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INTRODUCTION

1. The aim of this service paper is to propose a framework for a Force Employment Concept (FEC) for the Tactical Armoured Patrol Vehicle (TAPV) within the Royal Canadian Armoured Corps (RCAC). A full FEC will be a more detailed examination, however this paper will establish the parameters for what grouping of the TAPV and Light Armoured Vehicle Reconnaissance and Surveillance System (LRSS) vehicles may be suitable in future operations.

2. In June, 2012 the Canadian Armed Forces (CAF) awarded the TAPV contract to Bell- Textron, which had submitted a variant of their Commando vehicle for competition. The TAPV is intended to replace the capabilities of the Coyote Reconnaissance Vehicle for the RCAC and the RG-31 protected mobility vehicle for other branches.¹ For the TAPV to replace the Coyote, it will be required to perform in a reconnaissance (recce) role, following the principles of ‘Move, Shoot, Communicate’ that the RCAC has espoused in its individual and collective training.

3. The core doctrine for ISTAR dictates that recce squadrons “execute reconnaissance, surveillance and counter-reconnaissance.”² The different characteristics of the TAPV compared to the Coyote will require a different operating concept in order to maximize strengths while minimizing limitations that the new platform imposes. By looking at the doctrinal foundations of reconnaissance, the specific characteristics of the platforms being considered and the implications of the new mixed fleet, several options for employment will be made clear.

DISCUSSION

¹ "TAPV: Contract Award for the Tactical Armoured Patrol Vehicle," last modified June 2015, accessed January 29, 2016, <http://www.casr.ca/doc-dnd-tapv-award.htm>.

² Department of National Defence, *ISTAR: Volume 1, the Enduring Doctrine*, B-GL-352-001/FP-001 ed. Her Majesty the Queen in Right of Canada, 2013), 4-13.

4. According to existing doctrine, armoured reconnaissance forces will be expected to engage the enemy and fight for information when required³; this can include fighting a counter-recce battle or even acting in a cavalry role similar to LAV-equipped elements of the USMC and Australian Army. Other armies have been able to specialize their recce organizations to fulfill different aspects of the recce tasks, such as Germany's "Intervention Force" and "Stabilization Force" units.⁴ Without the flexibility to have multiple units perform narrowly defined roles, Canadian (McGrath 2008) recce units need to provide the operational commander with a series of options: use recce forces to gather information in a passive surveillance role, use aggressive cavalry tactics to disrupt the enemy in a counter-recce fight, or to hold ground in an economy-of-force capacity similar to what was experienced in Afghanistan. Coyote-equipped recce squadrons have been able to fulfill a variety of roles using the firepower, mobility and protection their equipment provides.

5. Canadian reconnaissance forces are designed to find key information about the enemy and ground, enabling the operational Act function and confirming or denying other intelligence.⁵ The levels of reconnaissance (combat, close, medium and long range) are enabled by the equipment the force uses.⁶ With changing vehicle capabilities, it may not be suitable for the TAPV to undertake the same type of reconnaissance tasks that were possible using Coyote. The number of individual vehicles being acquired to replace Coyote will necessitate a mixed vehicle fleet with LRSS. Whether the mixing of vehicles occurs at the Regimental, Squadron or Troop

³ Department of National Defence, *Ground Manoeuvre Reconnaissance*, Vol. B-GL-394-002/FP-001 (Kingston, Ontario: Her Majesty the Queen in Right of Canada, 2004), 14.

⁴ John J. McGrath, *Scouts Out! the Development of Reconnaissance Units in Modern Armies* (Ft Leavenworth, KS: Combat Studies Institute Press, 2008), 144.

⁵ Department of National Defence, *Ground Manoeuvre Reconnaissance*, 11

⁶ *Ibid.*, 21-22

level will determine the operational effectiveness of the organization, the suitable methods of tactical employment and the degree of logistical synchronization.

6. The characteristics of the Coyote include a 25mm cannon for firepower, eight-wheeled drive for on and off-road mobility, direct fire protection from near-peer threats and a dated, but capable sensor suite for reconnaissance and surveillance. The Coyote has marginally better operational mobility than a LAV III or LAV 6.0 due to its lighter weight and has good cross-country mobility despite being underpowered.

7. With a very limited C6 machinegun or grenade launcher in a remote weapons' station (RWS), the TAPV will be unable to effectively engage a near-peer enemy. This will be particularly apparent in a counter-recce engagement because the RWS will lack the ability to effectively engage other armoured vehicles. Further, the placement of armour will defend well against explosive threats but is not designed to defeat direct fire from a comparable enemy vehicle, limiting a TAPV-equipped force from being able to hold ground under contact. Lastly, the difficulty in meeting tactical mobility requirements has already caused adjustments to the vehicle;⁷ further testing will reveal the extent of the improvement. The TAPV will have better operational mobility and an upgraded sensor suite, as well as modern digital communications equipment that will enable it to pass data more efficiently up the chain of command. Nevertheless, the characteristics of the TAPV mean that it lacks the firepower, mobility and direct-fire protection of the Coyote.

⁷ "Textron Readies More Mobile TAPV for Canada," DefenseNews, last modified June 16, accessed January 29, 2016, <http://www.defensenews.com/story/defense/land/vehicles/2015/06/09/canada-textron-armored-vehicle-mobility-solved-army/28729137/>.

8. The upgraded sensors and communications equipment provide the potential for an increase in recce information being collected and disseminated, but places the TAPV at significant risk in a contested environment. For permissive environments, where on-road movement is expected to be the norm and where enemy contact is not expected (e.g. in a peace enforcement role), the TAPV may be suitable for employment alone in order to take advantage of the greater operational mobility and lower threat posture that the vehicle presents. The sensor suite will allow TAPV to provide a tactical advantage to the commander in observing and recording information about the region in which it is deployed.

9. In addition to fielding TAPV, the RCAC is expecting to receive a smaller number of LRSS at each unit. The LRSS is expected to provide a similar suite of reconnaissance capabilities to the TAPV, including the mast-mounted sensors, but retains the 25mm cannon and increases the weight of armour protection considerably. Tactical mobility will be comparable to the existing LAV, but operational mobility will be reduced because of the 40% gross weight increase⁸, meaning the LRSS may not be suitable for deployment in all operational theatres. Nevertheless, introduction of both the LRSS and TAPV means that all vehicles in the RCAC fleets will have comparable sensors, a departure from the status quo that sees command-variant Coyotes and section-carrier LAVs mixed with surveillance-equipped Coyotes within recce squadrons.

10. Critical to any employment decision will be the operational level consideration of the threat, whether the enemy has the intention and capability to conduct their own kinetic counter-recce engagements. Similar to the German example, lightly equipped recce forces may not be

⁸ "Strengthened Backbone," Jane's Defence, last modified 27 May, accessed February 1, 2016, <http://www.janes.com/article/51730/strengthened-backbone-can2015d1>.

appropriate for employment in a high-threat environment. Without the ability to specialize units for narrower ranges of recce tasks, a mixed fleet is inevitable. The level of integration between LRSS and TAPV is critical to the operational utility of future recce forces, their tactical manoeuvre and a significant change in sustainment planning. The support considerations include parts commonality, availability of maintenance personnel and support echelon capacity. Any FEC for TAPV therefore requires the consideration of how TAPV and LRSS will be grouped to best effect, while minimizing the limitations of each vehicle. Integration can be accomplished with three potential courses of actions.

COA 1 – REGIMENTAL LEVEL

11. Mixing vehicle fleets at the regimental level means that each squadron would have a specific role that matches their equipment. A squadron equipped with TAPV could be conducting close recce while a second squadron with LRSS conducts medium recce. This arrangement requires coordination at the Regimental level to accept the risk of deploying TAPV, and may result in the LRSS squadron having a task to provide tactical support for the TAPV squadron. This provides a layering recce effect but reduces operational flexibility for the entire unit because the LRSS squadron is tied to protection of the other squadrons rather than being available for separate tasks. A regimental-level mixed fleet places the burden of support on the unit's HQ squadron, which has the advantage of continuing to centralize support resources for both fleets.

12. This option provides unity of purpose at the squadron level and centralizes the responsibility for assigning the less-robust TAPV rather than passing it to subordinate commanders. Because the RCAC typically force generates squadron-sized elements for

deployment, selection of this COA would generally mean deploying only one vehicle type for a particular operation.

COA 2 – SQUADRON LEVEL

13. Within the squadron level, the mixed vehicle fleet becomes a tactical consideration, whether the tactical situation warrants a more robust recce element (capable of conducting counter-recce or fighting for information) or if a lighter, less kinetic approach is warranted. Similar to mixing at the regimental level, a troop with TAPV could potentially be supported by a troop with LRSS, providing depth in a recce screen but with the protective element located closer than the regimental option. The TAPV's limited off-road mobility would mean it would be difficult to assign tactical tasks such as a zone recce, but in this framework, the zone recce could be accomplished with LRSS while TAPV could be assigned area recce or point recce tasks, using easier routes between areas of interest. In terms of logistical support, the squadron echelon would be required to provide the maintenance, supply and spare parts for both vehicles.

14. A mixed fleet at squadron level would mean different troops may complete different tasks, placing the responsibility for task assignment with the squadron commander. The presence of both vehicle types would allow each squadron to complete the full suite of reconnaissance tasks without external support required. This organization provides equal capabilities to all squadrons, increasing operational flexibility because any squadron can be tasked to complete a given task. The support burden placed on the squadron echelon would need more specialist skills such as vehicle technicians located at the squadron level rather than centralized at the regimental level. Additionally, the higher fuel consumption of LRSS over

TAPV would mean that all squadron echelons would need to be prepared to supply a larger quantity of fuel rather than centralizing resources to support a single LRSS squadron.

COA 3 – TROOP/PATROL LEVEL

15. An assignment of the mixed TAPV-LRSS fleet at the troop level means that the troop leader would have both capabilities at his disposal, with the ability to assign a patrol of either vehicle type to meet assigned tasks, while mixing vehicles down to patrol level would mean pairing of one TAPV with one LRSS at the very lowest level possible. These options are grouped within the same COA because the operational and support considerations for both situations are identical, with only the tactical employment of the mixed fleet differing.

16. A mixed fleet with one vehicle of each type would provide the most immediate fire support to TAPV, without reducing the recce capabilities in each patrol because the LRSS has comparable sensors. The presence of both vehicle types could impact an observation post's ability to remain covert; however, neither the TAPV nor LRSS are particularly well-suited to low profile, covert operations. In situations where covert recce is required, the TAPV would potentially be at greater risk because of its already-stated limitations. This option would provide the best operational flexibility because every deployable element is equipped to complete any task, rather than specializing troops or patrols with either vehicle type. Including LRSS in all elements may reduce units' deployability because of the increased kinetic profile of the larger vehicle type. While TAPV-only units provide a lower profile deployment potentially suitable for peace monitoring, including LRSS in all elements increases the protective posture to a level that may be too aggressive for those types of operations.

CONCLUSION

17. Given that the TAPV has weaknesses in all three areas of firepower, protection and mobility, those weaknesses must be compensated for when employed in a contested environment. The inability to protect from and respond to a direct fire threat means that TAPV should not be employed alone when enemy contact is expected. TAPV would be able to function well in a permissive environment, on roads, in a peace monitoring or patrolling role but would not be well-suited for kinetic engagements.

18. The addition of LRSS, while fewer in numbers than the Coyote it partially replaces, makes up for the loss of direct fire protection, firepower and tactical mobility. Even deployed in smaller numbers than the TAPV, LRSS provides the commander with additional operational flexibility in how recce assets can be employed in a contested environment. Having LRSS provide fire support and protection for the less powerful TAPV means that the TAPV can continue to be employed with the presence of a near-peer enemy, even if the mixed organization is less covert than a single fleet screen of observation posts.

19. The number of vehicles being acquired means that a mixed fleet will become a reality for all armoured regiments. Unlike other nations' armour branches, that may have the ability to specialize units based on the type of recce they will be required to perform, the RCAC is not sufficiently large to have units with different roles. What remains to be decided is the level at which the mixed fleet integration is to be achieved. Regardless, the balance of vehicle capabilities must consider the operational flexibility provided to the commander, the tactical employment of the vehicles in the contemporary environment and the sustainment required to operate both fleets. The three COAs described above each address the three factors with different approaches: COA 1 prioritizes sustainment considerations and unity of purpose for

each squadron. COA 2 is a balance between operational flexibility and sustainment, but places a significant burden on the squadron echelon to support. COA 3 prioritizes operational flexibility and protection against threats over the other considerations.

RECOMMENDATION

20. COA 3, the mixing of vehicle fleets at the troop/patrol level allows for the firepower, mobility and protection advantages afforded by the LRSS to balance out the weaknesses of the TAPV. Patrols of mixed vehicles will grant a commander additional options in how to employ recce elements. Rather than having to task other elements to defend the TAPV, they can move with their own integral fire support, protection and depth in sensor capabilities. Although mixing patrols and troops increases the logistical burden at the squadron level, the increased flexibility this option affords the commander means that the entire regiment is fully employable. Rather than having a portion of each regiment that may be unsuitable for the operational or tactical environment, fully mixed patrols/troops means all levels of recce are employable and able to fight for information if required.

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