



Centralizing to Survive: The Case to Reconstitute RCAF Construction Engineer Technicians

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RCAF Construction Engineer Technicians**

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Centralizing to Survive: The Case to Reconstitute Royal Canadian Air Force Construction Engineer Technicians

INTRODUCTION

The Royal Canadian Air Force (RCAF) Op TALENT initiative has missed the forest for the trees, and as a result, has placed a supreme amount of effort in sustaining aircrew and occupations which directly support flying operations, while not sufficiently investing in the Combat Service Support (CSS) function conducted by the Construction Engineer Branch. The RCAF Construction Engineer Non-Commissioned Member (NCM) trades have some of the worst Trained Strength (TS) versus Primary Manning Level (PML) rates across the entire level one organization as of this writing (Plumbing and Heating Technicians: 75.4%).¹ Furthermore, a January 12th 2022 Construction Engineer occupation health meeting chaired by RCAF Director Air Personnel Strategy (D Air Pers Strat) briefed information regarding the fact that four of the seven Construction Engineer technician occupations were deemed “unrecoverable”.² If Doctor Albert Einstein’s definition of insanity bears any weight in the mind of the reader, changes must be made to the systems of training and employing Construction Engineer technicians: as some of the practices currently in place have remained extant since the 1960s.³

Without some form of intervention, the ability to support the RCAF to “live, move, and fight” will be severely degraded, further adding to the concerns expressed by Canadian Military Engineer Branch leadership that there is inconsistency in the employment of Construction Engineer technicians across the RCAF due to the 2016 Inter-Capability Component transfer, and there is a growing sentiment that the RCAF should be concerned with the skill competency of its technicians.⁴ This paper will argue that in order to promote Canadian Armed Forces (CAF) reconstitution efforts and maintain the sustainment engineering capability primarily conducted by Construction Engineer technicians, the RCAF must centralize its existing pools of talent at fewer distinct geographic locations and reorganize the force into sustainable sub-units within the Mission Support Squadron (MSS) construct. This thesis will be proven by examining the manner in which technicians are currently developed as apprentices and journeypersons, reviewing the symbiotic relationship of employment between the RCAF and Assistant Deputy Minister (Infrastructure and Environment) (ADM(IE)), and discussing the consequences of dispersing low-density occupations across the country and the instability created therein. The scope of this paper is limited to a review of Regular Force (RegF) members employed by the RCAF, however a fair statement can be made regarding similar employment problems for these technicians in the Canadian

¹ Military Command Suite Establishment database (object name AMOR Query Class, Query Parra; accessed May 8, 2023).

² Meghan Setter, “Construction Engineer Occupation Health Meeting” (PowerPoint presentation, 2022 Construction Engineer Annual Military Occupation Review, virtual presentation, January 12, 2022).

³ K. J. Holmes *et al*, *The History of the Canadian Military Engineers: Volume III, to 1971* (Toronto: Military Engineering Institute of Canada, 1997), 352.

⁴ Canadian Military Engineers Branch Executive, *Executive Council Record of Discussion*, 2 March 2023, 3.

Army.⁵ The reader should be cognizant that this paper does not submit to a closure of bases, nor does it support a change in the permanent distribution of Construction Engineer technicians. In alignment with the Chief of Defence Staff's (CDS) recovery theme of CAF reconstitution, this paper submits that a temporary regrouping of personnel will foster the strategic priority of personnel generation, thus enabling the CAF to execute the "Build" theme from 2022-2030.⁶

The role of Mentorship

The CAF has seven RCAF NCM occupations that provide technical engineering expertise to support the maintenance and operation of infrastructure domestically and abroad.⁷ These occupations (colloquially known as trades) are the product of a severe reduction of specialized trade structures that existed prior to the forces-wide integrated trade structure initiative of 1966.⁸ As a result, these seven trades (Construction Technician, Plumbing and Heating Technician, Electrical Distribution Technician, Electrical Generating Systems Technician, Refrigeration and Mechanical Technician, Water, Fuel and Environment Technician, and Drafting and Survey Technician) are responsible for ensuring the RCAF can live, move, and fight (fly) from any location, and as such, have an enormous span of responsibilities that includes everything from the provision of potable water, to the operation of safety equipment to arrest CF-188 fighter aircraft.⁹ To accomplish such feats, each occupation is cross-trained to employ specialist tasks that may be infrequently employed, but that each are expected to know (i.e., an Electrical Distribution Technician may be trained to perform maintenance of high-voltage powerlines and install complex intrusion alarm systems during their career, despite receive baseline instruction and minimal practical exposure once qualified as a journeyman). These military occupations draw numerous parallels to their private and public sector counterparts not only in their employment on a daily basis, but in the manner in which they are trained at the Canadian Forces School of Military Engineering (CFSME), and how they receive their apprenticeship when placed under the command authority of the RCAF at their first posting engagement. The process used by the CAF to train prospective candidates is similar to the apprenticeship process in the province of Quebec, whereby formal training is provided at a training establishment, and a period of apprenticeship is conducted in order to allow apprentices the ability to refine the skills they've learned and practiced.¹⁰ The CAF then provides additional training during a journeyman course (Rank-Qualification Corporal (RQ-Cpl)) before the member is

⁵ Canadian Military Engineers Branch Executive, *Executive Council Record of Discussion*, 2 March 2023, 4.

⁶ Government of Canada, "CDS/DM Directive for CAF Reconstitution," last accessed 8 May 2023, <https://www.canada.ca/en/department-national-defence/corporate/policies-standards/dm-cds-directives/cds-dm-directive-caf-reconstitution.html>.

⁷ The Canadian Military Engineers Association, "The Canadian Military Engineers," last accessed 12 April 2023, <https://cmea-agmc.ca/fr/node/9854>.

⁸ K. J. Holmes *et al*, *The History of the Canadian Military Engineers: Volume III, to 1971* (Toronto: Military Engineering Institute of Canada, 1997), 348.

⁹ The Canadian Military Engineer's Manual, (Ottawa: DND Canada, 2003), 1:20.

¹⁰ Government of Canada, "How to become an apprentice," last accessed 8 May 2023, <https://www.canada.ca/en/services/jobs/training/support-skilled-trades-apprentices/become-apprentice.html>.

deemed fit to perform the full range of technical skills within the occupation (less the ability to directly supervise subordinates).

Unfortunately for the ranks of numerous RCAF Construction Engineer technicians, the nature of the on-the-job training process (known as the On-Job Performance Record (OJPR) within the RCAF) has been a concerning matter since the 1960s.¹¹ Present day members often encounter issues that impede their ability to complete their logbooks and affirm the completion of the OJPR.¹² This argument shall submit for consideration the following: the apprenticeship of Construction Engineer NCMs suffers from a lack of leadership within the RCAF due largely in part to an insufficient number of qualified supervisors who are distributed across various formations within the level one organization. In order to address a low density of supervisory talent, RCAF Construction Engineer flights within the MSS units must temporarily reallocate their positions, personnel, and equipment in order to promote a greater concentration of members to plan on-job training (OJT) opportunities, mentor apprentices during the conduct of their OJPR, affirm the completion of their required logbooks, and generate technicians in support of RCAF individual and collective training exercises as well as domestic and expeditionary Canadian Joint Operations Command (CJOC) missions. Note that for the purposes of this persuasive paper, only readily available open source available from the DWAN concerning RegF members will be used. This is not to discount the efforts and contributions of those members serving within the Primary Air Reserve, but to maintain consistency in the argument and contrast matters that may be interpreted differently due to the structure and employment of Primary Reserve counterparts.

In order to develop an apprentice and guide them through the process of learning one's trade, a qualified supervisor must be present to coordinate opportunities for their fledgling skills to develop. 2 Canadian Air Division has established a standard whereby apprentices are expected to complete the OJPR within a 24-month period once they are qualified as apprentices.¹³ This standard further states that completed logbooks will not be accepted by 2 Canadian Air Division if they are finalized within 20 months of the apprentice finishing their Rank-Qualification Aviator (RQ-Avr) course, for fear of members being inadequately prepared for their next career course at the CFSME. The expectation that apprentices complete their OJPR within 24 months is impeded by significant barriers, of which a quarter of which are directly located to their posting location.¹⁴ Additional barriers include a member's medical condition (8%), maternity/parental leave (10%), participation in a deployment (10%), undergoing release from the CAF (18%), substandard performance (8%), and other reasons (23%).¹⁵ On average, a member's OJT completion can range from 29-39 months, with outliers taking

¹¹ K. J. Holmes *et al*, *The History of the Canadian Military Engineers: Volume III, to 1971* (Toronto: Military Engineering Institute of Canada, 1997), 348.

¹² Nicholas Sabine, email message to author, April 4, 2023.

¹³ Department of National Defence, *Air Force Training and Education Management System On-Job Performance Record (OJPR)* (Ottawa: DND Canada, 2019), 4-7.

¹⁴ Nicholas Sabine, email message to author, April 11, 2023.

¹⁵ Nicholas Sabine, email message to author, April 11, 2023.

as long as 72 months or more to complete a 2 year apprenticeship.^{16 17} If indeed one of the CAF's missions is to "reconstitute in order to ensure its ability to deliver strategic effects directed by the Government of Canada now and into the future", new strategies must be investigated to promote the strength of the Construction Engineer occupations.¹⁸

Examining the distribution of Construction Engineer technicians who can act in a supervisory role is an important part of establishing the rate at which an apprentice can progress towards becoming a journey person in their respective trade. The author has decided to examine the Plumbing and Heating technician PH Tech (MOSID 00304); as of this writing, it has the worst TS vs PML percentage across all NCM occupations managed by the RCAF.¹⁹ Additionally, it is represented near the median size of Construction Engineer NCM trades (00304: 113 positions, Median: 112.5).²⁰ The PH Tech occupation has 23 qualified Master Corporals and Sergeants positions who supervise 36 Aviators and Corporals in the RCAF. The remainder of the occupation's personnel are primarily employed by the Canadian Army, Assistant Deputy Minister (Infrastructure and Environment), or Military Personnel Command. Therefore, while the RCAF may not have ownership of all members within the occupation, it is responsible for setting the framework for the occupation's training via the development of a Qualification Standard, and is responsible for developing an OJPR that can be conceivably be executed by level four units in order to promote the maintenance of the CAF's ability to support sustainment engineering in this particular domain. It is important to note that while it may be preferable to have Master Corporals and Sergeants supervise the OJT of apprentices, the number of RQ-Cpl qualified PH Tech Corporals in the RCAF outnumbers both the number of qualified Master Corporals and Sergeants (13:11).²¹ This resulting disparity necessitates the inclusion of Aviator/Corporal positions in the analysis to recommend the dispersion of PH Tech talent across RCAF Level 3 Formations (Wings).

PH Tech positions are distributed across nine distinct formations within the RCAF (Bagotville, Comox, Dundurn, Gander, Greenwood, Cold Lake, North Bay, Trenton, and Winnipeg). Of the 61 positions, 23 have supervisory roles, and 13 have an incumbent who is a qualified service member.²² These 13 members are unevenly divided across 6 RCAF formations within 1 Canadian Air Division and are charged with mentoring 16 apprentices with the assistance of the RQ-Cpl qualified Corporals. In effect,

¹⁶ Nicholas Sabine, email message to author, April 4, 2023.

¹⁷ Nicholas Sabine, conversation with author during 2022 Annual Military Occupation Review, January 12, 2022.

¹⁸ Government of Canada, "CDS/DM Directive for CAF Reconstitution," last access 8 May 2023, <https://www.canada.ca/en/departement-national-defence/corporate/policies-standards/dm-cds-directives/cds-dm-directive-caf-reconstitution.html>

¹⁹ Military Command Suite Establishment database (object name AMOR Query Class, Query Parra; accessed May 8, 2023).

²⁰ Military Command Suite Establishment database (object name AMOR Query Class, Query Parra; accessed May 8, 2023).

²¹ National Defence, "Military Command Suite Personnel Dashboard," last accessed 29 April 2023, <https://mcs-lcm.forces.mil.ca/MCSPersonnel/Default.aspx#!LZ:3633!FRC:RegF>.

²² National Defence, "Military Command Suite Personnel Dashboard," last accessed 29 April 2023, <https://mcs-lcm.forces.mil.ca/MCSPersonnel/Default.aspx#!LZ:3633!FRC:RegF>.

the RCAF has already begun to draw down on the footprint of PH techs distributed across the country, as some L3 formations are manned at 50% or less.²³ The ability for RQ-Cpl qualified members under the command of the RCAF to mentor apprentices is further exacerbated by a standing requirement to fill four expeditionary positions (2x Op REASSURANCE (Air Task Force) and Joint Task Force IMPACT), which prolongs the completion of an apprentice's OJT experience, given the density of supervisory staff at the Wings.²⁴ Using Ontario's Building Opportunities in the Skilled Trades Act (Bill 288 - 2021) as a guideline, of the eight Wings where PH techs conduct their apprenticeship in the RCAF, 12.5% of Wings are not meeting the ratio set forth by the Government of Ontario.²⁵ Using this statistic, the lack of RQ-Cpl qualified members in the RCAF impacts 37% of PH Tech apprentices, which further reinforces the argument that positions are distributed too thinly, protracting the time required for apprentices to complete the OJPR, and delaying the careers of members as they progress towards becoming qualified journeypersons. If one were to use Ontario's pre-2022 apprentice/journeyperson ratio, 79% of apprentices would be impacted. If the current Quebec ratios were used for non-residential sectors, 68% of PH tech apprentices would not be receiving the supervision required by the regulatory body.²⁶ Ultimately, regardless of the provincial ratios selected, the trend indicates that a number of technicians are not receiving the oversight required to safely administer the OJPR in the timeframe required by 2 Canadian Air Division.

In order to promote CAF reconstitution, improve OJT completion timelines, and provide additional oversight to CE tradespersons undergoing an apprenticeship, the limited number of technicians in the RCAF must be centralized to promote an economy of effort. With 7 Sergeant, 16 Master Corporal, and 38 Corporal positions for PH Techs in the RCAF, an equitable distribution of personnel should take into consideration organizational considerations such as support to operations, real property availability, and proximity to supporting units who enable members to conduct pre-deployment preparation. This centralization of effort coincides with the 2015 Mutual Support Agreement (MSA) between Lieutenant-General Blondin (Comd RCAF) and Mr. Jamie Pitfield (ADM(IE)) which states the RCAF would establish six engineer squadrons at each of its main wings to support the force generation of its personnel.²⁷ The author suggests that a further reduction in footprint to four geographic locations would further concentrate the density of technicians capable of adopting a supervisory role, and provide oversight to apprentices. The reinforcement of MSS units at Greenwood, Bagotville, Trenton, and Cold Lake would reduce posting turbulence for member's families, place

²³ National Defence, "Military Command Suite Personnel Dashboard," last accessed 29 April 2023, <https://mcs-lcm.forces.mil.ca/MCSPersonnel/Default.aspx#!LZ:3633!FRC:RegF>.

²⁴ Military Command Suite CF Tasks, Plans and Operations database (object name Data Source: Archive, Task Type: Operations; accessed April 16, 2023).

²⁵ Building Opportunities in the Skilled Trades Act of 2021, S.O. 2021, c. 28 (2021).

²⁶ Commission de la Construction du Quebec, "Complying with Apprentice-Journeyperson ratios," last accessed 8 May 2023. <https://www.ccq.org/en/loi-r20/etre-employeur/ratios>.

²⁷ Department of National Defence, *Mutual Support Agreement between Assistant Deputy Minister Infrastructure and Environment and Royal Canadian Air Force* (Ottawa: DND Canada), C-3.

members in vicinity of cities where the cost of living is reasonable, and evenly distribute units across the country from a geographic and linguistic perspective.

A counter argument to this proposal would focus on the strong ties the military has with its community, and the political implications that arise when the economic stimulus provided by the CAF to municipalities is removed. A case study examining the movement of the RCAF's Aerospace Engineering Test Establishment (AETE) from Cold Lake, Alberta to Ottawa, Ontario would examine the uproar and feelings of betrayal experienced by political executives at the municipal and federal levels. Former Member of Parliament David Urdiga was quoted as saying "Cold Lake can't afford to lose even one position", referencing the inability for the municipality to experience the loss of one single military or public service position.²⁸ Similar sentiments were felt by municipal and federal bureaucrats when the 2nd Battalion, Princess Patricia's Canadian Light Infantry relocated from Winnipeg to Shiloh, Manitoba in 2001. Representing at \$58 million-dollar loss for the local economy, the movement of six hundred and forty members, with approximately five hundred family members was a challenge that future political advisors would need to contend with prior to the redistribution of Construction Engineer NCMs.²⁹

Another sound counter argument would be the impact to RP Ops detachments, where in a number of locations (i.e., Greenwood, North Bay), Construction Engineer NCMs have been informally fully integrated into the work flow process, and have developed a symbiotic relationship with the public servants at the detachment.³⁰ Removing members would have the unintended consequence of reducing the efficacy of affected detachments due to a reduced workforce available to support the management of an increasing complex and complicated infrastructure portfolio. This issue, compounded by the reality that DND infrastructure is aging, RP Ops Group lacks resources, and there are consistent operational pressures for growth, means the level two organization, like any other, can benefit from free labor in exchange for meaningful employment that exercises Construction Engineer NCM's technical trade-specific skills.³¹

Construction Engineer technicians are spread far too thin across the RCAF. Members within these occupations invest numerous years in their apprenticeship, and often contend with organizational shortcomings that impede their development as journeypersons, part of which is attributed to the location in which they are posted to, based on the current organization of the RCAF.

²⁸ David Pugliese, "Feds to move military aircraft testing from Alberta to Ottawa, but Cold Lake politicians say they're in the dark," *National Post*, 06 December 2018. Reference Type: Newspaper Article.

²⁹ Canadian Broadcasting Corporation, "Winnipeg city officials angry PPCLI moving," last accessed 08 May 2023. <https://www.cbc.ca/news/canada/winnipeg-city-officials-angry-ppcli-moving-1.292710>.

³⁰ Albert Levesque, Conversation with author, May 3, 2023.

³¹ Department of National Defence, *CF Real Property Operations Group Implementation Directive: Services Delivery Study* (Ottawa: DND Canada), 2.

The requirement to train

The reorganization of Construction Engineer units in 1966 following the publication and acceptance of the Whiting Report resulted in the formation of Regional Construction Engineering Offices to manage infrastructure on behalf of the environmental service chiefs.³² While the dissolution of the six offices (Atlantic, Quebec, Ontario, Prairie, Pacific, and European) due to concerns regarding “perceived lack of control of CE staffs and resources at the second-line level” took place in 1970, the tactical level Construction Engineering Offices (CEOs) were absorbed by the functional commands to provide services such as requirements forecasting, engineering, production, administration, utilities, and fire and crash protection.³³ These CEOs were led by military officers, as numerous public service positions were moved or abolished, and management positions were scaled down to give way to additional technical tradesmen positions.³⁴ This change in organizational structure and merge in managing authority led to a collective improvement in personnel training standards, an increase in project management capabilities, and better access to funding for members serving within the organization.³⁵ These units were maintained until infrastructure management was transitioned from the environmental service chiefs in 2016 under what was dubbed “IE Transformation”, due to the findings of the Office of the Auditor General report of 2012.³⁶ While ADM(IE) has certainly moved the yardstick forward on managing infrastructure assets that were largely neglected in the past, the degree to which it has prepared military members for operations is questionable. This argument shall submit for consideration the following: the distribution of RegF Construction Engineer technicians throughout the RCAF complements the organizational function of ADM(IE), but it does not prepare members to execute the function they joined the CAF to perform. In order for the CAF to be the agile, well-educated, flexible, diverse, and combat-ready military enumerated by *Strong, Secure, Engaged*, RCAF Construction Engineer technicians must be able to operate from austere or prepared airfields and be well versed in the “practical application of aerospace power”.³⁷ A departure from partially supporting RP Ops detachments across the country, to focusing on the secondment of Construction Engineer NCMs to ADM(IE) for the maintenance of skills that cannot be readily training by the RCAF would promote the skill competency of the technical trades which is currently in question.³⁸

³² K. J. Holmes *et al*, *The History of the Canadian Military Engineers: Volume III, to 1971* (Toronto: Military Engineering Institute of Canada, 1997), 334.

³³ K. J. Holmes *et al*, *The History of the Canadian Military Engineers: Volume III, to 1971* (Toronto: Military Engineering Institute of Canada, 1997), 336.

³⁴ K. J. Holmes *et al*, *The History of the Canadian Military Engineers: Volume III, to 1971* (Toronto: Military Engineering Institute of Canada, 1997), 338.

³⁵ K. J. Holmes *et al*, *The History of the Canadian Military Engineers: Volume III, to 1971* (Toronto: Military Engineering Institute of Canada, 1997), 338.

³⁶ National Defence, “IE Transformation: How did we get here?,” last accessed 8 May 2023, <http://intranet.mil.ca/en/infrastructure-environment/transformation/transformation-index.page>.

³⁷ Department of National Defence, *Strong, Secure, Engaged: Canada's Defence Policy* (Ottawa: DND Canada), 39.

³⁸ Canadian Military Engineers, *Executive Council Record of Discussion*, 2 March 2023, 3.

The centralization of infrastructure management under ADM(IE) resulted in a significant shift in responsibilities for NCMs posted to RCAF Construction Engineer Flights (CEFs). Previous to April 2016, members were part of the Wing Construction Engineering Squadron (responsible directly to each respective Wing Commander) responsible for supporting the maintenance of DND infrastructure, which aided in the maintenance of their trade-specific technical skillsets. In addition to this core task, technicians routinely participated in collective training exercises such as Ex MAPLE RESOLVE and Ex VIGILANT SHIELD, partnered with Airmen from the United States Air National Guard during Deployments for Training Programs (DFTPs) to refine logistical and technical skills, supported RCAF individual training while operating arrestor gear in the Canadian Arctic, conducted aerodrome assessment domestically and abroad, and pursued community-related projects to build and reinforce the rapport between the military base and the public writ large.

The creation of RP Ops Group and the transition of infrastructure maintenance responsibilities formerly executed by RCAF Construction Engineer technicians on strength at RCAF Wings resulted in an overall reduction in responsibilities, as well as the loss of the ability for members to develop and refine their technical skills necessary to prepare them for force employment missions in support of CJOC. A review of the initial relationship between ADM(IE) and the military members employed by the level one organization indicate there was never a desire to prepare members for force employment activities (i.e., full spectrum warfare, peace support operations, etc). The 2015 Mutual Support Agreement signed by the Chief of the Defence Staff (CDS) specifically detailed that ADM(IE) is not/will not be a force generating organization.³⁹ As a consequence of this relationship, the RCAF was ordered to establish six Construction Engineer Squadrons at each of their primary Wings (Comox, Cold Lake, Winnipeg, Trenton, Bagotville, and Greenwood) to generate personnel in support of force employment activities. This relationship, which is further defined in the 2013 DND RP Ops concept of operations states that military engineers will “not be subject to force generation for CAF operations other than on an emergency basis.”⁴⁰ These statements and others which set the foundation for the relationship between Construction Engineer NCMs, RP Ops Group, and the expeditionary missions that await them is cause for concern. With no official mandate to prepare members to support friendly forces as they live, move and fight, military engineers posted to RP Ops Group or seconded by the RCAF to support ADM(IE) will be ill equipped to perform their doctrinal engineer tasks. These tasks see any military engineer, regardless of environmental component, prepared to apply the science of engineering to five core engineering capabilities which include maintenance of mobility, counter-mobility, enhancement of survivability, sustainment engineering, and geomatics.⁴¹

³⁹ Department of National Defence, *Mutual Support Agreement between Assistant Deputy Minister Infrastructure and Environment and Royal Canadian Air Force* (Ottawa: DND Canada), C-6.

⁴⁰ Department of National Defence, *Concept of Operations: DND Real Property Management* (Ottawa: DND Canada), 25.

⁴¹ Department of National Defence, B-GG-005-004/AF-015, *Military Engineer Support to Canadian Forces Operations* (Ottawa: DND Canada, 1999), 6-3.

The inability for RP Ops to commit to the force generation of military engineers is further reflected in the various service level agreements (SLA) between Command RP Ops and the respective level three formation commands. The SLAs identify the disparity in workforce employment due to the non-transfer of RCAF personnel during the Inter Capability Component Transfer (ICCT) process, and the RCAF seeks to rectify the shortfall by employing members within RP Ops Group when force generating activities (and some non-force generating activities) are not being performed by the host engineer squadron.⁴² This further affirms that while RP Ops can indeed *support* force generating activities, it cannot assume the responsibilities for training members for force employment, nor can it assume the responsibility for maintaining non-trade specific technical or tactical training.

In contrast to this argument is the fact that many of the tasks performed by Construction Engineers fall within the scope of sustainment engineering, and that training this capability entails access to building systems (mechanical, electrical, plumbing, automation, etc) in order to apply the skills which enable members to practice the repair, maintenance, and construction of facilities.⁴³ With ADM(IE) serving as the sole point of responsibility and accountability to the Deputy Minister for all real property management activities, there are lessened opportunities for Construction Engineer tradespeople to practice their vocation, leading to a symbiotic relationship that sees both level one organizations dependent upon each other.⁴⁴ The reality faced by many Construction Engineer NCMs is that completion of their OJPR to be eligible for RQ-Cpl qualification (and journeyman status) as well as “trade-full” employment within their occupation relies on the strong interpersonal skills that must be demonstrated by RP Ops detachment Officer Commandings (OCs) and their counterparts within the Mission Support Squadrons.⁴⁵ This relationship demands that members deconflict operational readiness priorities and training with that of RP Ops’ mandate to provide infrastructure management activities to the Department of National Defence (DND).⁴⁶

The requirement to conduct both individual and collective training is enshrined in Canada’s commitment to the North Atlantic Treaty Organization Article III, in that it maintains “individual and collective capabilities to defend (itself) and to resist attack.”⁴⁷ Pending the composition of the Canadian land or air contingent, the Construction

⁴² Department of National Defence, *Service Level Arrangement between Canadian Forces Real Property Operations Group and 8 Wing Trenton Concerning Provision of Support Services* (Ottawa: DND Canada), Annex D 2/2.

⁴³ Department of National Defence, B-GG-005-004/AF-015, *Military Engineer Support to Canadian Forces Operations* (Ottawa: DND Canada, 1999), 6-3.

⁴⁴ Canada. Department of National Defence, *Concept of Operations: Environmental Support to DND Real Property Management* (Ottawa: DND Canada), 2.

⁴⁵ CWO Roger Foucault (former Construction Engineer Senior Occupation Advisor) used this term extensively to describe the appropriate employment of Construction Engineer technicians throughout the CAF.

⁴⁶ Department of National Defence, *Service Level Arrangement between Canadian Forces Real Property Operations Group and 8 Wing Trenton Concerning Provision of Support Services* (Ottawa: DND Canada), Annex D 1/2.

⁴⁷ Canada. Department of National Defence, *Strong, Secure, Engaged: Canada's Defence Policy*. Ottawa, Ont.: National Defence, 2017: 91.

Engineers called upon to enable friendly forces to live, move, and fight must be able to demonstrate a comprehensive suite of competencies previously enumerated in order to enable the mission's objectives. While employment within RP Ops enables Construction Engineer NCMs to gain invaluable mentorship from Public Servants who maintain building systems and further enables the use of skillsets that can easily suffer from skill-fade (i.e., maintenance of aircraft arrestor systems, electric intrusion alarm devices, commercial high voltage systems, etc), it does not provide them with the means to meet the requisite RCAF collective training standards listed within the Interim Air Force Expeditionary Standards which see members ready to plan, construct, maintain or tear down a temporary camps. Nor does it see them prepare to execute a camp passive defensive plan, provide fire services, or execute airfield surface assessment and expedient repair.⁴⁸

The secondment of members to ADM(IE) has numerous benefits that solve personnel shortage issues for RP Ops Group, and provide meaningful employment to RCAF technicians, but does not train them to use all of their skillsets in a deployed environment. Bearing this shortfall in mind, the secondment of members to ADM(IE) has the potential to be an effective strategy that has the unintended consequence of reducing posting adversity for members and their families.

The price paid by families

The currency of a soldier is that of sacrifice, and it is often the family that pays the price. With twenty-three staffed posting locations across the country, and nine of those at RCAF installations, the potential posting turbulence that can be experienced by a Construction Engineer technician is staggering.⁴⁹ Of the many challenges that military families face as they support their service member, the top five are all related to the annual posting cycle undertaken by the institution (spousal employment (43%), primary healthcare (37%), relocation due to military service (32%), financial stability (30%) and childcare (19%)). Family stability suffers due to the number of locations member are employed by the RCAF and other level one organizations, thus driving members to release from the CAF. This argument shall submit for consideration the following: family stability suffers due to the frequent posting of members, thus lowering the retention of Construction Engineer NCMs. By reducing the number of distinct geographic locations a member can be compelled to serve at, the RCAF can promote CAF reconstitution by retaining its membership.

With numerous Construction Engineer courses costing nearly half a million dollars or more per year to administer, the RCAF must strategize deliberate efforts to retain talent within the institution.⁵⁰ Decisions to move CAF members and their families are not made through the application of a governance framework that employs HR

⁴⁸ Department of National Defence, *Interim Air Force Expeditionary Task Standards* (Winnipeg: DND Canada), 166.

⁴⁹ Military Command Suite Establishment database (object name AMOR Query Class, Query Parra; accessed May 4, 2023).

⁵⁰ Public Works and Government Services Canada, *2021 Technical Service Contract – CFSME*, June 2021 (Contract No. W2037-200134), 17.

analytics.⁵¹ Defined as the process of “collecting, analyzing, and reporting relevant HR information to make data-driven decisions”, HR analytics can be used to match members displaying desirable traits, talents and qualifications with billets that require an incumbent, and cannot be left vacant. This data driven process is used to consider the needs of the organization, contrast them with the ambitions of a selected member, and compare the results with other members in a similar cohort (i.e., based on rank and occupation) to instantaneously develop the optimal posting plot.⁵² The problem of assigning the “right” member to a position so that their efforts can meaningfully contribute to the needs of the service can be easily accomplished through the use of a Hungarian algorithm, which uses a method to assign personnel to assignments “where the possible assignments are ranked by the total scores or rating of the workers in the jobs to which they are assigned.”⁵³ Using this method, the RCAF must rebalance talent where it is most needed, deliberately leave positions vacant based on the needs of the service (i.e., due to CAF reconstitution), and match members to future billets based on their preferences, geographic mobility, and demands of the service. Using such a system would support career managers and prevent them from becoming overwhelmed as they balance direction from branch advisors, member preferences, and the needs of the service.⁵⁴

The issue of geographic stability is a factor driving members to release from the CAF. With a third of all CAF releases due to geographic instability, and 19% of current serving members identifying the same reason for leaving the organization in the future, more has to be done to retain talent within the service.⁵⁵ The issue of geographic stability is a difficult matter to broach, given the dispersion of CAF units across the country, and the fact that Canada has an attrition rate lower than its NATO allies.⁵⁶

CONCLUSION

Managing the employment of Construction Engineer technicians is a tumultuous issue. While a large portion of technicians fall under the command of the RCAF, the level one organization lacks the authority to train members using Wing infrastructure as it does not have the authority to do so. Additionally, members who do serve within the RCAF have limited means to pursue OJT with the RCAF, as not only do they not have the authority to exercise their trade skills at the Wings, the limited number of journey person-qualified supervisors limits their development given the geographic distribution of the billets between the East and West coasts. Lastly, career management practices have

⁵¹ Cauty, A.L.O., “An Analysis of the CAF Career Management System.” (Joint Command and Staff Program course paper, Canadian Forces College, 2016), 5.

⁵² Spencer Turner, “Programming the Posting Plot: How algorithms can optimize every area of logistics” (submission to *Praefectus Annonae* journal, 2021), 1.

⁵³ H. W. Kuhn, “The Hungarian Method for the Assignment Problem.” *Naval Research Logistics* 52, no. 1 (2005): 83. <https://onlinelibrary.wiley.com/doi/epdf/10.1002/nav.20053>.

⁵⁴ Cauty, A.L.O., “An Analysis of the CAF Career Management System.” (Joint Command and Staff Program course paper, Canadian Forces College, 2016), 9.

⁵⁵ Department of National Defence, D2-615/2022E-PDF, *Canadian Armed Forces Retention Strategy* (Ottawa: DND Canada, 2022), 69.

⁵⁶ House of Commons, Standing Committee on National Defence and Veterans’ Affairs, *Minutes of Proceedings and Evidence*, no. 15, Monday, 04 April 2022, 4.

modernized, but show room for improvement as geographic instability and the impact it has on member's families continues to be a driving force that causes members to leave the institution. This paper has demonstrated the numerous advantages that can be had by temporarily reducing the footprint of Construction Engineer technicians within the RCAF, and the challenges that such a decision will face if acted upon.

The RCAF will continue to be challenged as it attempts to maintain a pace of operations and reconstitute its force in accordance with CDS direction, given it has 279 Construction Engineer technicians currently on strength, 9% are currently committed to a deployment, and 14% are not employable (due to medical restrictions, deployment waiver, or leave without pay).⁵⁷ Key to the success of employing Construction Engineer technicians in the future is reducing posting turbulence, further defining and solidifying the relationship between ADM(IE) and the RCAF to include role and responsibilities that govern individual and collective training, and the reinforcement of accountability to the chain of command for apprentices and supervisors who undertake 2 Canadian Air Division's OJPR.

⁵⁷ National Defence, "Military Command Suite Personnel Dashboard," last accessed 8 May 2023,

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