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PROACTIVE RECRUITMENT OF WOMEN INTO THE CONSTRUCTION ENGINEERING OCCUPATIONS

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Service Paper

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THE CONSTRUCTION ENGINEERING OCCUPATIONS**

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PROACTIVE RECRUITMENT OF WOMEN INTO THE CONSTRUCTION ENGINEERING OCCUPATIONS

AIM

1. The aim of this service paper is to provide Chief of Staff (Strategic), Military Personnel Command with recommendations within the Operation GENERATION framework to proactively target, attract, and recruit more women into the construction engineering (CE) trades. The options presented represent adaptations of current civilian marketing strategies; each will require further in-depth study as to the policy and legal framework and potential amendments required for implementation.

INTRODUCTION

2. This paper was developed to support the Canadian Armed Forces' (CAF) inclusivity target to grow its proportion of female representation from 15% to 25% by 2026, as outlined in Strong, Secured, Engaged: Canada's Defence Policy (SSE).¹ The Construction Sector Council (CSC), a not-for-profit committed to developing a highly skilled workforce,² examined the factors behind a lack of increase in women's participation in the construction trade. The main reasons were identified as a lack of supply of new female entrants, a lack of demand or need for new female entrants, and a lack of retention of existing female employees.³ Unlike the civilian market where "[some employers] argued that they do not believe it is their job to recruit women to the construction industry",⁴ the Government of Canada and the CAF have addressed the issue of lack of demand through explicit direction provided in SSE and Op GENERATION proportion

¹Department of National Defence, *Strong, Secure, Engaged: Canada's Defence Policy* (Ottawa: National Defence, 2017), 12.

²Construction Sector Council, "The State of Women in Construction in Canada," last modified 3 March 2010, http://www.buildforce.ca/en/system/files/products/State_of_Women_in_Construction_in_Canada_0.pdf, preface.

³*Ibid.*, 5.

⁴Construction Sector Council, *The State of Women . . .*, 6.

targets.⁵ The issue of retention goes beyond the scope of this paper, though it is worth noting that other departmental initiatives including the General Safety Program, Operation HONOUR, and the Journey have, or likely will, address many of the factors cited for a lack of retention.⁶ This paper will focus on barriers affecting the lack of supply of new female entrants with the assumption that increased numbers in recruiting will equate to increased proportional representation. The CE trades were selected for investigation due to their small numerical size, technical skills requirement, and extremely low female representation in certain disciplines.⁷ The CE trades are similarly an important facet of the CAF as they provide the infrastructure management and maintenance Force Sustainment capability activities for the Royal Canadian Air Force (RCAF) in expeditionary theatres of operations.⁸ This capability is managed and maintained within the RCAF as a vital component of its doctrinal Sustainment function,⁹ and provides general support to the CAF as a whole.

3. Civilian recruiting efforts and best practices utilised to overcome known barriers to women in the construction field were considered for adoption within the current revamping of CAF recruiting operations.¹⁰ In order to effectively compare civilian recruiting practices, civilian and military occupational demographics must be understood in like terms. Therefore, for the purposes of this paper, the CE trades will be divided into two categories to mirror their civilian

⁵Department of National Defence, *Strong, Secure, Engaged* . . . , 12; Department of National Defence, “Joint CDS/DM Directive: OPERATION GENERATION,” 28 May 2018, 9-10.

⁶Construction Sector Council, *The State of Women* . . . , 6. The complete list of recommendations by tradeswomen and industry included: “workplace safety; workplace respect and family-friendly policies; stronger leadership employers and management; good hiring and HR practices to assure that women are not hired on the basis of gender only; careful education of all employees in new policies and practices; and, monitoring to ensure that policies make a meaningful difference”.

⁷Brandon Gesner, *Const Engr Occ Health Mtg* (PowerPoint presentation, Annual Military Occupational Review, Ottawa, ON, January 18, 2018); Louis Myre, *CE Trades Occ Health Mtg* (PowerPoint presentation, Annual Military Occupational Review, Ottawa, ON, January 18, 2018).

⁸Department of National Defence, B-GA-402-003/FP-001, *Royal Canadian Air Force Doctrine: Force Sustainment* (Ottawa: National Defence, 2017), 3-10 - 3-11.

⁹Department of National Defence, B-GA-400-000/FP-001, *Royal Canadian Air Force Doctrine*. (Ottawa: National Defence, 2016), 19.

¹⁰Department of National Defence, . . . *OPERATION GENERATION*, 10-12.

counterparts: construction management comprised of the Construction Engineer and Construction Engineer Superintendent occupations, and construction trades comprised of the remaining seven CE technician occupations. The Fire Fighter occupation has been excluded as it directly relates to non-construction civilian occupations.

DISCUSSION

Civilian versus Military Market Comparison

4. The civilian construction sector within Canada, like the CAF, faces an issue of proportional gender representation. The general civilian model for the development of tradespeople is that of the apprenticeship, which combines in-class technical training with practical work experience supervised by qualified journeypersons.¹¹ The CAF has also incorporated the apprenticeship model for the construction trades with in-class Qualification Level (QL) training combined with on-the-job training at RCAF, Canadian Army (CA), and Real Property Operations Group (RP Ops Gp) engineering units.¹²

5. BuildForce Canada, the successor to the CSC, remarked in its 2018 report that “while women make up about 12 percent of construction employment, their share of on-site occupations (skilled trades such as carpenters, bricklayers, boilermakers, etc.) employment is only about 4 percent”.¹³ As previously stated, certain CE trades suffer from extremely low female representation; the Refrigeration and Mechanical Technician occupation did not have a single

¹¹Industry Training Authority, “Apprenticeship Basics.,” accessed 9 October 2018, <http://www.itabc.ca/about-apprentices/apprenticeship-basics>.

¹² Department of National Defence, *Air Force Training and Education Management System: On-Job Performance Record MOSID 00305 Water, Fuels and Environment Technician* (Winnipeg: RCAF,)

¹³Buildforce, “Representation of Indigenous Canadians and Women in Canada’s Construction and Maintenance Workforce,” last modified 19 September 2018, http://www.buildforce.ca/en/system/files/products/Indigenous_Canadians_Women_in_Canadas_Construction_Workforce.pdf

female member amongst its ranks at the time of the 2017 Annual Military Occupation Review.¹⁴ While both the construction management and construction trade categories, at 11% and 6.1% respectively,¹⁵ are still far below the desired end state of 25% both are above their civilian counterparts (6.5% and 4%, respectively).¹⁶ Similar to the civilian workforce, there are certain outlier occupations that skew the average numbers: construction engineer officers maintain an average of 16% female representation, and the water, fuels, and environmental (WFE) technicians at 29%.¹⁷ It should be noted that when the WFE technicians are removed from the data set, the proportion of women in the remainder of the construction trades category falls to 2.6%,¹⁸ very near, but below the national 2006 civilian average.¹⁹

6. Despite the unique challenges of attracting women to the military, the CAF has, to this point, managed to match the results of its civilian counterparts. The two markets are nearly identical and are facing the same issues, albeit each with its own strengths and weaknesses. Moving forward, two opportunities, or potential threats, present themselves as the Canadian civilian market shifts its focus towards overcoming the barriers impeding women's participation. First, the CAF can either follow along the same shifts and trends, which have a head start compared to the rollout of Op GENERATION, or expend time and resources to develop its own way forward from naught. Second, the CAF can choose to partner with industry in an effort to boost the overall number of women interested in and joining the construction sector, perhaps by leveraging unique aspects of military life to attract recruits; or it can opt to directly compete

¹⁴Louis Myre, *CE Trades Occ Health Mtg . . .*

¹⁵Brandon Gesner, *Const Engr Occ Health Mtg . . .*; Louis Myre, *CE Trades Occ Health Mtg . . .*

¹⁶Buildforce, *Representation of Indigenous . . .*, 10; Construction Sector Council, *The State of Women . . .*, 15, 17.

¹⁷Brandon Gesner, *Const Engr Occ Health Mtg . . .*; Louis Myre, *CE Trades Occ Health Mtg . . .*

¹⁸Louis Myre, *CE Trades Occ Health Mtg . . .*

¹⁹Construction Sector Council, *The State of Women . . .*, 15.

against the civilian market, which is a thousand times its size²⁰ and is anticipating 255,000 retirements within the decade with a predicted shortfall of 7,200 replacements; the bulk of which in the immediate future.²¹ Within its follow-up engagement strategy to its State of Women in Construction in Canada study, the CSC, now BuildForce Canada, notes that:

The magnitude of change required to increase the participation of women in the construction industry can only happen if all stakeholders work together. Collaboration and partnership at the national/provincial/territorial/regional [sic] level will help to avoid duplication and ensure that resources are maximized, and that the objectives of increasing the participation of women in the construction industry are achieved.²²

Thus the opportunity and mechanism already exist to grant access to the larger civilian partnership network.

Barriers

7. Analysis of the various factors affecting the lack of supply of new female entrants revealed that they could be grouped into two broad areas: a lack of information regarding the construction sector, and a lack of interest to join the construction sector. Both areas are susceptible to external influences, which will ultimately impact upon career path decision making.

²⁰Statistics Canada “Census Profile, 2016 Census - Canada [Country] and Canada [Country],” last modified 24 April 2018. <https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/prof/details/Page.cfm?Lang=E&Geo1=PR&Code1=01&Geo2=&Code2=&Data=Count&SearchText=Canada&SearchType=Begins&SearchPR=01&B1=All&GeoLevel=PR&GeoCode=01>.

²¹BuildForce Canada, “Construction and Maintenance Looking Forward National Summary 2018-2027 Key Highlights,” last modified 29 January 2018, http://www.buildforce.ca/en/system/files/products/2018_National_Summary_Constr_Maint_Looking_Forward.pdf, 4-5.

²²Construction Sector Council, “Women in Construction Engagement Strategy,” last modified 19 July 2010, http://www.buildforce.ca/en/system/files/products/Women_in_Construction_Engagement_Strategy_0.pdf, 6.

Lack of Information

8. The lack of information regarding construction-sector career options, including apprenticeship funding options, lifestyle, and wages, is detrimental to attracting entrants.²³

Career counsellors are primary sources of information for vocational options, however, studies have shown that counsellors are among those lacking information regarding the construction sector.²⁴ Students cannot be expected to choose a specific career path if they and their primary influencers do not the facts about it. Outreach is key to overcoming the information deficit. Outcome evaluations of an apprenticeship and skilled trade’s awareness marketing campaign conducted by the Canadian Apprenticeship Forum and Skills/Compétences Canada indicated that 73% of youth increased their knowledge regarding skilled trades.²⁵ The Forum further promoted the importance of speaking to young women in high school, ensuring that recruitment committees are representative of the organisation’s diversity values.²⁶ Though it also stipulated that “men are important allies in the efforts to promote gender diversity in the workplace”²⁷ and therefore should also continue to be a part of the recruiting effort, both as recruiters and entrants.

9. For the CAF, within the messaging constraints in Op GENERATION,²⁸ proactive speaking engagements should continue to be sought. Additional exposure opportunities such as sponsoring pre-apprenticeship high school co-op students should also be pursued. Female apprentices cited the co-op program as one of the frequently received prior-training programmes.²⁹ Enrolling high school co-op students into the CAF in order to complete work

²³Construction Sector Council, *The State of Women* . . . , 65-66.

²⁴*Ibid.*, 66.

²⁵*Ibid.*

²⁶Canadian Apprenticeship Forum, “The Competitive Advantage: A Business Case for Hiring Women in the Skilled Trades and Technical Professions,” last modified 28 July 2015, <https://www.swc-cfc.gc.ca/rc-cr/bc-cb/business-case-en.pdf>, 14.

²⁷*Ibid.*, 15.

²⁸Department of National Defence, . . . *OPERATION GENERATION*, 9.

²⁹Construction Sector Council, *The State of Women* . . . , 29.

placement may be difficult, though possible within its current reserve force structure. The projected overhaul of the entire force structure as part of the Journey may provide an opportunity to better distinguish these individuals as a new form of part-time members.³⁰ In either case, a secondary solution of employing those in a co-op as Department of National Defence (DND) student employees working in close proximity with uniformed CAF members already exists. The Federal Student Work Experience Program,³¹ with a history of supporting post-secondary co-op programs,³² could be used to deliver pre-apprenticeship exposure to the construction sector, enabling graduates to make more informed decisions regarding career paths. RP Ops Gp would be the natural location to employ the bulk of the students as it is not a primary force generator and maintains an existing workforce of qualified journeypersons at numerous sites across the country.

Lack of Interest

10. A lack of interest amongst most high school students towards careers in the construction trades is well documented.³³ Given that “[a]pprenticeships and construction jobs are widely perceived as ‘dirty,’ ‘difficult’ and low-status”,³⁴ any marketing aimed at this demographic must compete directly with well-entrenched college and university recruitment.³⁵ Employment in the skilled trades is often the second or third career option for many, with approximately 75% of female apprentices commencing five or more years after high school and more than half having

³⁰Senate. Subcommittee on Veterans Affairs, *Evidence*, Wednesday, 12 April 2017.

³¹Canada, “Federal Student Work Experience Program,” last modified 11 October 2018, <https://www.canada.ca/en/public-service-commission/services/staffing-assessment-tools-resources/human-resources-specialists-hiring-managers/recruitment-options-managers/student-recruitment/federal-student-work-experience-program.html>

³²Canada, “Post-Secondary CO-OP/Internship Program,” last modified 13 May 2015, <https://www.canada.ca/en/public-service-commission/services/staffing-assessment-tools-resources/human-resources-specialists-hiring-managers/recruitment-options-managers/student-recruitment/post-secondary-coop-internship-program.html>

³³Construction Sector Council, *The State of Women . . .*, 64.

³⁴*Ibid.*, 65.

³⁵*Ibid.*, 63.

attended some level of post-secondary education.³⁶ These statistics are significant as they clearly identify this segment of the population as a key recruiting pool.

11. When considering both pools, the CAF could reflect on its own successes at garnering interest. There has been much speculation as to why the WFE Technician occupation has been so successful in recruiting women. One theory is that the presence of a female WFE technician in the recruiting video serves as a strong role model.³⁷ Research in both the United States and the United Kingdom supports that role models are fundamental to fostering interest, especially in non-traditional sectors including engineering and the military.³⁸

12. Status of Women Canada also proposes that “[t]he process of attracting women to a sector needs to be approached differently in emphasizing [sic] the meaningful social relevance of the non-traditional career”.³⁹ Therefore, the name of the occupation itself, water, fuels, and environment technician, and its perceived role, actually target social relevance, with water and the environment as key topics in today’s society. If this is the case, the CAF could look to the naming, image, and key messaging of the other construction trades with a view of their social relevance. Such analysis could be nested within the mandated Gender Based Analysis Plus

³⁶*Ibid.*, 4.

³⁷Department of National Defence, “Water, Fuels, Environmental Technician,” last modified 27 July 2018, <https://www.canada.ca/en/department-national-defence/services/caf-jobs/career-options/fields-work/technicians/water-fuels-environmental-tech.html>

³⁸Catherine Hill, Christianne Corbett, Adresse St. Rose, “Why So Few?: Women in Science, Technology, Engineering, and Mathematics,” last modified 30 December 2013, <https://www.aauw.org/files/2013/02/Why-So-Few-Women-in-Science-Technology-Engineering-and-Mathematics.pdf>, 42; Douglas Yeung et al., “Recruiting Policies and Practices for Women in the Military: Views from the Field,” last modified 20 June 2017, https://www.rand.org/content/dam/rand/pubs/research_reports/RR1500/RR1538/RAND_RR1538.pdf, 29; Randstad Engineering. “How Women Can Lead the Way in Engineering.” Last modified 26 April 2018. https://www.randstad.co.uk/job-seeker/areas-of-expertise/construction-property/digital-cpe_women-in-engineering_a4-8pages-4.pdf, 2.

³⁹Status of Women Canada, “Building Canada’s Innovation Economy: Best Practices for Supporting Women in Non-Traditional Sectors,” last modified 20 June 2014, <https://www.swc-cfc.gc.ca/initiatives/wesp-sepf/ntes-en.html>, 2.

(GBA+) framework.⁴⁰ One example could be the electrical generating systems technicians. With ongoing efforts to adopt alternate or greener technologies for power generation,⁴¹ perhaps it is also time to review the occupation name.

13. The CAF could also take more proactive measures in the interim by employing construction engineering flights, and possibly area construction troops, as part of a concerted outreach programme to conduct highly visible infrastructure projects for school boards and local communities. This effort would be aimed primarily at the issue of lack of interest in the construction trades, and secondarily, the lack of information about the trades and the CAF in general. Use of uniformed personnel within the public's view may have better results for the CAF than if conducted by a similar civilian organisation, piquing curiosity and interest given the unexpected nature of such an event.

14. Conducted at the flight level as deliberate tasks, these public projects would also have the benefit of providing project management and quality assurance opportunities for the flight commanders and warrant officers away from normal training sites, skills maintenance for the various technicians, and planning and logistics opportunities for mission support squadrons. Project selection could leverage an adapted version of the current Assistant Deputy Minister (Infrastructure and Environment) priority scoring sheets, which focus on targeted attraction market, community benefit, scale, and lack of required ongoing maintenance and/or liability. The projects would need to be heavily scrutinised in order to avoid possible legal ramifications of competing with, or the perception of competing with, local industry, as well as any liability issues concerning general public use of CAF work. The Op GENERATION directive could be

⁴⁰Department of National Defence, "CDS Directive for integrating UNSCR 1325 and related Resolutions into CAF Planning and Operations," last modified 22 February 2016. <http://collaboration-admpa.forces.mil.ca/sites/DI/Organizations/sjs/cds-dir-unscr-1325-signed-2016.pdf>.

⁴¹John Michaud, email message to author, 26 September 2017.

leveraged as the authority to task the flights and troops, as the RCAF and CA are tasked to support its activities.⁴² Given the nature of the work, both Op GENERATION and force generation training financial coding could theoretically be used to fund the projects.

CONCLUSION

15. The construction sector is a competitive market. With the forecasted shortages in skilled labour, the civilian industry is turning towards non-traditional demographics to fill the void. In doing so, it is not only meeting its workforce quantity needs but also strengthening the quality of its workforce and its competitive edge through diversity. The proposals highlighted throughout this paper provide the CAF with the opportunity to similarly move forward in strengthening itself through diversity as it meets its Government-mandated objectives, with industry as a supportive partner, or it can opt to develop its own solution and invariably compete with industry. The Op GENERATION framework provides the flexibility to do either.

RECOMMENDATIONS

16. The following recommendations would allow DND and the CAF to more proactively target, attract, and recruit more women into the construction engineering trades:

- a. BuildForce Canada and its civilian network should be engaged as a strategic partner to increase the overall number of female construction sector entrants.
- b. Career counsellors and educational administration should be directly engaged by strong CAF role models to provide factual representations of military and the skilled trades and dispel any misconceptions.
- c. High school and post-secondary co-op programmes should be sponsored as a means of pre-apprenticeship exposure to the skilled trades in general, and the CAF in particular.

⁴²Department of National Defence, . . . *OPERATION GENERATION*, 21.

- d. Defence Research and Development Canada should be engaged to survey WFE Technician applicants and/or QL 3 candidates as to their reasoning for selecting the occupation.
- e. Social relevance of imagery and messaging of the CE trades should be conducted and included within the GBA+ framework.
- f. Opportunities should be sought to showcase the talent of skilled CAF tradespeople in public through projects, in order to increase interest in the skilled trades in general, and the CAF in particular.

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