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RCAF SEARCH AND RESCUE LEADERSHIP: CHECKMATE

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RCAF SEARCH AND RESCUE LEADERSHIP: CHECKMATE

By Major Jean G.R. Leroux

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LIST OF ABBREVIATIONS

ADM	Assistant Deputy Minister
AIAC	Aerospace Industries Association of Canada
AOR	Area of Operation
C2	Command and Control
CAD	Canadian Air Division
CAF	Canadian Armed Forces
CAMSAR	Canadian Aeronautical and Maritime Search and Rescue Manual
CANSOFCOM	Canadian Special Forces Command
CCG	Canadian Coast Guard
CDS	Chief of Defence Staff
CFAWC	Canadian Forces Aeronautical Warfare Center
CFC	Canadian Forces College
CJOC	Canadian Joint Operating Center
CMLU	Cormorant Mid-Life Upgrade project
CO	Commanding Officer
COC	Chain of Command
CSH	Canadian SAR Helicopter
CSOR	Canadian Special Operations Regiment
DND	Department of National Defense

DRDC	Defence Research and Development Canada
EMO	Emergency Organization Management
FDL	Fond-Du-Lac
FE	Force Employment
FG	Force Generation
FLIR	Forward-looking Infrared
FY	Fiscal Year
HQ	Head Quarters
ISED	Innovation, Science and Economic Development Canada SAR Search and Rescue
JRCC	Joint Rescue Coordination Center
JTF2	Joint Task Force 2
MALA	Mission Authorization and Launch Authority
MND	Minister of National Defence
MOB	Main Operating Bases
NATO	North Atlantic Treaty Organization
NM	Nautical Miles
NSP	National SAR Program
OP STARFISH	Operation Starfish
OTU	Operational Training Unit
R&D	Research and Development
RARM	Record of Airworthiness Risk Management

RCAF	Royal Canadian Air Force
RMC	Royal Military College
SARCAG	Search and Rescue Advisory Group
SAR Tech	Search and Rescue technician
SME	Subject Matter Expert
SOP	Standard Operating Procedures
SOR	Statement of Operational Requirements
Sqn	Squadron
SRR	Search and Rescue Region
SSE	Strong, Secure, Engaged
SSO	Senior Staff Officer
WOG	Whole of Government
YFR	Yearly Flying Rate

ABSTRACT

Canadians have directed the Canadian Armed Forces (CAF) to make Search and Rescue (SAR) a priority through the new Canadian Defence Policy entitled *Strong Secure Engaged*. Capital investment, operating funds, and human resources are all in place for the SAR community to begin the journey of rising to its full potential, but is the SAR community internally set up to deliver on its mandate? Through natural evolution rather than design, Royal Canadian Air Force (RCAF) is SAR predominantly generated and employed tactical-level air power. Such mission-execution focus, however, has led the community to strive at the unit level to the detriment of the development of command unity. This study will prove that while the RCAF SAR is tactically highly effective, it is inefficient at delivering its mandate due to organizational leadership anemia. A total of eight Squadrons and three Joint Rescue Coordinators Centres serve as engines in the military SAR system, and each currently operates under different Chains of Command that do not possess tacit knowledge of the SAR mandate. Innovation, growth, risk management, mission command principle and strategic communication are thus all paralyzed by the lack of command unity. This research project found that the best way to break from the tactical shell and ultimately institutionalize RCAF SAR is through the creation of a dedicated command structure such as a SAR Wing, led by a SAR Commander.

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I must tip my hat to Dr. Richard Goette. It is quite the achievement on his part to get me to exchange my flying helmet for a pencil, but even more impressive is having me enjoy the adventure in the process. All the time spent on the reflection required for writing this paper made me realize one important thing – I miss the smell of Jet Fuel.

Rescue.

The Department of National Defence (DND) and the Canadian Armed Forces (CAF) lacks a dedicated and proportionally resourced Search and Rescue (SAR) governance structure that can provide strategic direction on requirements, standards, and operational boundaries. Without this staff, DND/CAF risks being unable to resolve ongoing issues and continued mission creep.

- Canadian Chief Review Services, January 2015

INTRODUCTION

Public Safety Canada is responsible for Canada's national Search and Rescue (SAR) program and dictates that its "objective is to prevent loss of life and injury through SAR alerting, responding and aiding activities that use public and private resources."¹ Public Safety adopts a whole-of-government approach with regards to SAR. The 'whole-of-government approach' idea is based on the concept of genuine and effective coordination between levels of governments, departments, and agencies across various fronts. Indeed, Canada's unique size, geography and resources requires a multi-agency approach, as no single agency has the resources and qualifications to solve the SAR equation by itself. SAR in Canada is not delivered or executed by a single organization but is rather a combination and co-operation of multiple federal, provincial, municipal and volunteer organizations.²

One of the key players in the national SAR program is the Canadian Armed Forces (CAF). Canada's new defence policy presents a revised strategic vision for defence, dubbed *Strong, Secure and Engaged* (SSE). In developing SSE, the CAF sees

¹Department of National Defence / Canadian Coast Guard. B-GA-209-001/FP-001-DFO 5449, Canadian Aeronautical and Maritime Search and Rescue Manual. Ottawa: DND/CCG, 2014, art 1.01.

²Department of National Defence, National Search and Rescue Secretariat. Quadrennial Search and Rescue Review. Ottawa: Department of National Defence ADM(PA), 2013, 7.

Canada as “[s]trong at home, with its sovereignty well defended by a Canadian Armed Forces ready to assist in times of natural disaster, emergencies and search and rescue.”³

The CAF is ultimately responsible and accountable for the coordination and execution of all aeronautical SAR incidents over Canadian territory and adjacent waters. Moreover, enabled through a close partnership with the Canadian Coast Guard, the CAF is also responsible for the coordination of marine distresses through Joint Rescue Coordination Centres (JRCCs).⁴

The field of CAF SAR responsibilities is enormous. In the aviation community, over 34,000 fixed- and rotary-wing aircraft are currently registered in Canada.⁵ In addition, many foreign aircraft, especially American, overfly areas within Canada's area of SAR responsibility. In the Gander Flight Information Region, which includes a large portion of the Atlantic Ocean (for which Canada has SAR responsibility), over 400,000 passenger flights are flown each year.⁶ This equates to over 60,000,000 persons being transported annually through Canada's Eastern area of responsibility alone. On the marine side, over 8,600,000 pleasure craft are registered in Canada,⁷ and a further 45,721 commercial vessels are listed.⁸ When these numbers are combined with the extensive transient traffic in foreign-registered pleasure craft and commercial vessels, an enormous

³Department of National Defence, *Strong, Secure and Engaged*. Ottawa: Department of National Defence, 2017, 59.

⁴Canadian Aeronautical and Maritime Search and Rescue Manual..., art 1.06.

⁵Government of Canada, *Overview of Air Transportation*, Ottawa: Transport Canada, <https://www.tc.gc.ca/eng/policy/anre-menu-3018.htm>, last accessed March 2018.

⁶Government of Canada, *NATS and NAV CANADA finalize technology upgrade for improved flight efficiency across the North Atlantic*, Ottawa: NAV CANADA, <http://www.navcanada.ca/EN/media/Pages/NR-28-14-NATS-and-NAV-CANADA-finalize-technology-upgrade-for-improved-flight-efficiency-across-the-North-Atlantic-.aspx>, last accessed March 2018.

⁷National Marine Manufacturers Association of Canada, *The Economic Impact of Recreational Boating in Canada: 2016*, <https://www.nmma.ca/statistics>, last accessed March 2018.

⁸Government of Canada, *List of Ships Statistics*, Ottawa: Transport Canada, <https://tc.gc.ca/media/documents/marinesafety/stats2004.pdf>, last accessed March 2018.

potential for emergency situations is created. The vastness of Canada's water areas and the often inhospitable climatic conditions add considerably to the inherent risks. This primary mandate is also complemented by a secondary but equally important mandate to assist Provincial emergency services when requested.⁹

A compelling question that should be periodically revisited is: has the Royal Canadian Air Force (RCAF), and by extension the CAF, set the conditions for success for maintaining a relevant and credible force to fulfill its national SAR mandate? Research conducted for this study has found that the tactical aspect of the military SAR force is strong. Tactical RCAF units are deployed more than a thousand times a year and are continually saving lives under the most dangerous situations.¹⁰ However, further analysis reveals that the current system insufficiently addresses operational- and strategic-level concerns by narrowing its outlook and efforts to the present while avoiding considering the potential of second and third order effects.¹¹ This is an approach that greatly hinders sustainability, innovation, and cultural institution in the long run.

This study will prove that while the RCAF is tactically highly effective at meeting its national SAR mandate, it is inefficient at delivering that mandate due to organizational command and leadership anemia. The lack of leadership manifests in a broad range of

⁹Canadian Aeronautical and Maritime Search and Rescue Manual..., art 1.06.

¹⁰Quadrennial Search and Rescue Review..., 11.

¹¹ Department of National Defence, B-GA-404-000/ FP-001, Canadian Forces Aerospace Move Doctrine.(Winnipeg: Canadian Forces Aerospace Warfare Centre, 2011), pp. 1-3. Strategic: This level sets out fundamental principles that guide SAR forces in Canada, laying out the intent and expectations of the government, and establishing a framework for the effective use of resources. Operational: This level applies the principles of strategic intent to actions by describing the use of resources as distinct objectives and responsibilities. Tactical: This level is concerned with planning and directing resources on the ground and engagements and/ or activities within a sequence of operations to achieve operational objectives. The tactical level is the 'hands' reaching out to the victims.

aspects, including lack of capability development, challenges in force-generation sustainment, difficulties in communicating operational risk, and lack of unity of effort.

Some serious attempts have been made to provide SAR with the appropriate command structure. The most legitimate of these came from the Commander of the 1 Canadian Air Division (CAD) on 29 June 2012, who gave the order to re-align the RCAF Wings' structure to be built around capabilities rather than geographical location in order to achieve improved effectiveness. The Commander at the time stated that the re-alignment of the Wings, including a Search and Rescue Wing, into functional formations would improve force generation agility and resilience and set the condition for future RCAF capabilities.¹² The order was reversed by the next incoming RCAF Commander in September 2012 and the status quo was confirmed in the March 2013 RCAF policy document AIR Power: Agile-Integrated-Reach-Power.¹³ Since then, the functional SAR Wing has encountered significant resistance and has never been able to gain momentum.

Following the failed realignment attempt of 2012, multiple independent agencies have assessed the RCAF SAR program. The most notable reports cited in this paper are the Office of the Auditor General report (2013), the Quadrennial SAR review (2013), the CAF SAR posture review (2014), and the evaluation of DND contribution to the national SAR program in 2015 by the Chief of Review Services. All of these reports echo similar recommendations to remedy defects in SAR governance. The Chief Review Services

¹²Canada, Department of National Defence, File 19257, *Implementation Directive Wing Functional Re-Alignment*, Commander of 1 Canadian Air Division, 29 June 2012. Functional organization has been an effective and long-standing characteristic of air power and air forces for several decades. See Allan English and John Westrop also advocate this position in *Canadian Air Force Leadership and Command: The Human Dimension of Expeditionary Air Force Operations* (Trenton: Canadian Forces Aerospace Warfare Centre, 2007), 29-30.

¹³Department of National Defence, A-GA-007-000/AF-008, *Air Force Vectors* (Ottawa: Director General Air Force Development, 2014).

recommended that the “DND augment or restructure SAR command and control in order to provide strategic and operational-level oversight and direction for DND/CAF SAR in Canada.”¹⁴ The present paper will demonstrate that the unification of SAR forces under the long-debated functional SAR Wing is the path to efficiency.

The strategic and operational leadership in the SAR force has reached a state of checkmate and is slowly chipping away at the foundation of the tactical level. In old Persian, checkmate means the king is helpless. In the context of this paper, the king does not represent a man or a woman but rather the concept of command. Chess is one of the oldest strategy war games. After emerging in the 6th century in Northern China, it grew to become much more than just a hobby to upper social classes. In fact, in ancient times, chess was used to train the minds of emerging leaders to enable them to think more deeply.¹⁵

The game of chess is often perceived as a win or lose endeavour. Dr. Judit Simó is a long-time contributor to research and interpretation of chess strategy and language. She argues that a deeper look reveals that “perhaps, chess is not just a game but rather a line of communication between two brains.”¹⁶ Simó supports that the board and the chess pieces are the “transmission medium in an exchange of ideas, attitude and personal positions about uncertainty.”¹⁷ Similar to chess, leadership is not a matter of losing or

¹⁴Canada. Department of National Defence. Chief of Review Services. Evaluation of the DND/CAF Contribution to the National Search and Rescue Program (File # 1258-216 (CRS)) January 2015, 28.

¹⁵Gerhard Josten, *Chess, a living fossil*, Initiative Group Königstein, Cologne, 2001, 3.

¹⁶Judit Simó, *Chess metaphors in American English and Hungarian*, *Metaphor and symbol* 24.1, 2008, 42.

¹⁷*Ibid.*, 43.

winning but rather a relationship and exchange between people.¹⁸ Just like the endless possibilities chess strategies bring forth, the military world has endless opportunities for leadership to be enabled.

What makes chess similar to the SAR mandate is the way leaders decide to move every day on a wide spectrum of actions and the different outcomes that such moves will produce. No single action is the result of the inefficiency of the SAR leadership, but rather a constant evolution on the board.¹⁹ Chess is a game where one needs to know the abilities and strengths of each piece in order to move them coherently. The vulnerable King, the powerful Queen, the clever rook, the agile knights, the swift bishops – each must be played intelligently and appropriately and at the most expedient time. Players must also understand that success is not necessarily about the current move, but rather about the second and third orders of effect of the piece being played. The CAF SAR mandate does not reflect the adversarial aspect of a chess game; the relevance of the analogy is that the movement of one element affects the possible movements of the others. The strength of the RCAF SAR is dependent on how all aspects of the elements' capabilities come together to deliver optimal air power.

The analytical starting point for this research will be the King and command. In the military, command is the equivalent of the King in chess; it moves slowly, but everything evolves around it. However, the mission cannot be accomplished with the

¹⁸ Canada. Department of National Defence. *Leadership in the Canadian Forces: Leading People*, Canadian Defence Academy, 2007, p.5.

¹⁹Yury Markushin, *How Complex is the Game of Chess*, The Chess World Journal, <https://thechessworld.com/articles/general-information/how-complex-is-the-game-of-chess/>, last accessed 01 March 2018. Following a chess player's first move, 400 different positions are possible; after the second move, more than 72,000 are possible; after the third move, 9 million; after the fourth move, 288 billion; and so on.

King only. The first chapter will therefore also focus on command deficiencies which contribute to the inefficacy of RCAF SAR. It will highlight the difficulties of employing the mission command principle within the current dislocated command structure of the SAR force.

The second chapter will highlight the role of the bishop. Interestingly, the common belief is that, in the past, Kings and Queens surrounded themselves with Knights, but the chess board set up with the Bishops standing next to the King and Queen suggests that Bishops played a more prominent role than is assumed today. In this chapter, the Bishop will represent innovation; and just like the Bishop, innovation is an element that leaders often forget. The chapter will prove that the SAR community has been unable to support innovation in a meaningful way and the long-term effects will be detrimental for the force. The paper will use examples such as sensors and capabilities development difficulties to prove the presence of stalled innovation.

The third and fourth chapters will be closely interlinked. The Knights pieces on the chess board are arguably the most complicated to move. Their sideways, frontwards and backwards motions of one or two spaces can make them very hard to follow. If one's Knight gets in trouble, it is very hard to go back in time and find the origin and roots of their precarious position. Just like the complex Knights, the CAF sometimes creates situations over time that do not allow an easy resolution to the problem or issue which has evolved.

The third chapter will present an analysis of a complex situation that has eluded the RCAF for 13 years: Operation Starfish (OP STARFISH). OP STARFISH was

initiated in October 2005, when the decision was made to relocate all 424 Squadron CH149 Cormorant SAR helicopters to the East and West Coast SAR units due to poor availability within the Cormorant fleet. The CH146 Griffon helicopter was deployed to 424 Squadron to fill the void, which was a temporary solution that was intended to last 18 months but has now lasted for more than 13 years. Using an evidenced-based analysis approach, this research will show that there have been 52 incidents between 2005 and 2017 that have been classified as failures of the RCAF SAR mandate. These incidents were directly linked to the use of the CH146 Griffon helicopter as a primary SAR platform in the Trenton SAR Region (SRR).

Chapter 4 provides a deeper look at OP STARFISH. Analysis of OP STARFISH will be used to highlight deficiencies in RCAF SAR communication. This chapter is associated with the most powerful chess piece – the Queen, which is the most agile piece due to its ability to move in any direction as a constant force on the board. The Queen is always on the move and builds precious momentum in a game. Just like the Queen, communication is crucial for any organization that wants to survive and thrive. SAR is an inherently risky mission. The strategic importance and the complexity of CAF SAR activities require constant oversight from the CAF chain of command (COC). The current lack of leadership structure for SAR capabilities has hindered effective communication throughout the COC. Chapter 4 will also look at the theory of military misfortunes as proposed by authors Cohen and Gooch and apply their model against OP STARFISH. The comparison will indicate that the main three ingredients for catastrophic failure are currently present.

In the medieval era, the Rook symbolized the chariot,²⁰ which was a fast-moving vehicle used in the Roman and Greek empires.²¹ The goal of charioteers was to manage and preserve the momentum in difficult manoeuvres. Chapter 5 will reflect on the momentum required to establish an institutional culture. The analysis will highlight inefficiencies in developing a SAR culture in the CAF and the failure to set a common vision. Both factors will be shown to be aftershocks of a dispersed leadership. This chapter will also demonstrate that the CAF SAR community consistently lacks the ability to foresee second and third orders of effect of their actions and decisions affecting the community. As well, Chapter 5 will highlight the misunderstanding of the SAR mandate by higher command. Examples of this mission misunderstanding will be highlighted when casualties occur during SAR operations, such as the death of Sgt Gilbert.

Finally, Chapter 6 will conclude the work with an analysis of the role of the Pawns, in this analogy represented by the men and women executing the SAR missions. It will look at existing models of RCAF command structure that have similarities to SAR operations and have proven successful. The two specific organizations are 1 Wing model and the CANSOFCOM.

SAR is one of the few military missions that are active 24/7. The Government of Canada defines SAR as a no-fail mission where resources must be allocated with the aim of preventing the loss of lives and injuries.²² To highlight the policies, the Prime Minister's mandate letter to the Minister of National Defence (MND) dictates that the

²⁰Henry Davidson, *A Short History of Chess*, Crown/Archetype, 2012, 42.

²¹John H. Humphrey, *Roman Circuses: Arenas for chariot racing*, University of California Press, 1986, 388.

²²Canada. Office of the Auditor General. Report of the Auditor General of Canada to the House of Commons, Chapter 7: Federal Search and Rescue Activities. Ottawa: Office of the 100 Auditor General of Canada Distribution Centre, 2013. http://www.oag-bvg.gc.ca/internet/English/parl_oag_201304_07_e_38192.html, art. 7.13.

Canadian Armed Forces' overarching goals are to protect Canadians, and an essential way to accomplish this is through search and rescue. The letter also states that the CAF has to be equipped and prepared to carry out its mandate when called upon.²³ SSE, released in 2017, sets a detailed road map for the modernization of the CAF. It delineates clear roles and missions, with one of the established core missions being to conduct SAR operations.²⁴ Moreover, the current 1 CAD Commander, Major General Christian Drouin, wrote in his operational direction and guidance for fiscal year (FY) 17/18 that the priority will be SAR, NORAD, and named missions.²⁵

Despite a clear direction at every level that SAR is a top priority, there is still a leadership struggle within the RCAF with regards to how SAR is structured. There are currently five primary SAR Squadrons, three combat SAR support Squadrons, and three Joint Rescue Coordination Centres. These 11 units each fall under different chains of command, and there is no unity of command for SAR in the RCAF. Among the questions that will be addressed in this paper are: Who is actually in charge of SAR in the CAF? Who is the SAR commander? And how is the RCAF SAR mandate coordinated and managed? Even though the CAF has been conducting SAR for 45 years, the community is struggling to gain maturity due to the lack of leadership above the tactical level. Money, personnel, projects and readiness are mostly managed locally without a common vision. The RCAF needs to start building roots in order to break the tactical level shell that is hindering real growth. Ultimately, the key is to coordinate a move from tactical

²³Office of the Prime Minister, "Mandate Letter to Minister of National Defense from Newly-Elected Liberal Government 2016." Last accessed 21 December 2016. <http://pm.gc.ca/eng/minister-national-defencemandate-letter>.

²⁴Strong, Secure, Engaged..., 17.

²⁵Canada, Department of National Defence, Operational Guidance for FY 17/18, Commander of 1 Canadian Air Division, March 2017.

success to institution creation.²⁶ This paper will advance that the only glue capable of holding this coordination together is leadership through a dedicated SAR Wing.

²⁶Brad Gladman, Richard Goette, Richard Mayne, Shayne Elder, Kelvin Truss, Pux Barnes, Bill March, *Professional Airpower Mastery and the Royal Canadian Air Force: Rethinking Airpower Education and Professional Development*, RCAF Journal - WINTER 2016 - Volume 5, Issue 1, para 40.

Chapter 1 KING: COMMAND

Introduction

The military is a unique profession. As an example, the CAF has a concept of unlimited liability, which means that the government can legally put the force in harm's way.²⁷ Unlimited liability, when harnessed with sound risk management and solid thought processes, provides unparalleled capabilities, but this force and immense responsibility rest upon one principle only: command.

Command is a unique part of the military profession, and there are different ways and means of exercising it. The first part of this chapter will describe current SAR command and control (C2) in order to understand the intricacies of its command structure. The focus will then move to associated challenges. Finally, the chapter will dive into the mission command principle and highlight the paradox between the principle's intent and the actual way the SAR community is led. This chapter will ultimately demonstrate that SAR mission command can only be enabled through a SAR Commander position.

RCAF Current SAR C2 Structure

Fundamental to the success of any command in the military is a well-defined command and control structure and authority. Personnel at all levels must understand the

²⁷ *Duty With Honour*, 4, 27

fundamentals behind the terms ‘command’ and ‘control’, as these notions form the core momentum of military forces. Allan English has written extensively on the concept and application of leadership. He discovered that the theoretical study of command in the military sphere as a whole is still immature,²⁸ and that the “inter-relationships and interconnectedness of command, management and leadership functions often make it difficult to disentangle the command, management and leadership effects achieved by individuals in positions of authority.”²⁹ The SAR C2 is no exception to this theory, as it changes constantly between Force Generation (FG) and Force Employment (FE). Moreover, the SAR C2 is further challenged by the mandate being shared with other federal agencies, provincial departments, and a full complement of volunteer organizations.

In the military, the chain of command (COC) is the source of command authority.³⁰ This authority is at the core of C2. Command is “the authority vested in an individual of the armed forces for the direction of military forces,” whereas control is “the authority to use forces for a specific mission.”³¹ Command and control relationships can differ greatly when forces change from FG to FE operations. In FG mode, the C2 is fairly simple; it flows from the Chief of Defence Staff (CDS) to the RCAF Commander, to the Division Commander, to the Wing Commanders, to the Squadron Commanding Officers (CO). In fact, it is a great reminder that the Air Force’s role is to generate forces capable of being employed by one of the CAF force employers. This entire chain is

²⁸Allan English, *Command & Control of Canadian Aerospace Forces: Conceptual Foundations* (Trenton: Canadian Forces Aerospace Warfare Centre, 2008), 2.

²⁹*Ibid.*, Preface.

³⁰Canada, Department of National Defence, *Canadian Forces Aerospace Command Doctrine*, B-GA-401-000/FP-001, (Trenton: Canadian Forces Aerospace Warfare Centre, 2012), 38.

³¹*Ibid.*, 4.

enabled by full command, meaning that the command and control are joint throughout and lay within the same person.³² During FG, the CO of a Squadron has full command of the unit. The CO is delegating some command authority to the aircraft commanders to give them the authority to command the crew. This delegation is done through an official document (delegation of authority) that lists the mission types that the AC is allowed to execute. Figure 1 depicts the COC of SAR squadrons in FG mode.

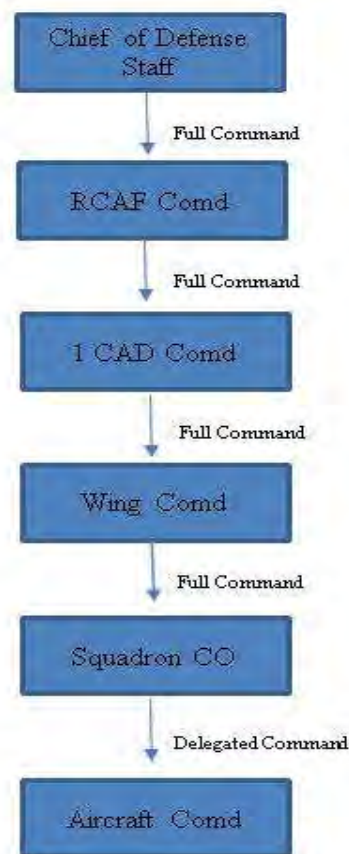


Figure 1.0 – C2 for a SAR Squadron in FG mode.

Source: Author's interpretation of the organizational structure of CAF aerospace forces in Canadian Forces Aerospace Command Doctrine, B-GA-401-000/FP-001, (Trenton: Canadian Forces Aerospace Warfare Centre, 2012), p. 14.

³²Ibid., 6.

There is an actual shift in the chain of command that takes place between FG and FE. During FE operations, more specifically SAR missions, Commanders and COs are delegated their C2 authorities according to their appointment within the expeditionary COC.³³ This separation of command and control is illustrated in Figure 1.1.

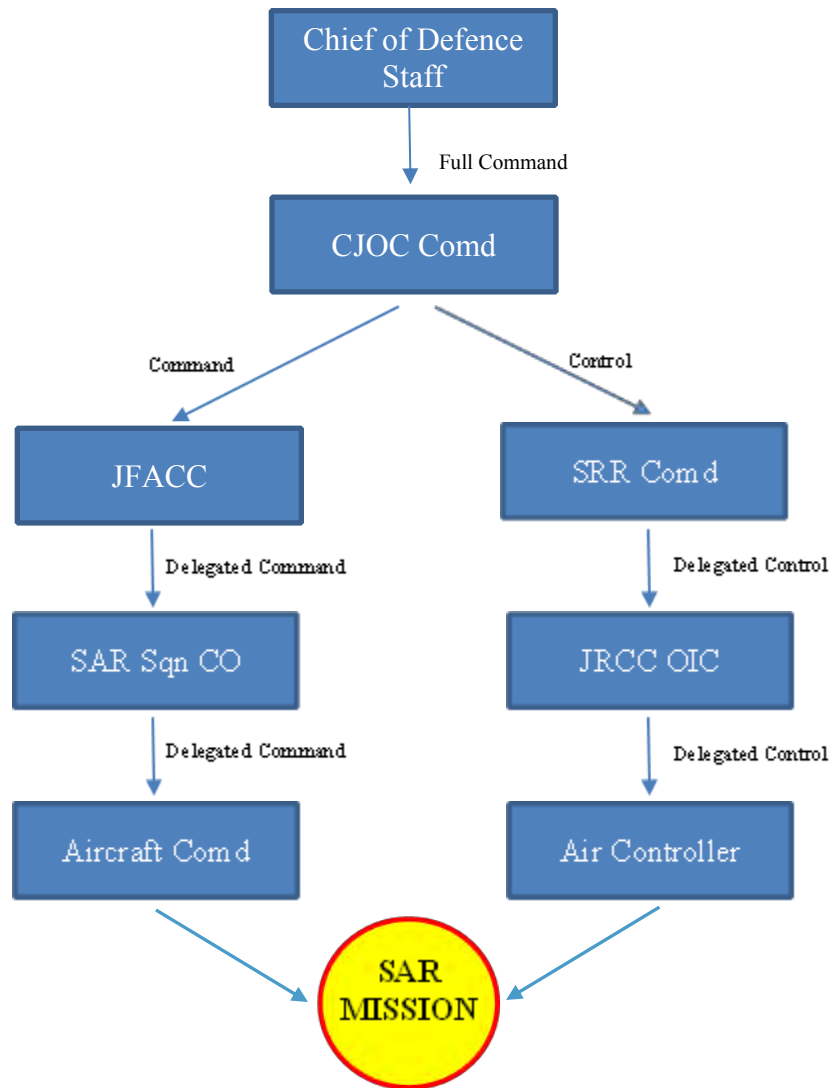


Figure 1.1 – C2 for a SAR mission in the RCAF.

Source: Author's interpretation of the organizational structure of CAF aerospace forces in Canadian Forces Aerospace Command Doctrine, B-GA-401-000/FP-001, (Trenton: Canadian Forces Aerospace Warfare Centre, 2012), p.14

³³Department of National Defence, *Canadian Forces Aerospace Command Doctrine...*, 6.

In FE mode, the force employer is the Canadian Joint Operating Command (CJOC). In the case of domestic SAR missions, the CDS retains full command, but from there it takes a different route down to CJOC. The RCAF Comd and the Wing Commanders are removed from the COC, and CJOC is the tasking authority for SAR missions. The CJOC Commander receives full command from the CDS.

The CJOC Comd then splits the C2 into two avenues. The command aspect is given to the Joint Forces Air Component Commander (JFACC), which is usually the 1 CAD Comd, unless delegated. The control element goes from CJOC Comd to the appropriate Search and Rescue Region (SRR) Commander: Halifax, Trenton or Victoria.

From there, the JFACC delegates command to the appropriate squadron commanding officer. In turn, through another delegation of authority, the CO gives delegated command to the Aircraft Commander to accomplish the mission. On the control side, the SRR Comd delegates control to the JRCC Officer in charge, which in turn delegates control to the JRCC Air Controller to control the mission.³⁴

In time of force employment with specific SAR missions tasking, the CO retains the command function through the JFACC but loses the control aspect which is given to JRCCs. The SAR crews remain under the command of the CO but are controlled by JRCCs through CJOC. Figure 3 depicts the CFAWC interpretation of SAR mission C2. It shows the same principles explained in Figures 1.0 and 1.1, but with greater detail about other secondary players involved, such as the Canadian Coast Guard.

³⁴ Department of National Defence, RCAF Air Doctrine Note 14-01 - ATF Commander Definitions, Roles and Responsibilities, Canadian Forces Aerospace Warfare Centre, 2014, p.3

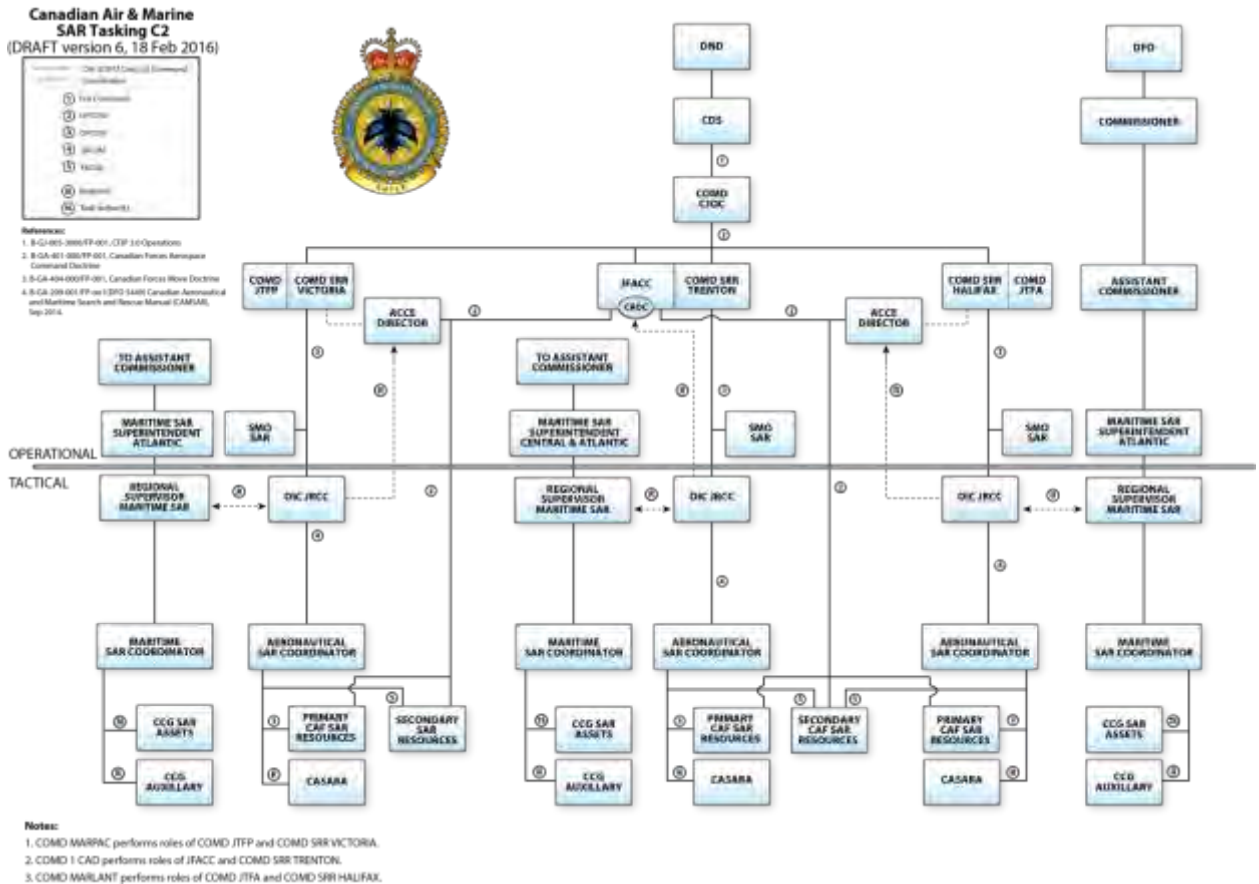


Figure 1.2 SAR tasking C2
 Source: CFAWC draft version of Canadian Air and Marine SAR Tasking C2, 18 February 2016.

What does this mean in simple terms? The control authority, in this case JRCC, has the authority to task a crew for a specific mission. According to CAF doctrine, the mission must include five basic elements: intentions on the use of forces; the time to

achieve the mission; the space to achieve the mission; the objectives; and the end state.³⁵

In practical terms, the mission should look like the following: *“Rescue helicopter 901 is tasked to search and recover a missing snowmobiler. The mission time will start upon mission acceptance by the Aircraft commander and will be terminated at the discretion of JRCC. The crew is tasked to operate 100 Nautical miles around Deer Lake airport. The mission end state is the delivery of the patient to a suitable medical facility.”* This is what the control is about – executing a given mission, with a time and space culminating at an end state.

The command aspect of the equation, which remains with the aircraft commander, is about the **how**. Command enables the authority to make decisions on how this given mission will be accomplished. RCAF command doctrine highlights different command principles, amongst which is freedom of action. The doctrine dictates that “[o]nce the task or mission has been established, subordinate commanders must be permitted maximum freedom of action to take initiative and exercise their skills and knowledge of the local situation in the planning and conduct of the operation.”³⁶ This is even further developed in the recently published 2016 RCAF doctrine with regards to authority by supporting that the RCAF “fosters initiative and situational responsiveness and provides subordinate commanders with the authority to apply their expertise and understanding of local conditions to accomplish the mission within the guidelines and overall intent of the commander.”³⁷

³⁵Canada, DND, B-GJ-005-000/FP-001, Canadian Forces Joint Publication (CFJP 01), Canadian Military Doctrine (Ottawa: Department of National Defence, 2011), 54.

³⁶Department of National Defence, Canadian Forces Aerospace Command Doctrine..., 3. This also relates to mission command, which will be discussed below.

³⁷Department of National Defence, RCAF Doctrine (Trenton: Canadian Forces Aerospace Warfare Centre, 2016), 21.

In general, JRCCs are in the business of tasking and coordinating assets for SAR missions, whereas the Squadrons are in the business of force-generating professional SAR crews which ultimately will be employed to conduct missions. How the missions are flown and executed is the responsibility of the aircraft commanders under their respective commanding officer's authority. This relationship between the aircraft commander and higher command is where the mission command principle takes roots.

SAR Command Challenges

Military power is exercised under different types of commands. Dr. Martin Van Creveld, professor at the National War College in Washington DC, and author of numerous books on military command, highlights four elements that make command difficult. The first element is dividing a force into multiple sub-units; the second is rapid movement of forces; the third is when the span of command covers a large area of operations (AOR); and the fourth element is maintaining group cohesion when the command is remote.³⁸

Search and Rescue in the RCAF reflects all four criteria described by Van Creveld. In the first factor (i.e., when a force is divided into multiple sub-units), the RCAF SAR command and control structure switches back and forth with minimal notice from a force generation command structure to a force employment structure. In FE mode the force is controlled by three different JRCCs and subdivided into five primary SAR units; 442 Sqn in Comox, 435 Sqn in Winnipeg, 424 Sqn in Trenton, 413 Sqn in Greenwood and 103 Sqn in Gander. Out of those five units, eight crews of helicopters and

³⁸Martin Van Creveld, *Command in War*, Harvard University Press, Cambridge, 1985, 6.

fixed-Wing aircraft are on active duty.³⁹ Van Creveld's first factor is more troublesome for SAR in day-to-day FG operations. The system has five primary SAR units, which together total 48 SAR crews led by aircraft commanders.

The second Van Creveld factor for difficult command environments is the speed at which units are moving. SAR crews move without notice more than a thousand times a year.⁴⁰ Most of the time, the crews move within 30 minutes' notice, which does not permit thorough briefing or advice from senior commanders. Eight SAR crews could be launched at the same time across Canada. The element of speed is in the tasking process, the reaction time, and the speed of the aircraft themselves. Once a crew is launched on a SAR mission, decisions are made instantly and swiftly without the direct supervision of commanding officers.

The third element that brings challenges is the sheer size of the AOR. Canada is the second largest country in the world.⁴¹ The SAR mandate covers 18 million square kilometers of land and water, comprising more than 243,800 kilometers of coastline, three oceans, three million lakes, and the St. Lawrence River system.⁴² The SAR responsibilities also extend hundreds of miles out to sea for marine incidents. At the same time, the country is characterized by sparsely settled regions with limited infrastructure in the Northern area, topography with peaks exceeding 12,000 feet, and weather patterns

³⁹ CAMSAR, art 2.10.5

⁴⁰ Quadrennial Search and Rescue Review..., 6.

⁴¹ M. Mattyasovszky, The Largest Countries in the World. World Atlas, <https://www.worldatlas.com/articles/the-largest-countries-in-the-world-the-biggest-nations-as-determined-by-total-land-area.html>. 2017, last accessed 08 April 18.

⁴² Strong, Secure, Engaged..., 87.

reaching both extreme cold and heat. The combination of these factors makes the AOR one of the most challenging in the world.⁴³

The last Van Creveld factor is arguably the most significant for SAR: the remoteness of the command. Primary SAR Sqns fall under different Wing Commanders with no C2 connection to each other until reaching a 2-star General at the 1 Canadian Air Division (CAD), as depicted in Figure 1.3.⁴⁴

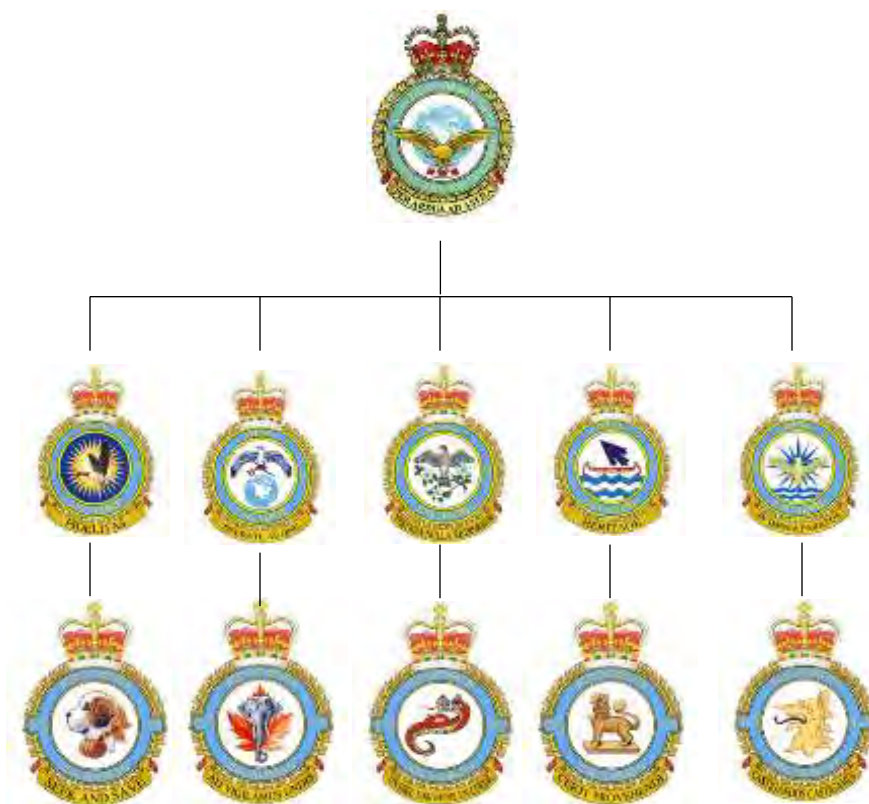


Figure 1.3 – Current SAR C2 in FG Mode

Source: RCAF Web page <http://www.rcaf-arc.forces.gc.ca/en/1-cdn-air-div/index.page>

⁴³National Defence of Canada, *Development of RCAF Future Search-and-Rescue Concept Project*, (Trenton: Canadian Forces Aerospace Warfare Centre, 2013), 4.

⁴⁴1CAD Comd is the RCAF centralized commander responsible for all RCAF operations.

In practical terms, this means that no Wing commander oversees the SAR force as a whole. The command, management, logistical needs, training, administration, etc., are all largely left to local Wing Commanders, who manage the SAR Squadrons (plus other RCAF assets) falling under them as they see fit. Each SAR unit then pushes issues to their respective Wing Commanders, who have competing priorities. To illustrate the problem, the training funding for Search and Rescue technicians (SAR Techs) was centralized in 2014 by 1 CAD due to some RCAF Wings diverting SAR Sqn funding to other uses while some of the Sqns were able to retain funding. This resulted in inconsistency in training across the country to provide the same expected level of service.⁴⁵ There is no CAF SAR budget, no SAR vision, and no SAR Headquarters (HQ) to advance issues as a whole. More importantly, there is no SAR commander to lead the force, institute a risk management philosophy, and set mission command on the right track.

Mission Command

Different types of command can be employed operationally. The current 1 CAD Commander, Major-General Drouin, produced a document on operational guidance that was published in 2017. In the document, General Drouin explicitly states that RCAF units across the entire spectrum, including SAR, will be using mission command principles.⁴⁶ Also known as centralized control and decentralized execution, mission command is about entrusting military personnel with increased responsibility and promoting initiatives

⁴⁵ James, Pierotti, *Functional Rescue for SAR Squadrons*, Canadian Forces Air Warfare Center, Issue 31 Inform, May 2017.

⁴⁶Department of National Defence, MGen Christian Drouin, 3000-2 *Commander of 1 Canadian Air Division – Operational Guidance FY17/18*. 24 March 2017, 3-11.

derived from a commander's intent.⁴⁷ Canadian Military Doctrine states that "CF culture emphasizes mission command and empowers all commanders with the authority to execute their mission while holding them accountable for the actions of the forces under their command."⁴⁸ The North Atlantic Treaty Organization (NATO) also makes an attempt at defining mission command, with the Allied Joint Doctrine stating: "Through mission command, commanders generate the freedom of action for subordinates to act purposefully when unforeseen developments arise, and exploit favorable opportunities. Mission command encourages the use of initiative and promotes timely decision-making."⁴⁹

The moment of truth for the RCAF is when an aircrew comes in contact on the front line with its mission. Whether it is a plane dropping a bomb, gathering intelligence, transporting troops, or a SAR helicopter rescuing a person, what this "front liner" believes he or she should do on behalf of the RCAF and the CAF at large is the heartbeat of the organization.

Gen Martin E. Dempsey is the former US Chairman of the Joint Chiefs of Staff and currently a professor at Duke University. Dempsey argues that the cornerstone in mission command is the establishment of trust for the commander in charge of the operation and the sub-unit commanders. He also advances one of the most important concepts of this chapter, which is that the commander needs to be an expert in the field of operation to understand the problem, envision the end state, and visualize how to get

⁴⁷Trent R. Carpenter, USAF. *Air & Space Power Journal*; Maxwell AFB30.2 (Summer 2016), 50.

⁴⁸Canada, Department of National Defence, Canadian Forces Joint Publication, CFJP 01, Canadian Military Doctrine (Ottawa: Canadian Forces Experimentation Centre, 2011-09), 5-1.

⁴⁹North Atlantic Treaty Organization, AJP-01(D), Allied Joint Doctrine (Brussels: NATO Standardization Agency, December 2010), 6-3, accessed April 10, 2018.

there. The commander needs to “equip decision-makers at all levels with the insight and foresight required to make effective decisions, to manage associated risks, and to consider second and subsequent order effects.”⁵⁰ SAR delivery in the RCAF is a very specialized skillset that requires Commanders to understand the details of the operations in order to fully understand the capabilities’ strengths and weaknesses.

The mandate of SAR in Canada is fairly straightforward: save lives and reduce injury potential.⁵¹ While the intent of saving lives is simple, it requires a detailed road map to guide the SAR force on how to accomplish the mandate. LCol Pux Barnes warns that when mission command is practiced throughout the COC, the Commander’s intent is crucial because the further down command authority is passed, the more things need to be clear and understood.⁵² The mission command principle only works through an understanding of the means to meet an end state. The end state in its own can become problematic if no direction is given and is left to the lowest sub-unit to figure out how to execute.

The current SAR construct has the potential for similar risks, in that the lack of commander’s intent enables different units to start acting on their own. Operational effectiveness can be seriously jeopardized when small units make their own rules and values. It is very difficult for commanders at the strategic level to give directives and

⁵⁰Gen Martin E. Dempsey, *Mission Command*, white paper (Washington, DC: US Joint Chiefs of Staff, 3 April 2012), 3.

⁵¹Canada. Public Safety Canada. “Emergency Management Framework for Canada.” Last modified 15 December 2015. <http://www.publicsafety.gc.ca/cnt/rsrscs/pblctns/mrgncmngmnt-frmwrk/index-eng.aspx>.

⁵²Pux Barnes, *Mission Command and the RCAF: Considerations for the Employment of Air Power in Joint Operations* (Trenton: Canadian Forces Aerospace Warfare Centre, 2014), 4. LCol Pux Barnes is a veteran academic at the Canadian Forces Air Warfare Center. Barnes explains: “The individual crew, section or team commander, way down at the tactical end of an operation, must understand the intent of their commander as the mission is being executed.”

orders when the behaviour of the soldiers on the ground can differ between units. Following the tragic loss of SAR tech Sgt Janick Gilbert during an Arctic rescue, the flight safety report revealed that “crew training, progression and experience levels combined with the myriad of considerations and factors during SAR operations present a significant safety concern.”⁵³ It also calls for a community approach that makes operational decisions based upon the collective wisdom of decades of SAR community experience.⁵⁴ While a tool like a risk matrix is a step forward, only proper leadership and command will enable and improve guidance in the long term. Leadership empowers a risk matrix, not the other way around.

The Canadian Defence Academy defines command as the exercise and delegation of authority, acceptance of responsibility, and a demonstration of leadership and competence. Command is the purposeful exercise of authority over structures, resources, people, and activities.⁵⁵ Despite the different types of command and the associated responsibilities, one striking characteristic of command is the extent to which the various command types rely on the personal nature of command itself, especially the authority to command being vested in one individual.⁵⁶ SAR in the CAF has unfortunately no dedicated command structure and no SAR Commander, which results in a diluted mission command and ultimately reduced operational efficiencies.

⁵³Department of National Defence, *Canadian Forces Flight Safety Investigation Report (FSIR) File number 1010-CC130323 (DFS 2-2) Final Report*, Directorate of Flight Safety. Ottawa 2013, 46.

⁵⁴Department of National Defence, *Canadian Forces Flight Safety Investigation Report...*, 46.

⁵⁵Department of National Defence, *Leadership in the Canadian Forces: Doctrine*, Canadian Defence Academy, 2005, 7.

⁵⁶Command and Control of Canadian Aerospace Forces: Conceptual Foundations (Ottawa: Her Majesty the Queen, as represented by the Minister of National Defence, 2008), Preface.

The command function in CAF doctrine is projected to be a continuous action that integrates every other operational function.⁵⁷ As previously discussed, General Dempsey highlighted the requirement for the Commander to be expert at knowing the details of the operations in order to establish that all-important trust link. Currently, there is no SAR Commander. No officer in the RCAF is empowered with the authority to provide the insight and foresight required to make effective decisions, to manage associated risks, and to consider second and subsequent order effects. This reality is putting trust in a fragile state across the RCAF for SAR. The Commanding Officers of the five primary SAR Squadrons have different Wing Commanders for supervisors who have, for the most part, no deep knowledge of SAR operations. For example, the Wing Commander in Greenwood, Nova Scotia, who has under his or her command a primary SAR Squadron (413 Sqn), is traditionally a long-range maritime patrol senior officer with no SAR experience. Moreover, the Wing Commander at 424 SAR Squadron is typically an air transport community officer. The SAR Squadron Commanding Officers are left to themselves to create a mission-command principle for their own Squadron.⁵⁸

The RCAF has tried to patch the deficiencies with a position called the Search and Rescue Chair Advisory Group (SARCAG), which is a senior SAR Colonel chairing a group composed of different senior positions in the community.⁵⁹ The problem with this option is that the SARCAG is a secondary job for the designated officer, and that person

⁵⁷Canada, Department of National Defence, Canadian Forces Aerospace Command Doctrine..., 1.

⁵⁸ Flight Comment Department of National Defence, RCAF Flight Safety magazine, issue 2, 2014, PWGSC (Ottawa; Ontario), p.24.

⁵⁹ Canada. Department of National Defence. Chief of Review Services. Evaluation of the DND/CAF Contribution to the National Search and Rescue Program..p.27

is not part of the chain of command and therefore has no authority. The RCAF is ultimately asking the SARCAG chair to lead without authority.

Adherence to the concepts and principles of mission command and the effectiveness of the C2 is only enabled by setting the tone, communicating effectively, and leading by example.⁶⁰ The mission command principle that is advertised as the way forward for SAR in the RCAF would only be actualized with the creation of a SAR Wing Commander position that not only requires sufficient knowledge and expertise but also wields authority. If the values and beliefs of the institution are firmly embedded in SAR members, they would then be able to select the correct behaviour for each situation.⁶¹

Conclusion

Command is the foundation for healthy leadership. This chapter highlighted the different SAR command structures between FE and FG. From those structures, the roots of the challenges were identified, including SAR's multiple sub-units, the rapidity at which the force moves, the span of command covering a large AOR, and the remoteness of command between the crews delivering the SAR services on the ground and those giving the orders.

The mission command concept is outlined by the Commander 1 Canadian Air Division as the way forward for RCAF operations. In order for mission command to be effective, however, General Dempsey highlighted the requirement for the Commander to

⁶⁰Dempsey, *Mission Command White Paper...*, 4.

⁶¹Jerry W. Koehler and Joseph M. Pankowski, *Transformational leadership in Government*, St Lucie Press, Delra Beach Florida. 1997, 39.

be expert at knowing the details of the operations. The current SAR structure has Wing Commanders that do not possess sufficient tacit SAR knowledge to establish that all-important trust link. The lack of a SAR commander is jeopardizing the core of mission command and poses operational risks, especially with regards to risk management and decision-making processes.

Chapter 2 BISHOP: INNOVATION

Introduction

RCAF SAR, like any other capability in the CAF, needs to innovate in order to grow. In this context, growth is considered not as ‘bigger’ but ‘better.’ The chapter will show that the innovation required to grow and develop better SAR capabilities has stalled over the past decade due to a lack of leadership structure and thus jeopardizes the effectiveness of the RCAF mandate.

Stalled Innovation

Creativity and innovation are elements over which effective leaders have control. In fact, effective leadership creates an environment that emboldens innovation.⁶² SSE highlights the importance of keeping pace with rapid evolution and innovation to ensure that the CAF maintains operational relevance.⁶³ SSE establishes a defined path for the CAF in the years to come, and that SAR is a clear priority echoes in the document. While innovation can take different shapes and forms, technology will always be a key component. SSE describes technology as “a critical enabler of modern militaries and fundamental to every type of operation the CAF is expected to conduct. That includes everything from search and rescue, humanitarian assistance, disaster relief, and peace support, to combat.”⁶⁴

Canada likes to project itself as a leader in the aeronautical business. Innovation, Science and Economic Development Canada (ISED) and the Aerospace Industries

⁶²N. Anderson, K. Potocnik, J. Zhou, *Innovation and Creativity in Organizations: A State-of-the-Science Review*, Prospective Commentary, and Guiding Framework. *Journal of Management*. 2014, 1297-1333.

⁶³Strong, Secure, Engaged..., 70.

⁶⁴Ibid, 70.

Association of Canada (AIAC) released a report in 2016 on the current state of the Canadian aerospace industry. One of the report's key finding was that aerospace manufacturing was "the number one research and development (R&D) investor across Canadian manufacturing industries." In fact, R&D is over five times as intensive as the manufacturing sector average, and accounts for close to 30% of total manufacturing in R&D investments.⁶⁵

This strength in aerospace innovation has been reflected across the Defence spectrum. Among CAF spending in 2014, \$1.3 billion was allocated to Airborne Communications, Navigation, Airborne Sensor/Information Collection and Other Information Systems.⁶⁶ With this significant investment in sensor technology, an assumption could be made that SAR, as a top priority for the RCAF and CAF, has been able to modernize and keep up with current technology. The fact, is that every primary SAR platform in the RCAF – fixed-wing and helicopter alike – is relying almost solely on the eyesight of aircrew to search for people in distress.⁶⁷ Further research found that Canada is the only country in the G20 that does not use supplemental means, such as forward-looking infrared (FLIR), thermal imaging technology and high definition video camera in primary SAR aircraft. These supplemental technologies have revolutionized the effectiveness of searches in all conditions.⁶⁸

⁶⁵Innovation, Science and Economic Development Canada, *The Innovation, Science and Economic Development Canada (ISED), State of Canada's Aerospace Industry 2016 Report*, last accessed 01 April 2018 <http://aiac.ca/wp-content/uploads/2016/06/State-of-Canadas-Aerospace-Industry-2016-Report.pdf>.

⁶⁶Innovation, Science and Economic Development Canada, *The Innovation, Science and Economic Development Canada (ISED), State of Canada's Aerospace Industry 2016 Report...*, 22.

⁶⁷Department of National Defence, *ISR Support to SAR Operations* (Trenton: Canadian Forces Aerospace Warfare Centre, 2016), 3.

⁶⁸*Ibid*, 3.

The RCAF SAR community has been unable to benefit from this technical advancement, despite the large amounts of aeronautical investment in the CAF. The RCAF Aerospace Warfare Centre (RAWC) has studied the question of ISR support to the RCAF SAR mandate. The 2016 report found that “the crux” of the S-factor in SAR is finding “a target quicker and more efficiently. Searches can last for weeks, expanding hundreds of hours of flying time...[as]...the current RCAF search methods haven’t changed for decades.”⁶⁹ The SARCAG minutes of May 2010 made it clear that there was a need for FLIR and IR sensors in the current aircraft.⁷⁰ Once again, a mention of those sensors is made in every subsequent SARCAG minutes, but with no actions, despite the immense impact the sensors could have on operations.

The question can be asked as to why such a high priority mandate for the CAF has not been able to gain traction on technological investments. For the innovation process to begin in any organization, that organization must first put the right leaders and leadership structure in place. The command authority to oversee innovation in SAR capabilities is nonexistent. Other communities, like Special Operations, Joint Task Force 2 (JTF2) and tactical helicopters, for example, are all supported by a dedicated command structure which enables a Commander to set priorities and order staff officers to find solutions and implement them.⁷¹ Whereas those communities have the benefit of a dedicated command structure, SAR has no such advantage to coordinate innovation efforts.

⁶⁹Ibid, 4.

⁷⁰Department of National Defence, *Minutes of the SAR Capability Advisory Group (SARCAG) 10-01, Trenton, 06 May 2010*. Signed 23 July 2010, 4/12.

⁷¹ Sandrine Murray, Canada’s top commando, *Esprit de Corps, Canadian Military*. Volume 24 issue 10, November 2017, p. 16

The CAF round table is very busy and everybody is struggling to get their piece of the cake in order to advance their capability. Despite being a high priority for the Government, SAR has no representative at the table and so is obliged to feed on the crumbs left by other stronger command structures. This is proven by the lack of modern sensors on SAR aircraft and the difficulty to capitalize on innovative technology. For example, the tactical helicopter community has had FLIR technology tested and installed on their Griffon helicopters for years to enhance their ability to detect moving people at night.⁷² Primary SAR helicopters have still no such equipment and (even more troubling) no such project is in the works, despite SAR having a clear requirement to find people more effectively.

Nina Kollars has studied military innovation for over a decade and supports that the core personnel of an organization are the refiners who focus on the deep exploration of a specific area, crafting, shaping and perfecting that area over time.⁷³ She sees fundamental military elements such as doctrine, organization, training, material, education, personnel, facilities and policy as being linked together when it comes to innovation.⁷⁴ Those elements, however, need to be directed and guided by a leadership core that understands the details of the operation.

SARCAG meets twice a year to discuss issues and projects relating to SAR capabilities. One of their functions is to oversee the innovation in procedures and equipment that would improve the RCAF SAR system as a whole. The SARCAG minutes

⁷²Department of National Defence, Griffon CH146 Technical data, RCAF Web site, last accessed 01 April 2018, <http://www.rcf-arc.forces.gc.ca/en/aircraft-current/ch-146.page>.

⁷³Nina Kollars, *Genius and Mastery in Military Innovation*, Survival Journal Global Politics and Strategy, Vol 59, Numero 2, 2017, 127. Nina Kollars is a Professor at Franklin & Marshall College. She is also a fellow at the Modern War Institute at West Point Military Academy.

⁷⁴Ibid, 126.

from 2010 state that three projects were identified as important in the evolution of the CH149 helicopter capabilities. The first of these was the ability to use an alternate-all-up-weight already authorized by other user-countries to extend the range of off-shore missions and increase the safety factor by allowing the crew to fill up the fuel tanks to capacity. The second minor project was the ability to use a proven supplemental oxygen system to allow flight above 10,000 feet, which would significantly reduce the transit time on the mountainous west coast. The third project was an improvement to the basic patient treatment area on their aircraft to bring it to a standard seen in other military SAR fleet and civilian organizations.⁷⁵ All of the following SARCAG minutes from 2010 to April 2017 note that the projects are being worked on, but with no resolution.⁷⁶ This stalled innovation is a sign that the community lacks the structural and leadership requirements to effect necessary changes. The institutional fragility of SAR in the RCAF has been most flagrant in its difficulty to advance in even the smallest of projects.

The Commander 1 CAD promotes an agile air force that is responsive, resilient and adaptable. He also promotes capability development as his third priority.⁷⁷ Aligning with the Commander's direction, the Quadrennial Search and Rescue review, conducted in 2013, was very direct, stating that the CAF needs to remain innovative and committed to improvement due to the life-and-death consequences of SAR operations.⁷⁸ Still, when the system is evaluated objectively (like in the 2013 Spring Report of the Auditor General

⁷⁵Department of National Defence, Minutes of the SAR Capability Advisory Group (SARCAG) 10-01, Trenton, 06 May 2010, Signed 23 July 2010.

⁷⁶Department of National Defence, *Minutes of the SAR Capability Advisory Group (SARCAG) 17-01*, Ottawa, 09 April 17. Signed 08 May 2017.

⁷⁷Canada, Department of National Defence, RCAF Operational Guidance for FY 17/18..., 1/11, 4/11.

⁷⁸Quadrennial Search and Rescue Review..., 14.

of Canada), issues are raised about the ability to cope with innovation in the fleet. Among other observations, the report stated that “the search and rescue information management system does not adequately support daily operations and is near the breaking point.”⁷⁹

The current success and effectiveness of the RCAF to conduct rescue missions on the terrain is a reality that needs to be viewed from an objective point of view. As Bill Gates once said: “Success is a lousy teacher.” Ira Kalb highlights concerns about companies that are currently successful, as they tend not to have innovation ingrained in the core of their businesses. He warns that “survival today requires more than treading water ... many of the companies that were once great are now gone or on their way out largely because they stopped innovating.”⁸⁰ The SAR community ought to see pass their immediate tactical successes and look at how they can innovate to ensure they remain competitive with other SAR services, including commercial solutions.

Conclusion

The SAR community simply does not have the basic scaffolding manpower to work on and implement innovation. This inefficacy is evident by the lack of modern sensors on aircraft, the difficulties implementing proposed changes, and the inability to capitalize on the emergence of the Canadian aerospace industry. The lack of innovation

⁷⁹Auditor General. Report of the Auditor General of Canada to the House of Commons, Chapter 7: Federal Search and Rescue Activities..., Section, “What we found”.

⁸⁰Ira Kalb, *Innovation Isn't Just About Brainstorming New Ideas*, Business Insider Journal, Marshall Scholl of Business, Last Accessed 01 April 2018, <http://www.businessinsider.com/author/ira-kalb>. Ira Kalb is a professor of clinical marketing at the Marshall School of Business at the University of Southern California.

was also proven through the demonstration of how technology has not been part of the SAR community's main line of effort.

Chapter 3 KNIGHTS: OPERATION STARFISH

INTRODUCTION

The CAF launches its elite military SAR aircrews more than a 1000 times a year to help Canadians in distress. Regardless of the environment, whether on land, on water or in the air, the RCAF is ready to act 24 hours a day, 7 days a week. The military SAR function never sleeps; as SAR readiness is continuous.

At the same time, CAF SAR missions are frequently conducted in the most challenging weather conditions, over demanding terrain and water, and within one of the largest areas of responsibility on the planet. Over-water operations at night or in instrument meteorological conditions are inherently dangerous to execute. For SAR delivery, the Government of Canada has chosen the CH149 Cormorant helicopter, which many independent analysts have described as the best SAR helicopter on the market.⁸¹ However, the impressive airborne capabilities of the CH149 were challenged on the ground by sustainment difficulties experienced since its introduction in Canada in 2000. The projected availability rate was never met and the lack of available CH149s in 2005 initiated OP STARFISH. The operation saw the relocation of the Cormorants from Trenton to the other three Main Operating Bases (MOB) and the replenishing of Trenton with CH146 Griffon helicopters.⁸²

While the Trenton crews have done a tremendous job at delivering SAR since OP STARFISH was initiated, operating the CH146 Griffon in the Trenton SRR increases

⁸¹Jacek Siminski, *AW101 Merlin Helicopter: a Prospective SAR Platform for the Polish Navy?*, *The Avionist*, 2017, last accessed 01 April 2018, <https://theaviationist.com/2017/03/08/aw101-merlin-helicopter-a-prospective-sar-platform-for-the-polish-navy/>.

⁸²Department of National Defence, RWSAR Capability Tiger Team Report 31 Jan 2008, 3010-6(DAirSP), 3.

risks to both SAR crews and the SAR program as a whole, as this platform was never designed or intended to be used in this demanding role.

The question that keeps surfacing through the RCAF's COC has been the same for several years: Apart from its non-compliance to the Canadian SAR Helicopter (CSH) Statement of Operational Requirements (SOR), has the CH146 Griffon failed at delivering the RCAF SAR mandate in the Trenton SAR region? This chapter will show that yes, failure has occurred 52 times so far. Two equally important consequences are at play here: the safety of Canadians, and the safety of the crews putting their lives on the line in difficult conditions without the proper equipment.

The analysis will highlight 52 incidents since 2005 that have been classified as failures of the RCAF SAR mandate directly linked to the use of the CH146 Griffon helicopter as a primary SAR platform in the Trenton SAR Region (SRR). This chapter will focus on OP STARFISH itself, while the following chapter will analyze the root causes.

Operation Starfish

In October 2005, the decision was made to relocate all 424 Sqn CH149 Cormorant helicopters to the East and West Coast SAR units due to poor availability within the fleet. During OP STARFISH, the CH146 Griffon helicopter was temporarily deployed to 424 Sqn to fill the void. The decision was acknowledged publicly, with the acceptance of the

interim solution out of operational necessity.⁸³ This situation was further complicated by the subsequent loss of one CH149 airframe in 2006.

It was recognized through the Rotary-Wing SAR studies initiated by the Chief of the Air Staff in May 2009 that the level of SAR service would be negatively impacted in the interim. In parallel, a Record of Airworthiness Risk Management (RARM) was initially produced to mitigate the increased risk of operating the CH146 Griffon over water on SAR missions.⁸⁴ 424 Sqn has been operating under this RARM for more than a decade. As such, the CH146 still remains the interim solution for Rotary-Wing SAR in the Trenton SRR.

There is an elevated risk level associated with using the Griffon in place of the Cormorant due to its limitations in range, size, power and equipment deficiencies. Amongst the most significant factors are the lack of de-icing capability, lack of range, lack of weather radar, and lack of four-axis autopilot.⁸⁵

Definition of Failure

Defence Research and Development Canada (DRDC) is the national leader in defence science and technology, developing and delivering new technical solutions and advice to DND and other federal departments. DRDC works closely with academia, government, industry and Canada's allies. Back in 2012, DRDC was tasked by the Canadian Government to conduct a study in order to find "appropriate parameters" for

⁸³Department of National Defence, *RWSAR Capability Tiger Team Report 31 Jan 2008*, 3010-6(DAirSP), 3.

⁸⁴Department of National Defence, *CH146 Griffon Operation over Water Risk of Airworthiness Risk Management*, RARM-CH146-2009-13, Canada.

⁸⁵Department of National Defence, *RWSAR Capability Tiger Team Report 31 Jan 2008*...

assessing “the use of the CH-146 as a primary SAR platform in determining both the nature of the particular demand being placed on that fleet and the potential risk areas in its continued use as a SAR platform.” In its conclusion, the DRDC report stated that:

Further study on an incident by incident basis is required to determine if that capability deficiency was significant. A fuller appreciation of the impact of maintaining this capability in MOB Trenton would require a full risk assessment comparing the Griffon to the other primary RWSAR asset – the Cormorant – to determine what would be the real impact of the Cormorant’s capability versus that of the Griffon, given the historic demand.

This chapter will answer the call of duty and use an evidenced-based analysis approach to assess 43,570 SAR missions in the Trenton region from 2005 to 2017. The first and most important task confronting this chapter is to define what precisely constitutes a failure of the RCAF SAR mandate. Some inherent subjectivity exists in any attempt at quantifying failures in such a complex and interconnected environment like SAR in Canada. In order to replace subjectivity with an evidenced-based approach, significant research and analysis efforts have been applied to determine an appropriate level of capability against published and endorsed operational requirements.

The CSH SOR was created in order to define the minimum capabilities that must be maintained by a primary Rotary-Wing SAR asset. It describes the elements an air vehicle must possess to be compliant, such as range, endurance, cabin capacity, hover performance, icing capabilities, and so on. It contains several hundred carefully studied requirements. The CSH stipulations have been determined by the SAR level of service required to successfully save the majority of lives in all types of incidents. SORs also take into consideration Canada’s extensive territory and often inhospitable climate. These challenging factors, combined with very few refueling points, require the CSH SOR

vehicle to be highly capable in a broad range of aspects, with very little wiggle room for compromise.⁸⁶ Any decision for greater or lesser capability would undoubtedly result in lives saved or not saved. The CH149 Cormorant helicopter is the only CSH SOR-compliant platform in the current RCAF fleet.

The Government of Canada defines SAR as a no-fail mission⁸⁷, with failure being defined as an event in which any part of a capability does not perform according to its associated operational requirements. In other words, failure occurs any time the expected operational effectiveness is negatively impacted due to a controllable factor. More specifically, in the context of this study, a failure is defined as any time a tasked SAR mission in the Trenton SRR produced a decreased level of SAR service due to a CH146 being parked on the ramp at 424 Sqn instead of a CH149 Cormorant.⁸⁸ To reiterate the point made previously: the crews serving under the RCAF are not the cause of those failures; rather, the equipment provided to conduct the missions is the source of the failures.

Mission failure is unfortunately not a new term associated with OP STARFISH. The 2009 DRDC research clearly articulates that the capability gaps of the Griffon versus a CSH SOR have the potential for mission failure.⁸⁹ The same report warns that the limitations of the Griffon increase the workload of the crew, slow down the response time, and make both the search and rescue phases of the mission more difficult. Even more alarming is the DRDC's conclusion that throughout their analysis of missions

⁸⁶ Department of National Defence, Canadian Search and Rescue Statement of Operational Requirements, Ottawa, Originally written in 1995 and later updated in 1999.

⁸⁷ Quadrennial Search and Rescue Review..., 2.

⁸⁸ CAMSAR, Glossary, 16.

⁸⁹ Paul Dickson, RWSAR Evaluation of Options..., 110.

conducted by the Griffons at 424 Sqn between 2005 to 2008, only slight changes in the conditions surrounding the SAR incidents could have easily led to disastrous outcomes that resulted in fatalities.⁹⁰

In October 2007, facing mounting questions on the situation, the Chief of the Air Staff ordered a stand-up of a special team to examine issues related to retaining Griffon aircraft at Trenton for OP STARFISH. The Tiger Team analysis was based primarily on input from the operational community coordinated through 1 CAD, and from appropriate subject matter experts (SME) within RCAF, ADM (Mat) and CANADACOM staff. The group assembled 18 experienced SAR staff officers and SAR Squadron Commanding Officers. One of their findings was that “there are a number of critical operational deficiencies with the Griffon compared to the CSH SOR. Some mitigating improvements could be made, but some critical deficiencies cannot be resolved.”⁹¹ From the theory of failure, the next step is to dig deep into the SAR mission logs and see how we can retrieve and highlights those failures.

Methodology

In 1982, former Prime Minister P.E. Trudeau’s cabinet created the National SAR Program (NSP). It promotes a whole-of-government (WOG) approach where all agencies available (federal, provincial, municipal and volunteers) are called upon to answer the call of duty.⁹² The WOG strategy often hides the intricacies of the decision-making process of the JRCC Mission Coordinators when it comes to which assets are tasked and why;

⁹⁰Paul Dickson, RWSAR Evaluation of Options..., 115.

⁹¹Department of National Defence, RWSAR Capability Tiger Team Report 31 Jan 2008..., 2.

⁹² Department of National Defence, National Search and Rescue Secretariat. Quadrennial Search and Rescue Review...p.4

hence the importance of understanding the details of the operation in order to detect failures.

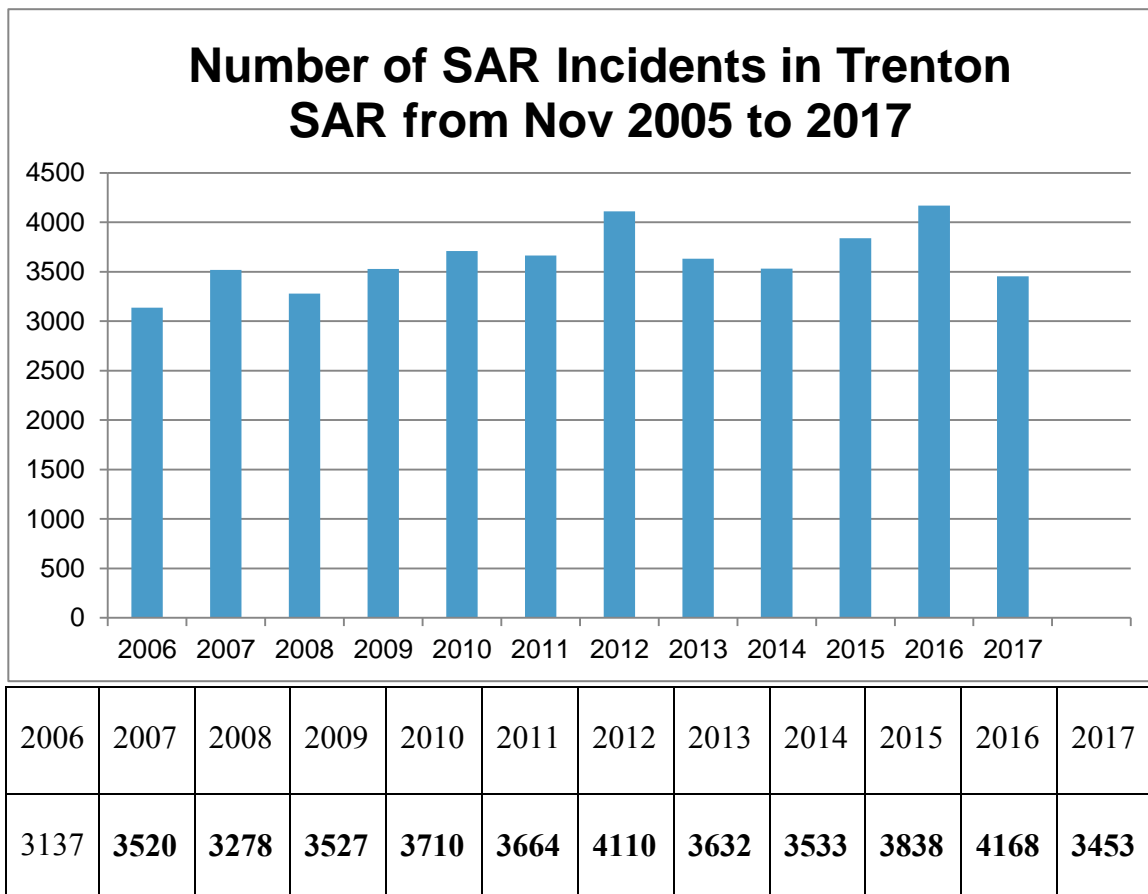


Table 1.0 – Number of SAR Incidents in Trenton SRR from November 2005 to 2017
Source: JRCC Trenton log data

The initial step of the methodology used in this research was to obtain all SAR incidents, regardless of type (air, marine and land) that occurred in the Trenton SRR from November 2005 to September 2017. Table 1.0 shows that 43,570 missions were recorded in the Trenton SRR for that time period.

Table 1.1 – SAR Incidents Where Helicopters Were Wmployed But the CH146 Platform Was Not Used or Only Partially Used

Source: JRCC Trenton log data

The research then carefully extracted each of those 225 cases and analyzed the narrative. The crucial step was then to assess if factors like weather, for example, genuinely made a difference in the mission relative to which helicopter was used. Extensive research in historical aviation weather for every mission's date, time and location provided a clearer picture. For instance, if the mission had been cancelled or affected by adverse weather, this would limit any type of helicopter, including Cormorants, in which case the mission was not retained for failure analysis.

Additionally, those 225 missions had to be assessed against the principle of the WOG approach. If helicopter assets other than Griffons were used in the Trenton SRR, the context and location of the distress were examined in order to eliminate missions that used other assets that were better positioned to the incidents, which promoted the WOG approach. For example, the mission below is not considered a failure:

T2007-00139 16-Feb-2007 21:05 Stranded person off Cape Parry N070.09-W124.22 70.09 - One 70 YOM was blown off shore in a small fishing boat & is now stranded on a 1 km diameter ice floe. Male is unable to paddle to shore due to weather conditions. R342 (Winnipeg Hercules), R804 (Twin Otter from Yellowknife) tasked to assist. R342 SAR Techs parachuted to ice & assisted the missing person. A helicopter from Canadian Helicopters was unable to depart Inuvik to recover the stranded hunter and the 2 SAR Techs due to weather. A Cormorant from 442 Sqn on an exercise in Yellowknife was tasked; R904 successfully evacuated all personnel from the ice flow.

Of the 225 cases flagged by the system, 173 were discarded because the uses of other assets were justifiable and logical for the given context, and/or the weather would have been a factor regardless of the helicopter type. This investigation researched further into the database to seek anomalies in the narratives that prompted mission cancellation or delays. Altogether, 52 missions were identified as containing capability gaps and ultimately delivered a decreased SAR service due to the CH146 Griffon used as a primary SAR platform. Every mission resulting in a failure is described in Annex A.

Types of Failures Recorded

While each mission has a specific context, trends in three different areas were identified:

- a. Range and Speed – for this trend, the mission was physically closer to 424 Sqn by at least 100 Nautical Miles (NM), but a CH149 Cormorant from another SAR Sqn was tasked instead for a faster response.
- b. Weather and Icing – for this trend, either the mission was turned down initially by the Aircraft Commander or the mission execution suffered delays due to light icing encounter.
- c. Cabin Space or Power Availability – for this trend, either the cabin space or the performance of the CH146 prevented or delayed the extraction of critical patients.

Range and Speed. The highest rate of failure surfaces when JRCC Trenton voluntarily does not task a CH146 from Trenton due to its limited range and speed and instead tasks a CH149 from another SAR Sqn. This is done either to have a rescue asset faster on scene,

or to be able to conduct the rescue in the first place. In some instances, the Griffons simply do not have the ability to reach and operate in the assigned region.⁹³

The map in Figure 3.0 shows the ranges of the CH149 and CH146 superimposed on Canadian territory. Every suitable airport with available fuel is at the centre of a range radius. The CH149 is depicted by red circles and shows that this primary SAR platform can reach every corner of Canada. The purple circles represent the range of the Chinook helicopters, while the green circles represent the range of the CH146s in a SAR-configured role.

⁹³ Figure 3.0 shows the range of the Griffon in green circles. Outside the green circles shows the gap in coverage due to limited range. Those circles are based on the Griffon being able to take-off from a refuelling point, fly to onscene, affect a 20 minute rescue and recover VFR to the closest refuelling point.

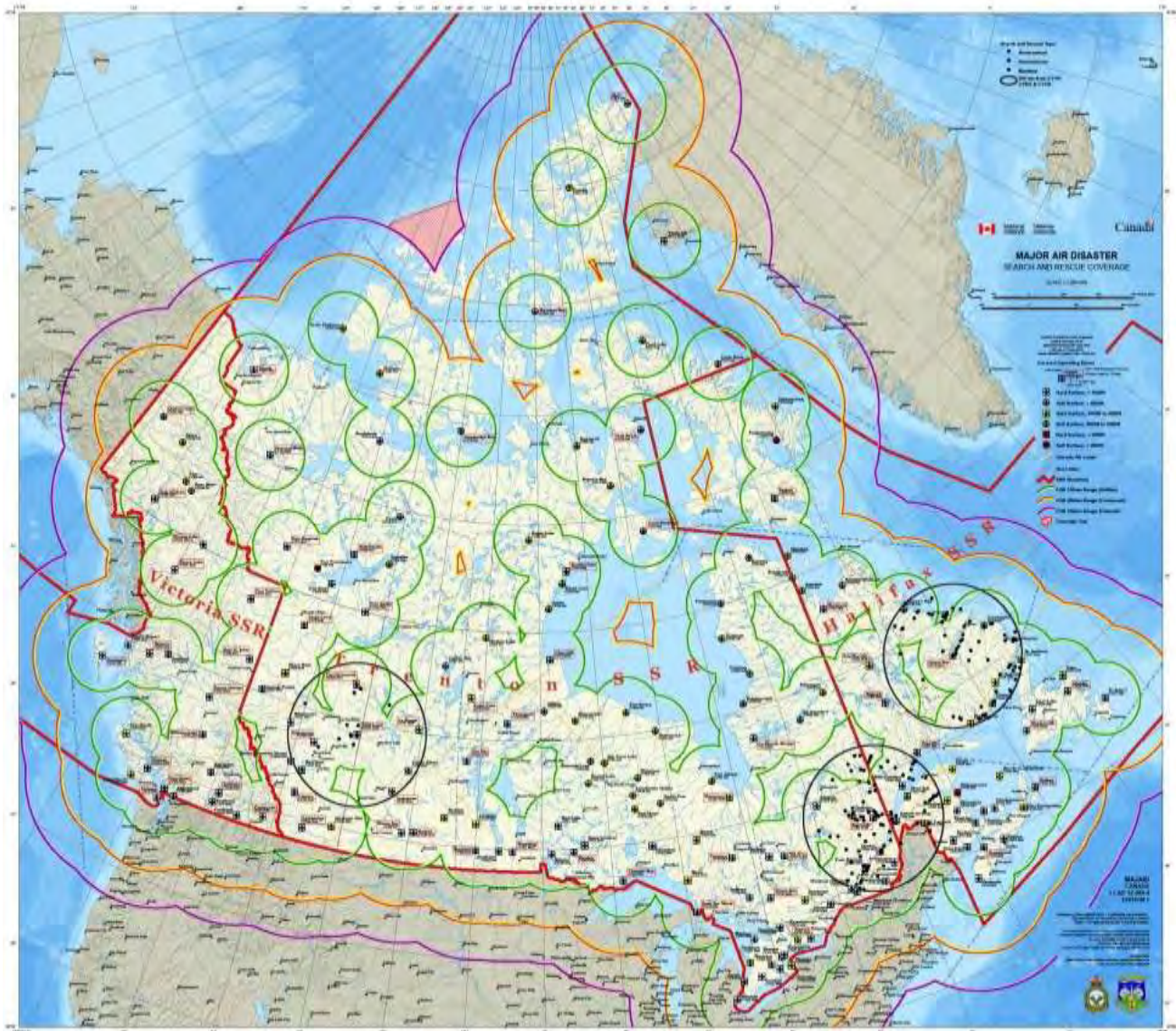


Figure 3.0 – Major Air Disaster SAR Coverage

Source: 1 Canadian Air Division mapping services MAJAD CANADA 1 CAD 12-069-4 ED 1

The take-away on this figure is that the CH146s are limited to operating inside the green circles. Unless fuel is pre-positioned, rescues outside those green circles need to be conducted with other helicopter assets. This study found 25 cases of this type of failure.

Here are three examples:

- a. JRCC Trenton case # (T2009-02918) Emergency Organization Management (EMO) Nunavut requested air support for two people overdue from Coal Harbour. Even though the mission was in 424 Sqn AOR and the distress case was 122 miles closer to Trenton than Greenwood, a Cormorant from Greenwood was tasked instead of a Griffon from Trenton for a faster response. The Griffon R432 was estimated to take 12.5 hours transit and 6 fuel stops to possibly make it on scene before the end of the crew day. The Cormorant transit took 9 hours with 1 fuel stop. 413 Sqn Cormorant completed the mission successfully.⁹⁴
- b. JRCC Trenton case # (T2014-00999) EMO Nunavut requested assistance to evacuate a 31 YOM injured on a cliff side on Diggs Island. Even though the mission was on 424 Sqn AOR and the distress case was 105 miles closer to Trenton than Gander, JRCC Trenton elected to task the Cormorant out of Gander for a faster response and a better ability to deal with the complex IFR environment. The victim was severely injured and response time was an important factor.⁹⁵
- c. JRCC Trenton case # (T2014-00906) Plane crash west of Wabush, Quebec. A Griffon from Trenton was initially tasked. The mission report stated that the Griffon tasking was cancelled when the AC reported not having suitable refueling points near the intended tasking, and the logistics

⁹⁴ JRCC Trenton mission log: case (T2009-02918)

⁹⁵ JRCC Trenton mission log: case (T2014-00999)

to get the fuel to a suitable location was not seen as practicable by JRCC.

A 413 Sqn Cormorant was tasked to the case.⁹⁶

Weather and Icing. The second type of failure is when the inability of the CH146 to fly in icing conditions directly affected SAR operations. The failure is either when the crew did not take the mission in the first place or when delays due to icing impacted the mission's effectiveness. The missions that mentioned freezing rain were not held in the study due to the fact that the CH149 is also prohibited to fly in those conditions. There were 21 cases of this type of failure. Here are five sampled examples:

- a. JRCC Trenton case # (T2005-03303) Confirmed crash of a Cessna with 3 people on board. 424 Sqn Griffon was tasked to search but was hampered initially by icing conditions causing significant delays. The 3 POB were fatally injured in the crash.⁹⁷
- b. JRCC Trenton case # (T2009-02912) Cessna 310R, C-GFIT, departed Sioux Lookout, Ontario, on a night visual flight rules flight to Cat Lake, Ontario, with a pilot and two passengers on board. When the aircraft did not arrive at its destination, a search was launched. Griffon tasked out of 424 Sqn. There was a 5-hour delay in Marathon due to IFR weather. The crew did not have sufficient range and endurance to hold an IFR alternate and IFR recovery. A delay of 5 hours occurred until weather improved.

⁹⁶ JRCC Trenton mission log: case (T2014-00906)

⁹⁷ JRCC Trenton mission log: case (T2005-03303)

Once the crew reached the scene, the three occupants of the aircraft were found fatally injured.⁹⁸

- c. JRCC Trenton case # (T2009-00486) Overdue person in a 14-foot boat near Penetanguishene. 424 Griffon was tasked to search. The lack of anti-icing capabilities caused significant delays to reach the scene. OPP divers recovered the body four days later.⁹⁹
- d. JRCC Trenton case # (T2013-00294) A helicopter from the company ORNGE was reported crashed near Moosonee, Ont. A Hercules R344 reached the scene and 2 SAR Techs jumped to the crash. The mission report states that the “Griffon which was in transit near Timmins ON turned around due to bad weather and the aircraft’s usual inability to fly under adverse IFR conditions.”¹⁰⁰
- e. JRCC Trenton case # (T2014-02636) Air Tindi with 7 people on board declared a mayday west of Yellowknife. 435 Sqn Herc was tasked, but a Griffon from 424 Sqn was not tasked due to icing conditions at the scene.¹⁰¹

Cabin Space or Power Availability. The third type of failure is when limited power availability and/or limited cabin space in the CH146 negatively affected SAR operations.

There were six cases of this type of failure. Following are some examples:

⁹⁸ JRCC Trenton mission log: case (T2009-02912)

⁹⁹ JRCC Trenton mission log: case (T2009-00486)

¹⁰⁰ JRCC Trenton mission log: case (T2013-00294)

¹⁰¹ JRCC Trenton mission log: case (T2014-02636)

- a. JRCC Trenton case # (2009-01216) Distress call for a person in the water in Lake Ontario near Rochester. When the person was located, the CH146 did not have the required power to hover or carry out a hoist sequence due to the weight of the aircraft and the outside temperature. The Griffon had to wait for water resources to reach the scene and effect the rescue.¹⁰²

- b. JRCC Trenton case # (T2009-00021) Montreal ACC notified JRCC Trenton of a plane crash south of Quebec City. The crash site was located by Griffon at Bagotville. Of the four POB's, two were reported as deceased and two were seriously injured. The Griffon out of Trenton was on scene but would have required four separate flights to conduct evacuations because of cabin space limitations. Due to the urgent nature of the injuries, a Cormorant from Greenwood was called in to provide evacuation. The Cormorant airlifted in one trip the two injured survivors as well as all of the SAR Techs involved at the scene to the Canadian Coast Guard (CCG) helipad in Quebec.¹⁰³

Conclusion

There is an elevated risk level associated with using the Griffon in place of the Cormorant due to the Griffon's limitations in range, size, power and equipment. Among the most significant factors are the lack of de-icing capability, lack of range, lack of weather RADAR, and lack of four-axis autopilot. Apart from its non-compliance to the

¹⁰² JRCC Trenton mission log: case (2009-01216)

¹⁰³ JRCC Trenton mission log: case(T2009-00021)

CSH SOR, has the CH146 Griffon failed at delivering the RCAF SAR mandate 52 times so far. Of these 52 cases, 25 were due to lack of speed and range, 21 were due to weather limitations, and 6 were caused by cabin and power limitations

Chapter 4 QUEEN: COMMUNICATION

Gen de Chastelain simply did not know in great detail of any of the important matters. With his limited knowledge came a failure to act, to direct, and to command. It is the responsibility of those who exercise supervisory authority to know what is transpiring within the area of their assigned authority. Where a superior contends that he or she was never informed, or lacked requisite knowledge with regard to facts or circumstances affecting the proper discharge of organizational responsibilities, reveals a deep failure.

- *Dishonored Legacy*, CF Somalia Affair Report

Introduction

People live in communities, and this phenomenon of living together brings forth the complexity of human beings and their interrelationships. Peter G. Northouse supports that leadership is widely known to be an exchange that is an essential element of any society.¹⁰⁴ Hence, wherever humans live together, leadership exists. This leadership needs to be expressed and exchanged, and the enabler of the exchange is communication.

Communication can take many shapes, such as oral expression, written word or gesture, and gives people many options to connect with others. Hackman and Johnson support that the quality of a leadership is best understood from a communication point of view. The goal of communication is to create a shared reality between the sources and the receivers.¹⁰⁵ Awareness of the risks involved in OP STARFISH has spread unchecked for several years due to the inability of the SAR community to coordinate messaging and

¹⁰⁴Peter Northouse, *Leadership: Theory and Practice* 6th edition, Sage Publication, 2013, London, 12. Northouse is Professor Emeritus of Communication at the School of Communication, Western Michigan University. Northouse is a well-respected writer on the subject of human relationships.

¹⁰⁵Michael Z. Hackman, Craig E. Johnson, *Leadership: A Communication Perspective* Sixth Edition, Waveland Press, Long Grove, 2013, 6.

communicate upward. OP STARFISH, which took the Cormorants out of Trenton due to availability issues, was supposed to be an 18-month temporary measure but has now been in effect for over 12 years.

This chapter shows that leaders and decision-makers still do not fully appreciate the extent and significance of the CAF's accountability for those system failures. This chapter will also use Elliot Cohen and John Gooch model which analyzes military failures to assess OP STARFISH. It is worth noting that the intent of this chapter is not to blame any individual, but is rather an objective discussion of the risk at hand.

Risks

Dr. Robert L. Heath is a professor at the University of Houston and an internationally recognized authority on public relations and crisis communication. He defines communication as “the deliberate, planned, and sustained effort to establish and maintain, by conveying information and by all other suitable means, mutual understanding and good relations.”¹⁰⁶ A communication strategy is essential for any organization in order to establish a purpose and determine boundaries. Yet this approach to communication in the current SAR C2 is intermittent. Instead of a set of simple and relevant messages constantly emanating from an organized SAR structure, a more ad-hoc approach that features on-demand information is produced sporadically because of the

¹⁰⁶Robert Heath, Title Handbook of Public Relations, Sage Publishing, London, 2001, 233.

independence of the RCAF SAR units towards each other. The community seldom takes the time to share successes and challenges.¹⁰⁷

Moreover, the communication is sensitive because the nature of SAR is to save people and any deficiencies in meeting the mission is legitimately perceived as unacceptable. This dichotomy between a no-fail mission and a best-effort principle with available resources makes both sides (the tactical and the strategic) uncomfortable to engage in discussion. Dr. Heath argues that when the stakeholders of an organization agree on a messaging, then the relation is positive and leads to ready sharing. On the other hand, if they suspect disagreements, it can be negative and result in the withholding of key information.¹⁰⁸

For example, in 2011, the Commanding Officer of 424 SAR Squadron commented on OP STARFISH in an interview, stating that “criticism about CFB Trenton's search and rescue helicopters' (CH146 Griffons) reliability are unfounded.”¹⁰⁹ This was pronounced in the same year that the very same aviation community filed a RARM for the increased risk of operating the Griffons over water. That RARM emerged from a flight safety incident filed from a 424 crew putting themselves in a dangerous situation during a SAR manoeuvre over a boat at night.¹¹⁰ A valid question then emerges from the situation is: why does OP STARFISH still exist if it has received significant risk warning from independent reviews and failed its mandate operationally at least 52 times?

¹⁰⁷SARCAG meets twice a year to discuss SAR related issues. Department of National Defence, Minutes of the SAR Capability Advisory Group (SARCAG) 17-01, Ottawa, 09 April 17. Signed 08 May 2017.

¹⁰⁸Robert Heath, *Today's Public Relations: An Introduction*, Sage publications, thousand oaks, 2006, 6.

¹⁰⁹Jerome Lessard, *Griffon's our best bird: 424 boss*, 25 February 2011, <http://www.trentonian.ca/2011/02/25/griffons-our-best-bird-424-boss> (last Accessed 01 April 2018).

¹¹⁰Department of National Defence, RARM 2011 CH146-2009-013(1CAD) 22 Jun 2009, RARM CH146 Griffon Operation Over-Water.

The SAR community's lack of command momentum and assertiveness has led to dysfunctional communication. The dysfunctionality of the communication was highlighted by Colonel G.M. Reid of 1 Canadian Air Division HQ, who was Co-Chair of the SAR capability group that met in May 2010. He opened his address to the community by saying that "despite the success of SAR, one challenge that remains is the insular nature of the SAR system." He continued by advancing that "the SAR community functions almost as a subset of the RCAF and many of its internal processes are invisible to the rest of the CAF." He finished by stating that "[a]t the general officer level, many leaders are unclear on how SAR truly operates."¹¹¹ The situation reveals that while the higher COC is willing to acknowledge and accept higher risk, there is a lack of understanding of the details of SAR operation in general, including OP STARFISH.

Some efforts to address OP STARFISH are on the books. For example, in order to ensure the reliability of the mandate, the Government of Canada has included in its new Defence policy SSE that the CAF will "complete the acquisition of the new Fixed-Wing Search and Rescue Aircraft and also invest in its rotary wing Search and Rescue helicopters to ensure the reliability that Canadians depend upon in times of need."¹¹² Additionally, one of the main objectives of the RCAF Cormorant Mid-Life Upgrade (CMLU) Project is to return a CSH SOR-compliant helicopter to Trenton. At the same time, the RCAF took some extra steps in 2015 to force the communication of operational risk upward in the form of Mission Authorization and Launch Authority (MALA). The MALA implemented by the 1 CAD Commander is a successful and proven

¹¹¹Department of National Defense, RCAF SARCAG 10-1 Agenda, minutes of the search and rescue capability advisory group held at Trenton, 6-7 May 2010.

¹¹²Strong, Secure and Engaged..., 87.

process towards a better awareness of the risks taken in the line of duty. Military SAR operations are inherently complex, dynamic and dangerous.¹¹³ The MALA is a tool that is intended to relieve Aircraft Commanders of the burden of making extraordinarily risky decisions in isolation.

Potential Catastrophic Failure

Cohen and Gooch support that true military failure in the modern era is never the fault of one individual only but rather the fault of a system.¹¹⁴ The authors introduced three types of failure: failure to learn, failure to anticipate, and failure to adapt. If any of these failures occurs in isolation, the failure is called simple; but if all failures occur simultaneously and consecutively, the failure is catastrophic.¹¹⁵

The first type of failure is the failure to learn, which can be summed up as a failure to absorb readily accessible lessons from recent events. While individuals have the tendency to repeat mistakes even if they perceive them as such, Cohen and Gooch see the vast intellectual resources and vicarious experience of professional military organizations to be the antidote for repeated mistakes.¹¹⁶ However, like people and businesses, armed forces suffer misfortune when they fail to learn obvious lessons. This paper alluded earlier to OP STARFISH elevating risk for both the clients of SAR and the SAR crews

¹¹³Canada, Department of National Defence, B-GJ-005-502/FP-000, Risk management for CFoperations (Ottawa: Department of National Defence, 2011), 1-2.

¹¹⁴ Eliot A. Cohen and John Gooch. *Military Misfortunes: the Anatomy of Failure in War*. (New York: Free Press, 1990), 23. Dr. Eliot Cohen and Dr. John Gooch are university professors well-known for their historical research on leadership. Their work is extensively studied at the Joint Command Staff Program at the Canadian Forces College in Toronto, and their anatomy of failures has become the classic analysis of failures from competent militaries.

¹¹⁵*Ibid*, 26.

¹¹⁶Eliot A. Cohen and John Gooch. *Military Misfortunes: the Anatomy of Failure in War...*, 25.

themselves. This chapter highlighted 52 failures that occurred and keep occurring without correction.

The insidious aspect of those failures has never been met with a dedicated COC to tackle them. Back in 2009, the Tiger Team rang the alarm by reporting that “JRCC Trenton is already forced to restrict the use of the Griffon due to its operational limitations, [which] imposes increased risk in survivability for casualties of SAR incidents.”¹¹⁷ Further research in SAR mission logs confirms the Tiger Team report. For example, in a plane crash in September 2009 (mission # T-2009-02672), the JRCC air controller log states: “Griffon not tasked due to insufficient range, Greenwood Cormorant would get there much faster”¹¹⁸ In another example of a missing aircraft, this time near Val’D’Or Quebec on 13 Oct 2007, the mission log states: “Cormorant was tasked in the event the Griffon did not make it in due to weather.”¹¹⁹

On 12 November 1996, Rescue 421 (R421), a Griffon from 444 Sqn, was tasked by JRCC to medevac a critical patient onboard a fishing vessel off Resolution Island near Iqaluit. With no auto-pilot capabilities like transition to hover, the flight was conducted at night in snow showers over rugged terrain. R421 encountered deteriorating weather while flying over water. During an attempt at landing on shore, R421 impacted the water. The crew egressed the helicopter in frigid water and swam to shore. The crew spent 34 hours struggling to stay alive while awaiting rescue. The flight safety report states that “the crash cannot be solely attributed to poor airmanship.”¹²⁰ In the same report, the Chief of

¹¹⁷Department of National Defence, RWSAR Capability Tiger Team Report 31 Jan 2008..., 8.

¹¹⁸Department of National Defence, JRCC data mission log 26-Sept 2009 13:00 Entry Crash.

¹¹⁹Department of National Defence, JRCC data mission log 13-Oct 2007 21:34 Entry crash.

¹²⁰Department of National Defence, RCAF Flight Safety magazine, issue 3, 2016, PWGSC (Ottawa; Ontario), 15.

the Air Staff states that “this was a preventable accident, long-term systemic breakdown of training and regulatory oversight of the Griffon operations...the difference between the primary and secondary SAR resources played a contributory role in the accident.”¹²¹

Fifteen years later, on 17 June 2011, a Griffon SAR crew from 424 Squadron was conducting a night boat hoist training over Lake Ontario. On a manual transition to the hover near the vessel, the pilot suffered a loss of spatial orientation and struggled to control the helicopter in close proximity to the water. The aircraft drifted upward and rearward before settling back down to 35 feet with low rotor tone at a mast over torque of 110%. The pilot regained control of the situation, initiated an overshoot, and aborted the night sequence. The flight safety investigation highlighted that “the Griffon systems and equipment issues and the risk of operating the Griffon in the low level water environment at night.”¹²² The investigation team concluded their report by recommending that the CAF proceed with “the formulation of a long-term plan to address the current platform limitations with respect to Canadian SAR region mission requirements.”¹²³

The commendable fighting spirit of the 424 crews does have a limit and was highlighted in the Tiger Team report: “Overall, there is strong and unanimous opposition in the operational SAR community to the notion of retaining the Griffon as a permanent solution. The assessment is that the Griffon is not suited for primary SAR.”¹²⁴ Despite the significance of the issue, the Griffons were still in a primary SAR role in Trenton SAR region in 2018. The SAR community struggles to progress the issue due to the lack

¹²¹Flight comment Department of National Defence, RCAF Flight Safety magazine, issue 3, 2016, PWGSC (Ottawa; Ontario), 17.

¹²²Department of National Defence, Flight safety investigation report CH146491 griffon epilogue project number ch146491-e-cat.

¹²³Flight safety investigation report CH146491.

¹²⁴Department of National Defence, RWSAR Capability Tiger Team Report 31 Jan 2008..., 5.

of SAR HQ construct to be in a position of authority to align priorities and enable adequate staffing focus.

Although in a different context, a very similar situation to OP STARFISH involving management of risk occurred in 2006 within another community of the RCAF. In June 2006, when the CAF was fully engaged in the conflict in Afghanistan, the Government of Canada created a project to acquire a new fleet of medium-to-heavy lift helicopters to meet the CAF rotary-wing transport requirements for the next 20 years.¹²⁵ Two years after the project identification, the RCAF and the Army warned the Government that the lack of helicopter transport while deployed in Afghanistan placed the soldiers at greater risk.¹²⁶ A narrative that was also later used in *The Independent Panel on Canada's Future Role in Afghanistan*, convened in January 2008, stated that “the safety and effectiveness of Canadian Forces in Kandahar would be markedly increased by the acquisition and deployment of new equipment, in particular helicopters.”¹²⁷ The tactical helicopter community was able to build momentum, and in December 2008, in parallel to the 2006 Medium-to-Heavy Lift Helicopter Project, Canada purchased six used Chinooks in order to meet an urgent need for lift capability in

¹²⁵Department of National Defence, Medium-to-Heavy Lift Helicopter Project: Status, Fact sheet 25 June 2015, Project number: FS12.012, <http://www.forces.gc.ca/en/news/article.page?doc=medium-to-heavy-lift-helicopter-project-status/hgndblkw>.

¹²⁶Government of Canada, Government Of Canada's Acquisition Of Chinook Helicopters For The Canadian Forces, News Release BG – 09.022 - 13 December 2010, <https://www.canada.ca/en/news/archive/2010/12/government-canada-acquisition-chinook-helicopters-canadian-forces.html>.

¹²⁷Canada, Minister of Public Works and Government Services, Independent Panel on Canada's Future Role in Afghanistan, 2008, http://publications.gc.ca/collections/collection_2008/dfait-maeci/FR5-20-1-2008E.pdf.

Afghanistan.”¹²⁸ This reflects the effectiveness of a functional Wing to make the message heard and initiate actions.

The SAR community has had an opportunity to bolster its Cormorant line-up since 2011 and solve OP STARFISH. The CAF website reports that in 2001, Canada purchased nine VH-71 airframes for spare parts.¹²⁹ The VH-71 is a variant of the current CH-149 Canadian Cormorant that was destined and later abandoned by the US to fly the president within the US.¹³⁰ In 2012, then Minister of National Defence, The Honorable Peter McKay, directed DND to consider whether some of the nine VH-71 presidential helicopters that were originally purchased for parts could be upgraded to an operational status for SAR.¹³¹ Later, the RCAF public affair officers stated that “[a]nalysis has shown that a VH-71 could be converted for SAR (search and rescue) operations... the VH-71s are similar to the search-and-rescue Cormorant helicopters currently used by the RCAF.”¹³²

Senator Colin Kenny is the former chair of the Senate Committee on National Defence. In an article he wrote in 2016, Senator Kenny suggested that “the Minister of Defence should have already acted to secure the funds necessary to put these VH-71s into service. Search and Rescue is not something that gets very much attention until something

¹²⁸Department of National Defence, Medium-to-Heavy Lift Helicopter Project: Status, Fact sheet 25 June 2015.

¹²⁹Department of National Defence, Search and Rescue Posture Review 2013, 23 May 2014, <http://www.forces.gc.ca/en/about-reports-pubs/search-and-rescue-posture-review.page>.

¹³⁰National Post, RCAF's new search and rescue plan: refurbish the U.S. president's old helicopters, 4 June 2015, <http://nationalpost.com/news/canada/rcafs-new-search-and-rescue-plan-refurbish-the-u-s-presidents-old-helicopters>.

¹³¹Martin Shadwick, REFLECTIONS ON SEARCH AND RESCUE, Canadian Military Journal, Vol. 13, No. 4, Autumn 2013, <http://www.journal.forces.gc.ca/vol13/no4/PDF/CMJ134Ep71.pdf>.

¹³²National Post, RCAF's new search and rescue plan: refurbish the U.S. president's old helicopters.

goes awry.”¹³³ Similarly, the 2016 Report of the Standing Senate Committee on National Security and Defence, called *Reinvesting in the Canadian Armed Forces: A plan for the future*, analyzed how the government could effectively address the strategic challenges ahead. The report highlights that “for some time there have been proposals under consideration to potentially activate this fleet in order to expand numbers of Search and Rescue rotary-wing assets.”¹³⁴ The reports advanced that “the VH 71 should be stationed at CFB Trenton to provide support for Search and Rescue operations.”¹³⁵

The report also provided specific recommendations. Recommendation #6 states that “the Government of Canada [should] upgrade the Cormorant (VH-71) presidential fleet of helicopters to support search and rescue while the Cormorants (CH-149) undergo a mid-life upgrade.”¹³⁶ This situation is in contrast to the emergency procurement of the Chinook by the Tactical Helicopter community in 2008. While many elements come into play in the VH-71 story, and whether or not it is the solution, the fact remains that the driving force to communicate the SAR requirements for OP STARFISH to a higher level of command has been either unrecorded, absent or misunderstood. Outside pressure, as shown in this study, has always been compensating for deficiencies in communication. The reaction within the RCAF is only reflected by a yearly signature of a risk acceptance by the operational commander of the RCAF on using the Griffons in a primary SAR role. The current SAR structure is not giving the CAF’s Generals the information required to understand and learn from recurring failures.

¹³³Colin Kenny, A cost-effective way to replace our aging search-and-rescue helicopters, 18 August 2016, <http://nationalpost.com/opinion/colin-kenny-a-cost-effective-way-to-replace-our-aging-search-and-rescue-helicopters>.

¹³⁴Senate of Canada, Report of the Standing Senate Committee on National Security and Defence, 01 May 2017, http://publications.gc.ca/collections/collection_2017/sen/yc33-0/YC33-0-421-11-eng.pdf.

¹³⁵Senate of Canada, Report of the Standing Senate Committee on National Security and Defence.

¹³⁶Ibid.

Cohen and Gooch support that soldiers on the ground or in the air have the opportunity to exercise their professionalism to the best of their abilities, just like the crews at 424 Squadron who fight admirably with the Griffons. Failure, however, sometimes lurks at a different level where there is an inability to bind together actions and decisions taken at different times and locations. Failures taken separately, like the 52 highlighted in this document, do not seem disastrous in themselves but nonetheless are creating a path for catastrophic failure to occur at some point, whether anticipated or not.¹³⁷

The second type of failure is failure to anticipate predictable situations. In some environments, the next enemy's move can be difficult to anticipate and understand. In contrast, SAR missions are fairly predictable in nature: Canada is a treacherous place to conduct activities; people have gotten in trouble in the past and will likely continue to get in trouble in the future. It is a matter of amplitude of the distress situation, which is why the Government is very strict with its statement of operating requirements for SAR helicopters. The 2009 Tiger Team warned that:

due to the Griffon's inherent SAR limitations, any courses of actions which retain Griffons in Trenton would also be a tacit acknowledgement by DND that it is not pursuing the level of SAR service in the Trenton SRR which had been approved under the CSH project. That includes a departmental acceptance of increased risk to the survivors of SAR incidents.¹³⁸

On the evening of 14 December 2017, shortly after 1800 local at 0012Z, a plane with 25 people on board departed a small airport on the eastern shore of Lake Athabasca in Northern Saskatchewan. The airport serves a small community called Fond-

¹³⁷Eliot A. Cohen and John Gooch. *Military Misfortunes: the Anatomy of Failure in War...*, 24.

¹³⁸ Department of National Defence, RWSAR Capability Tiger Team Report 31 Jan 2008...

Du-Lac (FDL) which, just like hundreds of small communities in Canada, it is only accessible by boat during the summer and air otherwise. The ATR 42 twin turboprop aircraft was travelling from Fond-Du-Lac airport enroute to Stony Rapids. Minutes after take-off, the plane crashed. It plowed through 800 feet of trees before coming to a stop, with the fuselage ruptured at about the third row of seating. All of the passengers, including crew, were injured, six seriously.¹³⁹ The temperature at the time of the accident was -15.8 °C.¹⁴⁰ According to the Defence and Civil Institute of Environmental Medicine in North York, Ontario, a fully-dressed average adult has 15 hours of survival time before death by hypothermia in an exposed environment of -16 °C, and injuries will diminish this amount of time greatly.¹⁴¹

A pause is required in the storyline to look at who should be showing up on scene to conduct this particular rescue. Within Canada, SAR activities span a multitude of jurisdictions and responsibilities, and the Government of Canada equips and trains different agencies for different situations. Public Safety Canada states that all aeronautical incidents falls under the responsibility of the Canadian Armed Forces,¹⁴² such that “the provision of assistance to aircraft in distress through a federal aeronautical SAR service arises out of Canada’s signatory status in 1944 to the Convention on International Civil Aviation, Article 25.”¹⁴³

¹³⁹Guy Quenneville, Engine failure ruled out in Fond-du-Lac, Sask., plane crash, CBC News, 20 December 2017, <http://www.cbc.ca/news/canada/saskatoon/fond-du-lac-crash-tsb-1.4458032>.

¹⁴⁰Weather Network, Historical Weather data, <https://www.theweathernetwork.com/ca/weather/historical-weather/saskatchewan/fond-du-lac>.

¹⁴¹Peter Tikuisis, Defence and Civil institue of Environmental Medicine. North York Ontario. 1995, p.161 <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.489.1366&rep=rep1&type=pdf>.

¹⁴²Government of Canada, Public Safety National Search and Rescue Program, <https://www.publicsafety.gc.ca/cnt/mrgnc-mngmnt/rspndng-mrgnc-vnts/nss/prgrm-en.aspx>.

¹⁴³CAMSAR, art 1.06.

The Canadian Aeronautical and Maritime Search and Rescue (CAMSAR) Manual sets national guidelines and standard operating procedures (SOPs) specific to the Canadian Federal Aeronautical and Maritime Search and Rescue (SAR) System.¹⁴⁴ The document talks about 2 concepts: SAR units and primary SAR units. A SAR unit is a unit composed of SAR crews and equipment suitable for the conduct of SAR operations. Primary SAR units are further defined in the policy as Federal SAR aircraft or vessels established and equipped specifically for SAR with SAR-trained crew onboard.¹⁴⁵ To re-emphasize what was said earlier, the only compliant primary SAR rotary-wing unit in the RCAF is the CH149 Cormorant helicopter. The policy states that it is the responsibility of the RCAF Commander to allocate primary SAR units within Canada's area of responsibility.¹⁴⁶ Hence, the plane crash at Fond-Du-Lac should have activated a primary SAR unit: a Cormorant helicopter. Instead, the Trenton AOR, still under the temporary auspice of OP STARFISH, had only a Griffon helicopter at hand.

Luckily for the victims of the December 14th plane crash, the incident occurred just under a mile west of the airport and in an accessible area. Dozens of locals responded to the crash in its immediate aftermath. As well, many federal and provincial agencies responded, including the RCMP and qualified paramedics.¹⁴⁷ Although one young man tragically perished from his injuries days later, all were recovered alive within 4 hours. The response was immediate and effective and truly the best-case scenario for all

¹⁴⁴Ibid, Foreword.

¹⁴⁵CAMSAR, Glossary, 16.

¹⁴⁶Ibid, art 1.06.3.

¹⁴⁷CBC News, Remarkable there were no fatalities in Fond-du-Lac crash, says aviation expert, 21 December 2017, <http://www.cbc.ca/news/canada/saskatchewan/fond-du-lac-crash-aviation-expert-1.4460330>.

involved.¹⁴⁸ The RCAF for its part never had the opportunity to come into action due to the immediate assistance to the victims that was provided.

Although the situation is resolved and the dust has settled, the CAF ought to use this experience as a severe warning of what it could have been if the crash would have happened only a few minutes or miles later. An increase of only 5 minutes of airborne time at a cruising speed of 150 nautical miles an hour would have put the crash 23 kilometers away in a remote, inhospitable and inaccessible location. The only resources then would have been the RCAF and its trained personnel. This paper argues that the RCAF and the CAF were 5 minutes away from a catastrophic military failure due to the extended acceptance of OP STARFISH and the consequences of limitations of the Griffon helicopter in a primary SAR role for a mission like the FDL plane crash.

Two very important aspects need to be established in this statement: first, professional tacit knowledge needs to be used to table-top the FDL plane crash with real facts to see how this analysis developed; and second, an analysis and definition of military failures needs to be explored further to solidify the argument. In the FDL plane crash, 25 people were in need of assistance (including 6 injured) within 15 hours or they would have perished. A Cormorant leaving Trenton would fly directly to Winnipeg at 130 kts for a 6-hour transit, then make a 30-minute fuel stop. This would be followed by a direct leg to Stony Rapids Airport at 130 kts for a 5-hour leg, another 30-minute fuel stop, and finally a 1-hour transit to the plane crash location. The Cormorant reached the plane crash within 13 hours. The Cormorant has the ability to take 6 stretchers at the same time

¹⁴⁸CBC News, Passenger in Fond-du-Lac plane crash has died, family says, 27 December 2017, <http://www.cbc.ca/news/canada/saskatchewan/passenger-in-fond-du-lac-plane-crash-has-died-family-says-1.4465220>.

for the 6 injured. Assuming that the helicopter can find a place to do a confined area landing close by, if 20 minutes were allotted for packaging each injured person, the 6 injured could be onboard in 2 hours.¹⁴⁹

The remaining 19 can arguably be taken on the same trip as well. The Cormorant has conducted mass evacuations in the past, including a flood evacuation in the NB area where 30 passengers were taken. Another example is during an evacuation on a First Nations reserve, where 31 people were evacuated on the same trip.¹⁵⁰ From the extraction site, there would be a 15-minute flight to Fond-Du-Lac Airport. This brings the total time required for the rescue operation of just over a 15-hour rescue operation. On paper, this would have been successful in all accounts and within the predicted time of survival.

But the reality of OP STARFISH is much different. Without going into details of the non-compliant capabilities referred to in the previous chapter, the independent study conducted by the Chief of Air Force Development in 2009 highlighted some significant risks for the CH146 crews conducting primary SAR. The reports states that "[t]he helicopter's capabilities are challenged when employed as a front-line rescue aircraft and its use constitutes a risk...Having to stop for gas increases the response time to an incident site and it is too small and lacks the range to reach wilderness sites."¹⁵¹

The distress call in December 2017 could have been problematic right from the initial tasking phase if any type of freezing conditions existed between Trenton and Fond-Du-Lac. In this regard, the Griffon helicopter is non-compliant to the CSH SOR in its

¹⁴⁹ Canada. Department of National Defence. Chief of Review Services. Evaluation of the DND/CAF Contribution to the National Search and Rescue Program...p.14.

¹⁵⁰CBC News, Flood forces 2nd day of evacuations in northern Ontario, 27 April 2008, <http://www.cbc.ca/news/canada/flood-forces-2nd-day-of-evacuations-in-northern-ontario-1.698529>.

¹⁵¹Department of National Defence, 3010-6(D Air SP) 20 May 2009, CAS Initiating Directive-Follow-On Actions from RW SAR studies.

anti-icing capability, and this would have meant no take-off for help from Trenton. Let us, however, assume that weather was not a factor. Taking into consideration that the cruise speed of the Griffon is 110Kts (which is 20% lower than the Cormorant with half the range), the transit time would have been 14 hours.¹⁵² Three additional fuel stops of 30 minutes each would also have been required, for a total of 5 stops at 30 minutes each, totaling 2.5 hours. The Griffon would have been on the scene of the plane crash at 16.5 hours, already past the 15-hour key survival time.

The Griffon would show most of its limitations in a case like the FDL plane crash, in that the Griffon is also non-compliant in the storage area and space available for the internal cabin. Only one stretcher at a time can be carried. This equates to the crew only being able to treat one injured victim at a time and having to fly the injured one by one to Fond-Du-Lac Airport. Similar assumptions that the Griffon would land beside the site, with similar 20-minute preparations for each patient, would then add 20 minutes to transit times back and forth and another 10 minutes for patient transfer at the medical or airport facility. This lack of cabin space would add 10 back-and-forth transits, adding 3 hours to the evacuation of the injured. This brings the clock to 19.5 hours, which is well beyond the 15-hour target, and with another 19 people yet to evacuate who are possibly in severe hypothermia. Three victims at the time would require another 6 trips, which would add another 4 hours, for a total of 23.5 hours. The maximum crew day allowed for SAR ops is 18 hours.¹⁵³

¹⁵² Canada. Department of National Defence. Chief of Review Services. Evaluation of the DND/CAF Contribution to the National Search and Rescue Program...p.14.

¹⁵³ Department of National Defence, Flight Operation Manual, 1 Canadian Air Division, Winnipeg, updated 2018.

While the transit part is often the Achilles' heel of the Griffon in Trenton as a primary SAR platform, a scenario like the plane crash at Fond-Du-Lac would quickly overwhelm its overall capabilities. This is not a new reality; the DRDC report in 2012 stated that 39% of the Trenton missions from 1994 to 2004 involved two or more people. The report warned that “two people plus crew, or one stretcher and one injured person plus crew, was the practical load of the CH-146Griffon. It was determined that cargo capacity might be a critical area of risk.”¹⁵⁴

The result of the 5 minutes of extra flight time of the doomed ATR42 can only be looked at with “What if?” at this point. The loss of lives would be highly speculative and is not the point of this exercise. This exercise is only to put the facts on the table and shed light on a very possible situation in the future. OP STARFISH has all the elements to be called a significant issue in the CAF SAR mandate. DND has its own policy to deal with and define issues and crisis management. Defence Administrative Orders and Directives (DAOD) 2008-3 defines an issue as “a potential incident, event or series of events, either internal or external to an organization, that may undermine, cause damage to, or lead to public concern with regards to a policy, program, service, law, activity, person or organization.”¹⁵⁵ More importantly, the doctrine insists that “every issue could potentially escalate into a crisis.”¹⁵⁶ The policy warns that “issues that are poorly managed affect the credibility of an organization, undermining staff or public confidence and contributing to the emergence of crises.”¹⁵⁷ The responsibility to inform the pressing issues with OP

¹⁵⁴Paul Dickson, RWSAR Evaluation of Options,... 66.

¹⁵⁵Department of National Defence, DAOD 2008-3, Issue and Crisis Management, <http://www.forces.gc.ca/en/about-policies-standards-defence-admin-orders-directives-2000/2008-3.page> 2.0 definitions.

¹⁵⁶Ibid, ... Art 2.0 Definition.

¹⁵⁷Department of National Defence, DAOD 2008-3, Issue and Crisis Management, para.3.3.

STARFISH has never gained momentum, largely due to the lack of a dedicated SAR headquarters that has the horsepower to build the narrative and make it a priority for the CAF. However, from media activities in itself, a total ignorance of OP STARFISH from higher HQ is also unlikely, but never the less, the art of the possible with the info at hand has never led to any significant action. Knowledge does not equal to power if the knowledge has no structure and coherence throughout.

Having looked at failure to learn from past events and failure to anticipate events like the FDL crash, the third type of failure concerns the present: failure to adapt. Cohen and Gooch support that “where learning failure have their roots in the past, and anticipatory failure look to the future, adaptive failure suggests the inability to handle the changing present.”¹⁵⁸ This type of failure is based on the rigidity of an institution prohibiting changes. The concept of the SAR Wing promoted in this paper is often faced with doctrinal challenges. The point here is to move from tactical execution to a broader institution creation.

Dr. Brad Gladman, Dr. Richard Goette, Dr. Richard Mayne and senior military officers wrote an extensive article on the issue of institutionalizing capabilities in the RCAF. They warned that “if the RCAF cannot embrace an immediate program of transformational and intellectual change, it will remain a force that merely excels at the tactical delivery of air effects instead of truly mastering airpower itself.”¹⁵⁹ The current SAR command structure is ill-equipped to see through events like FDL crash and

¹⁵⁸Eliot A. Cohen and John Gooch. *Military Misfortunes: the Anatomy of Failure in War...*, 27.

¹⁵⁹Brad Gladman, Richard Goette, Richard Mayne, Shayne Elder, Kelvin Truss, Pux Barnes, and Bill March, “Professional Airpower Mastery and the Royal Canadian Air Force: Rethinking Airpower Education and Professional Development,” *Royal Canadian Air Force Journal*, 5(1) (2016), 19.

properly educate and influence Government decision-makers for better preparedness of the next “5-minute eventuality.” The current situation must be approached with prudence. Advancing that the Griffon is doing a great job at SAR in the Trenton AOR and that the current situation is a positive story can be misleading.

RCAF historian Major Bill March has warned that institutions must be wary of success the same as they are wary of failure. As an example, he explained that the Battle of Dieppe in 1942 was acclaimed an RAF success, but a further and deeper analysis shows that the success at the surface was in fact more of a defeat.¹⁶⁰ The Tiger Team working group carried out extensive research, writing that “[i]t is estimated that the Griffon is only suited to approximately 20% of the SAR missions it is tasked to conduct in the Trenton SRR.”¹⁶¹ Hence, the argument of “no news is good news” is only valid if the Government looks at the situation superficially without looking into the details that would show many failures that have the potential to be fatal.

The current fear of the accountability of the RCAF SAR system towards OP STARFISH does not only impoverish SAR responses but stretches the trust link from the population to the highest level. The Tiger Team reported that: “OIC JRCC Trenton has indicated there is strong continuing public awareness of this discrepancy currently, with acceptance of the interim solution as a necessity but also an expectation that the Cormorant will return to Trenton as promised.”¹⁶² OP STARFISH is by many conventions, an easy solution to a bigger procurement problematic. The current doctrine

¹⁶⁰William March, “Wishfull Thinking? Dieppe 1942,” *Royal Canadian Air Force Journal*, 6(3) (2017), 42.

¹⁶¹Department of National Defence, RWSAR Capability Tiger Team Report 31 Jan 2008..., 4.

¹⁶²*Ibid*, 12.

for procurement is in place for the Cormorant Mid-Life Upgrade and the objective is to return a CSH SOR compliant to Trenton. However, the current doctrine is rigid and takes time. There is no surprise at this weariness within the CAF. As Dr. Richard Goette and Major Bill March describe, organizational change within larger institutions such as the CAF faces an inherent degree of lethargy to transformation or meaningful change.¹⁶³ The CAF command doctrine states that:

Doctrine is not static; to be relevant it needs to remain in concert with how forces evolve in response to experience, new technologies, and a multitude of other factors. In this way, doctrine must be revalidated continuously and never be considered as dogma.”¹⁶⁴

OP STARFISH is the reflection of the inefficiency of the SAR community to build momentum on a serious issue which is the second order of effect of a lack of command structure. The current procurement strategy promotes an attempt at improving the transparency and ensures DND requirements are clearly understood.¹⁶⁵ This, however, needs information like risks to be communicated by a military COC that understand the SAR mandate and its intricacies. Despite SSE naming SAR as a core mission, no actions have been taken to solve OP STARFISH in the short term.¹⁶⁶ The Tiger Team concluded their report by stating that the “[u]se of the Griffon leaves a stark inequality in the level of SAR service provided domestically throughout Canada. The Griffon fails to meet promised expectations of the level of service which would have been provided by the

¹⁶³Richard Goette and Bill March, “Transforming Canada’s Post-Cold War Air Force,” in *The Transformation of Western Airpower*, ed Gary Schaub, Jr. (n.d). At the time of writing this paper was still in draft form and the publication had not been released, 40.

¹⁶⁴Department of National Defence, *Canadian Forces Aerospace Command Doctrine...*, 1. The Concise Oxford English Dictionary (11th ed.) defines dogma as a set of principles laid down by an authority as incontrovertible.

¹⁶⁵Government of Canada, *New Defence Procurement Strategy*, <https://www.tpsgc-pwgsc.gc.ca/app-acq/amd-dp/documents/presinfosession-stkinfosession-eng.pdf>.

¹⁶⁶Strong, *Secure and Engaged...*, 106.

Cormorant.”¹⁶⁷ Cohen and Gooch highlight the importance for military community to self-organize through organizational integration, and explain that “military that are good at responding to setbacks in a coordinated and effective matter will be more likely to avoid failures and disasters.”¹⁶⁸ They also contend that the combination of the failures to learn and adapt makes a complex situation difficult to understand, but recoverable.

However, adding the failure to anticipate to the mix paves the way for a catastrophic failure. If a crisis occurs due to the materialization of all three types of failures, it brings the risk of complete collapse of a military community.¹⁶⁹ SSE is proclaimed to be offering a clear direction on defence for the next decades. Canada’s new approach is anchored in ANTICIPATE-ADAPT-ACT. The document states that “to implement our new vision, Canada will also adopt a new approach to defence – one that values the ability to anticipate new challenges, adapt to changing circumstances, and act with exemplary capability and professionalism.”¹⁷⁰ OP STARFISH challenges all three elements of the new vision.

A point to remember is that failure and success often walk together. The success of the crews at 424 Squadron surely deserve high admiration, but in their shadow, at a close distance, are the missions that were never accomplished or abandoned due to the equipment provided to them. In contrast to the SSE vision, the missing SAR command structure has left a void that enabled the creation, acceptance and maintenance of OP STARFISH. Cohen and Gooch do not see failures like the 52 described in this chapter as

¹⁶⁷Department of National Defence, RWSAR Capability Tiger Team Report 31 Jan 2008..., p.5

¹⁶⁸Eliot A. Cohen and John Gooch. *Military Misfortunes: the Anatomy of Failure in War...*, p.26

¹⁶⁹Ibid, 27.

¹⁷⁰Strong, Secure and Engaged..., 15.

the responsibility of a Commander, individuals or a Squadron but rather the consequences of an inherent fragility of an entire military community.¹⁷¹ The RCAF institutional proclivities toward SAR leadership and the resistance to create a SAR command structure is the real underlying cause of the identified failures and the possibility of any catastrophic failure like the FDL plane crash.

The Way Ahead

As stated in the introduction of this chapter, this paper used OP STARFISH as strong evidence of strategic communication inefficiencies caused by the lack of a dedicated command and control in SAR. However, the outside pressure put on the SAR system has chipped away slowly at the issue at hand. While the situation is still enduring, Canadians have taken the lead to ensure SAR professionals are looked after. In April 2016, Defence Minister Harjit Sajjan declared in the House of Commons in response to a question by the opposition that the Liberal Government would not privatize military SAR. He said “I can assure Canadians that this Government is not [privatizing SAR], because the CAF play a critical role in SAR.”¹⁷² More specifically, Canadians have spoken loud and clear through the new Defence Policy in 2017. The conduct of SAR is clearly identified in SSE as one of the core missions for the CAF.¹⁷³ SSE proclaims that the most important objective of this new policy is “to provide the men and women with the equipment and care they deserve.”¹⁷⁴ Relevant to this paper, the Cormorant Mid-Life

¹⁷¹Eliot A. Cohen and John Gooch. *Military Misfortunes: the Anatomy of Failure in War...*, 243.

¹⁷²Lee Berthiaume, *Military SAR won't be privatized, says MND*, Ottawa Citizen April 12, 2016, <http://nationalpost.com/news/politics/military-search-and-rescue-wont-be-privatized-defence-minister-says>.

¹⁷³Strong, *Secure and Engaged...*, 6.

¹⁷⁴*Ibid*, 6.

Upgrade (CMLU) project is initiative #55 in SSE. The project is to maintain the operation of the current CH149 fleet while addressing obsolescence issues through an upgrade of the fleet and augmenting it with the same variant of CH149 to allow the return of capability to Trenton.¹⁷⁵

In other words, CMLU is the answer to OP STARFISH. The RCAF backgrounder published in July 2017 confirmed the investment plan of the RCAF: “The Government will provide \$46.4 billion on an accrual basis (\$64.4 billion on a cash basis) to fund equipment projects for the Royal Canadian Air Force over the next 20 years.”¹⁷⁶ The backgrounder further identifies the CMLU project as part of the investment plan on line #7; *CH-149 Cormorant Mid-Life Upgrade* – Upgrades CH-149 avionics as the current suite will increasingly restrict the ability to operate in all weather conditions.

Conclusion

This chapter looked at the Cohen and Gooch model to shed light on the risk of OP STARFISH from an evidence-based analysis without passing judgment. Crews at 424 (T&R) Sqn have been doing an outstanding job at responding to complex SAR missions with the equipment provided to them. The CH146 Griffon helicopters are reliable aircraft but were never meant to be used in the RCAF as primary SAR platforms.

Fifty-two failures have been recorded since 2005. These failures mainly came under scrutiny only because the decreased level of SAR service was due to the use of a CH146 instead of a CSH SOR-compliant helicopter. It is difficult, if not impossible, to

¹⁷⁵ Department of National Defence, Strong, Secure and Engaged. Initiative number 55.

¹⁷⁶ Government of Canada, Backgrounder: Investment in the Royal Canadian Air Force. Last modified 07 June 2017, <http://dgpaapp.forces.gc.ca/en/canada-defence-policy/news/investments-royal-canadian-air-force.asp>.

determine whether the failures resulted in loss of life. However, it remains crucial to return a CSH SOR-compliant platform to Trenton as soon as possible and not continue to operate with limited capability in the Trenton SRR, considering that SAR is by very definition a no-fail mission.

The crews flying the Griffon in a primary SAR role have expressed their fears through the flight safety system. Nonetheless, the Commander of the 1 Canadian Air Division keeps signing the RARM year after year, and the Cormorant Mid-Life Upgrade, with one of its objectives to correct STARFISH, is idling in the Option Analysis phase and minimum 3-4 years away from implementation. The plane crash at Fond-Du-Lac has shown that these issues can become a crisis in a matter of minutes. The communication struggle to pass strategic messages is yet another symptom of the SAR community not having a distinct command structure.

Chapter 5 ROOK: INSTITUTIONAL CULTURE

Introduction

Why is culture so important? Unlike civilian organizations, where leaders can be in place for decades, military leaders are typically in a position for only a very short period of time. Therefore, it is their shared culture that links them all together. While a Commander in charge is key; the long-term battle of military effectiveness and efficiency cannot be won by a single individual. This notion is not new by any means, but it is still important to re-emphasize that no individual can solve the SAR equation by him- or herself. The goal is not only having a strong leader on top but rather developing a culture of leadership across the whole spectrum of the organization. The solution is the creation of institutional culture.

Culture Development

In speaking of the CAF, SSE is clear and unambiguous, in that adapting “to the rapid pace of change in today’s fluid security environment is fundamental to operational success and that Canada’s new approach to defence [must] adopt new technologies and methods, and transform the way people are managed and employed.”¹⁷⁷ The military forces are dealing today with much more complex and complex threats. SAR is no exception; with the Arctic opening up, for example, people are getting lost further and more often. SAR requires strong guidance from the top down. However, this culture of adaptation that is promoted for the next 20 years in the Defence Policy is challenging for the SAR community due to the lack of connection from the strategic to the tactical.

¹⁷⁷Strong, Secure and Engaged..., 15.

There is a tangible risk that the information flow will not be empowered with the current command construct. The Assistant Deputy Minister (Review Services) (ADM(RS)) is responsible for providing the Deputy Minister and the Chief of Defence Staff with independent, objective and timely professional internal audits. In 2015, the ADM team was tasked to evaluate the CAF's contribution to the National Search and Rescue Program (NSP). The report brought forward several examples of disconnect from the tactical to the strategic. For instance, it mentioned that the RCAF has recently initiated a review of SAR tech skill sets.

Based on interviews and on the review of program documents, the amount and type of training activities for SAR techs has increased over the past five years to the point where insufficient time, or number of SAR techs, exists to accomplish all training and operations activities. This training includes, parachuting, diving, extensive paramedic training, survival skills, mountaineering, fast water rescue, and a multitude of other core and administrative skills.¹⁷⁸

The report states that “it is unclear if this will solely be a ‘bottom-up’ review necessitated by the lack of an overarching policy and strategic direction.”¹⁷⁹ Another study conducted by DRDC in December 2015 supports the CRS finding. The study analyzed the current SAR Tech establishment of 112 soldiers that was decided decades ago by the CAF to see if this was still valid. The DRDC report states that “when factors affecting manning are included, the overall deficit could be as high as 18 SAR Techs for the primary squadrons.”¹⁸⁰ This shortfall of 18 SAR Techs represents a 17% gap between the current establishment and what it should be. The take-away from this fact is that the

¹⁷⁸Department of National Defence, Chief Review Service, Evaluation of the DND/CAF Contribution to the National SAR Program Final – January 2015, 26.

¹⁷⁹Department of National Defence, Chief Review Service, *Evaluation of the DND/CAF Contribution to the National SAR Program Final* – January 2015, 26.

¹⁸⁰Dr. Lise Arseneau, Ms. Lynne Serré, SAR Tech Establishment Study, DRDC, Ottawa, 02 December 2015.

trade is constantly stretching its members to the maximum, and the trade is getting very tired along the way. The RCAF has struggled to deal with the issue, with the inaction keeping pressure on this no-fail trade. The natural solution would be the retention of current SAR Techs and an increase in recruitment, all the while tackling the establishment number. However, those elements have to be addressed from the highest levels of the CAF COC.

Therefore, the solutions are left to the tacticians and their limited span of control. Thus far, the solutions brought forward all target a quick fix and unfortunately involve decreases in SAR capabilities in order to relieve the pressure, such as removing the iconic parachute capability or the removal of SAR Tech positions from combat support Squadrons. Understandably, many factors come into play, such as manning shortages, but this shows a lack of involvement of senior officers in the development of durable solutions. In the world of business communities, organizations with weak leadership tend to be less effective and are prone to constant restructuring and downsizing in order to solve their problems.¹⁸¹ The evaluation of the CRS on the SAR Tech manning issues concluded that, although several areas require improvement, the primary requirement is for stronger governance and the creation of a restructured SAR command and control in order to link the tactical and strategic levels. This, in turn, will provide oversight and direction for CAF SAR in Canada.¹⁸²

Institutional culture can only be developed when the tactical, operational and strategic spheres are coherently connected together. At the core of institutional culture is

¹⁸¹Wang FJ, Chich-Jen S, Mei-Ling T. Effect of leadership style on organizational performance as viewed from human resource management strategy. *African Journal of Business Management*. 2010.

¹⁸²Ibid, p. 28

the ability to develop values and set a vision. Jerry W. Koehler insists that key in the assessment of a culture is looking at the behaviour of its members.¹⁸³ Culture is driven by behaviour and behaviour is guided by values. A mission statement is a good example of a derivative of institutional values.

Mission statements can have a significant impact on the members of an organization. An effective mission statement must answer the following questions: Who are we? What is our purpose? For whom do we do it? And why do we do it? For example, 1 Wing states that “self-contained and field-deployable Tactical Helicopter Squadrons make up 1 Wing and train and integrate with the Army brigades within their geographic regions. Our personnel are highly trained, dedicated professionals who maintain a culture of uncompromising standards, safety and operational fitness to deliver combat-effective airpower.”¹⁸⁴ This vision is a mature outlook that resonates from the tactical to the strategic levels.

RCAF SAR has no such global vision. The vision commonly known for SAR is usually the SAR Tech motto “That others may live.”¹⁸⁵ This vision is extremely tactical and often misunderstood by higher Chains of Command. An example of this disconnect are the military comments following the heroic death of Sgt Janick Gilbert during an Arctic rescue in 2011. The Government officials reacted appropriately, releasing statements like;

¹⁸³Jerry W. Koehler & Joseph M. Pankowski, *Transformational leadership in Government*, St Lucie Press, Delra Beach Florida. 1997p.45. Jerry W. Koehler is a professor at University of Florida State and a lead researcher in transformational leadership in governments.

¹⁸⁴Department of National Defence, *RCAF 1 Wing Kingston; Who we are*. Last modified, 26 July 2017 <http://www.rcaf-arc.forces.gc.ca/en/1-wing/index.page>

¹⁸⁵Department of National Defence, RCAF Website, Overview, Search and Rescue.<http://rcaf-arc.forces.gc.ca/eng/search-rescue.page>.

Sgt. Gilbert was an extremely brave Canadian who made the ultimate sacrifice while proudly serving his country.

Prime Minister

Sgt. Gilbert is a hero who deserves the gratitude and respect of his nation. He will be missed by the Canadian Forces family, and his loss will be profoundly felt in with all those with which he served.

National Defence Minister Peter MacKay

Sgt Gilbert has demonstrated tremendous courage in circumstances of great peril. His sacrifice will not be in vain; we will be forever grateful to him.

Gov. Gen. David Johnston¹⁸⁶

However, these statements were in sharp contrast to the military report on Sgt Gilbert's death. The report states: "Appropriate regulations would override excessive self-reliance and would serve to temper the (search-and-rescue) motto 'that others may live.' The motto was not intended to promote a rescue in the face of unreasonable risks."¹⁸⁷

Statistics show that the SAR force is launched a thousand times a years in dangerous situations. Moreover, the RCAF has officially been involved with SAR since 1947,¹⁸⁸ and yet the loss of personnel on operational missions can be counted on one hand. Sgt Gilbert has been the only operational casualty in decades. This translates into one loss of life over several thousand missions. The Afghanistan missions, in contrast,

¹⁸⁶CTV News, *CFB Trenton airman dies in rescue mission in Nunavut*, Published Friday, October 28, 2011, <https://www.ctvnews.ca/cfb-trenton-airman-dies-in-rescue-mission-in-nunavut-1.718074>

¹⁸⁷Department of National Defence, *SAR Technician - A Cat - Epilogue - Flight Safety Investigation Report October 28, 2011*, Director of Flight Safety, Ottawa, 12 November 2013, 1010-CC130323 (DFS 2), p.46 http://www.rcaf-arc.forces.gc.ca/assets/AIRFORCE_Internet/docs/en/flight-safety/cc130-sar-fsir-27oct11.pdf

¹⁸⁸James Pierrotti, *Reluctant to Rescue: The RCAF and the Search and Rescue Mandate, 1939-1959* Royal Military College, 2016, p.IV <https://espace.rmc.ca/jspui/bitstream/11264/903/1/Reluctant%20to%20Rescue.pdf>

have tragically lost more than 158 soldiers.¹⁸⁹ These statistics are relevant in the way that senior military echelons are reacting to them. Combat missions are well understood by high HQ and so bring forth no questioning. The combat missions' losses are rightfully accepted and respected.¹⁹⁰ SAR losses, in training or operational, as minimal they are, are always questioning the community's values and thought processes.¹⁹¹

Hence, the question can be asked: why is there such a disconnect and ultimately why is there such a misunderstanding of the SAR communities, which results in loss of effectiveness and efficiencies delivering the CAF mandate? A theory that remains to be proven is the lack of senior officers with SAR background and experience at the rank of Generals is detracting any efforts to truly develop institutional culture for the SAR force.

Conclusion

Institutional culture can only be developed when the tactical, operational and strategic levels are interconnected. The SAR community has always proven its strength at the tactical level but has stalled its cultural development past the daily operations. Restructured SAR command and control would remedy this situation by linking the tactical and strategic levels. The current lack of vision and mission statement for the whole SAR force has isolated the Squadrons and watered down the capability to the point where the higher Chains of Command have difficulties reaching so far down to

¹⁸⁹CTV News, *Canadian death toll in Afghan mission: 158 soldiers, four civilians*, Published Friday, May 9, 2014 <https://www.ctvnews.ca/canada/canadian-death-toll-in-afghan-mission-158-soldiers-four-civilians-1.1814248>

¹⁹⁰City News, *Canadian death toll in Afghan mission: 158 members of Forces, four civilians*, Published 9 May 2014, <http://toronto.citynews.ca/2014/05/09/canadian-death-toll-in-afghan-mission-158-members-of-forces-four-civilians/>

¹⁹¹David Pugliese, *Questions to be answered about the death of Sgt. Mark Salesse*, Ottawa Citizen, 13 February 2015, <http://ottawacitizen.com/news/national/defence-watch/questions-to-be-answered-about-the-death-of-sgt-mark-salesse>

understand how the mandate is delivered. An example of this mission misunderstanding is highlighted when casualties occur during SAR operations, like the death of Sgt Gilbert. In comparison to the loss of lives in Afghanistan, SAR losses are met at higher levels of command with skepticism and a sense that something was done wrong compared to losses in Afghanistan, where they are celebrated and respected.

Chapter 6 PAWN: ROLE MODELS

Introduction

The current CAF SAR program employs 950 personnel, almost all of whom are used at the tactical levels in SAR Squadrons and JRCCs.¹⁹² Outside the tactical units, only 9 SAR positions are dedicated for management of the capability: five at 1 CAD Senior Staff Officer cell, one at the RCAF air staff headquarters, and three at the Joint Canadian Operation Command.¹⁹³ This gives a ratio of 1% of SAR personnel involved in governance. In comparison, CANSOFCOM, which has similar number of tactical soldiers and specialized employment, has a ratio of 15% for oversight of their force development.¹⁹⁴ The Chief of Review services reported that “the importance and complexity of SAR activities require an ongoing oversight staff at the strategic level to coordinate and provide direction and policy on capability and resource development. The lack of resources hinders this process.”¹⁹⁵ This chapter will present the functional 1 Wing model as a successful example of a capability that establishes a coherent structure in order to deliver its mandate which RCAF SAR can embody.

Other Functional Commands

Some of the most successful elements of the CAF have long understood the benefit of a solid and specific command structure. For example, the Land Force command doctrine manual states that “the Land Force will be command-centric with a clear and

¹⁹²Strong, *Secure and Engaged...*, p.87

¹⁹³Chief Review Service, *Evaluation of the DND/CAF Contribution to the National SAR Program...*, p.27

¹⁹⁴*Ibid*, p.27

¹⁹⁵*Ibid*, p.27

unambiguous chain of command from the strategic to the tactical levels, with commanders at each level clearly understanding their assigned authorities, responsibilities and accountabilities.”¹⁹⁶ The Canadian Special Operations Forces Command (CANSOFCOM) is a command structure established in 2006 that leads some of the most recognizable units, like the Joint Task Force 2 (JTF2) and the Canadian Special Operations Regiment (CSOR).¹⁹⁷

Similar to SAR, CANSOFCOM is a small contingent of elite personnel delivering missions of strategic significance in a high-pressure environment. MGen Rouleau, the current Commander of CANSOFCOM, stated in a 2014 interview that the source of their effectiveness was beyond the excellence at the tactical level: “we are organizationally unique, we are a very agile organization. We don’t have a lot of structure and hierarchy built into our organization, it allows us to move very quickly on issues to build, break, iterate and do it all over again.”¹⁹⁸ Major General Rouleau admitted that before CANSOFCOM had its own command, they were constantly looking to find their way, but now that his command and control are established from a Commander in charge of a capability down to the units, the effectiveness and efficiency is incomparable: “there is an unbroken chain of clarity and speed in that system.”¹⁹⁹ He concluded his interview by affirming “[i]t’s not just about doing a great job on the ground, but about sustaining

¹⁹⁶CAF Land Operations 2021: The Force Employment Concept for Canada’s Army of Tomorrow, Directorate of Land Concepts and Design Kingston, Ontario, 2007

¹⁹⁷ Department of National Defence, CAF website, Canadian Special Operations Forces Command, about us.

¹⁹⁸Sandrine Murray, *Canada’s top commando*, Esprit de Corps, Canadian Military. Volume 24 issue 10, November 2017, p. 16

¹⁹⁹Sandrine Murray, *Canada’s top commando...*, p.18

ourselves as an organization over the long-run.”²⁰⁰ These are important lessons for RCAF SAR.

Within the RCAF, the SAR Wing concept does not need to look very far for a successful example of a functional Wing. 1 Wing is located at Canadian Forces Base Kingston, which is the home of Canada’s tactical aviation capability. Equipped with a mixed fleet of CH-146 Griffon and CH-147F Chinook helicopters, 1 Wing provides integrated tactical aviation air power effects through a Formation Headquarters and seven squadrons distributed across Canada.²⁰¹ The strength of 1 Wing is vastly attributed to the way it is led. The 1 Wing Commander has a clear mission: “The Commander will generate a relevant, responsive, and effective Tactical Aviation capability for the provision of air mobility, reconnaissance, and firepower in support of Land and Special Forces.”²⁰² Furthermore, the 1 Wing doctrine states that “[i]ntegration is one of the key vectors within the wing and one of the underlying themes within the force employment.”²⁰³ In order to deliver the capability, the 1 Wing Commander exercises command over the entire spectrum of tactical aviation. The Commander currently has in his arsenal 64 regular forces positions and 43 reserves in his HQ.²⁰⁴ In comparison, the SAR staff schematic has more of a shotgun approach, where positions are located in

²⁰⁰Ibid p.18

²⁰¹1 Wing Kingston, Who we are..., Last accessed June 25th.

²⁰²Ibid

²⁰³Chris Tatcher, *On the Move: Tactical aviation will help carry the Canadian Army’s future operating concept*, RCAF Today: Canada’s Air Force Review magazine, 2016 edition. <http://www.rcf-arc.forces.gc.ca/en/article-template-standard.page?doc=on-the-move-tactical-aviation-will-help-carry-the-canadian-army-s-future-operating-concept/irhk3ld2> Last accessed 28 June 2017.

²⁰⁴Canadian Forces Aerospace Warfare Center, INFORM, May 2017, forum on functional SAR Wing.

different COCs and departments in the RCAF. SAR has even some positions falling under Navy command and control organization, as is the case for JRCC staff.²⁰⁵

A factor that keeps efficiency at a high level is the control of the Wing across multiple facets of operation. 1 Wing has quarterly operational directives issued by the 1 Wing Commander to keep the troops informed and aligned with objectives. Items such as the Yearly Flying Rates (YFR), force generation, planned force employment, technical projects, maintenance programs, equipment and aircraft transfers, reminders of upcoming exercises, and tasking are all elements that the Wing keeps on track.²⁰⁶ The quarterly document produces a detailed and extensive matrix that deals with different timelines.

1 Wing HQ conducts the Command and Control of 1 Wing Squadrons and carries out the functions of:

- (1) maintaining aircrew and maintenance standards;
- (2) managing internal force generation;
- (3) managing the Force Development of Tactical Aviation through the Tactical Aviation Advisory Group;
- (4) serving as the conduit to higher RCAF authorities for all issues;
- (5) coordinating and prioritizing collective training with the Canadian Army;
- (6) formation level per admin and management; and

²⁰⁵ See Figure 1.2 SAR tasking C2 Source: CFAWC Canadian Air and Marine SAR Tasking C2, 18 February 2016. JRCC Officers in Charge for the Halifax and Victoria SAR Regions reports to Navy Admirals for SAR Ops.

²⁰⁶ 1 Wing Quarterly Operations Directives are issued by the 1 Wing Commander quarterly. Example 3350-1 Oct 2016

- (7) serving as Tactical Aviation Force Employment Lead Planner (FELP) for the RCAF.²⁰⁷

The SAR Wing Concept

The 1 Wing concept provides the 1 CAD Commander with a single point of contact for all matters relative to tactical aviation, which is highly effective in the context of its dispersed operations and apportionment across Canada. In contrast, the current construct of the SAR force requires the 1CAD Commander to reach out to 11 different and distinct Commanders for issues on flight safety, operational air-worthiness and communications relative to SAR. The outgoing CAF Acting VCDS, Lieutenant-General Parent, sees the SAR functional wing as the most effective and efficient model of command for the CAF to enable the SAR capability, a capability which is even more dispersed than tactical aviation, to operate under the primary air power tenet of centralized control and decentralized execution. He also supports that the functional Wing is the best means for the SAR force to have a strong and persuasive voice at the RCAF table. As well, Lieutenant-General Parent highlights the complications of command authority when the SAR senior staff officer (SSO) at 1 Canadian Air Division is fulfilling leadership roles that are above his or her advisory responsibilities.²⁰⁸ Add a “so what?” sentence here

The success of 1 Wing leadership was seen throughout the deployment in Afghanistan, where the HQ had to manage a high operational tempo at home and abroad,

²⁰⁷ 1 Wing Quarterly Operations Directives..., p.26

²⁰⁸ “With Permission”, Communication between the Author and Lt-General Parent on email from June 30th 2017.

all the while introducing a new flying platform: the Chinook helicopter. This feat of command and control would not have been possible without the solid leadership structure and framework that the functional Wing enables.²⁰⁹ Project Laminar Strike is a document that incorporated lessons learned from the Joint Task Force-Afghanistan (JTF-Afg) Air Wing. The authors of the document, which includes Major General Drouin, current 1 Cdn Air Div Commander, stated that the project was their way of giving back to the Air Force by compiling the knowledge they acquired throughout their tours of duty in a theatre of war. The documents support that the key to the success of the operation was this ability to transform and modify Air Wing HQ organizational structure that would strengthen command focus and influence the wing's tactical units.²¹⁰

Colonel Kevin Tromp of the RCAF is a SAR aircrew by profession and a former senior advisor on SAR to 1 Canadian Air Division. He argues that a functional Wing is likely the best step to take for the SAR community. He supports that “with the Canadian Forces School of SAR technicians, the Cormorant Operational Training Unit (OTU) and the future of the new fixed Wing SAR C295 OTU all being co-located in Comox under the new SAR Centre of Excellence, [this] marks the perfect time to make the move.”²¹¹ Tromp sees the major task of the CAD \$2.3 billion Airbus C295 implementation across the primary SAR Squadrons best accomplished through a functional Wing.²¹² Cultural and organizational transformation would provide the SAR Wing commander with a clear

²⁰⁹Chris Tatcher, *On the Move: Tactical aviation will help carry the Canadian Army's future operating concept...*, Last accessed 28 June 2017.

²¹⁰Department of National Defence, *Project LAMINAR STRIKE, Canada's Air Force: Post Op ATHENA* (Ottawa: Department of National Defence, 2011).p . 5

²¹¹Canadian Forces Aerospace Warfare Center, *INFORM*, May 2017.

²¹²Lee Berthiaume, *Canada's new search-and-rescue plane: Airbus C295*, Canadian Press, Published Thursday, December 8, 2016, <http://www.ctvnews.ca/politics/canada-s-new-search-and-rescue-plane-airbus-c295-1.3194690>

vision as to how he saw units and capabilities evolving in order to advance air power contributions to better support the SAR mandate.

SAR is at the forefront of SSE. The investment of billions of dollars planned in the next decade for SAR is making a case on its own for building a command structure that can absorb and bring those projects to fruition. As evidenced by the failure to deliver on the smaller projects highlighted earlier in this study, the RCAF needs to reposition the SAR community for sustainable success by providing it with the human resources and authority required to face a dynamic future.

Conclusion

Other CAF functional commands such as CANSOFCOM and 1 Wing offer insights on viable way forward for SAR, as they provide the commander with a more robust way of dealing with day-to-day challenges. The efficiency of 1 Wing in particular is a testimony to a decade spent deployed in Afghanistan, at home, and in other parts of the world while implementing a new flying platform. The future of SAR is paved with good intentions and billions of dollars, but it is now up to the CAF and the RCAF to ensure that, going forward, the chosen command structure can handle the pressure and deliver on expectations.

CONCLUSION

This study has demonstrated that while the RCAF is tactically effective at meeting its national SAR mandate, it is inefficient at delivering that mandate due to organizational leadership anemia. The lack of leadership has transpired at many levels, including a lack of capability development, a challenged force generation sustainment, difficulties in communicating operational risk, and a lack of unity of command. This research project found that the best way to align effectiveness with efficiency and break from the tactical shell and ultimately institutionalize RCAF SAR is through the creation of a dedicated command structure in the form of a SAR Wing led by a SAR Commander.

The first chapter of this study exposed the foundation of leadership for RCAF SAR and demonstrated the disconnect between the 11 SAR units, each falling under different Wing Commanders. As mentioned, most of those Commanders had no tacit knowledge of SAR operations. More troubling are the units like the Joint Rescue Coordination Centres that are led by Canadian Navy units with limited knowledge of air power delivery. In practical terms, this means that there is no Commander overseeing the SAR force as a whole. The command, the management, the logistical need, the business case, the training, and the administration are largely left to local Wing Commanders to manage the SAR resources with all other resources under his or her command. There is no CAF SAR budget, no SAR vision and no SAR HQ to advance issues as a whole. More importantly, there is no SAR Commander to lead the force, institute a risk management philosophy, and set mission command on the right track.

This challenging situation laid the groundwork for Van Creveld's model of a difficult command environment, such as when a force is divided into multiple sub-units,

when the forces move rapidly, when the span of command covers a large area of operations (AOR), and when the command is remote.²¹³ The first Van Creveld element is highlighted by the RCAF SAR command and control structure that switches back and forth, with minimal notice, from a force generation command structure to a force employment structure. Moreover, the force is controlled by three different JRCCs and subdivided into five primary SAR units, all of which together comprise 48 SAR crews led by aircraft commanders. The second aspect is anchored in the fact that the RCAF SAR force moves within a 30-minute notice and with few mission details. Thirdly, the RCAF SAR AOR is the second largest in the world with the largest coastline on the planet. Finally, the command is remote by the insular nature of SAR. The crews operate almost independently of any commanders' presence and, more significantly, only connect together at the operational level under the 1 Cdn Air Div Comd.

The first chapter then dove into the mission command principle, which is the model promoted for the RCAF as a whole. Whether dropping a bomb, gathering intelligence, transporting troops or rescuing a person, what the “front-liner” believes he or she should do on behalf of the RCAF and the CAF at large is the heartbeat of the organization. The importance of the Commander’s intent is primordial and needs to be communicated effectively for mission command to be successful. The Commander needs to “equip decision-makers at all levels with the insight and foresight required to make effective decisions, to manage associated risks, and to consider second and subsequent order effects.”²¹⁴ SAR delivery in the RCAF is a very specialized skillset that requires

²¹³Martin Van Creveld, *Command in War...*, p. 6

²¹⁴Gen Martin E. Dempsey, *Mission Command*, white paper...,p 3.

Commanders to understand the details of the operations in order to fully understand the capabilities' strength and weaknesses.

The first chapter concluded by finding that the Commanding Officers of the five primary SAR Squadrons have, as supervisors, different Wing Commanders that have, for the most part, no deep knowledge of SAR operations. This then results in the Commander's intent being developed at the tactical level in Squadron isolation. The lack of a SAR Commander is jeopardizing the core of mission command and poses operational risks, especially with regards to risk management and the decision-making process.

The second chapter proved that the innovation required to better SAR capability has stalled over the past decade due to the lack of leadership structure and thus jeopardizes the effectiveness of the RCAF mandate. SSE highlights the importance of keeping pace with rapid evolution and innovation to ensure that the CAF maintains operational relevance.²¹⁵ Among CAF spending in 2014, \$1.3 billion was allocated to Airborne Communications, Navigation, Airborne Sensor/Information Collection and Other Information Systems.²¹⁶ With this significant investment in sensor technology, an assumption could be made that SAR, as a top priority for the RCAF and CAF, has been able to modernize and keep up with current technology. The troubling fact is that all primary SAR platforms in the RCAF – fixed wing and helicopters alike – are relying almost solely on the eyesight of aircrew to search for people in distress.

Further research found that Canada is the only country of the G20 that does not use supplemental means, such as forward-looking infrared (FLIR), thermal imaging

²¹⁵Strong, *Secure and Engaged...*, p.70

²¹⁶*Ibid*, p.22

technology and high definition video cameras in primary SAR aircraft. The institutional fragility of SAR in the RCAF has been most flagrant in its difficulty to advance even the smallest of projects, such as, for example, the capability of the CH149 to fly at its alternate gross weight even though all other users in the world are using it. This stalled innovation is a sign that the community lacks the structural requirement to effect necessary changes.

The third chapter spent significant time analyzing a situation that has endured in the RCAF SAR community for more than a decade: OP STARFISH. In October 2005, the decision was made to relocate all 424 Squadron CH149 helicopters to the East and West Coast SAR units due to poor availability within the fleet. During OP STARFISH, the CH146 Griffon helicopter was temporarily deployed to 424 Sqn to fill the void. The CH146 Griffon is non-compliant in many aspects of the CSH SOR. Among the numerous non-compliances, five essential requirements are not met: speed, range, hover-performances, anti-icing capabilities, and cabin capacity. The decision was acknowledged publicly, with the acceptance of the interim solution made out of operational necessity and in the understanding that the capability will return within months.

Back in 2012, DRDC was tasked by the Canadian Government to conduct a study to find “appropriate parameters to assess the use of the CH-146 as a primary SAR platform in determining both the nature of the particular demand being placed on that fleet and the potential risk areas in its continued use as a SAR platform.”²¹⁷ In its conclusion, the DRDC report stated that further study on an incident-by-incident basis is

²¹⁷Paul Dickson, RWSAR Evaluation of Options, DRDC CORA...

required to determine if that capability deficiency was significant. This study analyzed all SAR incidents, regardless of type (air, marine and land) that occurred in the Trenton SRR from November 2005 to September 2017. In total, 43,570 missions were recorded in the Trenton SRR for the time period. Different filters were applied to highlights failures of the Griffon helicopter to perform according to the CSH SOR. This research found that OP STARFISH was responsible for 52 failures. The failures originated from different elements of the Griffon's inferior capabilities: 25 were due to range and speed, 21 to weather-related complications, and 6 to platform limitations on power and space.

Apart from the failures themselves, the situation has highlighted a deeper problem for RCAF SAR. The question that keeps surfacing through the RCAF's COC has been the same for several years: even if we ignore the CH146 Griffon's non-compliance to the CSH SOR, has the helicopter failed at delivering the RCAF SAR mandate in the Trenton SAR region? Indeed, those 52 failures have been unnoticed by the higher COC. This chapter laid the groundwork for Chapter 4, which looked at the second and third orders of effect from OP STARFISH and explained this lack of knowledge by the higher Commander of the CAF.

Chapter 4 set its premise on the fact that the goal of communication is to create a shared reality between sources and receivers.²¹⁸ The source, in the context of this paper, is the tactical level, and the receivers are the strategic level, including the high-level Commanders in the CAF in between: the SAR C2. The argument supporting the thesis is that awareness of the risks involved in OP STARFISH has spread unchecked for several

²¹⁸Michael Z. Hackman, Craig E. Johnson, *Leadership: A Communication Perspective...*, p.6

years due to the inability of the SAR community to coordinate messaging and communicate upward. A communication strategy is essential for any organization in order to establish a purpose and determine the boundaries. Yet this strategy in the current SAR C2 is intermittent. Instead of a set of simple and relevant messages constantly emanating from an organized SAR structure, a more ad-hoc approach and on-demand information is produced sporadically because of the independence of the RCAF SAR units towards each other. An interesting dichotomy was found between a no-fail mission and a best-effort principle with available resources that make the tactical and strategic levels uncomfortable to engage in discussion.

OP STARFISH is the reflection of the inefficiency of the SAR community to build momentum on a serious issue, which is the second order of effect of a lack of command structure. An example of a similar situation for the Tactical Helicopter community was looked at and showed that their leadership structure greatly helped in the emergency acquisition of the Chinooks in 2006. This example reflected on the effectiveness of a functional Wing to make the message heard and initiate action, which was in stark contrast to the SAR community trying to fix OP STARFISH with the upgrade of the VH71 helicopters.

The chapter then looked at Cohen and Gooch's three-pronged model on failures in competent militaries: failure to learn, failure to anticipate, and failure to adapt. OP STARFISH highlighted failure to learn in the 52 operation failures, which, when taken one by one, can seem benign, whereas the whole spectrum of failures provided clear proof of the SAR community being unable to communicate upward. Failure to anticipate was proved by the case study of the Fond-Du-Lac plane crash on the evening of 14

December 2017. The plane, with 25 people on board, was effectively rescued by local emergency services, but an objective look at the situation revealed that if the incident had occurred five airtime minutes later (and that much further from the community), it had the potential for a military crisis. At -15.8 °C, a maximum rescue time was calculated to be 15 hours for survival purposes.

The National policy on SAR detailed in the CAMSAR dictates that the RCAF must respond to aeronautical emergencies with a platform that is equipped to do the job. The CH149 is the only helicopter in the RCAF fleet that meets the requirements. A Cormorant would have accomplished the challenging rescue of Fond-Du-Lac in 15 hours. The reality is that OP STARFISH would use a Griffon that would have taken a total of 23.5 hours, but the maximum crew-day permitted for SAR operations is 18 hours. The Fond-Du- Lac plane crash formed the cornerstone for the analysis of the failure to anticipate.

The last failure – failure to adapt – is explained by the difficulties in changing the status quo and for the RCAF SAR to only look at the positive stories of the Griffons in Trenton instead of taking a holistic view of the situation. In the end, RCAF challenges toward SAR leadership and the resistance to create a SAR command structure is the real underlying cause of the identified failures left unaddressed and the possibility of any catastrophic failure like the FDL plane crash.

Chapter 5 looked at institutional culture development. Unlike civilian organization, where leaders can be in place for decades, military leaders assume their positions for a relatively short time, so the culture is what links all of them together. While a

Commander in charge is key; the long-term battle of military effectiveness and efficiency cannot be won by a single individual. The goal is not only to have a strong leader on top, but rather to develop a culture of leadership across the entire organization. The solution is the creation of institutional culture.

Institutional culture can only be developed when the tactical, operational and strategic spheres are coherently connected together. Research found that SAR does not have a common vision and mission statement. The only vision commonly linked to SAR is usually the SAR Tech motto “That others may live,” but it is extremely tactical and often misunderstood by higher Chains of Command. Statistics show that the SAR force is launched a thousand times a year in dangerous circumstances, yet the loss of personnel on operational missions can be counted on one hand. Sgt Gilbert has been the only operational casualty in decades. This translates into one loss of life over several thousand missions. In contrast, the Afghanistan missions lost more than 158 soldiers.²¹⁹ The combat missions’ losses are automatically accepted and respected,²²⁰ whereas SAR losses, as minimal as they are, are always questioning the community’s values and thought processes.²²¹ Furthermore, many Senior Officers believe that “the SAR community functions almost as a subset of the RCAF and [that] many of its internal processes are invisible to the rest of the CAF,” while “[a]t the general officer level, many leaders are unclear on how SAR truly operates.”²²²

²¹⁹CTV News, Canadian Death Tolls in Afghanistan...

²²⁰City News, Canadian Death Toll in Afghanistan...

²²¹David Pugliese, Questions to be answered about the death of Sgt Salesse...

²²²RCAF SARCAG 10-1 Agenda, minutes of the search and rescue capability advisory group held at Trenton, 6-7 May 2010.

The last chapter in this study envisioned a successful model of Command in the CAF that would have a similar workforce and operational environment. The current CAF SAR program employs 950 personnel, which are almost all used at the tactical levels in SAR Squadrons and JRCCs.²²³ Outside the tactical units, only 9 SAR positions are dedicated for management of the capability; five at 1 CAD Senior Staff Officer cell, one at the RCAF air staff headquarters, and three at the Joint Canadian Operations Command.²²⁴ This gives a ratio of 1% of SAR personnel involved in governance. In comparison, the CANSOFCOM, which has similar number of tactical soldiers and specialized employment, has a ratio of 15% for oversight of their force development.²²⁵ Major General Rouleau admitted that, prior to CANSOFCOM, it was not just about doing a great job on the ground, but about sustaining an organization over the long run.²²⁶

Within the RCAF, the SAR Wing concept does not need to look very far for a successful example of a functional Wing. 1 Wing is located at Canadian Forces Base Kingston, which is the home of Canada's tactical aviation capability. Equipped with a mixed fleet of CH-146 Griffon and CH-147F Chinook helicopters, 1 Wing provides integrated tactical aviation air power effects through a Formation Headquarters and seven squadrons distributed across Canada.²²⁷ The 1 Wing concept provides the 1 CAD Commander with a single point of contact for all matters related to tactical aviation, which is highly effective in the context of its dispersed operations and apportionment across Canada. In contrast, the current construct of the SAR force requires the Division

²²³Strong, Secure and Engaged..., p.87

²²⁴Chief Review Service, Evaluation of the DND/CAF Contribution to the National SAR Program..., p.27

²²⁵Ibid, p.27

²²⁶Ibid, p.18

²²⁷1 Wing Kingston, Who we are.Last accessed June 25th.

Commander to reach out to 11 different and distinct Commanders for issues on flight safety, operational air worthiness and communications relative to SAR.

The outgoing CAF Acting VCDS, Lieutenant-General Parent, sees the SAR functional wing as the most effective and efficient model of command for the CAF to enable the SAR capability to operate under the primary air power tenet of centralized control and decentralized execution, for a capability which is even more dispersed than tactical aviation. He also supports that the functional Wing is the best means for the SAR force to have a strong and persuasive voice at the RCAF table. As well, he highlights the complications of command authority when the SAR senior staff officer (SSO) at 1 Canadian Air Division is fulfilling leadership roles that are above his or her advisory responsibilities.²²⁸

The analysis and research conducted by this study points toward another area where more work could be done. Do Generals' operational backgrounds have an influence on the advancement of their own communities within the RCAF? It would be very interesting to investigate whether the lack of leaders at the rank of General in the RCAF with SAR operational background has hindered the development of the CAF SAR mandate as a whole. Relevant questions that need to be answered are: does the lack of SAR representation at the rank of General have an effect on the CAF SAR mandate? Does the leadership of a specific community tend to protect and promote officers of the same background? Does the RCAF SAR community have the ability to grow Generals? How is the SAR mandate perceived at the General level in the RCAF? Are the

²²⁸Communication between the Author and Lt-General Parent on email from June 30th 2017.

expectations of the general public and those of the RCAF General corps aligned with regards to the military efforts for SAR?

Chess has little to do with luck. Unlike other games where dice has a definite influence on the outcome, chess players depend on themselves and the way they use their brain resources efficiently to seek and find success. RCAF SAR keeps saving lives day after day. Thus far, their expert tactical accomplishments have compensated for the lack of leadership structure, but this no-fail mission has room to grow and save even more lives than they do today. The military senior leadership needs to embrace the complexity of SAR and entrust them with a dedicated command structure. The CAF SAR community is ready to get their opportunity at becoming chess masters.

ANNEX A

Mission failures in the Trenton SAR region caused by the use of the CH146 Griffon as a primary SAR platform at 424 (T&R) Sqn.

Event #	Date	JRCC case #	Description	Failure type
1	05 Nov 2005	T2005-03303	Quebec FIC reported a C-172, C-GPUL, 3 POB overdue on a local flight in the Saint-Frederic, QC area. The aircraft departed approximately 0215Z on 6 Nov 05 from Saint-Frederic airport [CSZ4] and was last heard via FM radio at approx. 0245Z in the vicinity of Saint-Pierre-de-Broughton. A 424 Sqn Herc, 424 Sqn Griffon and a 439 Sqn Bagotville Griffon were tasked. Icing conditions hampered the CH146 initially and caused delays to reach the scene. The search object was located southwest of Saint-Georges by a local resident. The 3 POB were fatally injured in the crash.	Lack of ability to fly in icing conditions.
2	10 Jun 2006	T2006-00599	Hall Beach RCMP reported 3 hunters overdue in a 22' green canoe. Local SAR vessel checking area; C130 tasked to search, ETA 0800z. At 0956z R317 reported sighting the search object on an ice flow 24Nm SE of Hall Beach. Cormorant from 413 Sqn Greenwood tasked for extraction.	Lack of range and speed.

3	27 Jul 2006	T2006-01446	C-GCMK reported overdue by Arctic Radio between Roche Bay and Rankin Inlet, NT. Hercs from 424Sqn and 435 Sqn, Twin Otters from 440 Sqn, a Cormorant from 103 Sqn and a Dash-8 from CG were tasked. Even though the mission was on 424 Sqn AOR and the distress case was 225 miles closer to Trenton than Gander, JRCC Trenton elected to task the Cormorant out of Gander for a faster response. aircraft. The pilot was located, and SARTECHs were on scene to assist. The pilot, with minor injuries, was airlifted to Rankin Inlet for medical attention.	Lack of range and speed.
4	11 Dec 2006	T2006-02700	RCMP Iqaluit requested humanitarian support for a search of 3 overdue snowmobilers who left Cape Dorset Saturday morning and did not return as scheduled on Saturday night. Trenton Herc R332 and 103 Sqn Corm tasked, but released prior to arrival.	Lack of range and speed.
5	06 Jan 2009	T2009-00021	Montreal ACC notified JRCC Trenton of a possible crash of a PA 28 C-FRZH with 4 POB approx 35nm SE of Quebec Airport. R-307and R-491 from 424 Sqn, R-450 from 439 Sqn, R-911from 413 Sqn and a CCG helicopter were tasked to respond. CCG helicopter was first on scene but unable to get on site due to weather. Crash site was eventually located by R-450. SAR Tech was inserted via hoist. Two additional SAR Techs jumped in approx. 5 miles from crash site. Of the four POB's, two were reported as deceased and two were seriously injured. The Griffon on scene could only take one patient for the transit to closest hospital. Cormorant R- 911 took over and airlifted two injured survivors and 5 SAR techs required to treat patients onboard the helo while enroute to CCG helipad in Quebec for patient transfer to ambulance.	Cabin space.

6	07 Jan 2009	T2009- 00030	Fox Lake: missing snowmobiler. OPP requested air assistance. Insufficient fuel to hold alternate, and no anti-icing ability, so the aircraft commander turned down the mission. Cormorant would have been able to fly through icing conditions and hold North Bay (85 NM) as an IFR alternate. Conclusion of the case and patient status unknown.	Lack of ability to fly in icing conditions.
7	07 Feb 2009	T2009- 00165	100 people stranded on ice in frigid conditions on Pelee Island. Slow transit and requirement for a fuel stop made JRCC look for other assets. JRCC stood down Griffon and tasked US Coast Guard for evacuation.	Range and speed.
8	27 Mar 2009	T2009- 00345	A person suffered a spinal injury in Algonquin National Park. Griffon from 424 Sqn tasked. Griffon launched in marginal VFR conditions instead of IFR due to the inability to find an IFR alternate with the range available. Griffon had to land in field enroute to wait for weather to pass. Once on scene, the helo had to drop the SAR Tech and RTB for fuel before going back on scene. Hoist sequence for extraction initially delayed due to lack of power.	Range and speed. Lack of power.
9	29 Mar 2009	T2009- 00359	Injured snowmobiler in Sudbury area. Unable to go direct due to range and icing conditions. Response to the victim was considerably delayed.	Lack of ability to fly in icing conditions. Range and speed.
10	06 Apr 2009	T2009- 00395	Distress call in Lake Erie. Due to the lack of anti-icing capabilities to fly in snow, the Griffon from 424 Sqn had to abort the mission and RTB. Conclusion of the case and patient status unknown.	Lack of ability to fly in icing conditions.

11	20 Apr 2009	T2009-00483	Male in distress in heavy swells in a canoe in Lake Huron. Griffon from 424 Sqn had to turn around and abort the mission prior to arrival on scene due to icing conditions. Conclusion of the case and patient status unknown.	Lack of ability to fly in icing conditions
12	21 Apr 2009	T2009-00486	OPP Orilla reporting overdue lone male in a 14 ft fiberglass boat who they believe departed Penetanguishene early Friday morning 170500Z to return to his residence approx 2nm by water. CG Cape Providence, 424 Sqn Griffon and Hercules, OPP Helicopter, 5 OPP Vessels and numerous vessels of opportunity tasked. 424 Sqn Griffon suffered considerable delays reaching on scene due to lack of anti-icing capabilities and multiple fuel stops required. OPP divers recovered body Apr 27	Lack of ability to fly in icing conditions. Range and speed.
13	04 May 2009	T2009-00568	Plane crash near Sorel, Qc. Arrival of 424 Sqn Griffon delayed due to multiple fuel stops required. Two hours delay compared to a use of a CH149 Cormorant.	Range and speed.
14	12 Jun 2009	T2009-00925	Report of a capsized vessel near Leamington. Arrived on scene and unable to hoist due to power limitations. Had to land at St-Thomas to unload critical SAR gear like dive gear to carry on. Caused delay in response.	Cabin and power limitation.
15	30 Jun 2009	T2009-01206	Person in the water near Rochester. Griffon unable to hover or hoist once on scene due to power limitations.	Power limitations.
16	07 Jul 2009	T2009-01318	Marine distress near Hamelin Beach. Griffon reached scene and had to loiter for 30 minutes before being able to conduct a hoist sequence. Delays in rescue.	Power limitations.

17	05 Sept 2009	T2009-02417	Medevac Moccasin Lake. Crew experienced two “over-torque” during insertion. Due to the lack of range, the crew had to shut down the helo between every evolution (insertion-extraction), causing delays. Landed below minimum VFR fuel at hospital.	Power limitations.
18	26 Sept 2009	T2009-02672	SARSAT picked up a 406 beacon. Investigation revealed it was from aircraft C-GACH. Shortly after Quebec FIC called to report a crash of the same aircraft approx 200 miles north of Bagotville. Herc from Trenton and Corm from Greenwood was tasked. Griffon not tasked due to insufficient range. Greenwood Cormorant would get there much faster. Rescue completed. Case closed.	Range and speed.
19	07 Nov 2009	T2009-02912	Cessna 310R, C-GFIT, departed Sioux Lookout, Ontario, on a night visual flight rules flight to Cat Lake, Ontario, with a pilot and two passengers on board. When the aircraft did not arrive at its destination, a search was launched. Griffon tasked out of 424 Sqn had 5-hour delay in Marathon due to lack of IFR capabilities and fuel endurance. The occupants of the aircraft were fatally injured in the incident.	Range and speed. Weather limitation.
20	10 Nov 2009	T2009-02927	EMO Nunavut requested air assistance for a vessel stranded in ice near Coral Harbour. Cormorant from 413 Squadron tasked instead of Griffon from 424 Sqn for a faster response.	Range and speed.
21	20 Nov 2009	T2009-02983	Person fell overboard a vessel near Cardinal, Ontario. Griffon was close to scene but did not have sufficient fuel to effect the rescue. Refuel delayed the rescue by an hour. Vessel in the area recovered the person before Griffon had a chance to return.	Range and speed.

22	22 Jan 2011	T2011- 00065	RCMP requested air assistance for seal hunter in distress near Resolute Bay. JRCC Trenton tasked Cormorant out of Greenwood due to icing in the area and for a faster response. Cormorant rescued the hunters and brought them to Resolute Bay.	Range and speed. Weather limitations.
23	07 Mar 2011	T2011- 00189	Confirmed plane crash south of Montreal was reported by Montreal FIC. JRCC Trenton tasked Cormorant out of Greenwood for a faster response and icing conditions in the area. Cormorant recovered one deceased and one severely injured occupant.	Range and speed. Weather limitations.
24	10 Jun 2011	T2011- 00746	Three missing hunters were reported in Northern Quebec. Cormorant from Gander tasked instead of Griffon from Trenton for a faster response.	Range and speed.
25	24 Jun 2011	T2011- 00897	CMCC reported a personal locator emergency beacon signal in central Quebec. Registration belonged to a helicopter company which confirmed a helicopter crash. Cormorant out of Greenwood tasked instead of Trenton Griffon for a faster response.	Range and speed.
26	01 Jan 2012	T2012- 00001	Overdue campers. Griffon from 424 declined mission due to light icing conditions in area.	Weather limitations.
27	01 Jan 2012	T2012- 00002	Snowmobile crash Southern Ontario. Griffon unable to proceed on scene due to icing conditions.	Weather limitations.
28	09 Mar 2012	T2012- 00192	OPP requested air assistance for 25 people drifting away from ice. 424 Griffon attempted to fly through snow showers but had to abandon mission due to icing.	Weather limitations.
29	03 May 2012	T2012- 00426	ELT report near Ottawa. Griffon from 424 tasked and had to RTB due to weather	Weather limitations.

30	08 Sept 2012	T2012- 02479	Nine people in distress near Coral Harbour in Nunavut. 424 Sqn Griffon R432 tasked to evacuate. Griffon R432 estimated 12.5 hours transit and 6 fuel stops to possibly make it on scene before end of crew day. Griffon R432 was stood down enroute and replaced by Coast Guard helo 366 that showed a better estimated time of arrival. A Cormorant transit (1222 Nm) would have been 9 hours with 1 fuel stop.	Range and speed.
31	30 Oct 2012	T2012- 02837	Marine vessel capsized Luther Marsh. One person in the water. Griffon declined mission due to high wind. OPP effected the rescue later and recovered the person.	Power limitations.
32	20 Dec 2012	T2012- 03018	Griffon tasked for a missing person near Kingston. Once on scene, crew encountered icing and had to abandon mission and return to Kingston to wait for better conditions. Person was recovered by OPP.	Weather limitations.
33	09 Jan 2013	T2013- 00019	Two seal hunters overdue in Arviat, Nunavut. A transit from Trenton to Arviat is 1178 NM. Arviat to Greenwood is 1510 NM. Even though Trenton is 332 NM closer, a Cormorant from Greenwood was tasked instead of a Griffon in Trenton for a faster response.	Range and speed.
34	02 Feb 2013	T2013- 00097	Stranded snowmobiler south of North Bay. Griffon unable to proceed to scene due to weather and icing conditions. Griffon had to RTB. Condition of patient unknown.	Weather limitations.
35	23 Apr 2013	T2013- 80258	Medevac Moosonee. AC turned the mission down due to icing conditions. ORNGE conducted the medevac one day later.	Weather limitations.

36	31 May 2013	T2013- 00294	A helicopter from the company ORNGE was reported crashed near Moosonee, Ont. Hercules R344 reached the scene and two SAR Techs jumped to the crash. The mission report states that “the Griffon that was in transit near Timmins ON turned around due to bad weather and its inability to have suitable IFR alternate with Griffon endurance.”	Range and speed. Weather limitations.
37	30 Jun 2013	T2013- 00666	Twenty-two people were adrift on an ice flow east of Pond Inlet, Nunavut. The distance to Pond Inlet is similar from Trenton and Greenwood. Even though the mission was on Trenton AOR, JRCC tasked a Cormorant out of Greenwood instead of a Griffon out of Trenton for a faster response.	Range and speed.
38	24 Aug 2013	T2013- 01604	Four people overdue on a freighter canoe near Igloolik, Nunavut. Even though the mission was on Trenton AOR, JRCC tasked a Cormorant out of Gander instead of a Griffon out of Trenton for a faster response.	Range and speed.
39	08 Nov 2013	T2013- 02223	Missing plane near London, Ontario. Marginal weather and snow squalls affected search effectiveness of Griffon. Asset had to hold until icing conditions cleared.	Weather limitations.
40	01 Feb 2014	T2014- 00137	Emergency beacon in Brunswick Lake. OPP requested support. Mission declined by crew due to light icing conditions.	Weather limitations.
41	28 Feb 2014	T2014- 00245	Lake Simcoe missing person. York police requested air assistance. Mission declined by crew due to light icing conditions.	Weather limitations.
42	28 Feb 2014	T2014- 00245	Additional assistance required for missing person Simcoe Lake. Mission declined by crew due to light icing conditions.	Weather limitations.
43	02 Mar 2014	T2014- 00256	One man fell through the ice on Cyprus Lake. Griffon tasked but unable to reach the scene due to weather and icing conditions. RTB	Weather limitations.

44	20 Mar 2014	T2014- 00340	OPP requested air support to evacuate a 64 YOF that went missing. OPP located the person in a remote area. She was hypothermic and needed immediate evacuation. Griffon launched but encountered icing conditions. Griffon had to RTB. Conclusion of the mission unknown.	Weather limitations.
45	15 Apr 2014	T2014- 00412	Medevac request from OPP. Griffon declined due to icing condition.	Weather limitations.
46	18 Jun 2014	T2014- 00906	Cessna on floats overdue west of Wabush Quebec. Griffon from Trenton was initially tasked. Mission report stated that Griffon tasking cancelled when the AC reported not having suitable refueling points near the intended tasking, and the logistics to get them fuel to a suitable location was not seen as practicable by JRCC. 413 Sqn Cormorant tasked to the case.	Endurance and speed.
47	02 Aug 2014	T2014- 01602	EMO Nunavut requested assistance to evacuate a 31 YOM injured on a cliff side on Diggs Island. Even though the mission was on 424 Sqn AOR and the distress case was 100 miles closer to Trenton than Gander, JRCC Trenton elected to task the Cormorant out of Gander for a faster response and a better ability to deal with complex IFR environment rather than a Griffon out of Trenton.	Endurance and speed. Weather limitations.
48	19 Sept 2014	T2014- 02243	Overdue 18-foot Lund with 2 POB near Hall Beach. 413 Sqn Cormorant tasked instead of Griffon from 424 Sqn for a faster response.	Endurance speed.
49	20 Nov 2014	T- 2014- 02636	Air Tindi with 7 people declared a mayday west of Yellowknife. 435 Sqn Herc tasked but Griffon from 424 Sqn not tasked due to icing conditions on scene.	Weather limitations.

50	09 Jan 2015	T2015- 00027	EMO Nunavut requested the evacuation of 8 stranded people on ice flow near Coral Harbour. Even though the mission was on 424 Sqn AOR and the distress case was 96 miles closer to Trenton than Greenwood, JRCC Trenton elected to task the Cormorant out of Greenwood for a faster response. Cormorant R915 recovered all 8 individuals.	Endurance and Speed. Cabin space.
51	19 Sept 2016	T2016- 02498	Overdue 18 foot Lund with 2 POB from Ulukhaktok. JRCC Trenton decided to task 413 Sqn Cormorant tasked instead of Griffon from 424 Sqn for a faster response.	Endurance and speed.
52	23 Jun 2017	T2017- 01037	Report of 3 freighter canoes with a total of 12 POB trapped in the ice near Sanikiluaq in the Hudson Bay. Even though the mission was on 424 Sqn AOR and the distress case was 130 miles closer to Trenton than Greenwood, JRCC Trenton elected to task the Cormorant out of Greenwood for a faster response.	Endurance and speed.

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