control is a tool of command – what are the best mechanisms required to connect the levels of command,

e. flexibility, and

f. create a "learning organization"- continual learning and change should be encouraged and rewarded at both the personal and institutional level.[13]

A comparison of the principles provided for transformation with those articulated by Sharpe/English, reveals that although the CF has yet to adopt the Pigeau/McCann model

[11] *Ibid.,* 3.
[12] *Ibid*.
[13] Sharpe/English, 89-90.

as doctrine, it is clear that their concepts have shaped the CDS's and the CF's understanding of command and control.

The first command and control principle of transformation, establishing a command-centric construct, very much embodies the set of principles provided by Sharpe/English. Implicitly, the set of principles they propose reflect the fact that command is a more effective method of accomplishing a mission than a matrixed staff approach. The second command and control principle of transformation explicitly incorporates the aspects of responsibility and authority and it is implicitly understood that the higher commander would be competent. Establishing a chain of command is also recognition that control is a tool of command. The third transformation C2 principle, empowered mission command, is an explicit recognition of Sharpe/English's first principle, empowering subordinates and putting people first. The totality of the three principles provided for transformation is essentially to ensure that the commander has the flexibility necessary to execute missions assigned. The fact that these principles are tied to transformation is also an implicit understanding that the CF needs to be a learning organization. As each of the three command and control principles of transformation are a reflection of those recommended by Sharpe/English, it is arguably implicit recognition of the CF's adoption of the Pigeau/McCann's concepts of command, control and command and control.

By combining the "academic" principles provided by Sharpe/English with the "operational" principles of transformation, a more robust framework of command and control principles is provided. Therefore, the following principles will be used to conduct the analysis of the four command and control models selected:

a. mission command – empowering subordinates and putting people first,

b. effective command – demands a balance of competency, authority and responsibility,

c. command centric – the level to which missions are accomplished via a chain of command as opposed to being staff matrixed,

d. control is a tool of command – form follows function,

e. flexibility, and

f. learning organization – ability to embrace change both at the individual and institutional level as a result of changing priorities.

Having established the principles by which a command and control construct will be measured, the next step will be to establish a common understanding of force employment, force generation, and force development.

COMMANDING IN THE SEAM

The Environmental Chiefs of Staff have two significant roles. They operate at the strategic level as strategic advisors to the CDS and they are also the commanders of their respective commands. An examination of the definitions of strategic and operational command reveals that ECSs do not command at either level. The strategic level of command is defined as:

> "[t]hat level of command through which control of a conflict is exercised at the strategic level and overall direction is provided to military forces, advice is given to political authorities and co-ordination is provided at the national level."[14]

Whereas operational level of command is defined as:

> "[t]hat level of command which employs forces to attain strategic objectives in a theatre of area of operations through the design, organization, and conduct of campaigns and major operations. At the operational level, sea, land and air activity is conceived and conducted as one single concentrated effort. Activities at this level link strategy and tactics."[15]

[14] Canada. Department of National Defence. *A report on the Validation of the Transformed Canadian Forces Command Structure,* 2007. E-3/5.
[15] *Ibid.*

According to these two definitions, in order to command at either the strategic level or the operational level, there is a requirement to command forces on operations (force employment). In the Canadian context the CDS commands at the strategic level and the Commander Canada Command and Commander Expeditionary Forces Command (CEFCOM) command at the operational level. It is therefore in the seam between the two levels of force employment command that the ECSs exercise command and control of their commands for force generation and force development.[16] As the ECSs do not force employ, the focus of this paper's analysis will be on their ability to exercise command and control over force generation and force development.

During transformation there was a significant amount of discussion with respect to who would be responsible for the different aspects of force generation. Since then, greater clarity has been provided on force generation responsibilities. Force generation is currently described as follows:

> "[f]orce generation occurs at three levels: direct, supporting and enabling. Direct force generation results in the provision of maritime, land, air and special forces capable of employing force in the achievement of strategic effect. Supporting force generation involves the provision of capabilities such as logistics, medical, military police, communications and intelligence. Enabling force generation consists of personnel recruitment and initial training as well as equipment procurement. Force Generators command assigned formations and are directly accountable to the CDS for force generation. They play a vital role, in conjunction with the other Level 1s, in generating and sustaining the forces assigned to operational commanders as well as providing the CDS with strategic advice on environmental and technical matters." [17]

For the purposes of this paper, the activities mentioned in the aforementioned description

[16] Force Development – A system of integrated and interdependent processes that identifies necessary changes to existing capability and articulates new capability requirements for the CF. It is driven by changes in policy, actual or projected, changes in the security environment and lessons learned from operations. force development comprises capability based planning, capability management and capability production.

[17] Canada. Department of National Defence. *CDS Directive on CF Command and Control and Delegation of Authority to Operational Commanders for Force Employment,* Draft Feb 2008, 5/8.

will be broken down into six distinct phases:

a. "military human resources requirement identification,
b. intake (both through external and internal sources),
c. training to basic occupation qualification,
d. training to basic mission readiness qualifications…,
e. training to operational readiness qualifications…, and
f. continuing Professional Development training/education."[18]

In order to successfully execute these six phases of force generation an effective command and control construct is required.

The ECSs are also responsible for providing environmental force development advice to the Vice Chief of the Defence Staff (VCDS) and to coordinate horizontal joint force development with the Chief of Force Development (CFD). The complexity of force development was captured very well by the Air Force in a letter to the Chief of Transformation. The Assistant Chief of the Air Staff (ACAS) noted that the force development process included international linkages with allied Air Forces, required service specific expertise to conduct effective operational research, concept development and experimentation, and research and development, and leveraged the expertise provided by environmental specific centres of excellence, such as the Canadian Forces Air Warfare Centre (CFAWC) and the Air Force Experimentation Centre (AFEC). It was also noted that this complex force development process had force generation linkages which required coordination across tactical, operational and strategic levels.[19] The Air Force therefore recommended that the ECSs should retain responsibility for environment specific force development, and CFD should be responsible for joint force development

[18] Canada. Department of National Defence. *Air Force Advice to the CF Chief of Transformation – Force generation,*3120-2(D Air PPD) 29 August 2005, 1-2/5.
[19]Canada. Department of National Defence. *Air Force Advice to the CF Chief of Transformation – Future Force Development* 3120-2(D Air PPD) 10 November 2005, 1-3/4.

integration and cross functional governance.[20] This is essentially the construct that was adopted and is currently in place today.

Commanding in the seam is therefore defined as the ECSs responsibilities to ensure that the six phases of force generation are successfully executed to ensure success on operations today and to provide environmental force development expertise to ensure success on operations in the future. Maintaining a balance between the two responsibilities is key to the continued success of their institutions. By definition this is neither a strategic or operational command activity. It is a command activity that takes place in the seam between the strategic and operational levels of command which is fundamental to their success.

THE FOUR MODELS

The Canadian Navy

In broad terms, the command and control construct that successfully recapitalized the Navy in the early 90s was very similar to the initial framework that was implemented after unification. This construct was a reflection of the Cold War and Canada's commitments to North Atlantic Treaty Organization (NATO). The Navy was therefore Atlantic Coast centric with virtually all of the "combat capability" stationed in Halifax, whereas Esquimalt was home port to the training squadron and a squadron of non-helicopter carrying destroyers. In recognition of these geo-strategic realities the Commander Maritime Command (Comd MARCOM) was located in Halifax.

Although force development was a clear priority for the Navy, it is rather interesting to note that during this period Comd MARCOM had no force development

[20] *Ibid*., 4/4.

responsibilities.[21] The officer responsible for naval force development was the Chief of Maritime Doctrine and Operations (CMDO), a rear-admiral (RAdm), who was located in Ottawa and worked directly for the Deputy Chief of the Defence Staff (DCDS).[22] Although the title of Chief of Maritime Doctrine and Operations indicates "operations" responsibilities, CMDO spent at least 75 - 85% of his time focused on the future Navy.[23] The importance of having the correct officer in this position and maintaining a continuity of vision over time, were therefore absolutely critical to the success of the Navy. Vice-Admiral (VAdm) Thomas, a previous Comd MARCOM who retired from the CF as the VCDS, articulated this philosophy in *The Admirals* where he reflected;

> "…we were going to have a full-blown "replace-the-navy" capital-equipment program. We became convinced that, if we collectively addressed both the NDHQ and the governmental processes in a cohesive and continuous fashion, a "New Navy" could be built. We recognized that progress took longer than anyone's tenure in any position of leadership or influence, so continuity of effort and approach became a keystone."[24]

VAdm Thomas' comments closely resemble Pigeau/McCann's definition of command and control - "the establishment of common intent to achieve coordinated action".

The Navy understood that if they were going to successfully deliver the new navy there was going to have to be a continuity of vision. The manner in which they achieved this was to ensure that successive MARCOM commanders had experience as Chief of Maritime Doctrine and Operations. This would provide the incumbent Comd MARCOM the opportunity to ensure that the Chief of Maritime Doctrine and Operations, his

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[21] Canada. Department of National Defence. *Organization Concept – Command Structure,* F 1901-4370/0(DME) 27 September 1967, Annex K.
[22] The reality of the situation was that there was an extremely close relationship between Chief of Maritime Doctrine and Operations and Comd MARCOM. Although Chief of Maritime Doctrine and Operations reported to the DCDS, there was little doubt who he worked for.
[23] Interviews with previous Chiefs of Maritime Doctrine and Operations.
[24] M. Whitby, R.H. Gimblett. and P Haydon (eds) *The Admirals- Canada's Senior Naval Leadership in the Twentieth Century*(Toronto: Dundurn Press, 2006), 335-336.

eventual successor, was completely intimate with all the processes and risks associated with the recapitalization program, having recently performed the duties of CMDO. [25] It was not an accident that during the decade prior to HALIFAX's commissioning, 1983-1992, Vice-Admirals Wood, Thomas, George and Anderson had all served as Chief of Maritime Doctrine and Operations prior to becoming Comd MARCOM.[26] Not only had each of them served as Chief of Maritime Doctrine and Operations, but three of the four officers went directly from CMDO to Comd MARCOM without commanding a formation (there was only one formation at the time).[27] With a RAdm focused almost exclusively on force development in NDHQ this allowed Comd MARCOM to focus on force generation.

The staff that supported Comd MARCOM to exercise his force generation responsibilities was led by a RAdm Chief of Staff (COS) who was also the deputy commander MARCOM. Operations were the responsibility of the COS Operations, a commodore, who was double-hatted as a line officer in the capacity of Commander Canadian Fleet.[28] On the west coast Maritime Forces Pacific (MARPAC) was commanded by a RAdm who was also supported by a COS (commodore in 1991 then Capt(N) in 1992). Fleet Units on both coasts were organized into squadrons with the exception of the AORs, which were assigned to the squadrons as required. Training was the responsibility of Capt(N) line officers who commanded schools and the training

[25] Interviews with previous CMSs.
[26] Whitby/Gimblett/Haydon, 379-383.
[27] When Chief of Maritime Doctrine and Operations was down-ranked to a commodore position (Director General Maritime Doctrine and Operations), the Navy still continued to ensure that it was a developmental opportunity for future CMS's. VAdm's Garnett and Murray served as Director General Maritime Doctrine and Operations and VAdm MacLean served as DGMD prior to becoming Comd MARCOM/CMS. Interviews with VAdm's Garnett, Murray, and MacLean.
[28] Canada. Department of National defence. *1990 MARCOM Annual Historical Report,* Annex C C-1.

squadron. Figure 1 describes the naval command and control construct that existed in 1990.

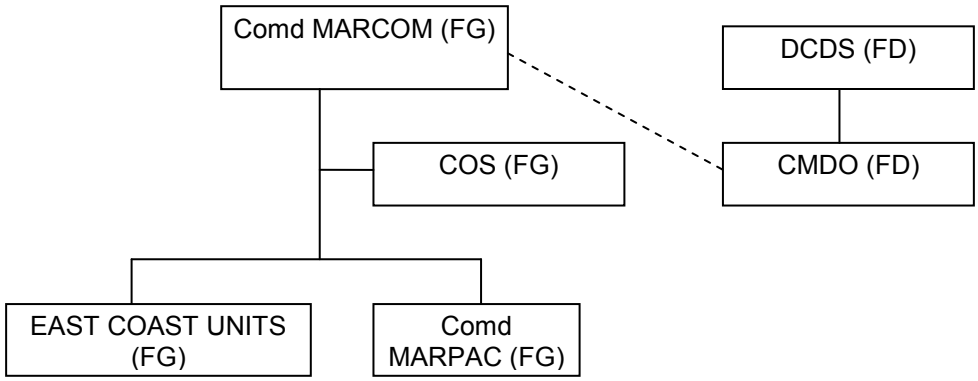

Figure 1: Canadian Navy C2 Architecture 1990

The first catalyst for change in the command and control construct for Maritime Command was Operation FRICTION, the Canadian contribution to expel Iraq from Kuwait in 1990-1991. Although there was a great deal written about the command and control challenges at the operational and strategic level during OP FRICTION, there was no information located that analysed the effectiveness of Maritime Command's command and control. This is not to say however, that there were no significant lessons learned during the Navy's contribution to this operation. As a result of the war, it was recognized that "staff and line functions in MARCOM HQ were often mixed and that many staff officers were multi-hatted with Fleet, Atlantic, Command and other responsibilities."[29] In addition to these shortcomings, there were also a number of other considerations that supported the need to make major changes.

By 1992, the Naval leadership understood that the commanders of commands would be required to move to Ottawa in order to provide immediate advice to the CDS and deputy minister (DM). Although not all senior officers believed that this would

[29] Canada. Department of National Defence. *Maritime Command Headquarters 1992 Annual Historical Report*, 1993, D – 2/3. Note the use of the terms Fleet, Atlantic and Command as opposed to tactical, operational and strategic.

necessarily be in the best interests of the Navy, there existed a sense of inevitability.[30] Another issue was the growing concern on the West Coast that resources were not being distributed "equitably" between the coasts, particularly in light of the post cold war strategic realities.[31] Finally, it was also evident that delivering three new classes of ships, decommissioning ships, and developing plans to deal with significant funding cuts would be a tremendous challenge for a single headquarters. Taking all of these various considerations into account, the decision was made to create a Maritime Atlantic (MARLANT) formation level headquarters. The new headquarters separated line and staff functions, established symmetry on the coasts, adopted the continental staff system, would deploy as an operational level joint force headquarters if required, and it would facilitate an easier transition of Comd MARCOM to Ottawa, if and when ordered.

As a result of a number of successive budget cuts and downsizing, there were no additional resources available to create an additional layer of headquarters. Not only were resources significantly constrained, but there was also political pressure to reduce the overall number of general and flag officers (GO/FOs) in the CF which had significant consequences for the Navy.[32] In the summer of 1992, NDHQ down-ranked the DCDS position to RAdm/Major General (MGen) and established the Chief of Force Development (CFD) as a RAdm/MGen. This in turn resulted in the down-ranking of the three RAdm/MGen environmental Chiefs of Doctrine and Operations. As a result, the Director General Maritime Doctrine and Operations, a commodore, became DG Maritime Doctrine and reported to CFD as the naval officer responsible for force development.

Unfortunately, the Navy was not authorized to transfer the RAdm billet to establish Commander MARLANT. As a result, there was a requirement to manage the

[30] Interviews with previous CMSs.
[31] Interviews with previous CMSs.
[32] Interviews with previous CMSs.

creation of MARLANT within existing naval resources. In order to establish symmetry with the west coast, the RAdm COS position was down-ranked to commodore and used to establish Comd MARLANT. The commodore position used to fill MARCOM COS was achieved as a result of de-activating Commander Canadian Fleet and down-ranking the COS Operations. As the MARCOM COS was now a commodore, the deputy commander responsibilities were given to Comd MARLANT. [33] This decision was very logical based on the fact that the two headquarters were geographically co-located and Comd MARCOM had no force development responsibilities.

1994 – Naval Transformation at Full Stride

By 1994, the transformation of the Navy from a Cold War ASW centric model to a post-Cold War geo-strategically balanced multi-purpose combat capable fleet was at full stride. The force generation challenges being experienced by the Navy were significant and are best exemplified by the extraordinary efforts of the Commander Canadian Destroyer Squadron 5 (CCDS 5). With a small staff of only 19 personnel (including two padres) CCDS 5 had 12 ships under his command and was triple-hatted as CCDS 5, MARLANT New Equipment and Trials (NET), and MARCOM NET. Superimpose a very controversial and a highly publicized naval Court Martial of a submarine Commanding Officer, force reduction plans, further budget cuts, the Somalia inquiry and a new White Paper, and one gains a better appreciation of the spectrum of leadership challenges that confronted the Navy during this period.

From a command and control perspective, 1994 was an exceptionally turbulent year. At the strategic level the White Paper directed the move of the three environmental commands to the National Defence Headquarters (NDHQ) in Ottawa. In order to best

[33]Canada. Department of National Defence. *Maritime Command 1992 Annual Historical Report* - Annex D D-1/3.

plan for the move, the CF embarked upon the Management Command and Control Re-engineering (MCCR) initiative. The aim of MCCR was to use management theories to transform NDHQ and the CF/DND from a "large complex, cumbersome organization" to a "smaller, less complex and much more efficient [organization] while recognizing that multiple organizational boundaries [would] continue to exist."[34] This was an exceptionally ambitious initiative which was made all the more difficult because of the compressed timelines. Although it was initially assessed that MCCR shaped the evolution of naval command and control, the evidence suggests that it had little direct impact on the commands themselves, other than to establish a personnel limit on the size of their staffs in Ottawa. What actually shaped the evolution of command and control on the East coast, was MARLANT's mini-MCCR initiative which was commissioned at essentially the same time as the MCCR.

Faced with significant decreases in resources, both announced and projected, Commander MARLANT commissioned the Regional Support Structure (RSS) study in August 1994. The aim of the study was "to develop non-traditional, conceptual models that would efficiently provide operational and regional support services required by the MARLANT CFOO [Canadian Forces Organization Order]."[35] What the report revealed was not surprising considering the infancy of the organization. One of the most significant criticisms of the organization was the level of duplication that existed between MARCOM, MARLANT and CFB Halifax. The report observed:

> "MARLANT staff are also required to process and/or review Base/Station/Unit reports and other staff submissions prior to forwarding them to the Commander or higher authority for approval. This review is often performed by individuals junior in rank to the originator and with less experience. In addition, several

[34] Canada. Department of National Defence. *Relationships and Resultant Responsibilities & Accountabilities in an Integrated CF/DND* 4/2/97 MCCRT ppt presentation slide 3 brief to DMOC.
[35] Canada. Department of National Defence. *MARLANT Regional Support Structure Study – Report – Executive Summary* MARL: 1901-RSS (SP OFFR) 13 January 1995, I – 2/3.

> MARLANT staff positions are "double-hatted" with MARCOM positions. Thus, individuals in fact staff correspondence to themselves or simply forward it untouched to the higher headquarters or base for action as required."[36]

It was also noted that there was significant overlap between the base and MARLANT with staff often asking "Who's in charge?".

It is useful to quickly examine the evolution of MARLANT, as many of the lessons would be re-learned three years later. The RSS report was distributed for comment with the recommendation that there should be an immediate amalgamation of MARLANT HQ with CFB Halifax. The Base Commander CFB Halifax had his senior staff review the report. He took their comments and placed them under a covering letter which did not indicate whether he supported or disagreed with the proposal. The feedback provided by his staff ranged from "[t]here is no quibbling with the overall basis of facts nor with the intention of the recommendations."[37] to "[t]he recommendations in the Kerr Study [RSS] are based on simplifications, incomplete and unthorough study, inaccurate assumptions and are therefore, not supportable."[38] Not surprising from the polarity of the responses, the recommendation to amalgamate the two units was not supported. However, the RSS did successfully streamline and integrate the support functions within the Halifax-Dartmouth area by approximately 1996, four years after the HQ was created and approximately 2 years after the RSS study was initiated.

Concurrent to these studies, MARLANT initiated immediate steps to develop joint command expertise during Maritime Command Operational Training (MARCOT) exercises. One of the outcomes of the exercises was the recognition that MARLANT and MARPAC had considerable responsibilities that would prevent them from deploying as a Joint Force Commander. With the realization that the formation commanders would not

[36] *Ibid*., 3/18.
[37] *Ibid*., E1/1.
[38] *Ibid*., H-3/3.

deploy, it was appreciated that for the first time since unification, the Navy no longer had a "deployable" flag officer, as the commodore fleet commander billet was sacrificed during the creation of MARLANT.

In addition to the major change initiatives taking place at NDHQ and the formations, 1994 also witnessed significant change at the tactical level. It was during this year that the Navy abandoned the destroyer squadron concept and adopted the concept of Maritime Operation Groups (MOGs). Using MARPAC as an example, the responsibilities of the MOGs were as follows:

> "MOG TWO retained control of all operational surface units with no change of staff. MOG FOUR was reduced to the small vessels PBs [patrol boats], YNGs [gate vessels] and SBU [small boat unit]. MOG SIX was the largest organization with new responsibilities for all surface ships not yet operational as well as NOTC [The Naval Officer Training Centre, CFFS [Canadian Forces Fleet School] Esquimalt, and all training responsibilities for MARPAC."[39]

What is particularly significant about this reorganization is the importance of keeping training in the direct chain of command. Unfortunately, despite the benefits of training being in the direct chain of command, it would only remain under the aegis of Comd MOG Six for less than a year, before it was transferred to a staff officer in MARPAC HQ. Submarines would remain formed in a squadron until 1996. Once the squadron was disbanded, the submarines were placed under the command of the Comd MOG Five in Halifax.[40]

1994 is also significant because of the introduction of the concept of the Canadian Task Group (CATG) in the White Paper. The CATG concept was a major departure from the Cold War concept of deploying under NATO command and control for

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[39] Canada. Department of National Defence. *Maritime Forces Pacific Headquarters Annual Historical Report 1994,* 19/61.

[40] For a more thorough examination of the factors that led to the disbandment of the submarine squadron see Clark, M.E. (Commander, CF) *Court martial of Lieutenant-Commander Dean Marsaw: lessons on culture, leadership, and accountability for the CF*. JCSP: Master of Defence Studies Toronto: Canadian Forces College, 2007.

predominately ASW missions. OP FRICTION reinforced the fact that the future security environment was uncertain and it was increasingly evident that the CATG concept was essential for the Navy to be able to successfully deploy to contribute to the less regimented, more complex coalition operations. The White Paper provided governmental approval of the CATG concept. Once approved, the detailed force development work of defining the CATG concept was assigned to the Canadian Forces Maritime Warfare Centre (CFMWC).

In 1994, the Navy also demonstrated its commitment to the Total Force concept and established a formation level headquarters in Quebec City. Commander Naval Reserves (Comd NAVRES) was established as a reserve commodore who was supported by a regular force Capt(N) deputy commander. It is clearly a testimony to the leadership of the Navy, at all levels, regular force and reserve, that while all these significant changes were taking place, it did not interfere appreciably with its ability to excel on operations enforcing United Nation's (UN) sanctions against the Former Republic of Yugoslavia in the Adriatic, operations off the coast of Somalia, and the enforcement of UN sanctions against Haiti.

1995-1997 – Major Changes continue apace….

Between 1995-1997, the CF was fully engaged in MCCR and Comd MARCOM was taking the necessary steps to move to NDHQ. From a force development perspective, the most significant event during this period occurred in April 1996. As was indicated previously, DGMD, now a commodore still working in Ottawa, was responsible to CFD and responsive to Comd MARCOM. However in preparation for the move of MARCOM HQ to Ottawa, DGMD was re-named N5 and incorporated into the

MARCOM HQ organization reporting to Comd MARCOM."[41] This was particularly significant because it was the first time since unification that the Comd MARCOM was directly responsible for naval force development.[42]

At the formation level, each of the coasts was attempting to work through the challenges with the new MOG concept and enhanced anti-air warfare (AAW) capabilities. In 1995, an AAW conference was held at CFMWC which generated a report entitled "Strengthening the Shield". The report made 69 wide-ranging recommendations and was reviewed by NDHQ, MARCOM and both Formations.[43] It was also evident that there were challenges with the recently introduced MOG concept. In 1996, the Hendel report recommended that "the much more capable fleet of today and tomorrow will require a single focal point of leadership, management and responsibility in the form of a Flag Officer *with a small staff drawn from the current MOG organizations."*[44] This report resonated with the leadership of the day, as the analysis very much supported what many flag officers had considered an operational requirement since the deletion of the Commander Canadian Fleet in order to create MARLANT. It was their assessment that a deployable commodore fleet commander was key to the success of the CATG concept. Therefore in 1997, commodore fleet commanders were established in MARPAC and MARLANT. As the Fleet Commanders would sail in the IROQUOIS Class destroyers, the decision was also made at this time to move the Capt(N) sea going billets from the supply ships to the destroyers to act as flag captains.[45]

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[41] Canada. Department of National Defence. *MARCOMHQ 1996 Unit Historical Report,* G-1/15.
[42] Canada. Department of National Defence. *Organization Concept – Command Structure.* F 1901-4370/0(DME) 27 September 1967. Annex K.
[43] Canada. Department of National Defence. *MARCOMHQ Annual Historical Report 1995 – Commanders Sitrep 002/95*, 9/11.
[44] Note: the extract from the Hendel report is taken from the following source: Canada. Department of National Defence. *Canadian Fleet Pacific Headquarters Organizational Review*. Conducted by Bindernagel Consultants Inc. 15 September 2000, 7/45.
[45] Interviews with previous CMSs.

The establishment of the two commodore fleet commanders on the coasts was a remarkable achievement by the naval leadership. It is interesting to reflect that while the rest of the CF was consolidating headquarters between 1990-1997, as a result of resource constraints and MCCRT, the Navy had actually grown by four headquarters. The fact has to be reinforced that these headquarters were established as a result of valid and legitimate operational requirements as was amply proven in 2001. It is inconceivable that the Navy would have been able to support Operation APOLLO, Canada's contribution to the war on terror, if it had not been for the vision and leadership to implement this new construct. However, in a resource constrained environment, if resources are increased in an organization in one area, there needs to be a corresponding decrease made in others.

Whether consciously or not, the evidence suggests that the area in which the Navy was prepared to make sacrifices was in force development and training. Arguably the day that the Navy command and control architecture became the most out of balance between force generation and force development, was on 31 July 1997. On this day, the "new" Director General Maritime Doctrine and Operations division stood up in NDHQ. In this new construct, DGMDO had force generation and force development responsibilities which automatically meant there was less of a focus on force development. The challenge was further exacerbated as DGMDO was also double-hatted as the Assistant Chief of the Maritime Staff (Asst CMS). Therefore, in a period of seven years, the Canadian Navy went from having the Comd MARCOM supported by a RAdm COS/Deputy Commander (FG) and a RAdm responsible for force development (Chief of Maritime Doctrine and Operations), to establishing the Chief of Maritime Staff (CMS) in Ottawa who was supported by a single commodore responsible for certain phases of force generation, force development, and the transactional demands of NDHQ.

1998-2005 – Validating the Construct

After a year in this command and control construct it became clear that there were significant concerns with respect to the specific roles and responsibilities at the fleet, formation, and command levels. There were also issues with the organizational constructs of the individual staffs. This was particularly evident in Maritime Staff HQ (MSHQ), CMS's staff in Ottawa, where the imbalance of focusing on today and tomorrow was most apparent.[46] In an effort to rectify some of the perceived deficiencies at the MSHQ level, an extensive study was conducted by BMB consulting services. The aim of the study was to "validate the current structural design of and functions carried out by MSHQ to help determine the optimal organizational construct required to achieve the Chief Maritime Command mandate within the NDHQ milieu."[47] The study was very comprehensive and it involved consultation with over 70 MSHQ staff members, senior formation commanders, external stakeholders, and Consulting and Audit Canada.[48]

The MSHQ organizational validation report (March 1999) made a number of key recommendations. The first recommendation was to separate Asst CMS from Director General Maritime Doctrine and Operations and to make DGMDO a separate division led by a commodore. The second recommendation was to establish Asst CMS as a RAdm.[49] Both of these recommendations would better re-establish the force generation/force development balance and provide Asst CMS the authorities and responsibilities necessary to effectively perform his duties. Unfortunately, the recommendations were only partially implemented. The duties of Asst CMS and Director General Maritime Doctrine and Operations were split, however, Asst CMS remained a commodore. The Director

[46] Canada. Department of National Defence. *MSHQ Organizational Validation Project – Final Report*, 12 March 1999. Submitted by BMB Consulting Services Inc., 5.
[47] *Ibid*., 4.
[48] *Ibid*.
[49] *Ibid.,* 23.

General Maritime Doctrine and Operations organization was made a separate division and re-named DGMD, but it was led by a Capt(N) as opposed to the recommended rank of commodore. These changes alleviated some initial force development deficiencies. However by 2000, it was recognized that the changes had not solved the problems as MSHQ was still challenged to focus on force development activities.

In order to rectify this situation and try to resolve some significant Human Resource (HR) challenges the Naval Headquarters Review (NHQR) project was commissioned. The aim of the project was to look at MSHQ and the other headquarters in an effort to delineate responsibilities, identify duplication, and consider current processes.[50] The Naval Headquarters review project final report was provided in June 2002 which provided a number of recommendations and considerations to improve efficiencies across the Navy.

The NHQR report contained a number of excellent recommendations but unfortunately, their timing could not have been worse. In the summer of 2002, the Navy was operating at virtually maximum capacity to sustain Op APOLLO. There was not only the fatigue associated with sustaining the operation, but arguably by 2002, the naval institution was suffering from acute change fatigue. The Army had reached this point by 1999, and if the Navy was not there in 1999 it must have been by 2002 as a result of the "revolution" in its command and control construct.[51] There was therefore very little capacity, if any, to embark upon a series of further changes, particularly considering that

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[50] Canada. Department of National Defence. *Naval Headquarters Review Project – Final Report,* 28 June 2002. Submitted by Lansdowne Technologies Inc. and BMB Consulting Services Inc.,5.

[51] Canada. Department of National Defence. *Communications Approach. Subject: Land Forces Planning Guidance 2000 (LFPG 2000) Designing the Army of Tomorrow.* Date 23 Sep 99. The 1990s were exceptionally demanding for all of the services. This was as a result of an increase in operational tempo (Balkans/Middle East for the Army, Navy, Air Force and other UN operations for each of the services such as Africa, Somalia, and Haiti) as well as reacting to the change agenda from successive budget cuts and organizational reviews. As a result, both the decreased resources and increased operational tempo caused change fatigue in the Navy.

the coasts were still desperately trying to sustain operations while adapting to the introduction of the fleet HQs which also dated back to 1999.

At the formation/tactical level the challenges were very reminiscent of the issues associated with the stand up of MARLANT. Once again the question was; "Who's in Charge?" In April 1999, the Commander Canadian Atlantic Fleet (CANFLTLANT) wrote a document outlining the issues. He indicated that:

> "[t]he introduction of the fleet commander, while carefully considered, was implemented without an agreed plan for the realignment of Formation responsibilities and accountabilities. To complicate matters, the role of various staffs for operations and readiness were altered drastically…(refers specifically to MARLANT but equally applicable to MARPAC). Each change produced its own conclusions and each made organizational changes. There was, however, no consolidated update of organizational functions, accountabilities and responsibilities. None of the governing documents, CFOOs, MARCORDs, MARLANT/PACORDs, the Naval Engineering Manual, the Naval Maintenance System Manual, reflect current organizations. A final complication was the lack of a common approach between MARLANT and MARPAC." [52]

The challenges were given considerable attention by the senior leadership and in July 1999, CMS signed off on the fleet commander's Terms of Reference (TOR) and provided direction that full implementation would be effective by the summer of 2000.[53]

Validation efforts of the command and control construct continued in the formations for several years. In 1999, MARPAC initiated a functional review and in 2000, MARLANT initiated the Process Improvement Project. In 2000, the Canadian Fleet Pacific Headquarters organization review was conducted by Bindernagel Consultants Inc. In 2001, Comd Canadian Fleet Pacific (CANFLTPAC) replied to the Bindernagel report. In 2003, MARPAC provided CMS a letter outlining the CANFLTPAC organization. In 2004, MARPAC completed a MARPAC Organization

[52] The Fleet Commander's comments were extracted from the following study: Canada. Department of National Defence. *Canadian Fleet Pacific Headquarters Organizational Review.* Conducted by Bindernagel Consultants Inc. 15 September 2000, 8/45.
[53] Canada. Department of National Defence. *Fleet Commanders' Terms of Reference*, MARC: 1000-25 (A/CMS) 20 July 1999.

review and validation – Final report. By 2004, the formations had resolved many of their command and control challenges.

As the difficulties on the coast were being resolved, the shortcomings with respect to MSHQ were becoming more apparent. This was particularly evident as a result of the fire in HMCS CHICOUTIMI in 2004. After the tragic incident in CHICOUTIMI, MSHQ was exceptionally busy dealing with post incident activities. Unfortunately, there was insufficient capacity on the staff to resource all of the activities. As a result, personnel had to be taken from projects (force development) to staff the board of inquiry and the quick reaction team. Although there were impacts on a number of projects, the consequences are difficult to quantify. As a result, there are those who would argue that the MSHQ was able to successfully weather the storm during this period. However, if an equally significant incident were to take place today, the impacts of using project staff could be catastrophic for the Navy. The fact is that the project offices are minimally manned as a result of personnel constraints and each of the projects, JSS, AOPS, HCM, and destroyer replacement, are on extremely tight timelines.[54] There is therefore no spare capacity in MSHQ/NDHQ to react to a significant incident such as the fire in CHICOUTIMI.[55]

With the formations' command and control challenges close to resolution and the MSHQ issues becoming more acute, the CF embarked upon transformation in 2005. Thus, any efforts to amend the Navy's command and control architecture during transformation would have been premature. One of the outcomes of transformation was the double-hatting of Comd MARPAC and Comd MARLANT as Commanders of Regional Joint Task Forces (RJTF). These additional responsibilities also put further

[54] Interview with VAdm MacLean.
[55] Interview with VAdm MacLean.

stress on the Navy's command and control architecture by increasing the formations focus on additional non-naval related responsibilities.

After 18 years of evolution, the Canadian Navy command and control organization has evolved into the construct provided in figure 2.

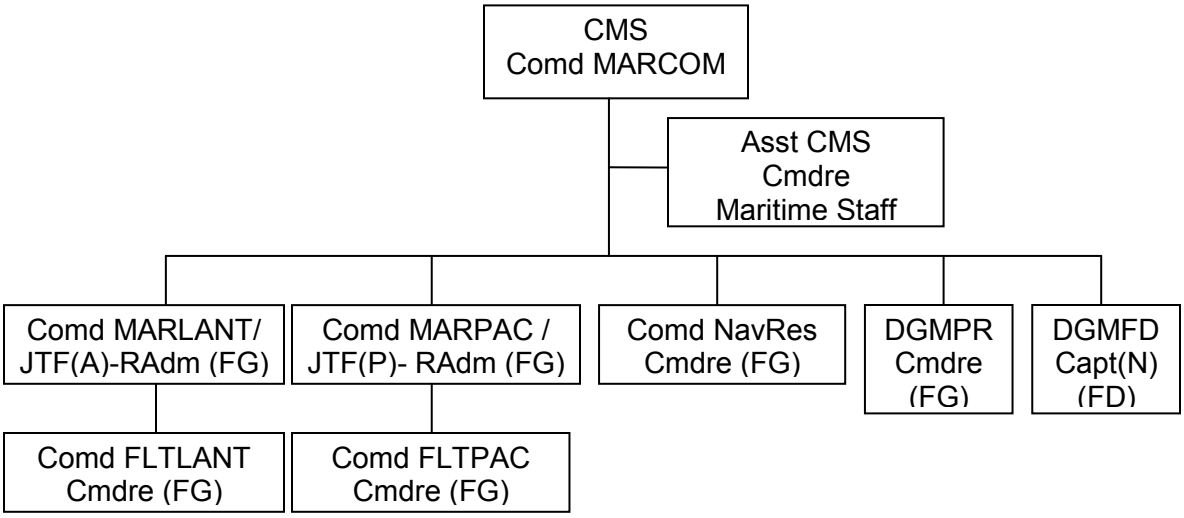

Figure 2: Canadian Navy C2 Architecture 2008

CMS is supported by Asst CMS, a commodore, who is an advisor on many issues and is responsible for the resource management of the Navy. Both formation Commanders are RAdms who are responsible for phase 4 force generation, training to basic mission readiness qualifications, and phase 5 force generation, training to operational readiness qualifications. The commodore fleet commanders also share in phase 4 and 5 force generation activities and deploy on CF operations. The remaining phases of force generation, HR resources requirements, intake, training to basic occupation qualification, and continuing professional development training/education, are the responsibility of DGMPR who is also responsible for operations. Force development is the responsibility of DGMFD a Capt(N). There has also recently been the creation of the Director General Maritime Strategic Management position who reports to the Asst CMS.

As a result of significant force generation pressures during the last 18 years, the current naval command and control construct has changed significantly since 1990. These changes have resulted in a greater focus being placed on force generation phases 4 and 5 at the expense of the other phases of force generation (individual training etc) and force development. If the Navy wishes to increase its chances of success to deliver JSS, AOPS, HCM, cyclone, and a new surface combatant, a balance in command and control will need to be restored and the principles of effective C2 applied. An examination of other Canadian and naval C2 models would be useful to determine how best to achieve this balance.

The Canadian Army

The early 1990s were also a significant transformational period for the Army. In the wake of the Cold War the army, then known as the Land Force, embarked upon a complete restructuring. One of the most significant aspects of the new construct was the adoption of the regional command framework. There were numerous advantages to this concept which included reducing the span of control at the strategic level, decentralizing responsibilities, and the elimination of a number of subordinate headquarters.[56] The changes were so significant that the commander of Force Mobile Command, Lieutenant-General J.C. Gervais noted in December 1991 that "The Army is undergoing what can be described as its most significant transformation since integration and unification."[57]

The additional budget cuts of the 90s required the army to reorganize again. In addition to the same key challenges experienced by the Navy, the 1994 White Paper and MCCRT, there were a number of army-specific factors which further reinforced the need for change. The factors included the creation of the 1st Canadian Division, Armed Forces

[56] Andrew Godefroy, "Chasing the Silver Bullet: The Evolution of Capability Development in the Canadian Army." *Canadian Military Journal*, Spring 2007, 59.
[57] *Ibid*., 60. LGen Gervais's quote is extracted from this article.

Council's approval of the requirement for a permanent, deployable CF Joint Headquarters, the closure of several large army bases, and anticipated major structural changes to the Army reserves.[58]

In April 1999, the Army commander signed a document entitled "Promulgation Letter – Land force command and control concept" which was implemented shortly thereafter. The command and control structure adopted by the army in 1999 provided the Army its "backbone and nervous system".[59] In this document, CLS was very specific as to who conducted force generation and force employment activities. "Command and control elements are either static or deployable. The static elements provide a fixed framework for force generation and the command of operations at the strategic and operational levels. Deployable elements are part of operational forces."[60] Since the implementation of this new command and control concept there have only been minor changes. Figure 3 illustrates the Army's current C2 organization.

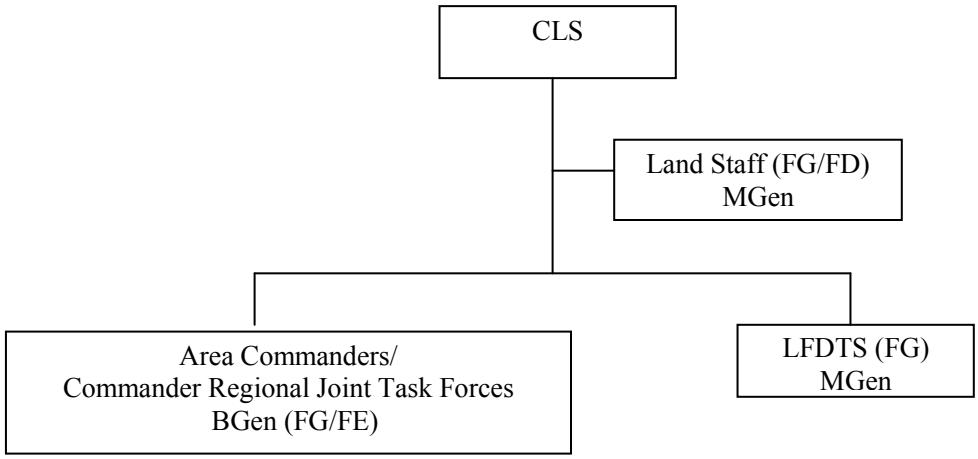

Figure 3: Canadian Army C2 Architecture 2008

[58] Canada. Department of National Defence. *Promulgation Letter – Land Force Command and Control Concept,* 1901-1 (Comd) 18 April 1999, 1- 2/11.
[59] *Ibid*., 5/11.
[60] *Ibid.*

The Army's current command and control construct is being validated on a daily basis as a result of their extraordinary efforts generating forces for operations in Afghanistan. CLS remains both a commander and an advisor to the CDS. He continues to be supported by a MGen ACLS who is responsible to CLS for the land staff. The land staff is divided into two organizations, COS Operations, led by a Brigadier General (BGen) who is responsible for the Army's force generation activities and COS Strategy, also led by a BGen, who is responsible for the Army's force development activities. The Land Force Area Commanders, BGens, are also double-hatted as regional joint task force commanders. As a result, they are responsible to Canada Command for force employment of forces assigned and to CLS for the force generation of their assigned units. In addition, CLS is also supported by a MGen who commands the Land Force Doctrine and Training System (LFDTS). Comd LFDTS is considered by the army to be a strategic level organization that is "responsible for overall command and control of the Army's training system and the long-range planning of Army training and doctrine development, including initiatives in simulation and digitization."[61]

The Army model is well balanced between providing force generation and force development advice to CLS. In addition, having a MGen as Comd LFDTS ensures that the BGen area commanders train to a single standard which avoids the Canadian Navy's "agree to disagree" philosophy which occurs when the coasts cannot agree on training standards. Having a deputy commander in Ottawa is also extremely advantageous as it allows CLS greater flexibility to travel knowing that the Army's interests will be represented in his absence by a MGen. The Army model has some distinct advantages that will be further examined in the comparison and options analysis sections. From a

[61] Canada. Department of National Defence. *Backgrounder Land Force Doctrine and Training System.* BG.Lforce developmentTS April 23, 2004.

Canadian context perspective, the Canadian Air Force is also an equally useful C2 model to consider.

The Canadian Air Force

The last two decades have also witnessed a significant evolution in Air Force command and control. When Air Command was created in 1975, its command and control architecture was based on centralized control with decentralized execution. Essentially the Air Force was structured along functional lines with operational forces being divided into various "groups" according to the fleet's primary role. The exception was 14 Training Group which was established in 1990 to address the Air Force's force generation training concerns. The reason for the creation of this group was because it was becoming "increasingly apparent…that training matters were not receiving the staff attention that they required".[62] Each of the groups had their own headquarters and by 1990, Air Force command and control had evolved into a very mature construct.

By 1992, the Air Force had realized that the significant force structure reductions would require a change in the overall command and control construct. In 1993, the Air Force introduced wing formations. Although initially intended to be an organizational expedient, the wing concept eventually evolved into a distinct level of command.[63] One of the added benefits of being a level of command was that it addressed the senior Air Force leadership's concern about the bases' lack of involvement in operations.[64] The objective was to have a Wing commanded by a single individual who would be both the Wing Commander (WComd) and Base Commander. The advantage of this construct was that the WComd would have clear authority, responsibility and accountability for both

[62] A. English and J Westrop. *Canadian Air Force leadership and command: The Human Dimension of Expeditionary air force Operations,* (Trenton: Canadian Forces Aerospace Warfare Centre, 2007), 59.
[63] *Ibid*., 63.
[64] *Ibid*., 64.

the operational and support functions required to generate air forces. Each of the wings were then assigned to either Fighter Group, Air Transport Group, Maritime Air Group, 10 Tactical Air Group or Air Command Headquarters. As a result of budget cuts, 14 Training Group was no longer considered affordable by the Air Force and training became the responsibility of a staff officer in Air Command HQ.[65]

Within a year of establishing this new construct, MCCRT was initiated. Arguably the impact of MCCRT was far more significant on the Air Force than the Army and Navy. The Air Force disbanded the four group headquarters and consolidated them into an "operational-level" headquarters in Winnipeg called 1 Canadian Air Division (CAD). Commander Air Command became the Chief of the Air Staff (CAS) and moved to Ottawa to join CMS and CLS. Initially there were challenges with respect to the new command and control construct.[66] As 1 CAD had essentially the same organization as the Air Staff, there was confusion over responsibilities and authorities between the two commanders. At the time it was "unclear whether 1 Cdn Air Div HQ [was] intended to be an "operational-level" headquarters or whether it [was] an "operational" headquarters in the sense of a headquarters that directs the conduct of operations."[67] Transformation provided the answer to this question when the two "operational-level" headquarters were established and 1 CAD was appointed as the CF's Air Component Commander (ACC). The Air Force command and control architecture is depicted in figure 4.

[65] *Ibid*., 65.
[66] *Ibid*., 70.
[67] *Ibid*.

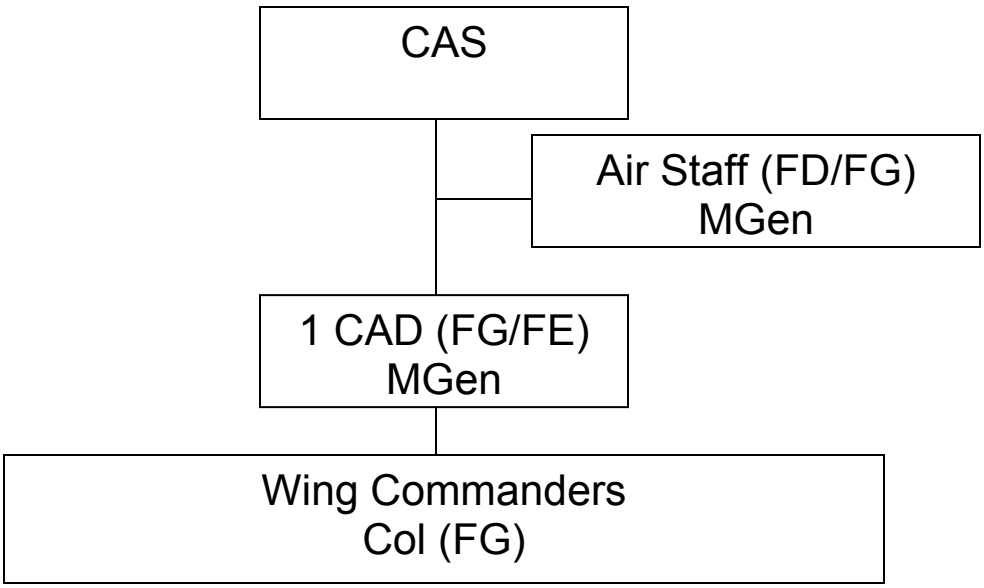

Figure 4: Canadian Air Force C2 Architecture 2008

CAS has analogous responsibilities to CMS and CLS. The Air Force has two MGens reporting to CAS; ACAS and Commander 1 CAD. ACAS is the deputy commander of the Air Force who:

> "is charged with the implementation of approved Air Force policies, the direction of Air force development, the monitoring of Air operations, the supervision of Air personnel planning and development, the control of Air resources, Air Reserve strategic development, and Air Public Affairs. The ACAS supervises and monitors the overall activities of the Air Staff in order to provide sound Air Force advice to the CAS, DND and the Government."[68]

Commander1 CAD is responsible to CAS for all phases of force generation and to Comd Canada Command and Comd CEFCOM for FE as the Air Component Commander. Comd 1 CAD is supported by each of his WComds for force generation and he has Regional Air Component (RACE) cells established in the Regional Joint Task Force HQs to support their force employment activities as required.

The Canadian Air Force model is similar to the Army model in that it is well balanced from a force generation and force development perspective. Similarly, all

[68] Canada. Department of National Defence. *ACAS TOA-2001(2)* 1.

training standards are the responsibility of a MGen which, once again, avoids the "agree to disagree" phenomena. The deputy commander is also established in NDHQ which accrues a number of advantages. There are therefore significant advantages worthy of consideration in both the Canadian Army and Air Force models. In an effort to demonstrate that these considerations are equally relevant in a naval context, the command and control of the Royal Australian Navy (RAN) will be examined as a model that has also established balance across all phases of force generation and force development.

The Australian Navy

There are a number of significant similarities between the Canadian Navy and the Royal Australian Navy that make it a very useful comparison for the purposes of this paper. The sizes of the two navies are comparable both in terms of the physical numbers of sailors and combatants.[69] In addition, both navies also share the same challenges with respect to having their fleet split in two geographical locations greater than 2000 miles apart.

There is one significant difference that provides a tremendous advantage to the RAN from a command and control perspective. The RAN is extremely fortunate to have exceptional breadth and depth in their flag officers. To best put this in perspective, consider the fact that the CF has a regular force strength of 64,000 personnel supported by a general and flag officer corps of approximately 70, of which currently only 15 are regular force flag officers (two VAdms, five RAdms, and eight Cmdres). The smaller

[69] The Canadian Navy has 21 major and 12 minor fleet units whereas the RAN has 23 major and 20 minor fleet units. It is recognized that there are some functional distinctions. For example, the RAN has a Fleet Air Arm, hydrographic and amphibious capability. With respect to personnel, the Canadian Navy has a regular force strength of approximately 13,450 personnel (determined by adding the Navy's establishment to an equitable percentage of the personnel required to staff CF support functions). The RAN has 12,644 regular force personnel in accordance with 2006-2007 reports.

Australian Defence Force (ADF) of 51,200, has twice as many general and flag officers, 153, of which the RAN has 48 flag officers (two VAdms, ten RAdms, and 36 Cmdres).[70] The RAN is therefore quite fortunate to have considerably more flag officers to distribute throughout the Navy and the Australian Defence Force.

The RAN command and control architecture from a force generation, force employment, force development perspective is quite mature. Their doctrine articulates that "[t]he effective organisation of the Navy is fundamental to its efficiency and its capacity to accomplish its missions. The objective of the RAN's current structure is to align the entire Service and its supporting agencies into a system which is focused on the delivery of *combat capability*."[71]

At the strategic level, the Chief of Navy (CN) sets the strategic requirements and priorities for the Australian Navy. He is supported by a RAdm Deputy Chief of Navy (DCN) who is responsible to the CN:

> "for developing and coordinating Navy capability; providing strategic personnel, operational and training guidance; management doctrine and structure; overseeing Navy resource management as Group Budget Holder; developing national and international relations; overseeing security policy, Occupational Health and Safety; environmental management and the public relations/information plan; strategic resource planning and management; developing strategic plans for Navy Information Services."[72]

In order to achieve these responsibilities he is supported by a number of directors general that are responsible directly to the DCN.

At the formation level, the RAN has a single RAdm fleet commander who is responsible to the CN for force generation, as the commander and operator of the fleet.

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[70] Australia. Government Department of Defence. Defence Annual Report 2006-07 Volume 1 Deparment of Defence. p. 217 Note: there are 1 VAdm, 2 RAdms, and 12 commodores in Navy positions. The rest of the flag officers are in joint positions with the exception of a RAdm in the Attorney General's department.
[71] Australia. Government Department of Defence, *RAN Doctrine 1 2000,* 81.
[72] Australia. Government Department of Defence, *Naval Headquarters Functional Directory* current as of 3 Dec 07.

The fleet commander is also responsible to the Commander Australian Theatre for force employment, as the single Naval Component Commander (NCC). [73] Similar to the Canadian Army's LFDTS, the RAN also has a RAdm Commander Australian Navy Systems Command (CANSC) who is responsible for delivering all functions related to naval personnel and training, naval certification, safety and acceptance, command of establishments, naval platforms and weapons systems, including command, control, communications, intelligence and electronic warfare.[74] In summary, the RAN has a RAdm responsible for force development at the strategic level (DCN), a RAdm responsible for force employment and force generation at the operational level (Fleet Commander), and a RAdm who supports force generation and force development activities (CANSC). The RAN command and control construct is provided at figure 5.

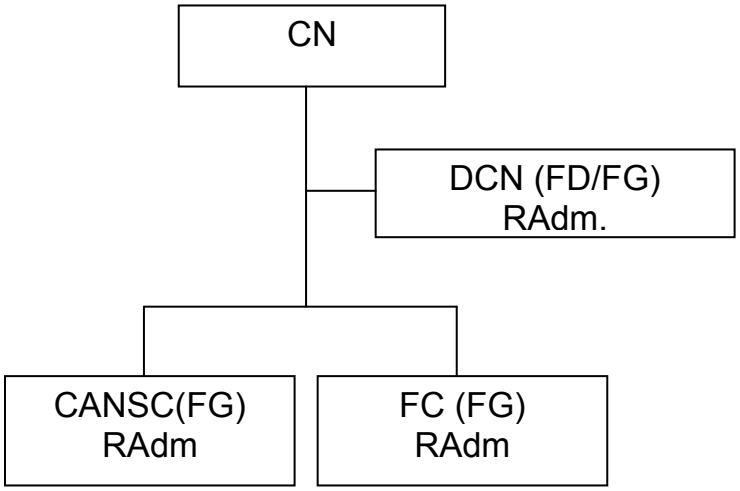

Figure 5: Royal Australian Navy C2 Architecture 2008

[73] *RAN Doctrine 1 2000,* 83. Note that the Fleet Commander commands Sea training and coordinates cross-FEG operational integration.
[74] Australia. Government Department of Defence. *RAN Doctrine 2*, 32. Note the Fleet Commander "delegates authority through three principal subordinates within Maritime Headquarters (MHQ) and seven subordinates located outside MHQ: the Deputy Maritime Commander [XO], Commodore Flotillas [Ops], the Chief Combat Support Group [Logistics], and the seven Force Element Group Commanders [capability managers]." P. 34. Note CANSC has 4 commodores working for him to manage these responsibilities.

With a solid understanding of the four different models, a comparison of them against the principles of an effective command and control architecture will highlight their strengths and weaknesses which will assist in options analysis.

MODEL ANALYSIS

Mission command – empowering subordinates and putting people first

Empowering subordinates and instilling mission command is a fundamental tenet espoused by the CDS in his principles to guide Transformation. In many respects this is a principle that lies at the heart of the Canadian Naval tradition. For decades the Navy has deployed ships on independent operations or as an independent unit on multinational operations. This is a strength that the Canadian Navy shares with both the Canadian Army and the RAN. Mission command is particularly enshrined in army doctrine as well as RAN doctrine. In the RAN doctrine, section 8 is entitled The Most Important Factor. The first bullet in the section states: "People generate Navy capabilities and are THE MOST IMPORTANT FACTOR."[75] Further evidence of their support to this principle is captured by the fact that their doctrine provides an example of a leader who was one of the earliest proponents of the concept of mission command: "The crowning example of leadership remains that of Lord Nelson…"[76]

Evidence of the Canadian Air Force's recognition of the new concepts espoused by Sharpe/English is found in *Strategic Vectors: The Air Force Transformation Vision.* Although Sharpe/English are referenced in the document, the priority of the Air Force is Mission First as opposed to people first. *Strategic Vectors* states: "This future aerospace force will be built on eight attributes: five that characterize our mission first precept, and

[75] *RAN Doctrine 1*, 75.
[76] *Ibid*., 77.

three that characterize the people who are our foundation and future."[77] Therefore, three of the four models reflect the principle of empowering subordinates and putting people first.

***Effective command* – demands a balance of competencies, authorities and responsibilities**

In order to use this principle to determine the effectiveness of each of the command and control models it would be necessary to apply Pigeau/McCann's competencies, authorities, responsibilities (CAR) matrix to each of the commanders from tactical units through to the ECS. Although clearly beyond the scope of this paper, a broader application of the model can prove useful.[78] Rather than focus on competencies of individuals, an examination of the authority/responsibility relationships of key commanders and staff positions that responsible for force generation and force development would prove very useful. Having an understanding of these relationships will permit the Navy to make the necessary adjustment to their C2 architecture as the first steps to ensuring effective command.

Pigeau/McCann state that the factors which apply to responsibilities are extrinsic and intrinsic responsibility. Those factors that apply to authorities are legal and personal authorities.[79] When authority exceeds responsibility Pigeau/McCann refer to this as a "dangerous" relationship. Where authority and responsibility are equal it is a "balanced" relationship and when responsibility exceeds authority it is an "ineffectual" relationship. Both authorities and responsibilities are further sub-divided into a number of other

[77]Canada. Department of National Defence. *Strategic Vectors- The Air Force Transformation Vision*. (DND: 2004), 51.
[78] This was demonstrated in Col Little's Advanced Military Studies Course Paper entitled *Mason Crabbe – Worth Another Look?*. In his paper he used the CAR matrix to conduct a comparison of the formation level headquarters of MARPAC/MARLANT, 1 CAD, and the Army's area commands to determine their effectiveness providing command and control over routine operations.
[79] Pigeau/McCann, 9-14.

considerations, some of which reflect the personality of the individual in command. Therefore, the aim will be to avoid assessing personal attributes of individuals and to focus on the tangible aspects of the various relationships that the Navy can adjust.

The initial relationships to be considered are those that support the six phases of force generation. As was indicated previously, the RAdm formation commanders are only responsible for phase 4 and 5 force generation activities. However, they have significant influence over the other aspects of force generation. They are responsible for the resource distribution to the schools, establish manning priorities on the coast, determine the level of representation to support force generation activities, and the commanding officers (CO) of the schools report administratively to their staff officers. In addition the formation commanders have tremendous personal authority as a result of their rank and influence. With respect to the phases 1-3 and 6 of force generation, the commanding officers of the schools rely on formation commanders for their resource allocations as opposed to the responsible MSHQ authorities, compete for manning priority with the fleet as determined on the coast, and as commanders they have low personal authority in comparison to a RAdm formation commander. Therefore, the force generation authority/responsibility relationships would be assessed as ineffectual from the MSHQ/schools perspective and dangerous as it pertains to the formation level, according to the terminology and concepts provided by Pigeau/McCann.

With respect to force development, ten years of study has amply documented that there is an inappropriate balance in authorities and responsibilities as well. As was indicated previously in the other models, MGen/RAdm deputy commanders supported by a flag/general officer are responsible for force development to their environmental commanders. In the Canadian Navy, force development is the responsibility of a Capt(N)

staff officer. Although there is a very clear chain of command and DGMFD has control over assigned resources, it is overshadowed by the disparity in rank which provides the position limited influence up and down. Influence down can also be a particular challenge, especially considering that down refers to directors of equal rank. It is therefore assessed that responsibilities exceed authority which results in an "ineffectual" relationship.

The position that has the greatest imbalance between authorities and responsibilities is Asst CMS. The responsibilities of this position far exceed the authorities that have been provided in Asst CMS's TORs. As a commodore, it will always be a challenge for Asst CMS to exert influence down. As the Level 1 resource manager / advisor to CMS, he has to exert influence down to formation commanders who outrank him. In addition, there is a challenge exerting influence down to formation staffs. For example, should Asst CMS provide direction which the staffs do not agree with, they can make representation to the formation commander who could deal with the issue directly with CMS. There are also challenges when Asst CMS represents CMS during meetings in NDHQ where his "peers" outrank him and DGs consider themselves "equals". The authorities/responsibilities relationship as it applies to Asst CMS is, at best, described as ineffectual.

It is therefore assessed that from a force generation, force development and governance perspective, that the responsibilities/authorities relationships are not in balance in the Canadian Navy. The relationships are either "dangerous" at the one end or "ineffectual" at the other. If the Navy is going to establish an effective balance in the various phases of force generation and force development, then a significant change to the command and control architecture will be required. It is essential to understand, that

any changes that are implemented will need to adjust authorities and responsibilities for them to be effective. Until these balances are achieved "…the Navy [will]continue to suffer because of these shortages of a RAdm Asst CMS and a commodore DGMFD, in terms of sustaining the effort required to strategically win in the force development domain, and preparing future heads of Navy to satisfy what arguably is their most important priority – the generation of the Navy after next."[80]

***Command centric* – the level to which missions are accomplished via a chain of command as opposed to being staff matrixed;**

The current command and control frameworks in place for the Canadian Army and Air Force and the Australian Navy are command centric. Each of the three significant missions, force employment, force generation and force development, are the responsibility of an officer in the line chain of command. Force development is the responsibility of the Deputy Commanders, and the six phases of force generation (military human resources requirement identification, intake, training to basic occupation qualification, training to basic mission readiness qualifications, training to operational readiness qualifications, and continuing professional development training/education) are the responsibility of LFTDS and Area Commanders for the Army, 1 CAD for the Air Force, and the FC/CANSC for the Australian Navy. This is not however, the case for the Canadian Navy.

Only phase 4 and a portion of phase 5 force generation are the responsibility of an officer in the line chain of command as they are the responsibility of the formation commanders. The first phase is the responsibility of Director Maritime Training and Education (DMTE) and Director Maritime Personnel (D Mar Pers), phase 2 is the responsibility of DMTE for internal intake. Phase 3 and portions of phase 4 and 5 are the

[80] Interview with RAdm (Retd) I. Mack.

responsibility of DMTE through the schools in Halifax, Esquimalt, and Quebec. Almost all of the schools report to a staff officer who does not have any training authorities or responsibilities for setting standards or policies in the schools. The CO of CFNOS and CFNES report to N1, a staff officer in MARLANT. The CO of the CFMWC reports to Asst CMS, a staff officer in NDHQ, and the CO of Fleet School Esquimalt reports to a staff officer, MARPAC N1. Although the schools are responsible to the staff officers in MSHQ for delivering their programs, their resources are determined by the formation commanders as was described previously.

The responsibility for establishing **individual** standards and policies is DMTE in consultation with the formations and D Mar Pers, who is responsible for military occupation classification (MOC) profiles, progression, and occupation requirements. The responsibility for standards and policies of **operational** training is Director Maritime Plans and Operational Requirements (DMPOR) in consultation with the formations. All three of these staff officers report to DGMPR. Future training requirements are the responsibility of DMTE. However, in this capacity he is responsible to the Maritime Capability Development Board chaired by the Director General Maritime Force Development. This complicated matrix of authorities, responsibilities and resource allocations is hampering the Navy's ability to resolve significant training challenges.[81] In addition, the challenge extends beyond the individual and operational training realms and into the delivery of projects, as evidenced by the project director Halifax Class Modernization.[82]

[81] Canada. Department of National Defence. *DMTE Priorities and Challenges 07-08*. (PPt)
[82] In preparation for the definition phase of HCM, there were a number of meetings held in an effort to determine who was responsible for the different aspects of articulating training requirements as it pertained to the overall project. These same challenges will be equally applicable to the other major projects.

With respect to force development, each of the other three models has a general/flag officer who is responsible to the deputy commander of the organization for force development. Once again this is not the situation in the Canadian Navy. The officer responsible for force development in the Navy is DGMFD who reports directly to CMS as a staff officer because Asst CMS is not in the chain of command.[83] Whereas the other Assistant ECSs and the DCN RAN are clearly deputy commanders, Asst CMS is a facilitator/advisor to CMS. Specifically the TORs state:

> "[t]he Assistant CMS is accountable to CMS for the effective and efficient operation of Maritime Staff in achieving the stated CMS goals through decisive leadership and sponsoring innovation, and for providing advice to CMS on public affairs, overall naval resource management, business planning, change and management and the successful implementation of projects in these areas."[84]

With respect to deputy commander responsibilities the TORs are explicit, although somewhat confusing, with respect to Asst CMS's responsibilities in the absence of CMS. They state he is to address "all managerial and operational aspects of CMS' responsibilities when CMS is absent (*Note: This does not include Acting Commander of Maritime Command*.)" The italics in the aforementioned statement are re-produced as provided in the TORs. Thus, there is a considerable difference between the philosophies of the Canadian Navy and the other three models. Whereas the principles of an effective command and control construct emphasize a command centric model, the evidence suggests that most phases of force generation and force development in the Canadian Navy are predominately staff matrixed.

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[83] "The Director General Maritime Force Development is accountable for the development of the next Navy and the Navy after Next, including the strategic direction and capability concepts and requirements from an operational, doctrine, personnel and training, materiel support, and information management/technology perspective, to meet future capability requirements. DGMFD is also accountable for the CMS Strategic Capability Plan coordination, and project directorship of naval acquisitions projects." *DGMFD Terms of Reference*.

[84] Canada. Department of National Defence. *Asst CMS Terms of Reference*. n.d.

***Control is a tool of command* – form follows function**

The definition of command and control, the establishment of common intent to achieve coordinated action, requires certain control processes to ensure the successful management of risk over time. This is particularly significant because certain phases of force generation require years to be successfully implemented and force development, particularly in the naval context, almost always spans at least a decade for projects, if not longer. Here again, it is assessed that the other three models are organizationally structured to better establish common intent and to manage risk.

Each of the other three models is better structured to ensure that successive chiefs of service have had the opportunity to have had recent experience in force development and/or all phases of force generation. For example, both the current ECSs of the Army and Air Force have been deputy commanders which gave them insight into both force development and force generation prior to assuming their current positions.

Here again the Canadian Navy is less effective. Based on the fact that Asst CMS is established as a commodore, there is no chance that he would succeed CMS immediately. However, although not immediately available, the professional development gained in the capacity of A/CMS would be invaluable for prospective CMSs. Unfortunately, since the Navy has moved to Ottawa, no Asst CMS has risen through the ranks to be appointed CMS.

The successors to CMS are therefore either one of the two formation Commanders or a RAdm serving in a "purple" billet. Although formation Commanders are intimately familiar with phases 4 and 5 of force generation they are not responsible for any force development nor phases 1-3, and 6 of force generation other than providing the resources. If CMS's successor is from a "purple" billet (s)he will be significantly

disadvantaged with respect to having insight into current force generation/force development. (S)he will not have been a member of the Naval Board Executive Committee and invariably would have been too busy with their previous responsibilities to have anything other than a general knowledge of broad topics. Therefore, there is a high likelihood that CMS's successor will have had narrow force generation experience, but no recent naval force development experience.

The three positions that are the most intimate with current naval force development are CMS, Asst CMS, and DGMFD. It is therefore institutionalized that the most recent force development experience/responsibility that a CMS could have is either 2 or 4 years removed in the most optimistic of scenarios. This is a significant departure from the emphasis that the Navy had placed on ensuring successive CMSs had recent force development responsibilities. As was previously indicated, prior to 1994 all naval force development activities were the responsibility of Chief of Maritime Doctrine and Operations which was not in Comd MARCOM's chain of command. This did not preclude however, the navy's ability to successfully implement a succession plan that ensured that successive MARCOM Commanders had extremely recent force development responsibilities for over a decade. Similarly, the other three models have essentially institutionalized a succession plan that provides successive commanders with a balance of force development/force generation experiences. A reorganization of the Navy's C2 architecture would be of significant benefit for future CMSs and it would serve to institutionalize the establishment of common intent to achieve coordinated action.

Flexibility

From an operational perspective the model that most exemplifies the principle of flexibility is the current command and control construct of the Canadian Navy. At each rank from commander to commodore, the Navy has at least two deployable operational commanders. This is not the case for the Army or the Air Force which must rely on force generating deployable commanders from within their organizations. The highest ranking deployable billets in the Army are Col brigade commanders. Although the Army BGens command forces as regional joint task force commanders and area commanders, it is not a deployable position. Therefore, if the Army has the opportunity to command expeditionary operations at this rank, it must either make do with a BGen position vacant or create a vacancy in a colonel position by making the individual an acting while so employed (AWSE) BGen. The situation is worse in the Air Force. Currently the Air Force does not have any deployable Col or BGen commands. The Australian Navy is more flexible than the Canadian Army and Air Force but less so than the Canadian Navy as they only have a single deployable commodore. From a force generation perspective the Canadian Navy has significant flexibility relative to the other three models.

***Learning organization* – ability to embrace change both at the individual and institutional level as a result of changing priorities**

It is assessed that all of the models are learning organizations. A simple examination of the phenomenal evolution of their command and control organizations since 1990 is ample testimony to this fact. The recent creation of the Navy's today tomorrow transformation team (T4) provides further evidence of the fact that the Navy remains a learning organization.[85] The true measure of the Navy's commitment to this

[85] The Navy has recently stood up a team that will examine a number of different options that will ensure the successful delivery of the major crown projects key to the future of the Navy.

principle will be a direct reflection of its actions to modify its current command and control construct to meet the priorities of the next decade. Therefore, the next step is to develop a number of options for consideration by the Canadian Navy based on the analysis of the four different models. The aim will be to incorporate those attributes of the models that best demonstrate effective command and control principles and ensure a balance between force generation and force development.

OPTIONS ANALYSIS

Option 1 – Minimal Growth

The ideal option to improve naval command and control would be to seek additional resources and implement the best attributes of the other three models. If the Navy was allocated an additional RAdm, Cmdre and additional staff positions[86] it is assessed that the command and control construct necessary to balance force development and force generation would be relatively easy to achieve. The RAdm billet would be used to up-rank Asst CMS. This would then facilitate establishing Asst CMS as the deputy commander MARCOM and the amendment of the position's terms of reference to include those responsibilities similar to those previously described for the Australian Deputy Chief of Navy. The up-ranking of Asst CMS to RAdm would then facilitate the establishment of DGMFD as a commodore. Although the terms of reference for DGMFD would remain the same, the position would now be responsible to Asst CMS. In addition to the many strengths of this construct, there is also the additional benefit of establishing symmetry among each of the Environmental Chief's of Staff architectures in NDHQ.

[86] The number of additional personnel to staff the HQ would require further analysis. However, the nucleus of the staff would be provided by the directorate of maritime training and education. With respect to growth, the commander would need a personal staff plus additional billets depending on how the command was structured.

The additional commodore position and staff would be established as Commander Maritime Training and Doctrine (Comd TRADOC). The creation of this new command would separate operations from training and embrace many of the effective C2 principles evidenced in the other three models. Ideally, this position would be established as a RAdm command similar to the Army construct. However, in an effort to ensure minimal growth it would be established as a commodore line officer. Comd TRADOC would have command of all naval training establishments, including sea training, and would be directly responsible to CMS for the applicable aspects of force generation training and naval doctrine.

The establishment of Comd TRADOC as a "command" position, as opposed to being a staff officer, is essential. Unless this position is made a "command" billet, it is unlikely, based on historical evidence, that the Navy will be able to provide stability to the staff officer positions, currently DGMPR and DMTE, responsible for training. For example, during the last six years, there have been nine DGMPRs. To further exacerbate the training challenges, during this same period there have been six DMTEs.[87] Unless TRADOC is established as a command, as is the case in the Air Force, Army and RAN models, the Navy will continue to be hard pressed to address their significant training challenges.

The location of Comd TRADOC will also need to be carefully considered. If the TRADOC HQ was located on one of the coasts it would be able to leverage the existing capacity and infrastructure that currently exists in those locations. However, if Comd TRADOC was located in the NCR, it would avoid the perception of having MARLANT or MARPAC bias, would be geographically closer to the project staffs, would maintain

[87] During the periods where DGMPR and DMTE were unavailable the SA to DGMPR and DMTE 2 fulfilled the duties.

more billets in the NCR, and would facilitate direct interaction with CMS and other central staffs. Therefore, the ideal location of this command is in the NCR. The minimal growth option is depicted in figure 6.

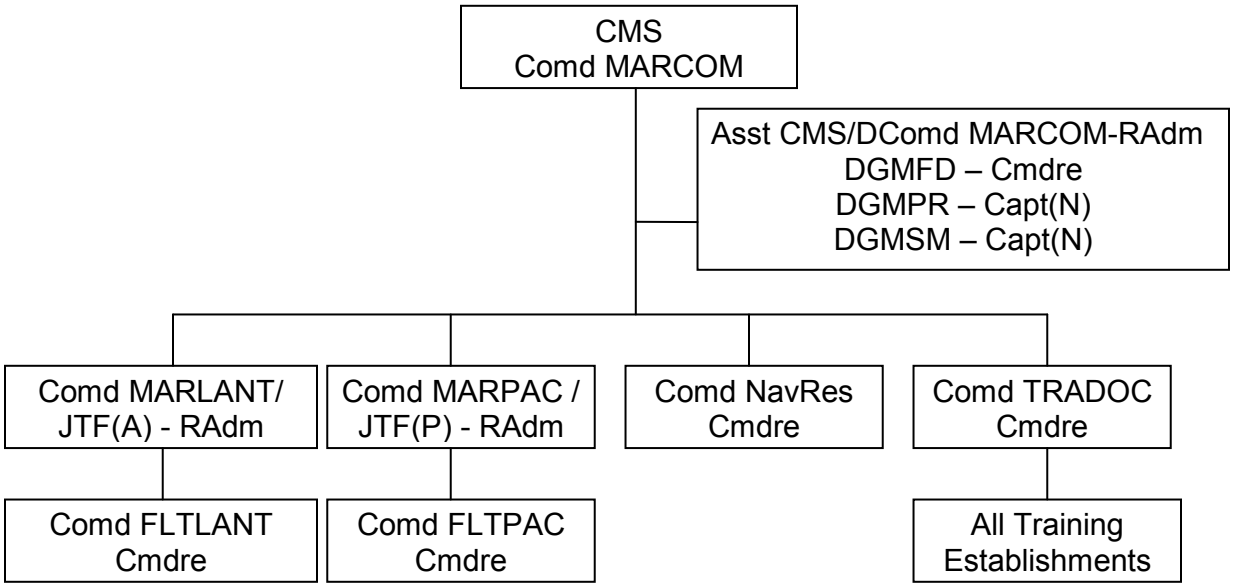

Figure 6: Canadian Navy C2 Architecture Option 1 - Minimal Growth

It is recognized however, that there are two fundamental difficulties with implementing the "minimal growth" option. The first challenge with this option is that although it would be feasible to create the additional staff billets for the TRADOC HQ, it would be extremely difficult to fill them. As a result of transformation there has been an increased requirement for additional naval staff officers in the operational HQs and the central staffs, such as Chief of Force Development. In addition, there has also been an increased demand for personnel to staff the Navy's project offices. Couple this increased demand with the fact that the Navy is currently at least 700 personnel under trained effective strength, with a negative trend line, and it quickly becomes apparent that providing additional personnel to resource the TRADOC HQ would be problematic.[88]

[88] Canada. Department of National Defence. *Naval Personnel Generation – Today and Tomorrow: Challenges and Remedies April 2008*. (PPt)

Therefore, in the short term, the establishment of TRADOC HQ will require a reallocation of resources from within the naval establishment.

The second and more difficult challenge is "the sensitive area of the total number of flag and general officers"[89] which was identified in the Crabbe-Mason report of 2000. In their report, Vice-Admiral Mason (retired) and Lieutenant-General (retired) Crabbe provided their assessment that

> "due to the reductions in the relative number of flag and general officers over the past several years, the Canadian Forces is under-strength in terms of trained, experienced and capable officers at that level who are available for either short-notice contingencies, or the requirement to provide the skeleton organization for mobilization."[90]

Unfortunately this very well-substantiated report, published by a retired VAdm and LGen, and subsequent efforts by the CF since then, have not been able to successfully increase the number of general and flag officers in the CF. Therefore, growing the general and flag officer establishment by an extra RAdm and Cmdre will not be a simple undertaking as a result of the political sensitivities surrounding this issue. [91]

This is not to say however, that the Navy should not make representation to the leadership of the CF to pursue this option. The first argument to substantiate pursuing the minimal growth option is that the context has changed. With the announcement of growth in the Canada First Defence Strategy arguably there should be a corresponding growth in the general and flag officer establishment. This environment contrasts sharply to the period when the Crabbe-Mason report was published, as the CF was still resolving issues associated with downsizing and trying to close the capability/readiness gap.

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[89] L.G. Mason and R. Crabbe, *A Centralized Operational Level Headquarter,*. (Ottawa: Department of National Defence, 2000), 53.
[90] *Ibid*., 42.
[91] It is assessed that if the CF were to make representation for additional flag officers on behalf of the Navy it would also attempt to satisfy the Army's and Air Force's requirements. For example, army brigade commanders are colonels as opposed to brigadier generals.

Another argument that substantiates increasing the establishment would be a comparison of the ratio of general and flag officers to the number of personnel in comparable western professional armed forces. For example, the Australian Defence Force is smaller than the CF by approximately 10,000 personnel but has approximately double the number of general and flag officers. To further reinforce this point, despite the fact that the Australian Defence Force has twice as many general and flag officers as the Canadian Forces, the Australian government has recently approved the up-ranking of the Commander Australian Naval Systems Command from Cmdre to RAdm. The arguments to substantiate an additional two flag officers are valid and sound. However, despite the logic, the fact remains that creating these two new positions will likely not happen very quickly, if ever at all.

The challenge for the Navy is that in order to avoid finding itself *in extremis* with respect to recapitalizing the fleet, it can not afford to wait very long before it re-establishes the balance in force generation and force development and dedicates the resources to solving numerous training challenges. Therefore, although option 1 - minimal growth will address the Navy's requirements, additional options need to be considered in the event that increasing the general and flag officer establishment is neither timely nor politically acceptable. The following three additional options provide the necessary resources required to meet the Navy's pressing requirements. Each of the options establishes Asst CMS as a RAdm DComd responsible for force development, establishes DGMFD as a Cmdre, and creates a TRADOC command under the leadership of a flag officer. As the options are essentially a variation of a common theme, they share a number of common advantages and disadvantages. Therefore, to avoid repetition the options will initially be broadly defined noting specific advantages and disadvantages.

The common considerations and advantages and disadvantages of each of the three options will be identified and provided in a separate section.

Option 2 – Minimal Change - Coastal Imbalance

Option 2 is very similar to option 1. The only difference between the two models is that the Comd MARPAC and Comd FLTPAC are down-ranked[92] and the commodore in DGMFD would assume command of TRADOC. However, it remains a very workable model as it incorporates some of the best attributes of all of the models used in the analysis. It maintains the flexibility of the current naval command and control construct, reflects the RAN concept of a deputy commander responsible for force development, and leverages the Army and Air Force strengths of having all training under the command of a flag officer. Option 2 is depicted in figure 7.

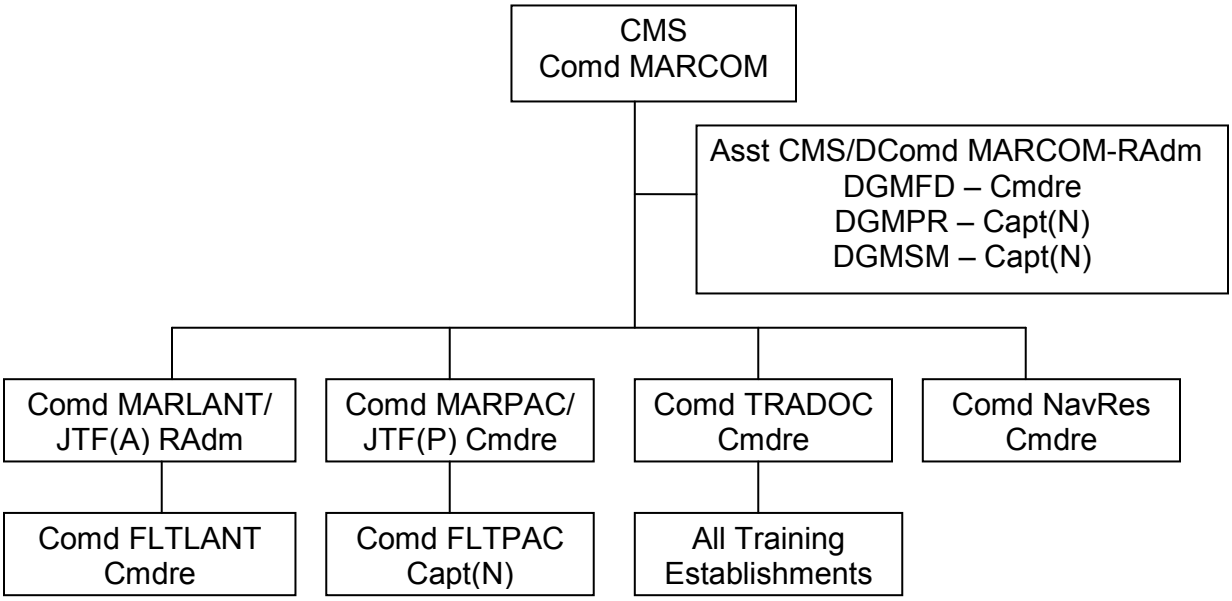

Figure 7: Canadian Navy C2 Architecture Option 2 – Minimal Change Coastal Imbalance

The unique advantage of this option is that it very closely approximates the current construct and would be the easiest to transition into. The disadvantage to this

[92] As indicated in option 1, the likelihood of increasing the overall general/flag officer establishment is extremely low. However, a possible consideration to avoid institutionalizing a coastal imbalance, would be to solicit approval from the CF leadership to establish Comd MARPAC as an AWSE RAdm.

model is that it still requires CMS to be personally involved in balancing force generation activities between the coasts and the Commander TRADOC. Therefore, it is worth investigating options that establish a single commander responsible for force generation.

Option 3 – Commander Maritime Force Generation – Coastal Imbalance

Option 3 is a very powerful model. The most notable attribute of this model is that it leverages the strengths of the Air Force and RAN models which have all force generation activities under one commander. In order to accomplish this, Comd MARLANT / JTF(A) would be assigned the additional responsibilities of the Comd Maritime Force Generation (MFG). As a result, Comd TRADOC would report directly to the force generation commander. Similar to the previous option, both Comd MARPAC and Comd FLTPAC would be down-ranked and the commodore in DGMPR would become Comd TRADOC. Option 3 is depicted in figure 8.

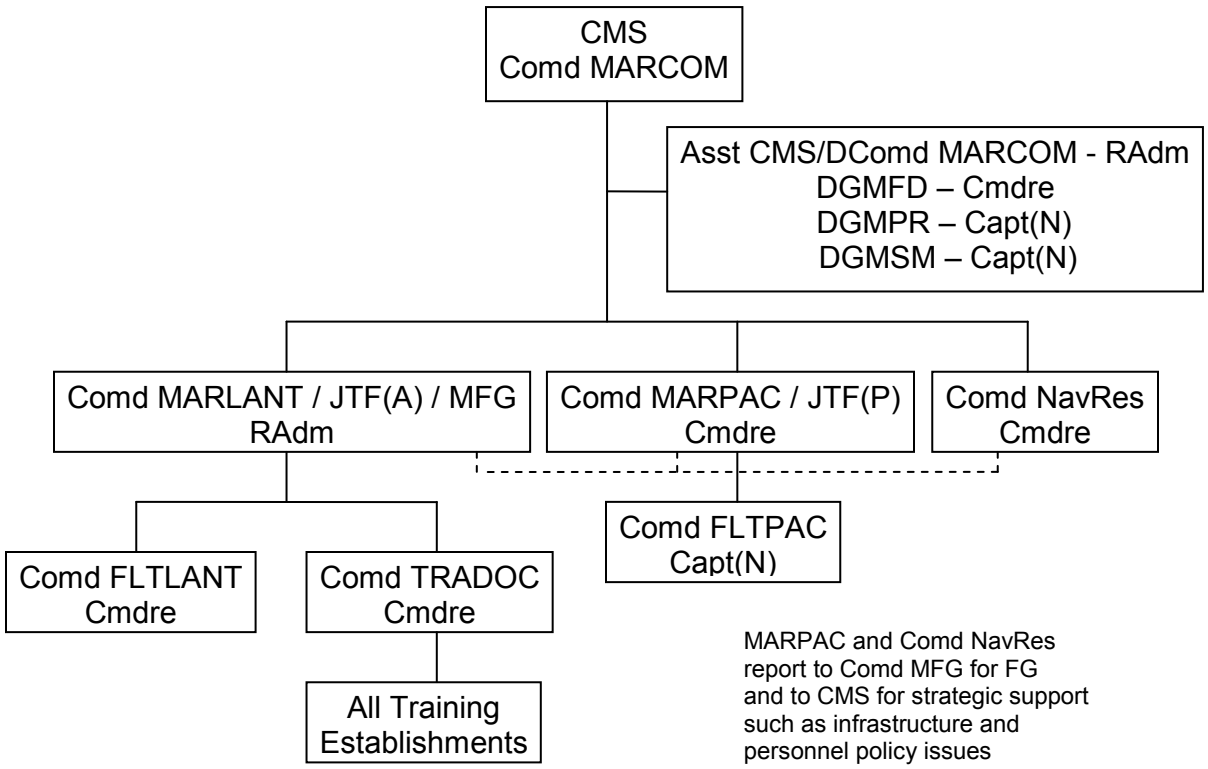

Figure 8: Canadian Navy C2 Architecture Option 3 –
Commander Maritime Force Generation Coastal Imbalance

Although the span of control is increased for Comd MARLANT, this is significantly mitigated by establishing TRADOC under his command. In addition, the direct reporting line to CMS is retained to ensure that Comd MARLANT does not need to assume responsibility for representing MARPAC and the naval reserves on such issues as infrastructure and personnel issues. Finally, as a result of the reduced capacity on the West and East Coasts as a result of Halifax Class modernization, there will not be a considerable additional burden placed on the MARLANT staffs. As the previous two options result in a coastal imbalance at the formation commander level, it is worth investigating an option that does not.

Option 4 – Comd Maritime Force Generation / TRADOC Coastal Balance

The final option is also an extremely powerful model. It aims to avoid institutionalizing a coastal imbalance and leverages many of the strengths of the other three C2 models. The subtle difference in this model is that the maritime force generation commander would have direct responsibility for training and doctrine and force generation on the coasts. As a result, the Comd MFG would directly command all of the training establishments, to include the CFMWC, and the Atlantic and Pacific Fleets. Whereas the previous two options only down-ranked one formation commander, in this option both Comd MARLANT and MARPAC are down-ranked to Cmdre. However, they would still report directly to CMS on such issues as infrastructure and still retain responsibility for naval coastal support functions resident in the bases and the maintenance facilities. Finally, this option would not affect their Canada Command responsibilities. The construct for option 4 is provided at figure 9.

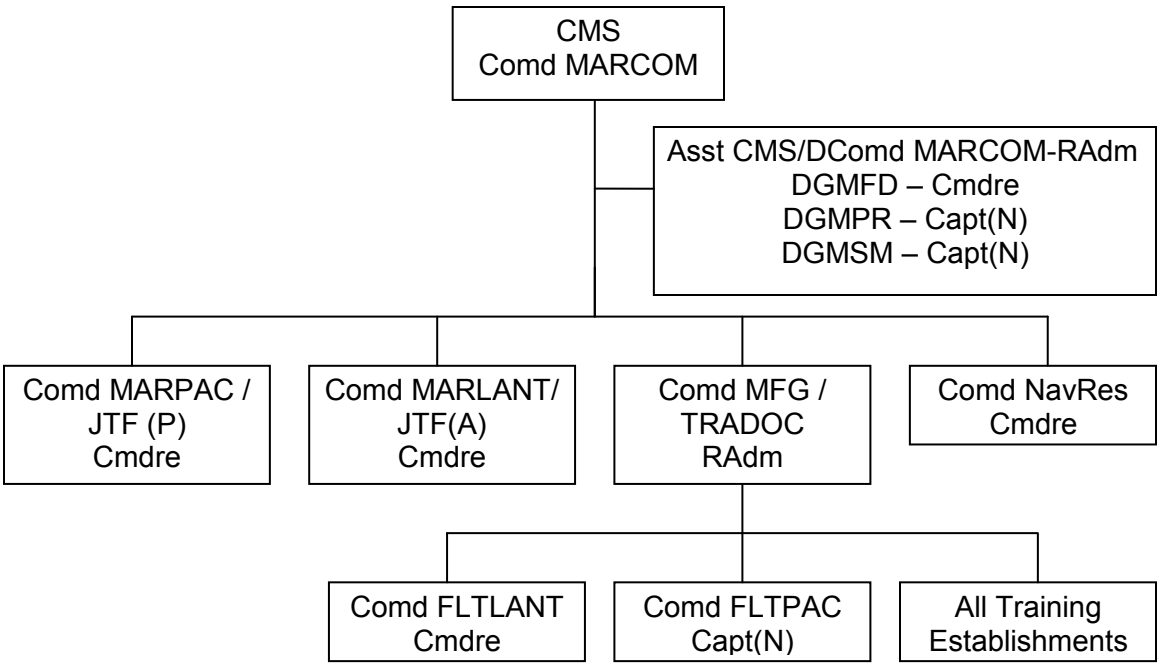

Figure 9: Canadian Navy C2 Architecture Option 3 –
Commander Maritime Force Generation / TRADOC Coastal Balance

The most significant advantage to this model is that it establishes very clear lines of responsibility for force development, force employment, and force generation which negates any concerns with respect to span of control issues. This model also alleviates any concerns of institutionalizing a coastal imbalance at the formation commander level. Notwithstanding the fact that the formation commanders will be the same rank, if the Comd MFG / TRADOC is established on a coast the additional flag officer may continue to reinforce the perception of a coastal imbalance and/or bias. Therefore to avoid the perception of coastal imbalance at the formation level and to leverage the strengths previously articulated in option 1 for having the TRADOC HQ in the NCR, the Comd MFG / TRADOC should be located in the NCR.

This model also provides a number of additional option specific advantages. Specifically, with a single RAdm as the force generation commander responsible for both fleets, (s)he would be able to conduct the Navy's international engagement activities with

a holistic understanding of the Navy's geo-strategic engagement priorities. Although there are two Cmdres on the East Coast, this model also ensures that there is no hierarchy of command issues as the formation and fleet commander have separate chains of command.

The most significant risk with this model is that once both formation commanders are down-ranked to Cmdre it could very easily be perceived that there was never a valid operational requirement to have RAdms as formation commanders. As a result, this construct could very easily become the status quo. Clearly, the down-ranking of positions on the coasts is an extremely sensitive issue which would have second and third order effects on the institution. As all of the options require down-ranking at least one formation commander and the Commander FLTPAC, the next step is to provide the analysis that was considered in down-ranking these positions and provide the common advantages and disadvantages of options 2, 3 and 4.

Options 2, 3 and 4 - Common Advantages and Disadvantages

When the ECSs were established in Ottawa, it was the Navy's position that there was a valid operational requirement for three RAdms in their C2 construct. As a result of constraints on the CF, the Navy was only allocated two RAdms, but was given the opportunity to distribute them in accordance with their priorities.[93] Thus, it is recognized that there is not an ECS allotment of MGens/RAdms. However, noting that all three environments have two MGen/RAdms in their command and control architectures, it is logical that the CF leadership believe that at least two MGen/RAdms are essential to the effective command and control of the three environmental commands.[94] Although the

[93] Interviews with previous CMSs.
[94] Provided the Navy's internal redistribution of the two RAdm positions does not impact on the regional joint task force construct there is an excellent chance that the recommendation would be approved.

reallocation of the positions may not be difficult, the risks associated with down-ranking formation commanders and a fleet commander needs to be carefully considered.

As the Navy's senior representative on each of the coasts, the formation commanders have significant responsibilities. The requirement for a formation commander to be a RAdm has been substantiated as a result of their international engagement obligations, span of control and the maintenance of the hierarchy of rank, as Cmdre fleet commanders report to them. This risk is mitigated in the aforementioned options by either down-ranking a single formation or establishing a RAdm specifically responsible for all force generation activities. Similarly, each of the options preserve the hierarchy of rank as the respective fleet commander would also be down-ranked or the reporting structure amended. Any issues with respect to span of control are mitigated by establishing a training and doctrine command either as a Cmdre or a RAdm.

Risk mitigating the international engagement obligations in MARPAC is a greater challenge in the options without a single Commander Maritime Force Generation / TRADOC. However, in those instances when a Cmdre formation commander is not determined to be adequate representation on behalf of the Canadian Navy, then either CMS or Asst CMS, in company with the formation commander, would be able to represent the Navy. In addition to having risk mitigation strategies to address the potential impacts on operational requirements there are also a number of factors that need to be considered with respect to retaining RAdm formation commanders.

One possible argument to retain both RAdms as formation commanders is that formation command is a developmental prerequisite for being appointed CMS. This argument is not valid based on historical precedent. Consider the fact that there have been a number of previous CDS, VCDS, and CMS officers who have not had formation

command experience.[95] In addition, the model analysis has also demonstrated that formation command does not provide a broad base of force generation experience and no recent force development experience. The lack of recent force development experience is a significant deficiency considering that the focus of successive CMSs for the next decade will be the successful delivery of several key projects.

Another argument that needs to be considered is the perception that down-ranking a formation will result in one less command opportunity for a RAdm. This argument is also not valid as all the options retain RAdm command appointments. Depending on the option, the RAdm appointments are; deputy commander of the Navy, commander force generation, or formation commander. Although not all of the command appointments reflect Canadian naval tradition, they are commands as demonstrated in the three other models examined. Having identified the risks and additional considerations associated with down-ranking one or both formation commanders, the next step is to provide the analysis with respect to why the West Coast was selected to be down-ranked at the formation level in options 2 and 3 and the fleet level for options 2, 3 and 4.

There are numerous factors to be considered when determining which formation commander and fleet commander should be down-ranked. Factors include the geo-strategic environment, planned international engagement opportunities, Canada Command requirements, principles of leadership, and the size of the organizations. Although not all of these factors are readily available, based on the analysis of those that are, the most logical formation to be down-ranked over the next several years is

[95] The following officers have not commanded a formation nor a fleet; Admiral Anderson, CDS, VAdm Murray, A/CDS, VAdm Thomas, VCDS, and VAdm Robertson, CMS, has not commanded a formation.

MARPAC.[96] The first factor to be considered was that the Navy's force structure will not change in the near term as it will remain broadly balanced as a result of the geo-strategic environment.[97] The second consideration is that MARPAC has fewer personnel and capabilities. The third consideration is that the BGen Comd Land Forces Atlantic Area has responsibilities to the Comd JTF(A) which could affect the hierarchy of command. Finally, and most significantly, there will be a tremendous reduction in capabilities in MARPAC over the next decade.

Beginning in 2009, there is an almost immediate reduction in capacity in MARPAC in accordance with the ten year fleet plan, version 6.5. Next year, there will only be four ships available for deployment (1-AOR, 3-FFH) as the rest of the ships are in refit. From 2010 to 2012 the capacity is approximately five ships. During the years 2013 to 2015, there is a significant reduction in capacity as there will only be three ships available for operations (1-AOR, 2-FFH).[98] Therefore with only 3-5 ships available for operations in MARPAC over the next seven years, there will be less risk down-ranking the formation commander and minimal risk down-ranking the fleet commander.[99] Down-

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[96] Note: There has been either a RAdm or VAdm as Comd MARPAC since 1934. Although tradition is important, it is not, in and of itself, a sufficient reason to avoid making changes to the Navy's C2 architecture as a result of higher priorities.

[97] When questioned about the following comment in David Pugliese's Defence Matters Blog:
"For the first time in human history we have a powerful India, China and Japan, and the world center of economic gravity is now in Asia,"… "As a result of globalization, of which the centerpiece is China, we are now looking at an ocean that is without equal in terms of the amount of activity."
VAdm Robertson, CMS, indicated that "[t]here may be other reasons that arise that won't necessarily be tied to where the centre of economic power happens to be and so we, [the Navy], need to be broadly balanced." There is therefore no anticipated change to the overall distribution of fleet assets in the near to mid term.

[98] Canada. Department of National Defence. *10 Year Fleet Plan Version 6.5*. This may change depending on which coasts the initial AOPS and JSS are delivered and whether or not they are delivered on time.

[99] It is not feasible to down-rank fleet commanders on both coasts. The uncertainties of the future security environment and recent operations such as OP APOLLO, have amply demonstrated the importance of having a commodore and staff ready to deploy on short notice (Roto 0). Therefore FLTLANT would remain established as a commodore and be prepared to deploy with staff as Roto 0. This would still permit the Navy ample opportunity to determine who would command the subsequent task group (Roto 1) provided by FLTPAC. The options would be to retain the current Capt(N) Fleet Commander as a commodore (AWSE) or perhaps it would be more appropriate to post in a substantive commodore to work up and deploy in command of the task group.

ranking both positions in MARPAC also preserves the hierarchy of command as a Capt(N) would be reporting to a Cmdre formation commander in all of the options. [100]

There are also a number of factors that have yet to be articulated. For example, as Comd MARPAC is also double-hatted as Comd JTF(P) there may be a CF requirement to maintain a RAdm in MARPAC until after the Olympics. If this is established as a requirement, then this would affect the timing of the option implementation. This is of course, unless other additional factors come to light which suggest an urgent requirement to move either more quickly or support down-ranking the positions in MARLANT. Therefore based on the factors as they exist today, the down-ranking of Comd MARPAC and Comd FLTPAC is recommended over the near term as indicated in the options.

As the formation commanders are also double-hatted as Comd RJTFs, the other consideration that must be taken into account is the way ahead for the Maritime Component Commander (MCC) concept to support domestic operations. It is currently understood that the most promising option is to have the formation commanders exercise the responsibilities of the MCC. Recent operations during the last decade indicate that a commodore is capable of exercising the force employment functions of a MCC for domestic operations. Canadian commodores have capably led joint task forces in operations during OP FRICTION, and have commanded standing NATO maritime forces and international task forces. Therefore, a commodore has the leadership and skills required to perform the duties of a MCC for domestic operations which should not preclude the down-ranking of formation commanders. Having established that the down-ranking of the formation commander(s) and the MARPAC fleet commander can be risk mitigated in the near term in each of the options, it will be exceptionally useful to

[100] The decision with respect to when to down-rank the two positions in MARPAC would also need to be carefully considered. It is not assessed that the requirement exists to have a RAdm Formation commander for the Navy's Centennial.

examine the significant advantages that all of the options share, as a result of directing the necessary resources towards training and recapitalizing the fleet.

Options 2, 3 and 4, share a number of advantages in addition to those already articulated when they were described broadly. Specifically the options:

a. incorporates the principles of an effective command and control organization as espoused by Pigeau/McCann and "operationalized" for transformation,

b. achieves balance in overall command and control architecture of the Navy between all phases of force generation and force development,

c. preserves command opportunities at the formation level and retains RAdm command positions,

d. recognizes the reduced capacity challenges of the Canadian Navy over the next decade,

e. does not impact on readiness levels of fleet units and staffs,

f. is anticipated not to require additional resources for the TRADOC HQ. Rather it will simply require a re-allocation of resources already dedicated to training in DMTE, DMarPers, DMPOR, and the coasts,

g. separates operations from personnel and training and establishes DGMPR as Comd TRADOC,

h. establishes Asst CMS as a RAdm. The TORs would also be adjusted to reflect that the position is the Deputy Commander of the Navy and that the DGs are responsible to Asst CMS for the execution of their duties,

i. establishes DGMFD as a commodore,

j. better aligns the competencies, authorities, responsibilities envelope for each of the positions,

k. are not assessed to impact on the Canada Command C2 construct, and

l. will have minimal impact on the day to day operations in the fleets.

In addition, each of the options shares the following disadvantages:

a. at least one formation commander is under-ranked relative to the operational requirement, and

b. more work will be required to define authorities, responsibilities, and accountabilities prior to implementation.

Options 2, 3 and 4 have far more advantages than disadvantages. In addition, each of the options better balances force development and force generation and more effectively incorporates the principles of effective command and control than the Navy's current command and control architecture.

RECOMMENDED WAY AHEAD

Implementing any of the aforementioned options will be a significant challenge in the complex and ever-changing political and strategic landscape of NDHQ. Therefore the way ahead has to be flexible while recognizing that not all of the variables are within the Navy's ability to control. Therefore in order to set the conditions for success, it is recommended that Navy pursue a phased strategy to further define and implement a more effective C2 construct in the near future.

The first step in this strategy is to make representation to the leadership of the CF that the Navy desperately requires additional resources to successfully recapitalize the fleet. Specifically, it is recommended that option 1 – minimal growth be implemented. However, acknowledging that the response to this request may take considerable time and may not ultimately be approved, it is recommended that the Navy concurrently further define and implement option 3 – Commander Maritime Force Generation Coastal Imbalance. Once it becomes clear that there will not be additional flag officers or it becomes clear that action needs to be taken immediately as a result of increasing risk, then option 3 should be implemented.

Option 3 provides excellent flexibility as it represents an interim solution enroute to defining a command and control endstate. Once Comd MARLANT is made responsible for force generation it is also recommended that he be tasked to conduct a

thorough options analysis of options 2, 3 and 4 or a variation thereof. The results of this analysis would then be provided to CMS as a decision brief. The advantage to having Comd MARLANT conduct this activity is that this officer is most familiar with the issues and can better assess the challenges such as span of control. An additional advantage is that it will allow MSHQ to immediately focus on the future and the other transactional activities in NDHQ where the urgent trumps the important.

Finally, although option 3 may not represent the command and control end-state, it provides a logical incremental approach to pursuing either of the options. Once implemented it will preserve the flexibility provided by the current construct, reinforce the chain of command, better balance authorities and responsibilities, provide a RAdm deputy commander responsible for force development and establish a flag officer responsible for the bookend phases of force generation. It would also be a visible indication of the importance of force development over the next decade, as DGMFD would be a flag officer. This model also has minimal impact on CF transformation command and control. Therefore, the aforementioned deliberate and phased way ahead is highly recommended for further investigation and implementation by the Navy to increase its effectiveness to secure the future fleet.

CONCLUSION

Pigeau and McCann provide a solid theoretical foundation from which to derive a number of principles to effectively analyze a command and control organization. Sharpe/English leveraged the work of Pigeau/McCann and recommended a number of principles to use when making adjustments to a command and control architecture. Rather interestingly, the principles to guide transformation were quite similar despite being derived from CF doctrine. By taking the best attributes of each of the two sets of

principles, a common framework was established for the analysis of the different command and control models. The principles are:

a. mission command – empowering subordinates and putting people first,

b. effective command – demands a balance of competency, authority and responsibility,

c. command centric – the level to which missions are accomplished via a chain of command as opposed to being staff matrixed,

d. control is a tool of command – form follows function,

e. flexibility, and

f. learning organization – ability to embrace change both at the individual and institutional level as a result of changing priorities.

A fundamental requirement of the analysis is also to have a clear understanding of the missions required to be executed by a command and control construct.

A theoretical examination of the missions to be completed by the ECSs reveals that they neither command at the strategic level or the operational level. Rather they command in the seam of these two levels to successfully force generate forces for operations today (force generation) and tomorrow (force development). Force generation consists of six different phases which are predominately the responsibility of the ECS. Force development, on the other hand, is based on a networked governance structure which relies on the ECSs for environmental specific input. In order to better understand the different approaches to commanding in the seam, the evolution of the Canadian Navy, Air Force, and Army were examined to provide a Canadian context. The Royal Australian Navy was also compared to the Canadian Navy to establish it as a useful model to be used in the naval context. These four different models were then compared to one another to identify their strengths and weaknesses.

It was assessed that all four models are learning organizations which embrace change at the individual and institutional level. The Canadian Navy was determined to be the model that had the most amount of flexibility. However, to achieve this level of flexibility it has sacrificed effectiveness in other principles. All of the other models better demonstrated effective command which requires balancing competencies, authorities, and responsibilities. The Canadian Navy was also not as command centric as the other models and it would benefit by institutionalizing a command and control hierarchy which better supported succession planning. Mission command was viewed as a strength in all of the command and control constructs with the exception of the Air Force which places the mission first as opposed to people.

The Navy confronts enormous challenges over the next decade re-capitalizing the fleet with compressed timelines, minimal resources and an institution that is out of balance. In order to re-establish this balance and incorporate effective C2 principles, it is recommended that a new command and control architecture be implemented. The recommended way ahead is a phased and flexible strategy. Specifically, it is recommended that option 1 – minimal growth be pursued while concurrently taking the necessary steps to implement option 3 – Comd Maritime Force Generation Coastal Imbalance. Once implemented, the Commander would then be tasked to fully investigate and define which of the options provided in this paper, or a variation thereof, should be implemented as an end state if the minimal growth option is not feasible. By implementing this strategy, the Navy will be Ready Aye Ready to embark upon and succeed on the most comprehensive and compressed fleet renewal in its history.

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