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TRAINING TECHNICIANS TO MEET THE ARMY'S FUTURE EQUIPMENT SUPPORT REQUIREMENTS

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AIM

1. The aim of this service paper is to examine Royal Canadian Electrical and Mechanical Engineering (RCEME) Development Period (DP) 1 training with a view to assess its efficiency and effectiveness in meeting the Canadian Army's (CA) equipment support requirements of today and those of the future.

INTRODUCTION

2. This service paper will examine the existing RCEME DP 1 training concept as it relates to the current and future operating environment. Several leaders within the RCEME Corps and the CA have questioned the amount of time it takes to produce a fully qualified technician, and in some cases they even disagree over the very meaning of being 'fully qualified'. This has led to some confusion regarding the actual health of the RCEME trades and caused debate about the relevancy and efficiency of training. As a result the On-the-Job Training (OJT) construct has come under considerable scrutiny.

3. From the CA's perspective, the current OJT concept has advantages and disadvantages. On one hand, it delivers a well-rounded and highly competent 'soldier-technician' who is capable of supporting the full range of equipment across the full spectrum of operations. This breadth and depth of training, however, comes at a cost: *time.* This raises the following key questions. Is it possible that RCEME technicians are being over trained? Is the training appropriately divided between technical and soldier skills? And what does the Army of Tomorrow (AoT) require of its RCEME technicians?

4. It can take upwards of 5 years to develop a RCEME technician to the journeyman level, with the OJT portion alone taking over 2 years.[1] Given this length of time, it is understandable that OJT in particular has been a focus over the last several years.

BACKGROUND

5. RCEME DP 1 training for all trades (Weapons, Vehicle, Materials, Electronic-Optronic) consists of two parts. The first part of training is a residency phase delivered by the Royal Canadian Electrical and Mechanical Engineering School (RCEMES) located at Canadian Forces Bases Borden. Depending on the trade, this phase can last anywhere from 1 to 2 years.[2] Upon successfully completing the residency course, which is mostly theoretical, students are posted to one of four OJT Centers to commence the 'hands-on' portion of training, sometimes called DP1 Mod 2.

6. The OJT concept enables the RCEME students to apply their knowledge and practice their skills in a controlled and practical learning environment.[3] Technical proficiency will be gained by performing prescribed repair tasks (Performance Objectives (POs)) on actual equipment or on training aids. Once students successfully pass all of their POs, they are deemed capable of working independently and correctly under normal supervision. At this point, they are posted into an established position becoming a productive member of a unit while they await DP2 training. In this sense, OJT is a force generator of qualified RCEME technicians for the Army (and in fact the Canadian Armed Forces as a whole).

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[1] RCEME School Standards Officer. "RCEME Individual Training Working Group." *Presentation.* November 2015
[2] 1180-0870 (Stds O). "OJT Centre Coord Conference." *Record of Discussions.* December 2015.
[3] CTC HQ. "On The Job Centres Royal Canadian Electrical Mechanical Engineers." *CAO 24-12*

DISCUSSION

7. This discussion will start by examining the current state of OJT training, with a particular focus on regional management issues and the command and control (C2) framework. From there, it will discuss the challenges in achieving the appropriate training balance in terms of technical skills versus soldier skills, and what this priority ought to be moving forward. An overview of the future operating environment (FOE) and new technologies will provide the context to the discussion in order to examine if the current OJT model is efficient and effective in meeting the CA's needs now and in the future.

Current Situation

8. As discussed above, it can take upwards of 5 years to train a RCEME technician to the DP 2 level. According to the Qualification Standards (QS), OJT is mandated to take 440 training days, which equates to approximately 24 month in real time.[4] This benchmark of 24 months gained significant visibility when it became one of 10 performance metrics as part of the Canadian Army Equipment Readiness Directive dashboard.[5] In 2014, Division Commanders began reporting individual cases of students exceeding the 24 month window.

9. The OJT framework follows a 'centralized control, decentralized execution' model involving various stakeholders. Firstly, the Combat Training Centre (CTC) Headquarters (HQ) manages the overarching training documentation, which includes the QS and the Teaching Plan (TP). RCEMES provides the training oversight, monitors standards and provides additional assistance the OJT centers as required.[6] This includes activities such as Staff Assistance Visits

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[4] Director RCEME Presentation. "Exercise BLUEBELL 2015 ." *Evolving with the Army - RCEME 2021.* May 2015
[5] 3350-1 (CA G4 Ops). "Annex B Canadian Army Equipment Readiness Directive FY 14-15 ." *Measures of Performance* . May 201
[6] CTC HQ. "On The Job Centres Royal Canadian Electrical Mechanical Engineers." *CAO 24-12. 3.*

(SAVs) and periodic Working Groups (WG). The OJT centres are responsible for delivering the training in accordance with the respective QS/TP and standards.

10. CTC and RCEMES have been the main beneficiaries of the creation of the OJT concept in terms of cost savings. The resources, funding and PYs needed to operate the OJT centers came disproportionately from the respective Divisions. The publication of COA 24-12 highlights this oversight by directing that RCEMES provide $50K per OJT center per year.[7] Until FY 15/16, the cost to operate each OJT has been almost completely absorbed by the respective Divisions. As a result, it is doubtful if there would be an appetite by CTC HQ to grow the length and scope of in-house training as this could be seen as a step backward.

11. With the exception of 4 Canadian Division, the OJT centers are considered a sub-sub unit within the Maintenance Company of a Brigade CSS Unit. This command relationship creates unique challenges and opportunities. Despite ongoing efforts to standardize the four OJTs centres, regional differences such as equipment fleets, training tempo, unit priorities, organizational structures and RCEME manning issues have created disparities in the way each OJT centre is managed and prioritized. The result is that students graduate from DP 1 Mod 2 with different levels of experience, technical skills and, in many cases exceeding the 24 months training target.

12. As with any large group of young soldiers, there are often the associated administrative and disciplinary issues. The current C2 relationship provides the necessary structure and resources to deal with these issues without placing an unnecessary burden on the training system (i.e. claims, PERs, supervisions, career management, administrative measures, summary trials

[7] RCEMES Chief Instructor . "RCEME School OJT Funding Risk assessement FY 16/17." December 2015

etc). This integration also enables the students to be immersed in a fully productive workshop setting and exposed to the Army culture. As will be discussed later, this appears to be an important developmental period from which to build the human dimensions necessary to effectively operate in the Army of Tomorrow(AoT).

13. This full integration can also be seen as a disadvantage, and some see it as a training distraction. The realities of unit life introduce numerous inefficiencies within OJT: unit parades, field deployments, sports days and short leave are only but a few distractions that can quickly take away from training time. Although these unit events and activities have benefits not directly related to technical training, some argue that they are not worth the inefficiencies and delays in qualifying trained RCEME technicians.

14. The RCEME Corps prides itself on delivering the very best 'Soldier-Technician' to the CA. Mottos such as 'Soldier first, Technician always", "By Skill and by Fighting" and "RCEME Seals" exemplify the Corps' perspective on the importance of maintaining a warrior ethos. LEMS and CSS doctrine further emphasize the need to have a right balance. The importance of achieving this balance can be seen in the enduring RCEME tenets such as "repair as far forward as possible" and "all LEMS personnel must be trained to fight in their own defence."[8] ADO doctrine further reinforces this idea with forces being dispersed in time, distance and purpose.

15. New terminology, such as Combat Logistic Patrols (CLP) and Combat Recovery have become part of the CSS lexicon, and lessons learned report from Afghanistan note the importance of maintaining these skills sets in DP1 and DP2 training.[9] On the other hand however, Force Protection organizations have become integral to deployed CSS elements

[8] B-GL-314-002/FP-001. "Combat Service Support, Maintenance." *Maintenace in Battle Volume 2.* 76.
[9] 3333-1 (ALLC) . "Lesson Synopsis Report." *BG Ech Decentralized Integral Support.* March 2, 201

possibly mitigating the requirement to maintain more robust fighting capability. Irrespective of the future force employment structure, the RCEME Corps must mindful of achieving the correct balance between being and soldier and being a technician. The question is whether or not the RCEME community best positioned to deliver soldier training, and if so should it be at the expense of technical training?

16. *The RCEME Corps Strategic Management Plan* also recognizes the importance of both aspects of the trade, but maintains that the Corps' centre of gravity is "the relevance of RCEME Expertise."[10] Understanding that issue is divisive with the Maintenance community, the logic follows that technical expertise must have primacy over soldier skills, and that the CA will be able to provide these necessary skills at the appropriate time and place, such as during pre-deployment training or as part of unit field exercises. The AoT requires a technician that is first and foremost able to handle the myriad of technical challenges and to support the next generation of equipment.

17. When it comes to rationalizing training, there has been a strong opposition from the Non-Commissioned-Members (NCMs) of the RCEME Corps. The Corps has traditionally been resistant to change, as was seen when it transitioned from a platform based training approach to a systems based training approach over the last decade. As a result of this significant change in training philosophy, some now assert that DP1 and DP2 training has been reduced to the bare minimum. While the argument is anecdotal, RCEME NCMs are outspoken on this topic, fearing that that the junior technicians will soon lack the required technical skills *and* soldier skills needed to support the full range of equipment in a domestic, or deployed setting.

[10] RCEME Corps Staff. "RCEME Strategic Management Plan." *Horsepower for the 21st century.* 2014. 8.

Future Trends

18. RCEME training requirements must be driven by future land warfare trends, advancements in technologies and new equipment. There are numerous doctrinal publications that serve as a framework for anticipating what the future entails. *Land Operation 2021*: *Adaptive Dispersed Operations* serves as a useful starting point from which to identify future trends, particularly as is relates to the Adaptive Dispersed Operations (ADO) concept. ADO has important implications to the RCEME Corps and for CSS in general. A greater reliance on technology in the hands of soldiers, combined with increased use of networks and dispersed forces will make supporting future land operations extremely challenging.[11]

19. The proliferation of technology on the battle field of tomorrow will require a technician that is more adaptable and flexible than ever. This implies a balance between cognitive abilities, practical skills and technical experience, along with some ability to fight and survive on the battle field. This balance of skills and abilities points strongly to the seven human dimensions,[12] which will become even more important in the FOE.

20. *Waypoint 2018* is the most recent publication dealing with the AoT. It outlines and reinforces the path for achieving many of the concepts described in *Land Operation 2021* without being overly revolutionary. Despite the rapid changes in technology, the lines of effort and tenets remain relevant and enduring, and the CA vision is clear: "The Army will be well-led, well-trained, well-equipped, and properly sustained to succeed at ADO across the full spectrum

[11] National Defence. "Land Operations 2012: Adaptive Dispersed Operations." *The Force Employment Concept for Canada's Army of Tomorrow.* 2007.
[12] National Defence "Waypoint 2108.". . . . 24. (1.Soldier attributes and competencies, 2. professionalism and ethics, 3. Army culture, 4, Moral cohesion and trust, 5. Cognitive Dominance, 6. Decision Making, 7. Stress strain and resilienc)

of operations."[13] Success within an ADO environment relies on numerous factors, many of which are particularly relevant to the RCEME Corps and the LEMS community.

21. Perhaps the most significant factor within the FOE will be the complete integration of commanders, soldiers, weapons, sensors and support systems.[14] This network enabled environment will require new skill sets and close collaboration with other technical communities, such as information technology and software specialists. This 'system of systems' will affect each trade RCEME differently and therefore an all encompassing training solution might not be the best way to meet these future challenges.

22. One aspect of the networked enabled environment that may simplify a technicians' role is the concept of the Family of Land Combat Systems (FLCS). This trend involves maximizing the number of equipment platforms that share common attributes, such as spare parts for example. This concept would ensure that basic equipment platforms are modular and easily modifiable. The implications for the LEMS community and the RCEME Corps would be significant; however, it remains to be seen if the realities of government procurement would ever truly enable this concept. Therefore, the RCEME Corps should be cautious about making any drastic changes to training based on this idea alone.

23. Doctrine related to the future operating environment is useful in providing general direction for force capability developers. It does not, however, provide any concrete details that would fundamentally alter the way RCEME conducts training at the DP1 level. The overarching theme to keep in mind among the various publications is the importance of flexibility and adaptability, which have implications for both the soldier and the institution.

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[13] National Defence "Waypoint 2108." *The Canadian Army Advancing Toward Land Operations 2021.* Army Publishing Office, Kingtson, Ontario, 2015. 1

[14] National Defence. "Land Operations 2022 . . . .5.

CONCLUSION

24. The OJT centre concept is finally institutionalized after a decade of hard work. The processes, the PYs and infrastructure are mostly in place, and with some minor adjustments, this training concept will be able to effectively and efficiently deliver the type of technicians the CA can depend on now and in the future. Any significant change to this concept risks undoing the progress made over that last decade, and in particular some of the key technical lessons learned from Afghanistan.

25. The discussion surrounding the future operating environment as it relates to RCEME DP1 training has generated several important considerations moving forward. There is a need for greater integration between capability development and training development so that changes to training documentation are purposeful and timely. There is an equally important need for increased oversight and involvement by both CTC HQ and RCEMES in order to standardize and achieve training efficiencies across all Divisions.

26. In terms of minor adjustments to the current construct, the following points are offered for additional consideration:

a. What incentives can be used encourage a RCEME student to want to complete OJT more quickly. As it stands now, OJT progress is not considered part of the pay or promotion criteria.

b. What type of organization is best suited to deliver an OJT centre that is focused on technical training? Should the command and control continue to reside within a Bde CSS Unit or would it be best situated within a CDSG or even held at the Division level?

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