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Why the RCAF Needs to Procure More CC-130J Super Hercules**

Major Gregor Jackson

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The Time Is Now: Why the RCAF Needs to Procure More CC-130J Super Hercules

AIM

1. The Royal Canadian Air Force (RCAF) should procure more CC-130J Super Hercules aircraft due to their expanding role in Fixed-wing Search and Rescue (FWSAR), coupled with its enduring requirement to satisfy a wide range of Air Mobility (AM) strategic and tactical taskings and the current inability of the Airbus CC-295 Kingfisher to accomplish the FWSAR role. The aim of the service paper is to expand upon the reasons why the RCAF needs to procure more CC-130J Hercules aircraft; this will be done by examining the current workload of the Air Mobility (AM) fleets, the problems facing the limited number of FWSAR capable aircraft currently in service within the RCAF, coupled with the failure of the introduction of the Kingfisher, and an acceptable, long-term way forward in addressing this problem.

INTRODUCTION

2. There is currently an unprecedented demand being placed upon all the AM fleets, with specific emphasis being placed on the workhorse of the RCAF, the CC-130J Hercules. This paper will address the problems arising due to the imbalance in supply and demand being placed on the fleet and the stressors this is causing, especially in meeting the tasking requirements, measured in Lines of Tasking (LoT), lack of Loadmasters and Pilot and maintainer retention.

3. The RCAF only has 17 CC-130J aircraft; at the time of writing, at least one of these is in deep maintenance at any given time, 2 are deployed on overseas Operations, and at least a further 2 are undergoing routine first and/or second line maintenance at CFB Trenton and are, hence, unavailable for tasking. To achieve the aim, this paper will examine the current demands on the fleet, the reasons for this demand, the problems arising because of this demand and the opportunities to resolve the issue. This will be done utilising a simple SWOT analysis technique.

DISCUSSION

4. In 2002, it was determined that the RCAF's expanded SAR mission has necessitated an upgrade from the fleet of aging CC-115 Buffalo aircraft; at that time, the RCAF initiated a competition to replace the Buffalo, which was then one of two aircraft employed in the FWSAR role.¹ A number of prominent industry names initially gave their notice of intent to compete towards the procurement of a replacement for the Buffalo. Two of the companies who gave notice were Airbus Industries and Lockheed Martin (LM), both large, well respected and successful companies. Following a review of the process and a change of the conditions, LM decided to withdraw from the process and not to pursue submitting a bid and released the

¹ GoC. Department of National Defence: Air Defence procurement projects. Fixed wing search and rescue procurement project. Fixed-wing search and rescue procurement project - Canada.ca

statement “out of respect for the procurement process, Lockheed Martin does not comment on competitive tenders that are underway.”² This was a surprise as LM has a long and successful history in Canada, commencing operations in 1937,³ and already provided and supported the CC-130H, the other FWSAR platform in service across Canada. However, it transpired that LM dropped out of the RCAF FWSAR procurement bidding process due to the Canadian government's “reset” of the project and the associated controversy.⁴ It is understood that the reset entailed having to add costs to include quoting for the set-up and configuration of a full maintenance and Weapon System Training (WST) facility. Since that time, LM have subsequently provided and support the CC-130J, continuing to provide on-site maintenance functions to date; this facility in place at CFB Trenton can be leveraged as an efficiency in any future expanding support/training activity.

5. This paper will now examine the strengths, weaknesses, opportunities and threats to a proposal to procuring additional CC-130J aircraft to satisfy the unforeseen requirement that is now facing the RCAF to satisfy the role of FWSAR.

Strengths

6. The new CC-130J model is capable of performing missions that are beyond the scope or capability level for other transport aircraft such as tactical airlift operations, electronic warfare support, surveillance roles etc. Additionally, it can provide improved search capabilities with its advanced radar system and enhanced navigation systems which could allow for greater accuracy in locating downed personnel or vessels at sea. Furthermore, the J model's larger payload capacity and improved efficiency allows it to carry additional rescue equipment such as life rafts which would be necessary during extended searches over water, where any opportunity to extend search or loiter time is critical.

7. The competition concluded with the Kingfisher successfully winning the contract and initial deliveries commencing in Dec 2019; the first aircraft was accepted by Canada in Spain and subsequently arrived at its home base of Comox in Sep 2020.⁵ Unfortunately, due to issues and concerns with the trials and testing of the new platform, the date to reach full operating capability (FOC) is delayed; the Canadian government has admitted that the CC-295 Kingfisher won't be available for FWSAR operations until the 2025-2026 timeframe⁶, due to several design changes made to the platform to meet Canadian mandatory and rated requirements, and software

² Pugliese, D. Ottawa Citizen: Lockheed Martin withdraws from bidding process. 18 Jan 2016, last updated Jun 2020. Lockheed Martin reverses course – admits it didn't bid on Canada's fixed wing search and rescue program | Ottawa Citizen

³ Price Waterhouse Cooper Lockheed Martin Study of Economic Impact in Canada. Apr 2018. PwC_Economic_Impact_Study_of_Canada.pdf (lockheedmartin.com)

⁴ Thatcher, C. Skies Mag. 19 May 2022. How a delay to CC-295 operations could impact RCAF search-and-rescue - Skies Mag

⁵ GoC. Department of National Defence: Air Defence procurement projects. Fixed-wing search and rescue procurement project. Fixed-wing search and rescue procurement project - Canada.ca

⁶ Thatcher, C. Skies Mag: How a delay to CC-295 Operations could impact RCAF search-and-rescue. 19 May 2022. How a delay to CC-295 operations could impact RCAF search-and-rescue - Skies Mag

problems affecting the plane's cockpit systems.⁷ Additionally, the delay has raised questions about the RCAF's ability to retain experienced aircrew⁸, and has created a gap in Canada's search-and-rescue coverage.⁹

8. Located at CFB Trenton, alongside the already established maintenance support, is a first-class training facility encompassing two weapon system training (WST) devices and one flight training device (FTD), coupled with multiple squadrons worth of crews.

Weaknesses

9. It must be noted, however, that one significant limiting factor in any proposal to use the CC-130J to support future FWSAR tasking full-time is the recognised cross-platform shortage of qualified Loadmasters (LMs). This is an issue that must be addressed urgently as a separate significant concern and worthy of its own submission. Another area to be considered is that of ramp space at CFB Trenton, however, this should be remedied by the combination of the retiring CC-130H models and the deployment of the remaining CC-130H aircraft to Winnipeg and Comox.

Opportunities

10. The opportunities that any decision to utilise the CC-130J are numerous; there are links to exploit with regard to existing infrastructure. This will provide the opportunity of commonality of training and maintenance. Another significant opportunity is that of providing intra-fleet or local positions into which pilots, LMs and maintainers can be posted. This would have a two-fold benefit of and addresses the following aspects; it would keep them flying or geo-located longer, and, hence, potentially retain them in the RCAF. This aspect directly addresses the reconstitution efforts in effect across the RCAF at this time.

11. Any timeline to achieve this would be compressed due to the resources already in place and adds to the argument as to why it is obvious that the easy answer is to procure or purchase more CC-130J aircraft to meet this new, unforeseen, demand arisen by the inability of the Kingfisher to presently meet the FWSAR requirements, nor do so until circa 2026.

⁷ Technical issues behind delay of Canada's new search and ...

⁸ Thatcher, C. Skies Mag: How a delay to CC-295 Operations could impact RCAF search-and-rescue. 19 May 2022. How a delay to CC-295 operations could impact RCAF search-and-rescue - Skies Mag

⁹Berthiaume, L. Helicopters Magazine: Military dealing with gap in search and rescue services due to new procurement delay. The Canadian Press. 5 May 2022. Military dealing with gap in search and rescue services due to new procurement delay - Helicopters Magazine

Threats

12. The procurement of the Kingfisher can be classed as a purchase endorsed by the Government of Canada (GoC), and it is feasible that any move away from this messaging would be unacceptable at the political level. The messaging of the Department of National Defence (DND) page on the GoC website states that “deficiencies were identified in the Crew Annunciation System (CAS) within the cockpit avionics; this system provides the aircrew with information on the aircraft’s status and its systems and hence, these deficiencies must be corrected through software and/or hardware development and updates.”¹⁰ This process can take some considerable time as it has to follow what has been described by DND as a rigorous testing and certification process; this “process cannot be circumvented as it ensures the proper function and safety of the aircraft and its crew.”¹¹

13. Another threat to the entry into service of the CC-295 is one of certification and qualification; the existing Airbus C295 aircraft had previously been certified by both civilian and military agencies for airworthiness, however, in order to meet the Canadian requirements for FWSAR as part of their initial proposal, Airbus included over thirty design changes to the base model for the CC-295 Kingfisher. These changes have resulted in a requirement for additional certifications which are yet to be resolved and add to the extended timelines to reach FOC.

14. Airbus also chose to develop and integrate new capabilities to meet the nuances of the Canadian FWSAR requirement. During the course of this development process, unforeseen technical challenges have been identified that are taking Airbus and its sub-contractors time to resolve. Concern exists that some of these challenges may prove insurmountable, such as weight capacity and environmental operating restrictions. Delays with the qualification of capabilities coupled with the slow resolution of technical issues have, in turn, directly impacted the development of the operating instructions and courseware for the new platform; another example of the domino effect.

Interim SAR Coverage

15. The government also noted that the delays in the Kingfisher project timelines will not impact SAR coverage in Canada, and as such, the CAF have implemented a plan to ensure continuous FWSAR availability and coverage during the transition to the CC-295, including during this delay, hence, another subject worthy of consideration in this analysis is that of the ongoing domestic SAR coverage and the impact this will have on any future aspirations. The retirement of the Buffalo and delay to the initial operating capability (IOC) date of the CC-295, meant an interim solution to FWSAR coverage was required. To ensure ongoing coverage, the

¹⁰ GoC. Department of National Defence: Air Defence procurement projects. Fixed-wing search and rescue procurement project. Fixed-wing search and rescue procurement project - Canada.ca.

¹¹ GoC. Department of National Defence: Air Defence procurement projects. Fixed-wing search and rescue procurement project. Fixed-wing search and rescue procurement project - Canada.ca.

CAF decided to rely on existing CC-130 Hercules aircraft until the CC-295 is able to assume SAR operations.

16. The CC-130H Hercules, in a SAR role, is capable of responding quickly to emergencies such as crashed aircraft or ships in distress in challenging weather and climates. It can parachute SAR Technicians, emergency equipment and food, life rafts, bailing pumps, arctic survival gear and drop illumination flares to support SAR missions on the surface.

17. The original plan was to continue the employment of the CC-130H in the Trenton and Halifax Search and Rescue Regions. Interim SAR coverage in Search and Rescue Region Victoria was then being provided by 435 Squadron operating CC-130H Hercules aircraft out of Winnipeg, however this has the domino effect of reducing the capability to support other tasks, such as air-to-air refuelling and strategic transport. As of the end of May 2022, 2 CC-130H Hercules have been deployed to Comox, B.C., to be operated directly from there; it became clear that this plan was unsustainable and a backfill was required. The revised plan involved adding the CC-130J to the FWSAR roster by developing a plan called CC-130J Search and Rescue (JSAR). Although this takes some of the pressure away from the existing FWSAR fleets, it places increasing pressure upon the already significant CC-130J LOTs and heralds direct negative impact upon the ability to force employ the CC130J fleet around the globe. The most appropriate solution would be to purchase more CC-130Js to alleviate this pressure and utilise the existing infrastructure, training and maintenance solutions already in place, augmenting where required.

18. Of additional note, DND also addressed concerns regarding project cost over-run. It was stated that they expected to remain within the project's approved budget, even after the delays in the operationalization of the aircraft. "Like any large-scale procurement project, we will continue working with our suppliers to actively monitor and manage the project's budget to ensure the best value for Canadians."¹²

CONCLUSION

19. In conclusion, the aim of this service paper was to expand upon the reasons why the RCAF needs to procure more CC-130J Hercules aircraft, therefore, the RCAF must consider replacing the existing Airbus CC-295 Kingfisher due to the myriad of problems it is encountering during the platforms into-service period. It could also be argued that it does not have the sufficient range nor endurance needed for long distance rescues or patrol duties over large bodies of water like oceans and lakes, nor does it possess the ability to carry the vast array of equipment required to undertake the FWSAR role. This lack limits Canada's ability to respond quickly enough when called upon by international partners; thus placing lives at risk if response times are too slow due inadequate resources on hand. The CC-130J not only offers better fuel efficiency than previous Hercules models, making them more cost effective, while simultaneously providing increased performance levels required by modern day FWSAR

¹² Canada. Department of National Defence: Air Defence procurement projects. Fixed-wing search and rescue procurement project. Fixed-wing search and rescue procurement project - Canada.ca

operations, both domestically within the vast borders of Canada, but also abroad when responding internationally on humanitarian relief efforts on the worldwide stage, or reacting to a search and rescue call in the mid-Atlantic.

20. The benefits that could be gleaned by utilising the already in place infrastructure and maintenance support, whilst allowing greater flexibility in the postings and career progression of pilots, LMs and maintainers, will undoubtedly assist in the positive retention of both aircrew and ground crew at a time when retention and reconstitution is at the forefront of the agenda by offering stability or the opportunity for geo-location postings. Some modifications may be required to this infrastructure, however the foundations are already in place which could easily be built upon.

RECOMMENDATIONS

21. Procuring additional CC-130Js will quickly and effectively enable our military forces to meet all requirements related to FWSAR missions while ensuring they remain adequately equipped with up-to-date technology; this will allow the FWSAR role to be performed efficiently under any circumstance, regardless of how demanding those tasks may be. This paper utilised a SWOT analysis style approach and has determined the following recommendations:

- a. Purchase more CC-130J Super Hercules to fill the operational void encountered due to the delay into service of the Airbus CC-295 Kingfisher;
- b. Conduct appropriate follow-on analysis to determine exactly how many aircraft will be required as the current number of 17 is unsustainable in the longer term;
- c. Support the Domestic and International FWSAR role with the utilisation of the CC-130J;
- d. Support the retention and reconstitution mandates of the RCAF by allowing aircrew and maintainers to rotate postings across the CC-130J fleets; and finally
- e. Utilise and augment, if necessary, the existing CC-130J infrastructure to assist in fulfilling this role.

Annex(es): Nil

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