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## **Current C2 Construct for the Joint Rescue Coordination Centres and the Canadian Mission Control Centre: A Model with Doctrinal Incongruences**

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CENTRES AND THE CANADIAN MISSION CONTROL CENTRE:  
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# **CURRENT C2 CONSTRUCT FOR THE JOINT RESCUE COORDINATION CENTRES AND THE CANADIAN MISSION CONTROL CENTRE: A MODEL WITH DOCTRINAL INCONGRUENCES**

## **AIM**

1. This service paper aims to explore the current command and control (C2) framework for the Joint Rescue Coordination Centres (JRCC) and the Canadian Mission Control Centre (CMCC) within the Canadian Armed Forces (CAF) and investigate possible alternate models.

## **INTRODUCTION**

2. The distinction and delineation between Force Generation (FG) and Force Employment (FE) responsibilities form much of the basis for the current C2 doctrine within the CAF. These two distinct processes span the breadth of operations from the tactical to the strategic level. Therefore, the associated command and control relationships must reflect the appropriate authorities to ensure the effective conduct of operations and administration.

3. This paper will provide a brief background on relevant CAF and Royal Canadian Air Force (RCAF) specific doctrine related to C2. It will then give an overview of Canada's National Search and Rescue Program (NSP) along with the roles of the JRCCs and CMCC within the program. This paper will then discuss the CAF's current SAR C2 structure, focusing on the JRCCs and CMCC. An overview of friction points and doctrinal incongruencies for this C2 structure will then be presented. Finally, recommendations for alternative C2 models will then be introduced.

## **DISCUSSION**

### **C2 Doctrine**

4. The *Canadian Forces Joint Publication (CFJP) 01 - Military Doctrine* is the CAF's capstone document on doctrine and specifies the roles and missions assigned to the CAF. Specifically, it provides the core framework and "guidance for command, control and organization of the...[CAF]..., authorized command relationships and the authorities that military commanders can use..."<sup>1</sup> *CFJP 01* also presents a set of six command principles that "...are the tenets that guide the effective management of military operations."<sup>2</sup> These principles are shown in Fig 1 and notably include the concepts of unity of command, span of control, continuity of command and delegation of authority.

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<sup>1</sup> Department of National Defence, B-GJ-005-000/FP-001, *Canadian Forces Joint Publication 01 – Canadian Military Doctrine* (Ottawa: DND Canada, 2009), v.

<sup>2</sup> Department of National Defence, *Canadian Forces Joint Publication 01 CFJP 01*, 5-2.

Principle	Application
Unity of command	A single, clearly identified commander will be appointed for each operation. This commander has the authority to direct and control the committed resources and is responsible and accountable for success or failure.
Span of control	Assigned resources and activities must be such that one commander can exercise effective command and control.
Chain of command	The command structure is hierarchical and must be clear and unequivocal. Bypassing levels of command in either direction is only justified in exceptional circumstances.
Delegation of authority	Commanders may delegate all or part of their authority depending upon the scope and complexity of an operation. How much authority is delegated, and to whom, must be clearly articulated.
Freedom of action	Once a mission is established and orders given, maximum freedom of action must be given to subordinate commanders.
Continuity of command	A clear succession of command, well understood at all levels, is required.

**Figure 1: Principles of Command**  
CFJP 01, 5-3.

5. Key elements to draw from this table are that command should flow from a single clearly identified commander through a clear hierarchical chain, with a clear succession of command. Furthermore, commanders may delegate part or all of their authority, depending on the scope and complexity of an operation. This implies residual authorities and responsibilities that any given commander might retain, even after delegating certain authorities to other commanders.

6. *CFJP 01* also establishes six command relationships that delineate the different spans and degrees of C2 at various levels. These are Full Command, Operational Command (OPCOM), Operational Control (OPCON), Tactical Command (TACOM), Tactical Control (TACON) and Administrative Control (ADCON). Lastly, *CFJP 01* delineates two types of military processes leveraged to achieve objectives or effects. Force Employment is the "...application of allocated military means to achieve specified objectives...through activities such as operations..." while Force Generation is the "process of organizing, training and equipping forces for force employment."<sup>3</sup> The C2 authorities exercised during FE are meant to be temporary and different from those used during the steady state of FG.<sup>4</sup> Given the complex nature of many operations, these C2 lines between command elements and units must be adequately tailored to meet the needs of CAF operations. Figure 2 illustrates the C2 authorities and relationships at various levels of command, including the delineation between FG and FE.

7. It is also essential to define both *command* and *control*. *Royal Canadian Air Force Doctrine: Command and Control* is an RCAF keystone document that defines command as "...the authority vested in an individual of the armed forces for the direction, coordination and control of military forces."<sup>5</sup> Control is "...the authority exercised by commanders over part of the activities of subordinate organizations, or other organizations not normally under their command, which encompasses the responsibility for implementing orders or directives."

<sup>3</sup> Department of National Defence, *Canadian Forces Joint Publication 01 CFJP 01*, 5-7 and 5-9.

<sup>4</sup> Department of National Defence, B-GA-402-001/FP-001, *Royal Canadian Air Force Doctrine – Command and Control* (Ottawa: DND Canada, 2018), 5.

<sup>5</sup> Department of National Defence, *Royal Canadian Air Force Doctrine – Command and Control*, v.

	FG		FE			
	Full Command	Administrative Control (ADCON)	OPERATIONAL		TACTICAL	
			Operational Command (OPCOM)	Operational Control (OPCON)	Tactical Command (TACOM)	Tactical Control (TACON)
Assign separate employment of components of units/formations	X		X			
Assign missions	X		X	X		
Assign tasks	X		X	X	X	
Delegate OPCOM	X		X			
Delegate TACOM	X		X		X	
Delegate OPCON	X		X	X		
Delegate TACON	X		X	X	X	X
Coordinate tactical positioning and flow, local movement and defence at installations	X		X	X	X	X
Plan and coordinate	X		X	X	X	X
Administrative responsibility	X	X				

**Figure 2: Command and Control authorities and relationships**  
RCAF Doctrine: Command and Control, 7.

## Canada's NSP and the roles of the RCCs and CMCC

8. To better understand the CAF's existing SAR C2 relationships, it is helpful to outline the CAF's responsibilities within the NSP. Established in 1986, Canada's NSP is a "...Canada-wide horizontal program that integrates organizations and resources involved in the provision of ...[SAR]...services to Canadians, including SAR response and prevention."<sup>6</sup> The NSP "...bridges the efforts of federal, provincial, territorial, and local rescue authorities, as well as the contributions of the private sector, non-governmental organizations, and the volunteer community towards a common goal: saving lives."<sup>7</sup> The program is characterized by the three complementary components of aeronautical, maritime and ground (humanitarian) SAR.<sup>8</sup> The CAF retains the primary responsibility for the "provision of aeronautical SAR services and effective operation of the coordinated aeronautical and maritime SAR system...."<sup>9</sup> To accomplish these CAF-specific tasks, the Commander (Comd) of the Canadian Joint Operations Command (CJOC) has been delegated the responsibility to ensure the coordination, control and conduct of SAR operations in Canada, including the operational CAF SAR policy. Conversely,

<sup>6</sup> Public Safety Canada, "National Search and Rescue Program," last accessed 23 February 2023, <https://www.publicsafety.gc.ca/cnt/mrgnc-mngmnt/rspndng-mrgnc-vnts/nss/prgrm-en.aspx>.

<sup>7</sup> Public Safety Canada, "National Search and Rescue Program."

<sup>8</sup> Department of National Defence and Department of Fisheries and Oceans Canada, B-GA-209-001/FP-001, *Canadian Aeronautical and Maritime Search and Rescue Manual – CAMSAR* (Ottawa: DND and CCG Canada, 2020), 9.

<sup>9</sup> Department of National Defence, *CAMSAR*, 19.

the Comd of the RCAF is responsible for the strategic CAF SAR policy and CAF SAR unit allocation.<sup>10</sup>

9. The RCAF's three JRCCs are crucial components within Canada's National Search and Rescue Program and deliver the 24/7 coordination and control of aeronautical and maritime SAR operations within Canada's three Search and Rescue Regions (SRR).<sup>11</sup> They are tactical-level units led by an Officer in Charge (OIC), are staffed by RCAF and Canadian Coast Guard (CCG) personnel and provide effects at a regional and tactical level.

10. The CMCC is a critical and unique element within Canada's National Search and Rescue Program which performs three essential functions: maintaining a current Canadian Beacon Registry (CBR) database, operating the Mission Control Centre (MCC) and sustaining the SAR Network Operations Communications Centre (SARNOCC). The MCC provides 24/7 coverage for the receipt of distress beacon messages from national and international sources and ensures the distribution of alerts and location data to the appropriate JRCC or SAR point of contact (POC). The latter often includes other international MCC counterparts. The SARNOCC is the sole custodian of the national SAR Network (SARNet) and provides information management (IM) and information technology (IT) support for the reception, prosecution and coordination of SAR cases. Furthermore, in alignment with the Government of Canada's (GoC) commitments to the International COSPAS-SARSAT Programme Agreement (ICSPA) treaty, CMCC maintains the "capability to provide Mission Control Centre (MCC) services to the United States as a backup to their own MCC."<sup>12</sup> The CMCC is also a tactical-level unit led by an OIC and staffed by RCAF personnel but provides operational and arguably strategic-level effects.

## **Current C2 for SAR and Challenges**

11. The *CDS Directive for Search and Rescue* identifies the Comd CJOC as the *supported commander*, while the Comd RCAF is the *supporting commander* for the conduct of SAR operations.<sup>13</sup> It also identifies the CAF, in partnership with the CCG, as responsible for the operations of the three JRCCs.<sup>14</sup> Lastly, it states that the Joint Force Air Component Comd (JFACC) is delegated OPCOM for operational air assets. The JFACC is also designated as the Search and Rescue Region (SRR) Comd for the Trenton SRR.<sup>15</sup>

12. Figure 3 depicts the current CJOC C2 framework for CAF SAR operations. It focuses on FE lines of C2 and identifies the various delegated authorities at the operational and tactical levels of command. The FG C2 lines on the left side of the figure depict the Full Command responsibilities that the RCAF Comd retains over SAR assets until tasked for any given FE SAR mission. Figure 3 also shows that each SRR Comd is delegated OPCON from Comd CJOC for

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<sup>10</sup> Department of National Defence, *CAMSAR*, I-1.06(E), 1. At the time of writing, CJOC SAR had identified a requirement for a change to the CAMSAR. The *CDS Directive for SAR*, a strategic level document, identifies the CDS as the holder of strategic SAR policy, not the Comd RCAF.

<sup>11</sup> Department of National Defence, *CAMSAR*, I-2.05(E), 1.

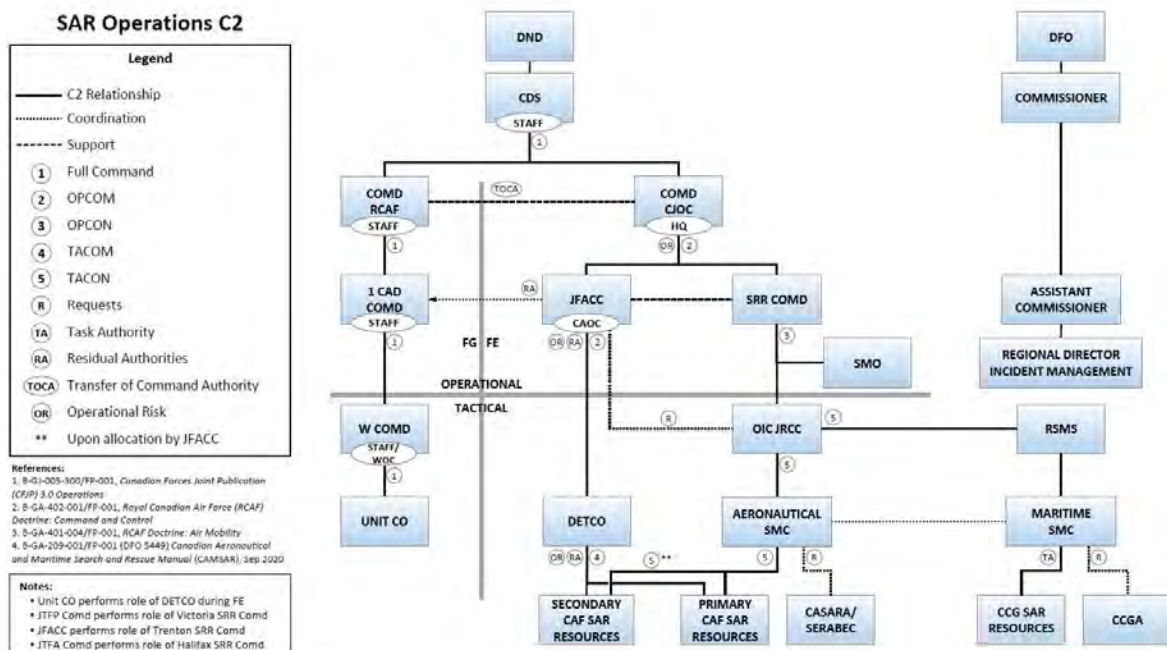
<sup>12</sup> Department of National Defence, *CAMSAR*, I-2.07(E), 1.

<sup>13</sup> Chief of the Defence Staff, "CDS Directive for Search and Rescue," (20 August 2019), 11.

<sup>14</sup> Chief of the Defence Staff, "CDS Directive for Search and Rescue," (20 August 2019), Annex A, 4.

<sup>15</sup> Canadian Joint Operations Command, "Canadian Joint Operations Command Search And Rescue Directive 2023," (31 January 2023), 10-11.

the “...coordination, control and conduct of SAR operations within their respective SRRs.”<sup>16</sup> This control is then exercised through the OIC of the JRCCs through TACON of assigned CAF assets. As this is an FE-based C2 chart, the balance of undelegated responsibilities and authorities normally residing with an appropriate FG Comd are not depicted. An important point to highlight is that within this construct, a single individual retains both FE responsibilities as the JFACC and FG responsibilities as the Comd 1 CAD. This nuance can often create confusion; therefore, when discussing SAR C2, it is critical to use accurate terminology to effectively distinguish between the FE authorities held by the JFACC and SRR Comd and the FG authorities held by the 1 CAD Comd. Notably absent in Figure 3 is any mention of the CMCC.



**Figure 3: Current SAR Operations C2**  
CJOC SAR Directive 2023 – Annex B

13. The *Canadian Aeronautical and Maritime Search and Rescue* (CAMSAR) manual is a joint CAF and CCG document that provides “...national guidelines and standard operating procedures (SOPs) specific to the Canadian Federal Aeronautical and Maritime...[SAR]...system.”<sup>17</sup> It states that Comd 1 CAD is responsible for the “staffing and operational oversight of the...[JRCCs]...and the...[CMCC].”<sup>18</sup> The *CAMSAR* further states that the Senior Staff Officer SAR (SSO SAR) within 1 CAD headquarters is responsible to Comd 1 CAD for the “...provision of operational guidance and support to the JRCCs and CMCC.”<sup>19</sup> These responsibilities do not clearly define Comd 1 CAD as having *command* of the JRCCs and CMCC but relate directly to traditional FG tasks. Lastly, the *CAMSAR* states that *as* the Trenton SRR Comd, the 1 CAD Comd “...is accountable for the...effective operation of the CMCC.”<sup>20</sup>

<sup>16</sup> Canadian Joint Operations Command, “CJOC SAR Directive 2023,” (31 January 2023), 11.

<sup>17</sup> Department of National Defence, *CAMSAR*, C-0.3(E), 1.

<sup>18</sup> Department of National Defence, *CAMSAR*, I-1.06(E), 2.

<sup>19</sup> Department of National Defence, *CAMSAR*, I-2.02(E), 3.

<sup>20</sup> Department of National Defence, *CAMSAR*, I-1.06(E), 2.



This implies a FE relationship of *control*, but only to *one* of the three SRR Comds, despite CMCC delivering national-level effects for all three SRRs.

14. These defined authorities and responsibilities should be revised for several reasons. Most importantly, RCAF doctrine explicitly states that “since only commanders may issue orders, staff personnel, regardless of rank, have no inherent authority over line officers, line personnel or staffs of subordinate formations, units or organizations.”<sup>21</sup> Having the JRCCs and CMCCs report to a staff officer is also contrary to the concept of continuity of command, where there is a “clear succession of command, well understood at all levels.” Lastly, the implied FE C2 relationship for the CMCC to a single SRR Comd conflicts with the principle of span of control.

15. The current SAR C2 model provides clear direction for the FE of the JRCCs but not for the CMCC. Furthermore, it does not adhere to the established doctrine concerning effectively exercising FG *command* for the JRCCs or the CMCC. These challenges can be addressed in several ways.

### **Recommended C2 constructs**

16. One possible solution to address the previously identified challenges encompasses housing the JRCCs and the CMCC within a new, dedicated tactical-level SAR unit. Under this notional SAR Operational Support Squadron (OSS), the JRCCs and CMCCs would fall under the Full Command of a CO, who would report to a Wing Comd and ultimately to the 1 CAD Comd and RCAF Comd. This satisfies the doctrinal principle of continuity of command by ensuring that the JRCCs and the CMCC have an established, direct and clear line of command for FG-related authorities. In addition, to better streamline the various tasks within CMCC, SARNOCC would become a separate sub-unit with a dedicated OIC within this notional SAR OSS. This would allow the OIC CMCC to focus on the CMCC’s unique international responsibilities and links to departments outside of the CAF SAR enterprise. At the same time, the OIC SARNOCC would be able to address and focus on network-related tasks as the custodian of SARNet.

17. The JRCCs would retain their existing FE C2 lines of authority and continue to fall under OPCON to their respective SRR Comds. To address the span of control related-concerns, a separate FE C2 relationship could be established for CMCC and SARNOCC. The OICs of CMCC and SARNOCC could report OPCON to either the Deputy Combined/JFACC (D C/JFACC) or a notional SAR Coordinating Comd (SCC). Both of these Comds would then report to the JFACC. The D C/JFACC is currently responsible to “lead all Force Employment activities of 1 Cdn Air Div including the Combined Air Operations Centre (CAOC)” and could therefore be a suitable FE link to the JFACC.<sup>22</sup> Conversely, the SCC responsibilities could be appointed to the SAR OSS CO, thus ensuring a high level of SAR-related expertise to advise the JFACC on FE matters effectively. Figure 4 depicts these notional C2 relationships for the tactical and operational levels, including key FE and FG authorities. The existing FE C2 relationships with non-CAF SAR resources are not depicted, nor are the OPCOM authorities that the JFACC retains over secondary CAF SAR assets. These relationships would all remain extant, as per the

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<sup>21</sup> Department of National Defence, *Royal Canadian Air Force Doctrine: Command and Control*, 20.

<sup>22</sup> 1 Canadian Air Division, “D C/JFACC DComd CANR,” last accessed 28 February 2023, [winnipeg.nil.ca/cma/en/DCJFACC-DComdCANR.aspx](http://winnipeg.nil.ca/cma/en/DCJFACC-DComdCANR.aspx).



CJOC SAR Directive 2023.<sup>23</sup> Figure 5 depicts the notional FE C2 utilizing the D C/JFACC instead of the SCC.

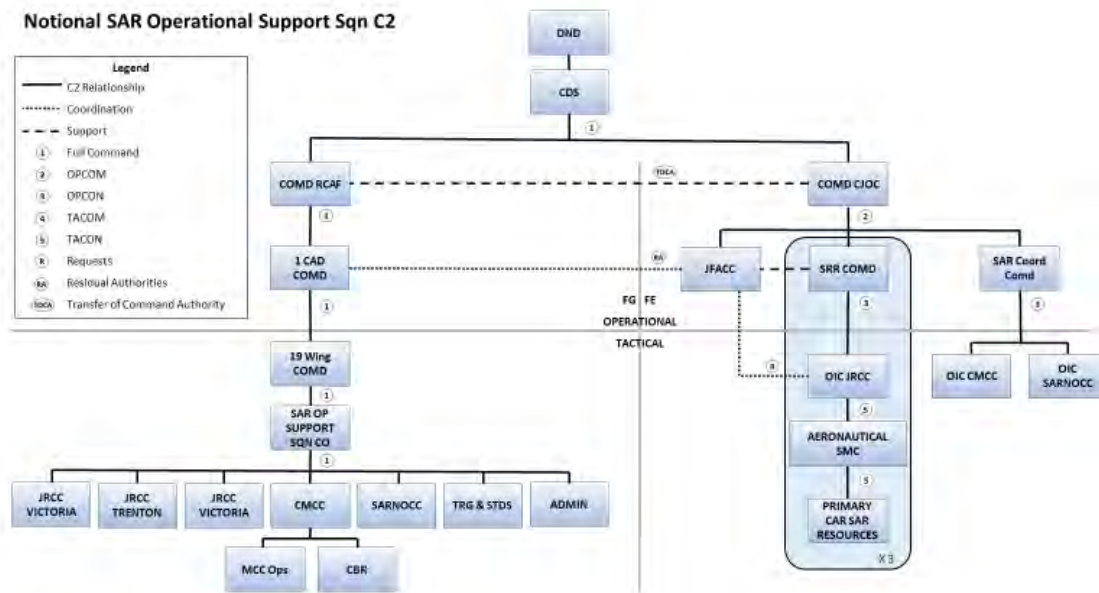


Figure 4: Notional SAR Operations C2 with SAR OSS and SCC

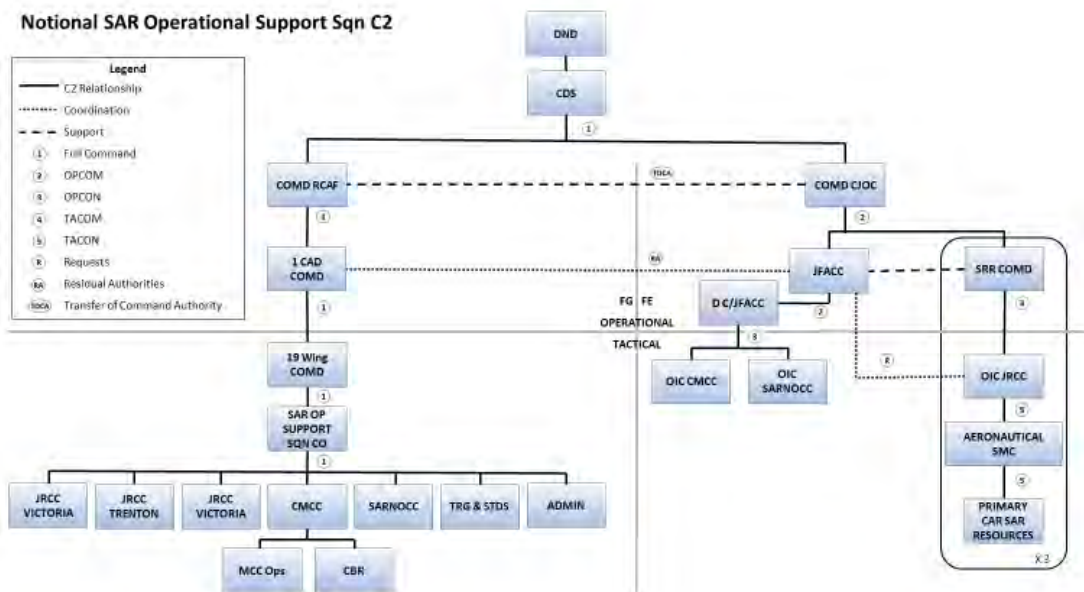


Figure 5: Notional SAR Operations C2 with SAR OSS and D C/JFACC

<sup>23</sup> Canadian Joint Operations Command, "CJOC SAR Directive 2023," Annex B – SAR Operations C2.

18. The second possible solution also involves establishing a SAR OSS with the JRCCs and CMCCs as subunits but also includes reallocating specific CMCC responsibilities to more suitable FE and FG entities. Given the unique nature of the CMCC within the CAF and the inherent spaced-based nature of their operations, it is worth investigating a possible relationship with the recently established 3 Canadian Space Division (CSD).

19. 3 CSD is a newly established divisional organization within the RCAF tasked to "...deliver and assure joint and combined defence space capabilities and effects to sustain CAF strategic advantage for domestic and international operations."<sup>24</sup> It also "...coordinates the fulfillment of the Defence Space Programme on behalf of the Comd RCAF, ensuring...Federal Government objectives in the use of space systems...."<sup>25</sup> Furthermore, the Comd of 3 CSD has been designated as the CAF's Joint Force Space Component Commander (JSFCC), responsible for the execution of space-based FE activities.<sup>26</sup>

20. While still relatively nascent, 3 CSD is developing a "...comprehensive and secure Space Command and Control capability, integrated within the existing CAF Command and Control structure."<sup>27</sup> It will also see the eventual incorporation of the Canadian Space Operations Centre (CANSPOC), currently mandated to provide "Space Domain Awareness to stakeholders through the integration of space-enabled effects in Operations."<sup>28</sup> With CMCC's space-based monitoring of national and international distressed beacons and the GoC's international obligations towards COSPAS-SARSAT, a reasonable link could be made to 3 CSD's mission and mandate. However, as 3 CSD is still developing their full capabilities and breadth of C2 within the CAF, it is difficult to determine whether these are viable or suitable options.

21. While beyond the scope of this paper, creating a SAR OSS is also a step toward the concept of a "SAR Wing" similar to that of the RCAF's 1 Wing for Tactical Aviation. This functional wing concept adheres to the RCAF's doctrine of centralized command and decentralized execution. It would further facilitate the effective command and control of the dispersed SAR units across Canada.

## CONCLUSION

22. The current command and control model for SAR activities within the CAF presents several doctrinal incongruences and C2 challenges regarding the JRCCs and the CMCC. The principles of span of control and continuity of command are strained under the current paradigm. In addition, the FG command relationships associated with the JRCCs and CMCCs need to be more firmly established. In contrast, the authorities surrounding the FE of CMCC need to be better defined. Two possible solutions have been presented that address the majority of these

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<sup>24</sup> 3 Canadian Space Division, "Deter – Deliver – Defend & Protect: Achieving the Space Objectives of Canada's Defence Policy," digital presentation, slide 4.

<sup>25</sup> Department of National Defence, "3 Canadian Space Division," Last accessed 24 February 2023. <http://rcmf.mil.ca/en/3-canadian-space-division/3-canadian-space-division-home.page?>

<sup>26</sup> Department of National Defence, "3 Canadian Space Division."

<sup>27</sup> Department of National Defence, "3 Canadian Space Division."

<sup>28</sup> 3 Canadian Space Division, "Deter – Deliver – Defend & Protect: Achieving the Space Objectives of Canada's Defence Policy," digital presentation, slide 4.

issues and challenges. They meet doctrinal intent, establish clear FE and FG C2 relationships, and enable the effective conduct of critical SAR operations.

## **RECOMMENDATION**

23. It is recommended that establishing a SAR OSS be investigated to address the C2 challenges identified in this paper. Furthermore, the current FE command and control authorities for CMCC should also be reviewed to determine more suitable relationships. Lastly, as 3 CSD continues to grow and build toward its stated goals, the possible suitability for synergies between CMCC and 3 CSD FE operations should be studied.

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