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TACTICAL COMPETENCY AND THE MEDIUM-WEIGHT FORCE

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TACTICAL COMPETENCY AND THE MEDIUM-WEIGHT FORCE

AIM

1. This paper aims to discuss how the Canadian Army (CA), has lost its competency in the tactical combat employment of medium-weight forces. It will be guided by the premise that the CA already possesses the resources required to operate as a medium-weight force. However, the current structure, organization, maintenance strains, extraordinary institutional tasks, and recent operational employment have created gaps in tactical knowledge. To analyze objectively and provide a feasible and realistic recommendation, the current fleet of land combat vehicles will be examined. This will include the addition of the Light Armoured Vehicle Reconnaissance Surveillance System (LRSS) project, which is scheduled to be at Full Operational Capability with the Royal Canadian Armoured Corps (RCAC) by winter 2021.¹ This paper will not look at the administrative or logistical requirements needed to support the recommendations. These include a reorganization of Person Years (PY), supply implications, infrastructure modifications, and financial reallocations. Moreover, employment considerations of the Army Reserve are not elaborated upon, however, they should be integrated into the optional employment model.

INTRODUCTION

2. The recent CA publication, *Advancing with Purpose: The Canadian Army Modernization Strategy*, proclaims that the CA “is an increasingly network-enabled,

¹ The current timeline for the delivery of the LRSS is unrealistic due to delays. The Land Defence Procurement Projects webpage for the LRSS has not been updated since 18 April 2019. Department of National Defence, “Light Armoured Vehicle Reconnaissance Surveillance System (LRSS),” April 18, 2019, <https://www.canada.ca/en/department-national-defence/services/procurement/lightly-armoured-vehicle-reconnaissance.html>.

medium land force augmented by light and heavy forces.”² There is no indication that this mentality will change, at minimum, for the next decade. Moreover, the eventual publication of *Force 2025* by the Directorate of Land Force Development will look at various ways to validate current CA structures and balance the force as a whole.³ Therefore, the CA must embrace structural and cultural change to remain operationally relevant.

3. The focus of this paper will be on the current Type ‘A’ vehicle disposition, the reoccurring maintenance constraints, the impacts of the restructuring of the RCAC, and alternative options the CA could explore to improve interoperability between the two manoeuvre arms: the armour and the infantry.

DISCUSSION

The Canadian Army Combat Vehicle Fleet

4. The current fleet of land combat vehicles is what defines the CA as being a medium-weight force. The publication *Brigade Tactics* defines a medium force as a “conventional force that consists predominantly of armoured fighting vehicles [AFV] and that prioritizes strategic and operational mobility over armour protection.”⁴ To determine the optimal employment model of a medium-weight capability, the current fleet must be

² Canada and Department of National Defence, “Advancing with Purpose: The Canadian Army Modernization Strategy,” Canadian Army (Ottawa: DND: Department of National Defence, 2020), 17.

³ “Force 2025” will assist the Canadian Army to adapt to the evolving pan-domain environment, advancements in technology, and doctrine. It will focus on a realignment of Canadian Army structures and organizations to help procure requisite equipment and resources.

⁴ Canada and Department of National Defence, “B-GL-321-003/FP-001 Army Brigade Tactics,” Canadian Army (Ottawa: DND, January 1, 2017), 1-12.

discussed. Of note, only vehicles belonging to the Fighting-Echelon (F-Ech) will be analyzed.

5. The primary AFV the CA utilizes is the Light Armoured Vehicle 6.0 (LAV 6) Family of Vehicles (FoV). Although the majority of the fleet is employed in the mechanized infantry battalions, there are a limited number of different variants in the artillery and engineer regiments. Of note, the RCAC has a dozen in its line-regiments and a few at the Royal Canadian Armoured Corps School, but they will be augmented by the LRSS in the coming years. However, this particular platform intends to serve in a command and reconnaissance role, and not necessarily in a Direct Fire Support (DFS) role to the mechanized infantry within a combined arms team. Moreover, it is anticipated that the complete divestment of the current Coyote reconnaissance vehicle fleet will not occur until the LRSS is at an Initial Operational Capacity, at minimum.

6. The Leopard 2 Main Battle Tank (Leo 2 MBT) is the heavy-armoured vehicle the CA employs to augment the medium-weight capability of the LAV 6 Command Post and Infantry Section Carrier variants in the doctrinal Combat Team. Geographical location, limited numbers, and the immense maintenance requirements of MBTs are some of the key reasons for the loss of medium-weight force tactics in the CA.⁵

⁵ Major R. A. Cooper, "Heavy Metal: A True Armour Capability for the Canadian Armed Forces," Canadian Forces College (Toronto, Canada: Canadian Forces College, 2018), 10.

7. The Tactical Armoured Patrol Vehicle (TAPV) was procured to replace both the aging Coyote fleet and the divested RG-31 Nyala, as well as complement the Light Utility Vehicle Wheeled “G-Wagon”. However, the TAPV is not a DFS vehicle, nor does it have the same mobility as the LAV 6 FoV or the Leo 2 MBT. Its design is more commensurate with tasks associated with Counter-Insurgency operations and Rear Area Security tasks rather than conventional offensive and defensive operations. Although its tactical employment was considered in the optimal employment model, its use is extremely limited. Therefore, only DFS vehicles will be included in the recommendation.

8. The Tracked Light Armoured Vehicle is essential to the A1 and A2 Echelons of a tank squadron and other combat arms units due to its off-road mobility. Although it could be employed in an offensive role, its current primary use is support to the F-Ech. Therefore, it will not be included in the employment model recommendation.

Vehicle Disposition

9. The current Type ‘A’ vehicle disposition is found in Table 1.⁶

⁶ “AEFC” [Army Equipment Fielding Centre] is the primary location of holdings of operational stock of equipment and vehicles.

“Outside Agency” includes OEM repair and distribution centres such as General Dynamics in London, Ontario.

“Other” includes Defence Research and Development Canada (DRDC), the Material Branch, and the Supply and Transport Branch of the CAF.

Table 1 – Type ‘A’ Vehicle Holding Summary

Vehicle Platform	2 Cdn Div	3 Cdn Div	4 Cdn Div	5 Cdn Div	CADTC	AEFC	Outside Agency	Other	Grand Total
Leopard 2A6M		8	5		3	3	1		20
Leopard 2A4		20	12		10				42
Leopard 2A4, OPS		11	4		3	1	1		20
Total	0	39	21	0	16	4	2	0	82
LAV 6.0 ISC	62	63	62	9	28	21	17	16	278
LAV 6.0 CP	25	25	27	5	21	5	1	11	120
LAV 6.0 ENG	11	11	11	10			1		44
LAV 6.0 OPV	11	10	11		12		1	2	47
LAV 6.0 ISC/CP	18	22	17		3			1	61
LAV 6.0 ASCC						1	3	1	5
Total	127	131	128	24	64	27	23	31	555
LRSS*	18	9	18		14			7	66
Total	18	9	18		14	0	0	7	66
Coyote Command	5		2		10				17
Coyote Mast	6	3	3		6			2	20
Coyote Remote	9	6	17		15			3	50
Total	20	9	22	0	31	0	0	5	87
TAPV GU	70	70	74	47	15			31	307
TAPV RECCE	50	33	52		51			7	193
Total	120	103	126	47	66	0	0	38	500

*Distribution of LRSS has not yet occurred.

Source: Author & Canadian Army G4, “Vehicle Holding Summary” November 3, 2020.

10. Of particular significance is the total number of vehicles committed to operational “war” stock at the Army Equipment Fielding Centre (AEFC) in Montreal. While some of these vehicles are required for *Contingency Plan* (CONPLAN) JUPITER and the North Atlantic Treaty Organization (NATO) Response Force (NRF), a percentage of their holdings could be better served in the line-units to fill the deficiencies of serviceable vehicles. Both the RCAC and the Royal Canadian Infantry Corps are lacking in DFS Type ‘A’ vehicle availability at the subunit level to effectively conduct full-strength training. With the current vehicle maintenance constraints, the CA cannot maintain a reserve of vehicles and be expected to support both institutional and operational requirements.⁷

⁷ Major Matthew D. C. Johns, “Leopards Without Claws: The Future of Tanks in the Canadian Army,” Canadian Forces College (Toronto, Canada: Canadian Forces College, October 15, 2018), 3.

11. The Coyote is in the process of being divested and replaced by the LRSS. However, as a result of Original Equipment Manufacturer (OEM) delays in receiving the LRSS,⁸ the Coyote will have to continue to serve as both a reconnaissance and a DFS platform in a cavalry role for an undetermined time.⁹ When first employed, the total number of Coyotes across the CA was 141, but they have since decreased to 87 due to end-of-life divestment. LRSS replacement numbers total 66, which is a difference of 75 platforms that are incapable of performing a DFS role. While the TAPV was intended to fill this gap, it is limited in its ability to mutually support another Type ‘A’ vehicle due to the short effective range of its main armament and its indirect fire characteristics.¹⁰

Maintenance Implications

12. Although the Vehicle Off-Road (VOR) rate for each regiment and unit will vary based on operational tempo and the capabilities of 1st and 2nd line maintenance resources, the current average VOR percentage for the Type ‘A’ land combat vehicle fleet is 59%.¹¹ This can be attributed to a variety of factors, including the impacts of COVID-19 on manning. However, the most common are a lack of spare parts resulting from accidents;

⁸ The initial LRSS project design had problems with the development of the mast. It did not meet the requirements and therefore contributed to the delay. As of November 2020, the next key LRSS milestone will be the Reliability, Availability, Maintainability, and Durability (RAMD) testing. Source: Major Sterling Scott, “The Light Armoured Vehicle Reconnaissance Surveillance System Project – An Overview”, in *LEMS Journal*, Issue 5, November 2020, 5.

⁹ Part of the restructuring of the RCAC will include an official renaming of the “non-tank” squadrons. The “Reconnaissance Squadron” is anticipated to change to “Cavalry Squadron”. Cavalry Squadron tasks will include traditional reconnaissance squadron tasks and some tank squadron tasks. Source: Col Graham and CWO Clarke, “DARMD and Corps SM Update of RCAC GOs”, *PowerPoint presentation*, November 19, 2020.

¹⁰ The TAPV 40mm AGL (indirect fire) maximum firing range is 3,000 meters and effective firing range is 1,500 meters. The LAV 6 FoV and Coyote M242 Bushmaster 25mm Chain Gun (direct fire) maximum firing range is 6,800 meters and effective range is 3,000 meters.

¹¹ CA G4 Maint, “CCA Serv (DRMIS Spreadsheet Extract),” January 20, 2021. Percentage calculated based on Leopard 2 MBT (21% serviceable), LAV 6 FoV (58% serviceable), LAV Coyote (37% serviceable), and TAPV (48% serviceable) VOR data.

complex retrofits requiring a Field Service Representative; a lack of personnel due to operations, tasks, and administrative reasons; and mandatory vehicle inspections that are developed and maintained by the Life Cycle Material Manager, on an annual, semi-annual, and quadrennial basis. In comparison, the VOR impact on the Leo 2 MBT can be attributed to many of the same factors. It is, however, typically two-times greater¹² due to individual and collective training over-use, the physical geography of training areas,¹³ limited parts, and a numerically smaller fleet (see Table 1). Many working groups, briefing notes, and service papers have been published to address the ongoing Leo 2 MBT VOR concerns, however, unless a decision is made by the CA, the lifespan of the fleet will be reduced. Ultimately, the VOR has a significant impact on realistic training in the CA. Although doctrine has not changed, realistic combined arms training seldom matches the doctrine and is often put together in an *ad hoc* manner to meet the minimum training requirements. Soldiers are, therefore, rarely exposed to the proper employment of a medium-weight force reinforced with heavy armoured capabilities, unless they are on the Road to High Readiness (RtHR) once every three years.

Operational Stock Holdings

13. Type 'A' serviceable vehicle shortages are common across the CA. The manoeuvre arm subunits seldom conduct CT with an appropriate doctrinal number of vehicles. Subunit exercises may be initially constructed around Battle Task Standards, however, they are often modified due to personnel and vehicle shortages. To mitigate, an

¹² CA G4 Maint, "CCA Serv (DRMIS Spreadsheet Extract)," January 20, 2021.

¹³ The 5th Canadian Division Support Base (Gagetown) Range and Training Area (RTA) may be large in size, but it is not ideal for the Leo 2 FoV. This is due to the hard bedrock and elevation deviations that wear more on the suspension, sprockets, road wheels, and hull of the vehicle.

option of transferring an additional two Leo MBTs and 14 LAV 6 FoV from AEFC to line-units would relieve some subunit shortages, improve interoperability training experience, and help realign the optimal employment model. Moreover, those vehicles that are operating outside the CA's scope of employment could be retrograded back to either the line-units or AEFC, if required. Acknowledging that the holding of the operational stock is to ensure the CA is capable of supporting the 90 and 30-day "notice-to-move" requirements for CONPLAN JUPITER or the NRF respectively, the risks associated are low.

Impacts of Restructuring the RCAC

14. The Combat Team is the CA's "ultimate expression of the combined arms team" and continues to be a part of the CA's "Vital Ground."¹⁴ However, as previously discussed, employment opportunities for tanks in a CT environment have been significantly hindered due to maintenance requirements. Furthermore, since the end of the combat mission in Afghanistan, the RCAC has been looking at options to ensure that the future employment of tanks in the CA is maintained while mitigating the stress of preventive and corrective maintenance. As a result, in January 2021, the RCAC proposed three courses of action (COA) to the CA that entailed a massive restructuring of vehicles and personnel of the three regular force armoured regiments.¹⁵ Regardless of the COA,

¹⁴ Canada and Department of National Defence, "Advancing with Purpose: The Canadian Army Modernization Strategy," Canadian Army (Ottawa: DND: Department of National Defence, 2020), 19.

¹⁵ Royal Canadian Armoured Corps Headquarters, "F2025 RCAC Structure Options" (Ottawa: Royal Canadian Armoured Corps, 2021).

- COA 1: Symmetrical Regiments – Each Regiment has one Tank Squadron and two Cavalry Squadrons.

- COA 2: Centralized Status Quo – C Squadron, Royal Canadian Dragoons moves from Gagetown to Wainwright.

- COA 3: Tank Regiment – The Lord Strathcona's Horse (Royal Canadians) has three Tank Squadrons, the 12e Régiment blindé du Canada and the Royal Canadian Dragoons have three Cavalry Squadrons.

there will be a significant impact on revitalizing the tactical employment of a combined arm, medium-weight force. Although the decision has yet to be made, the recommended COA is to have three symmetrical armoured regiments. Two tank squadrons, one from each the Royal Canadian Dragoons and the 12e Régiment blindé du Canada would be located in Wainwright and the third from the Lord Strathcona's Horse (Royal Canadians) in Edmonton. The remaining cavalry squadrons would be collocated with their Regimental Headquarters in Edmonton, Petawawa, and Valcartier respectively. This option, albeit the best for the RCAC to ensure tank and cavalry skills are maintained, is complicated to execute and will continue to have an impact on training opportunities for five of the six mechanized infantry battalions due to the physical distances between garrisons.¹⁶

Alternative Tank Organization

15. The current doctrinal structure of a Canadian armoured squadron is based on 19 tanks. In an ideal situation, the squadron should have 20 to ensure that each vehicle has a fire team partner for mutual supporting manoeuvre. However, due to the reasons mentioned above, rarely is a full squadron ever employed. Therefore, an alternative is to restructure the tank squadron based on 15 tanks (three troops of four tanks and three in the Squadron Headquarters). By doing so, it provides an additional heavy-armour subunit to conduct individual and collective training, improves competencies, and it provides more opportunities for interoperability with other arms. Furthermore, a fourth tank squadron would assist in ensuring a sustainable Force Generation model as part of the

¹⁶ Most significant impacts would be on the 2nd Battalion, Princess Patricia's Canadian Light Infantry (Shilo), the Royal Canadian Regiment (Petawawa and Gagetown) and the Royal 22e Régiment (Valcartier).

CA's Managed Readiness Plan. Although this is not an ideal structure, current vehicle availability cannot match Canadian doctrine. Fortunately, there is evidence that proves it could work. First, although the British model currently uses 18 tanks per squadron, it has employed 15 tanks in the past due to resource availability and cost, not unlike the current situation with the CA. Second, the Australian Army specifically refers in their doctrine to using three four-vehicle tank troops within their tank squadrons.¹⁷ Finally, the United States Army uses a 14-tank model in their heavy armour companies. If a fourth manoeuvre sub-subunit is required, either a mechanized infantry platoon or a Coyote/LRSS troop, could augment the tank squadron which would improve combined arms competency.

“Armoured-Infantry” Cavalry?

16. In World War II, the Soviets used a deliberate tactic called the *Tank Desant*, which saw dismounted infantry soldiers transported on tanks directly to their objective.¹⁸ Once at the objective, the infantry would dismount and clear the remaining enemy. Although the Soviet tactic ultimately failed because of a lack of protection for the exposed infantry, the concept of having the armoured crews carry the infantry to their objective should be examined further as an experiment to expand the tactical employment of medium-weight force. The armoured crew, as the subject matter experts in mounted warfare, would command the AFVs, whereas the infantry section, who excels in dismounted warfare, would be carried to the objective in the back of the vehicle.¹⁹ There

¹⁷ The Australian Army, “Land Warfare Doctrine 3-3-4: Employment of Armour 2016” (Australia: Commonwealth of Australia (Australian Army) 2016, November 11, 2016), 24.

¹⁸ Steven J Zaloga, “Soviet Tank Operations in the Spanish Civil War,” *The Journal of Slavic military studies* 12, 12, no. 3 (September 1, 1999), 154.

¹⁹ Tanks are not to be used. The LAV 6 is the only logical vehicle the CA currently has to conduct this type of exercise.

would be a significant movement of vehicles and PYS restructuring, however, this experiment could see a better alignment of the strengths of both trades coming together in a combined arms team.

CONCLUSION

17. A variety of reasons have had an impact on the CA's loss of competency in the tactical employment of a medium-weight force. The future restructuring of the RCAC, the high Type 'A' VOR, recent operational deployments, and extraordinary institutional tasks have hurt the CA's ability to learn, apply, and teach doctrinal combined arms operations consistently. Moreover, the fact that both Valcartier and Petawawa garrisons have not had a permanent presence of heavy-armour for many years has led to a loss of competency. Mechanized infantry and even the majority of armoured crewmen and officers only train with tanks once every three years when on the RtHR or during exercises such as MAPLE RESOLVE or COMMON GROUND II. Unless there is a fundamental change in priorities, the CA will continue to piece together an *ad hoc* combat arm grouping to meet specific requirements.

RECOMMENDATION

18. The following recommendations are options to improve interoperability and competencies between the combat arms trades, most notably the armour and infantry. Further analysis would be required to understand the impacts on the artillery and combat engineers. Regardless, the optimal employment model will be difficult to execute given the potential restructuring of the RCAC. The model below is meant to assist and possibly facilitate an improvement of combined arms competency. It is based on the principles of

Advancing with Purpose The Canadian Army Modernization Strategy and Adaptive Dispersed Operations (ADO).

Redefining the Combat Team

19. Training for a full square Combat Team is unrealistic due to the high VOR rate, extraordinary tasks, shortages in personnel, and operational deployments. To mitigate, combined arms training should be limited to smaller groupings. *Advancing with Purpose: The Canadian Army Modernization Strategy* specifically defines a combined arms team as a “sub-unit headquarters that commands two or more platoon-sized manoeuver and effects elements for training”.²⁰ Therefore, a deliberate grouping of no larger than three or four subunits rather than eight is a viable option and in line with current CA guidance. Moreover, with the CA’s integration of the ADO concept, smaller groupings will help achieve the specific goals of “Modularity” and “Adaptive Dispersion” in a complex environment.²¹ Figures 1 and 2 offer options to the Combat Team F-Ech groupings.²²

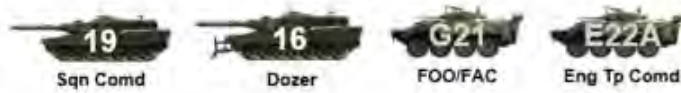
²⁰ Canada and Department of National Defence, “Advancing with Purpose: The Canadian Army Modernization Strategy,” Canadian Army (Ottawa: DND: Department of National Defence, 2020), 19.

²¹ Canadian Army, “Close Engagement: Land Power in an Age of Uncertainty: Evolving Adaptive Dispersed Operations” (Kingston, ON: Army Publishing Office, 2019), 17.

²² The supporting arm commander, the battle captain/LAV captain and a significant part of the A1, A2 Echelons are reduced in size. The combat engineer and artillery representatives are scalable as required.

ARMoured COMBAT TEAM(-)

COMBAT TEAM HQ



ARMoured SQUADRON(-)



ENGINEER TROOP(-)



INFANTRY PLATOON



The A1, A2, and B Echelons can be task tailored to ensure the proper support and training requirements.

Figure 1 – Option for Armoured Combat Team

Source: Author. Graphics from the Combat Training Centre.

INFANTRY COMBAT TEAM(-)

COMBAT TEAM HQ



ARMoured TROOP



ENGINEER TROOP(-)



INFANTRY COMPANY(-)



The A1, A2, and B Echelons can be task tailored to ensure the proper support and training requirements.

Figure 2 – Option for Infantry Combat Team(-)

Source: Author. Graphics from the Combat Training Centre.

“Vital Ground” without Tanks

20. If the restructuring of the RCAC is approved and all the Leo 2 MBTs move to Wainwright, Alberta, both the Royal Canada Regiment and the Royal 22e Régiment will have fewer opportunities to conduct combined arms training with tanks. The ideal solution would be to keep a troop of tanks in both Petawawa and Valcartier, however, this is unlikely to occur.²³ To mitigate, a cavalry squadron of Coyote and LAV 6 from both the Royal Canadian Dragoons and 12e Régiment blindé du Canada must be able to fill this gap. However, they must be significantly proficient in tank tactics for this to succeed. It is recommended that the same groupings be kept as illustrated in Figures 1 and 2, but change the Leo 2 MBTs for a 25mm platform. The TAPV must not be used, only a DFS vehicle will suffice.

²³ A myriad of factors would limit the option to include PY restructurings, command relationships, maintenance personnel and equipment augmentation (qualifications and spare parts), infrastructure and RTA modifications (ranges, buildings, bridges, and road networks), and other support (ammunition).

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