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CAOC UPGRADE AND MODERNIZATION A MUST

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CAOC UPGRADE AND MODERNIZATION A MUST

AIM

1. The aim of this service paper is to make a recommendation to Commander (Comd) 1 Canadian Air Division (CAD)/Joint Force Air Component Commander (JFACC)/Comd Search and Rescue Region (SRR) Trenton/Comd Canadian Region NORAD (CANR) on the required upgrades and modernization approach to the 1 CAD Combined Aerospace Operations Centre (CAOC) located in Winnipeg, Manitoba. There is a current capability gap within the CAOC as a result of the changing security environment and emerging weapon system threats. There are several different solutions to upgrading and modernizing the current 1 CAD CAOC. Still, the Comd 1 CAD must bear in mind that this current CAOC capability gap dictates the implementation of an immediate interim solution¹. The current CAOC operations cannot maintain the status quo while the Royal Canadian Air Force (RCAF) waits for a long-term CAOC solution. The most effective solution is an immediate action to existing CAOC concerns to address the current dynamic security environment and the associated weapon systems technology advancements.

INTRODUCTION

2. The CAOC is the principal centre from which the JFACC, Comd CANR, Comd 1 CAD and Comd SRR Trenton, exercises command and control (C2) over airpower force employment (FE) and force generation (FG) activities. The current CAOC opened its door in 2009 as a part of the CAOC /Transformation Master Implementation Plan (MIP)². The MIP called for the transformation plan to occur in phases; however, a re-prioritization of tasks resulted in a departure from the MIP timelines/schedule. In 2017, the Comd 1 CAD endorsed a Statement of Operational Capability Deficiency (SOCD), citing deficiencies in infrastructure, communications, resources, staffing and redundancy within the CAOC³. Since this time, the RCAF has made minor investments in the CAOC to essential updates for continued operation such as hardware upgrades, installing systems to expand redundancy, and various efforts to increase collaboration. These updates are short term solutions intended to bridge the gap until the implementation of a holistic solution⁴. This issue resulted in the Strategic Context Document (SCD) – Future Combined Aerospace Operations Centre (FCC), which examines four options to upgrade, modernize or replace the current CAOC. The SCD FCC conclusion proposed options three and four as the best suited and disregarded options one and two. The options in the SCD FCC are⁵;

- a. Option 1 - Status Quo;
- b. Option 2 - maintain the current Canadian Armed Forces (CAF) air C2 systems in the form of the CAOC with additions of space and cyberspace capabilities;
- c. Option 3 - new integrated C2 system of personnel, processes and equipment centralized in a new location; and

¹ Canada, Department of National Defence, *Strategic Context Document Future Combined Aerospace Capability*, (Department of National Defence), 19.

² CAOC Master Implementation Plan, v 1.4 Draft, 20 June 2008.

³ 1 Canadian Air Division/Canadian NORAD Region, *Statement of Capability Deficiency*, (1 Canadian Air Division, 18 January 2017).

⁴ Canada, Department of National Defence, *Strategic Context Document Future Combined Aerospace Capability*, (Department of National Defence), 6.

⁵ Ibid, 34.

- d. Option 4 - will employ a mixed network that comprises the CAF air C2 systems. Multiple nodes across Canada and theoretically worldwide will work together to act as the CAF airpower C2 system.

3. This service paper proposes that while options three and four within the SCD FCC may be the ideal solution for a future CAOC, the current capability gap within the CAOC does not allow for one to wait for this implementation. The changing security environment and emerging weapon system threats necessitate that an option five, not outlined in the SCD FCC, must be pursued in the interim. The interim solution (option five) will ensure the identified capability gap is reduced until a holistic solution, option three or four can be implemented. This paper will examine the following considerations to demonstrate the requirement for interim option to be implemented immediately;

- a. Current Capability Gap -this consideration will look at the current capability gaps that exist within the CAOC;
- b. The Changing Security Environment/ Emerging Military Capabilities –this consideration will examine the effects of the changing security environment in which 1 CAD exists and the CAOC exercises C2 airpower over and its impact on the capability gap. This consideration will also briefly touch on emerging adversary military capabilities, why the CAOC is currently and why this is unacceptable and expands the capability gap;

DISCUSSION

Capability Gap

4. To understand why the 1 CAD CAOC must be upgraded in the interim one must be conscious of the current capability gap within the CAOC. The Comd 1 CAD endorsed a CAOC SOCD that states since the inception of the CAOC in 2009 there have been deficiencies in infrastructure, communications, resources, staffing, and lack of redundancy that have prevented the CAOC from optimally performing its mission as the C2 node for RCAF airpower domestically and internationally⁶. The SCD FCC states that due to these reasons the CAOC is "unable to handle the work throughput required to execute the air defence of Canada, contribute to the air defence of North America, and support and enable air operations around the world". The CAOC deficiencies as mentioned above can be elaborated on as follows⁷;

- a. Infrastructure - The CAOCs current infrastructure is deplorable. The current CAOC physical setup does not allow expansion of either personnel or equipment. The electromagnetic shielding of the CAOC also needs to be reassessed. There have been years of upgrades since 2009 that have required extra electrical cables to run through the CAOC. Ultimately presenting a risk of compromising information.
- b. Communications – There is no standard process for information flow in and out of the CAOC. This lack of communication process then requires CAOC staff to spend an excessive amount of time managing this flow of critical information.

⁶ 1 Canadian Air Division/Canadian NORAD Region, *Statement of Capability Deficiency*, (1 Canadian Air Division, 18 January 2017).

⁷ Canada, Department of National Defence, *Strategic Context Document Future Combined Aerospace Capability*, (Department of National Defence),19.

- c. Resources – There is currently no management authority for systems inside the CAOC. When a new capability is integrated into the CAOC, it is integrated as a stand-alone capability. For instance, several of the CAOC's Information Management (IM) systems are stand-alone, and this arrangement places the onus upon the operator to manage the information⁸. It is an extra burden in an already burdensome environment that reduces effectiveness.
- d. Staffing – The CAOC currently does not have sufficient personnel to sustain operational operations 24/7/365. For example, as 1 February 2021, the current CAOC Air Operations Centre (AOC) is operated at 70% capacity (23 out of 33 positions)⁹.
- e. Lack of Redundancy - The CAOC does not have a backup facility that can operate at the same level of effectiveness with the same systems. This risks failure of the CAOC's 24/7/365 operations.

5. As a result of these CAOC deficiencies in infrastructure, communications, resources, staffing and redundancy the RCAF, more specifically 1 CAD, must do something to reduce this capability gap to facilitate the command, control and coordination of the C2 system that governs domestic and international operations 24/7/365. As it stands, the CAOC has a substantial capability gap that adversaries may exploit¹⁰. The CAF cannot wait until implementing a holistic CAOC solution, as outlined in the SCD FCC¹¹. Too much time will have passed if 1 CAD waits until the design, acquisition and implementation of either option three or four from the SCD FCC. The current capability gap that exists will remain and will be able to be exploited by adversaries. Fortunately, this adversary exploitation has not happened yet, but as the security environment changes and adversaries' weapon system technologies increase, the likelihood of this gap being exploited is enhanced.

Changing Security Environment/ Emerging Military Capabilities

6. The service paper has defined the current CAOC capability gap. The document has stated that if we do not reduce this gap immediately as the global security environment changes and adversary weapon systems technologies evolve, we put ourselves and the people of Canada at risk. The paper will now examine how the current global security environment has changed since 9/11 and its implications concerning airpower C2 and the CAOC.

7. When 11 September 2001 occurred, the global security environment undertook a colossal change, and the focus of Canada and North America was now on the threat posed by terrorism. In conjunction with the United States of America (USA) and other allies, Canada took the war on terrorism to such bodies as Al-Qaeda and the Islamic State in Iraq and Syria (ISIS) overseas. A couple of decades later and the war on terrorism is still occurring, but it has been coupled with the emergence and re-emergence of several world powers as threats to Canada. Russia is now once again in the game and seen as a legitimate

⁸ Canada, Department of National Defence, *Strategic Context Document Future Combined Aerospace Capability*, (Department of National Defence),

⁹ Lieutenant Colonel Sheri Lattemore, "Re: JCSP Paper." (Message to Lieutenant Colonel Paul Whalen, 1 February 2021), E-mail.

¹⁰ Canada, Department of National Defence, *Strategic Context Document Future Combined Aerospace Capability*, (Department of National Defence), iv.

¹¹ Ibid 41.

threat to North America and Russia is not the only country that Canada should be concerned with at this point¹². North Korea is growing its nuclear weapon threat, and China has now turned its sights towards the Arctic¹³. China has been upgrading its weapon resources, similar to Russia, and is developing a generation of advanced precision weaponry that includes such things as; long-range stealth cruise missiles, strategic bombers, nuclear weapons and advanced conventional weapons¹⁴.

8. The changing global security environment that Canada is concerned with now includes threats such as terrorism and global power potential threats such as Russia, North Korea and China. However, there is another factor one must consider when thinking of potential employment areas requiring the use of the CAOC. Climate change is also impacting this. As climate change occurs and the Arctic opens up, we have already seen China shift their gaze this way; it is guaranteed that more civilian and military activity will happen in the north. The Arctic will be busier than ever and will have to be monitored more frequently. Should anything go awry, Search and Rescue will be required, increasing the burden on the CAOC¹⁵.

9. As the service paper has demonstrated in this section, the changing security environment and the emerging military capabilities of our potential adversaries should cause the CAF, the RCAF and 1 CAD grave concern. There is a myriad of different threats globally that the RCAF must be prepared to respond against. The 1 CAD CAOC will inevitably govern the airpower that the RCAF will put forth against these threats. Based on these global threats and their emerging military capabilities coupled with the current CAOC deficiencies, 1 CAD will be tough to respond to all of these things with effective C2 of airpower.

CONCLUSION

10. As seen within this service paper's pages, the current CAOC cannot perform its function of airpower C2 effectively due to deficiencies in infrastructure, communications, resources, staffing, and lack of redundancy. This CAOC capability gap is present, and it is something that can be exploited by adversaries such as Al-Qaeda, ISIS, Russia, China and North Korea. With ever more threats globally and advancing weapons technology, the capability gap is also increasing. If the CAOC cannot effectively manage the C2 over air assets domestically and internationally now it will only become less effective in C2 management of airpower as time progresses. As a result of this, the current 1 CAD CAOC must undergo some investment to address this acknowledged capability gap until implementing a future full up solution.

RECOMMENDATION

11. Based on the conclusion of this service paper it is recommended that the Comd 1 CAD seek to upgrade the 1 CAD CAOC in the following manner to ensure its effectiveness against current and emerging threats;

- a. Infrastructure – It may be unrealistic to increase the physical size of the CAOC to accommodate more personnel and more equipment. The disruption of an undertaking of this magnitude may prove to be more trouble than its return on investment. If this proves true for

¹² Andrea Charron and James Fergusson, "Beyond NORAD and Modernization to North American Defence Evolution" (Ottawa: Canadian Global Affairs Institute, 2020), 1.

¹³ Andrea Charron and James Fergusson, "Beyond Modernization – North American Strategic Defence in the 21st Century" (Switzerland: Springer International Publishing, 2018), 183.

¹⁴ Michael Dawson, "NORAD - Remaining Relevant" (Ottawa: Canadian Global Affairs Institute, 2020), 3.

¹⁵ Canada, Department of National Defence, *Strategic Context Document Future Combined Aerospace Capability*, (Department of National Defence), 12-14.

- either schedule, scope or budget, then the four recommendations below must undoubtedly be carried out by the Comd 1 CAD to address the current CAOC capability gap. Though, as a minimum, the Comd 1 CAD should request the Technical Systems Inspection Team (TSIT) services from Ottawa to test and quantify the present electromagnetic shielding of the CAOC.
- b. Communications – Standardization of a process in the form of a 1 Canadian Air Division Order (CADO) developed, managed and updated accordingly by CAOC staff. To ensure accountability, the process owner should be the 1 CAD CAOC Director. Standardizing this process in the form of a CADO will provide a yearly review of the process for relevancy. This standardization will substantially reduce the amount of time CAOC staff managing the flow of information and not performing their primary function of C2.
 - c. Resources – There is little to do concerning management authority systems that already have been procured and integrated into the CAOC. Still, any new capability integrated into the current CAOC must not be integrated as a stand-alone capability. This integration strategy may prove difficult as many management authority systems have already been integrated this way, but this strategy should be followed if possible.
 - d. Staffing – To ensure that the CAOC has sufficient personnel to operate its C2 of air assets, the Comd 1 CAD should as a minimum fill all 33 positions on the CAOC AOC floor. A complete review of current 1 CAD manning allocation should be completed by the 1 CAD Chief of Staff's (COS) Office to determine if there are qualified individuals already within 1CAD lines that could be moved from one section to the CAOC section. It is much easier to fill these positions within 1 CAD lines instead of seeking talent from outside 1 CAD.
 - e. Lack of Redundancy – 1 CAD staff should perform a study to determine the exact delta of missing capabilities between the current CAOC and its current alternate location. Once determined these capabilities should be prioritized by CAOC staff and funds sought to procure these items in order of priority by Comd 1 CAD.

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