The Best Defence Is a Good Offence:
Integrating Anti-Armour Capability Into Reconnaissance Squadrons

Major Daniel Gray

JCSP 49

Service Paper

PCEMI n° 49

Étude militaire

CANADIAN FORCES COLLEGE - COLLÈGE DES FORCES CANADIENNES

JCSP 49 - PCEMI n° 49
2022 - 2023

Service Paper – Étude militaire

The Best Defence Is a Good Offence:
Integrating Anti-Armour Capability Into Reconnaissance Squadrons

Major Daniel Gray

The Best Defence Is a Good Offence:
Integrating Anti-Armour Capability Into Reconnaissance Squadrons

AIM

1.   The aim of this service paper is to identify the anti-armour capability gap within armoured reconnaissance squadrons and explain why they require additional offensive capability in the form of an ATGM system to remain lethal and survivable on the modern battlefield.

INTRODUCTION

2.   Mounted medium reconnaissance forces by nature are inherently vulnerable as they operate independently at great distances from friendly forces, often without additional support within Canadian Army (CA) reconnaissance doctrine. This means they are often far forward, alone, and unsupported other than by their own integral elements to the squadron or those attached for a specific operation. They are lightly protected, lightly armed and in the past have relied upon stealth and avoiding decisive engagement to survive in combat. These have been assumptions about reconnaissance forces that have been discussed since the beginning of mechanization and ones that must be challenged with the evolution of the operating environment and technological advances on the battlefield.

3.   Armoured reconnaissance squadrons (medium mounted reconnaissance) within the Canadian Mechanized Brigade Group (CMBG) context must to be capable of conducting aggressive reconnaissance and security tasks while remaining survivable on the modern battlefield, requiring additional capabilities in order to do so. The most obvious capability being the integration of an ATGM (Anti-Tank Guided Missile) system into armoured reconnaissance squadrons in order to fight when required, facilitating high tempo and decisive action, better enabling the main force. It is not that reconnaissance squadrons should become so heavily armed that they become another manoeuver element (such as the cavalry concept) or that they should be looking for a fight, it is that under our current doctrine and in the modern operating environment, they have to act aggressively to gain information in the conduct of reconnaissance and security tasks. In order to be effective, they require the addition of longer-range direct fire capabilities which do no currently exist within reconnaissance squadrons.

DISCUSSION

Reconnaissance Doctrine

4.   Within the CMBG construct, the reconnaissance squadron is the brigade's principal means of finding the enemy.[1] In addition to this capability, they offer significantly more utility by having the ability to conduct counter-reconnaissance, flank security, securing of key positions, fire bases, or form an exploitation force, however, they are typically grouped with anti-

---

[1] Canada. Department of National Defence, *B-GL-321-003/FP-001 Army Brigade Tactics*. (Canadian Army, 2017), 1-12.

armour elements for these tasks by doctrine.[2] The CA does not currently possess anti-armour elements except as a dismounted system in limited quantities within infantry battalions.

5.   Tasks for reconnaissance squadrons are broadly broken down into two types, reconnaissance and security, both of which enable the main force understand the enemy and terrain they will fight through and to protect the force, allowing them to operate unobstructed. Of the four core capabilities of ground manoeuver reconnaissance, one is counter-reconnaissance, defined as, "the identification, targeting, and destruction and/or neutralization of adversary recce assets in order to deny the adversary the ability to collect friendly force and terrain information."[3] Reconnaissance doctrine not only implies the destruction of enemy reconnaissance, it tasks it as a core capability and states that it must be done with skill.[4]

6.   CA doctrine on mounted reconnaissance is extensive and the common theme within doctrine is that reconnaissance forces should avoid decisive engagement as they are not optimized to carry out these missions.[5] This is emphasized in the key doctrine relating to reconnaissance, specifically in Land Operations, the capstone land operations doctrine, Brigade Tactics, the key tactical level doctrine for the brigade, and Ground Manoeuvre Reconnaissance, the main manoeuvre reconnaissance doctrine. The secondary theme of all three of these manuals is that despite the fact that that decisive engagement should be avoided, fighting for information is inevitable due to the nature of combat and the operations reconnaissance forces conduct.[6] It is mentioned to such a point that is should be held as an assumption and implied task that reconnaissance forces will have to fight for information, destroy enemy reconnaissance elements and conduct aggressive reconnaissance rather than the opposite, a common belief in the armour corps.

7.   It is clear from this doctrine review that reconnaissance forces are doctrinally directed to fight for information and must do so aggressively. Not only must they be skilled at gathering information through reconnaissance and surveillance but are also integral in conducting security tasks which require offensive capability.

The Current / Future Operating Environment

8.   While doctrine demands that armoured reconnaissance elements be capable of fighting for information, the current and future operating environment will also demand that we have better offensive capabilities in order to remain survivable. Unlike the wars of the last 30 or more years, there will be enemy tanks on the battlefield based upon current and future threats within the pan-domain environment and the return to great power competition. The return to training for and planning on engaging against a peer threat requires us to consider and modernize our forces

---

[2] Canada, *Brigade Tactics*, 1-12.
[3] Canada. Department of National Defence. *B-GL-394-002/FP-001 Ground Manoeuvre Reconnaissance*. (Canadian Army, 2015), 1-3-3.
[4] Canada. *Ground Manoeuvre Reconnaissance,* 1-3-3.
[5] Canada. *Ground Manoeuvre Reconnaissance,* 1-3-6, 1-3-5, 2-1-2, 3-2-12. Canada, *Brigade Tactics*, 4-14.
[6] Canada. Department of National Defence. *B-GL-300-001/FP-001 Land Operations*. (Canadian Army, 2008), 1-5, 7-77, 7-81. Canada. *Ground Manoeuvre Reconnaissance,* 2-1-4, 3-1-1, 3-7-1, 1-2-1, 1-3-5. Canada, *Brigade Tactics*, 6A-1, 6D-6, 1-12, 2-17, 3-6, 3-17, 4-9, 4-12, 4-34.

to counter this threat. Our main enemy have significant tank fleets which will come into contact with reconnaissance forces. Russia had 2,800 tanks within its invasion force in 2022.[7] Currently reconnaissance forces have no offensive capability to neutralize this threat and have no weapons systems that can engage any tank, or an armoured vehicle beyond 2200m[8] before being engaged.

9.   With the proliferation of modern sensor technology and layered UAVs used to the extent with which they have been used in the 2022 Russian-Ukraine War, it is not possible to hide mechanized forces or reconnaissance patrols.[9] The main tactic that reconnaissance forces have used to increase survivability is stealth and this is not something that can be accomplished on the modern battlefield with the use of the TAPV (Tactical Armoured Patrol Vehicle) and LRSS (LAV Reconnaissance Surveillance System) both of which are large armoured vehicles with significant IR signatures. Future infrared masking technologies for these vehicles are decades away[10] and although we doctrinally camouflage vehicles, this can only be done effectively while static and in forested environments and could be more easily done when reconnaissance vehicles were small with less of an infrared signature than our current vehicles. In a mechanized war, relying on dismounted patrols (a stealthier option for reconnaissance forces) is not an option when tempo of the main force must be considered, such as while screening the brigade's advance.

The Conduct of Reconnaissance Tasks and the Use of Anti-Armour

10.   In order to complete both reconnaissance and security tasks, reconnaissance elements must be survivable. A key to survivability is having the ability to fight, not only to defend oneself but to have the offensive capability to destroy threats to your force before they can identify and kill you. There is a paradox within reconnaissance forces in which forces that are too light are not survivable and therefore not used, while forces that are too heavy are misused as combat elements.[11]

---

[7] Oleksandr Danylyuk, Nick Reynolds, Jack Watling, and Mykhaylo Zabrodskyi. *Preliminary Lessons in Conventional Warfighting from Russia's Invasion of Ukraine: February–July 2022*. (London: Royal United Services Institute, 2022) 17.

[8] Maximum effective range of 25mm APFSDS-T (SABOT).

[9] Danylyuk, *Preliminary*, 3.

[10] BAE Systems. "ADAPTIV – a unique camouflage system" Accessed on 24 February 2023. https://www.baesystems.com/en/feature/adativ-cloak-of-invisibility

[11] John J. McGrath. *Scouts Out! The Development of Reconnaissance Units in Modern Armies*. (Combat Studies Institute, US Army Combined Arms Centre. Fort Leavenworth, Kansas. 2008). 199.
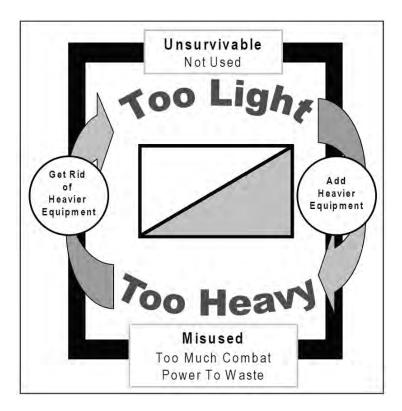
Figure 1. The Reconnaissance Paradox.
Source: John J. McGrath. *Scouts Out! The Development of Reconnaissance Units in Modern Armies.*

11.   History has shown this paradox to be true where reconnaissance organizations were simply re-tasked to the flanks or rear area due to their inability to survive while conducting reconnaissance in front of advancing forces. This occurred in the Second World War within General Bert Hoffmeister's 2nd Canadian Infantry Brigade, in which his reconnaissance squadron was annihilated due to an inability to fight back while attempting to gain information during their advance through Italy.[12] This is a key example of a reconnaissance organization not being capable of fighting and being unable to defend themselves. For much of the rest of the war, General Hoffmeister was unable to take advantage of the capabilities of reconnaissance forces due to his belief that they did not possess the means for combat, and had to rely on combat elements for reconnaissance.[13]

12.   More recently, in 2003 in Iraq, within SBCT (Stryker Brigade Combat Team) reconnaissance squadrons, "The unwillingness to risk the squadron in a hostile urban environment prevented it from gathering information to assist its parent brigade. Therefore, the

---

[12] Douglas E. Delaney. *The Soldiers' General: Bert Hoffmeister at War*. (Vancouver: UBC Press, 2005). 80-81.
[13] Delaney, *The Soldiers' General*, 80.

SBCT's infantry battalions advanced through the streets until they met contact".[14] This was due to the squadron's limited combat power and "Against a determined opponent, the RSTA unit had few options but to disengage."[15] Commanders within this unit determined that even against minor threats, they were incapable of conducting aggressive, rapid reconnaissance without massing forces.[16] They were simply held up because they did not have the combat power to adequately deal with the threats they faced without grinding to a halt and losing all momentum. Tempo of reconnaissance operations are of significant importance as reconnaissance elements must continue to advance and not be held up by enemy forces.[17] ATGMs will give the required offensive capability to deal with minor threats and move on rapidly.

13.   An example of the use of anti-armour teams to augment current weapons systems was during Exercise MAPLE RESOLVE 2021 with the LdSH(RC) Reconnaissance Squadron. This squadron used anti-armour teams during the exercise while providing a reinforced screen in the defence for 1 CMBG. These teams were extremely effective in destroying enemy reconnaissance and vanguard elements (including tanks) which maintained the survivability of the squadron and its ability to provide information for the brigade. These anti-armour teams were a significant force multiplier. Without the use of these teams and their equipment, the squadron would have been combat ineffective within the first few hours of enemy contact and would have been incapable of providing early warning to the brigade.[18]

14.   Integral anti-armour capability also lends the commander much greater flexibility as the squadron can be rerolled or adapt to unforeseen circumstances (such as exploitation) without the requirement to regroup or re-tasking another organization to conduct the task. As noted in doctrine, many tasks that reconnaissance forces are tasked with require additional augmentation. Doctrinally, this would be joint fires, engineers, or anti-armour.[19] The CA has joint fires elements and engineers integral to its structure that are easily attached for operations. What the CA does not have is anti-armour elements that could be attached in support of these tasks. Even if a task required it, the capability would not be able to be attached so it is best to integrate it directly within the squadron to solve the generation and integration problem. Training armoured soldiers to conduct joint fires or engineer tasks is not a feasible option whereas training them to use anti-armour weapons systems is well within their task description and scope.

15.   Giving elements a long-range offensive weapon system would reestablish the balance of the reconnaissance paradox. It allows them to gather information while having the ability to fight

---

[14] Robert S. Cameron. *To Fight or Not to Fight? Organizational and Doctrinal Trends in Mounted Maneuver Reconnaissance from Interwar Years to Operation IRAQI FREEDOM*. (Combat Studies Institute, US Army Combined Arms Centre. Fort Leavenworth, Kansas. 2010). 508.

[15] Cameron, *To Fight or Not to Fight*, 508.

[16] Cameron, *To Fight or Not to Fight*, 508.

[17] Canada, *Brigade Tactics*, 3-16.

[18] This note is based on the author's experience as Officer Commanding, 1 CMBG Reconnaissance Squadron for Exercise MAPLE RESOLVE 2021.

[19] Canada. *Land Operations*, 7-110. Canada, *Brigade Tactics*, 6A-3, 2-3, 2-7, 3-16, 3-20. Canada. *Ground Manoeuvre Reconnaissance*, 3-2-8, 3-4-19, 1-2-2, 2-1-2.

their way out of situations when required so they can complete the tasks they are given and are neither held-up nor require reinforcement.

The Anti-Armour Capability Gap

16.   Doctrine, the operating environment, and history have identified that mounted reconnaissance forces must be capable of aggressive reconnaissance and fighting for information. Our current capabilities to allow us to fight or at least disengage from contact, specifically with the 25mm and less so with the 40mm AGLS (Automatic Grenade Launcher) which current reconnaissance vehicles are equipped with. The maximum effective range for these weapons systems is 2200m[20] and 1500m[21] respectively. This leaves a significant gap in two regards. Firstly, against enemy targets beyond 2200m, out to 4000m and secondly against more heavily armoured threats such as tanks.[22] These maximum effective ranges are against lightly armoured threats and would not destroy them at these ranges.

17.   The only weapon system within armoured elements currently able to engage beyond 2200m is the Leopard 2 tank and even this is limited to lightly armoured vehicles at this range.[23] Reconnaissance forces have the capability to identify enemy at ranges beyond 2200m but do not currently have an ability to effect targets at this range with direct fire using conventional munitions. This gap is present for targets beyond this range as well as tanks at any range. Anti-armour (ATGM) systems are the only effective weapons system that can cover both of these capability gaps that are currently missing within our organizations and equipment. This is a risk and significant liability to reconnaissance elements and that essential battlefield information they provide. Based on this analysis, it is clear that armoured reconnaissance elements need a direct-fire weapons system that is capable of engaging and destroying targets beyond 2200m and ATGMs are the only viable option to fill this gap.

Options Analysis

18.   The intent of this options analysis is not to be exhaustive nor list specific models of weapons systems based on the capability gap. It is to identify where and how anti-armour systems could be integrated into reconnaissance squadrons. Adding this capability will require a capital project this would require further research for specific technical specifications by that project team, however, the following options are suggested:

    a.   Option 1: Vehicle mounted system on in-service reconnaissance vehicles – This would see an ATGM system mounted on our current TAPV RWS and or LRSS

---

[20] Canada. Department of National Defence. *B-GL-393-D10/FP-001 Theory of Armoured Gunnery, Part IV, Coyote/LAV III Application of Fire*. (Canadian Army), 11.
[21] Maximum effective range for 40mm HEDP-SD is 1500m. Muzzle velocity is ~240m/s (6.25 seconds time of flight) and is vulnerable to external factors.
[22] The TAPV was not designed to be an offensive platform and has limited offensive capabilities. It was meant to replace several vehicle fleets (Coyote, RG-31) and is more suited to peace support operations rather than the direct combat it will see as a reconnaissance platform. It does not provide the firepower, mobility or protection of the Coyote which it is replacing in reconnaissance squadrons.
[23] Canada. Department of National Defence. *B-GL-305-006-FP-002 Leopard 2 Application of Fire.* (Canadian Army). 24, 45. (Note: Leopard 2 ranges are max 2000m against tanks and 2-4000m against light armour targets).

turret (in the future). It would not require a new platform as it could be integrated into existing fighting vehicles and would require minimal additional training for the gunner and crew commander. Both of these platforms have outstanding optics and this system would allow for effective engagements at significantly longer ranges that their current range bands. This could also be accomplished as part of a mid-life upgrade of these platforms.

b.   Option 2: Dismounted shoulder fired system – Although short-range dismounted ATGM systems exist such as the Carl G, this option would be for a longer range, more capable system such as a SPIKE-LT or FGM-148 Javelin in order to meet the capability gap range band. This system would be easier to procure, require less training, would not require vehicle modifications and would allow for dismounted anti-armour ambushes which would be beneficial in defensive situations. This would require soldiers to dismount and increase firing time and mobility and would be more difficult to employ during high tempo operations.

c.   Option 3: Dedicated anti-armour vehicle – This system has already existed in the CAF with LAV TUA (Tow Under Armour) and ADATs (Air-Defence Anti-Tank). This would be a superior anti-armour system but would require a significant capital project and would limit flexibility as it would require a specific single use platform to be introduced and a significant additional training bill.

CONCLUSION

19.   It is clear through analysis of doctrine, the operating environment as well as historical and recent experiences that armoured reconnaissance squadrons will have to be aggressive in conducting reconnaissance and security tasks which will involve fighting on the battlefield. What is missing is the offensive capability in terms of weapons systems to overmatch the enemy they are likely to face, specifically tanks and armoured vehicles beyond 2200m. What is required immediately is the procurement of an anti-armour system to provide the squadron with a long-range ATGM capability filling the gap that currently exists.

RECOMMENDATION

20.   It is recommended that the CA proceed with a combination of option 1 and 2. This would provide the best flexibility for dismounted and mounted operations while leveraging our current vehicle fleets. Option 2 should be explored immediately with a UOR (Urgent Operational Requirement) as the CA is currently in the options analysis phase for this procurement and additional systems could be procured specifically for armoured reconnaissance squadrons.[24] Option 2 is also recommended albeit would require a longer-term procurement strategy as it requires not only the procurement of the ATGM system but also modification and integration into current vehicle platforms.

---

[24] Government of Canada. Defence Capabilities Blueprint. "Anti-Tank Guided Missile Replacement" Last modified 9 January 2020. http://dgpaapp.forces.gc.ca/en/defence-capabilities-blueprint/project-details.asp?id=1467

BIBLIOGRAPHY

BAE Systems. "ADAPTIV – a unique camouflage system" Accessed on 24 February 2023. https://www.baesystems.com/en/feature/adativ-cloak-of-invisibility

Cameron, Robert S. *To Fight or Not to Fight? Organizational and Doctrinal Trends in Mounted Maneuver Reconnaissance from Interwar Years to Operation IRAQI FREEDOM.* Combat Studies Institute, US Army Combined Arms Centre. Fort Leavenworth, Kansas. 2010.

Canada. Department of National Defence. B-GL-300-001/FP-001 *Land Operations*. Canadian Army. Ottawa: DND, January 1, 2008.

Canada. Department of National Defence. B-GL-305-006-FP-002 *Leopard 2 Application of Fire.* Canadian Army. Ottawa: DND.

Canada. Department of National Defence. B-GL-321-003/FP-001 *Army Brigade Tactics*. Canadian Army. Ottawa: DND, January 1, 2017.

Canada. Department of National Defence. *B-GL-393-D10/FP-001 Theory of Armoured Gunnery, Part IV, Coyote/LAV III Application of Fire*. Canadian Army. Ottawa: DND.

Canada. Department of National Defence. B-GL-394-002/FP-001 *Ground Manoeuvre Reconnaissance*. Canadian Army. Ottawa: DND, September 30, 2015.

Danylyuk, Oleksandr V, Nick Reynolds, Jack Watling, and Mykhaylo Zabrodskyi. *Preliminary Lessons in Conventional Warfighting from Russia's Invasion of Ukraine: February–July 2022*. London: Royal United Services Institute, 2022.

Delaney, Douglas E. *The Soldiers' General: Bert Hoffmeister at War*. Vol. 7. Vancouver: UBC Press, 2005.

Government of Canada. Defence Capabilities Blueprint. "Anti-Tank Guided Missile Replacement" Last modified 9 January 2020. http://dgpaapp.forces.gc.ca/en/defence-capabilities-blueprint/project-details.asp?id=1467

McGrath, John J. *Scouts Out! The Development of Reconnaissance Units in Modern Armies*. Combat Studies Institute, US Army Combined Arms Centre. Fort Leavenworth, Kansas. 2008.