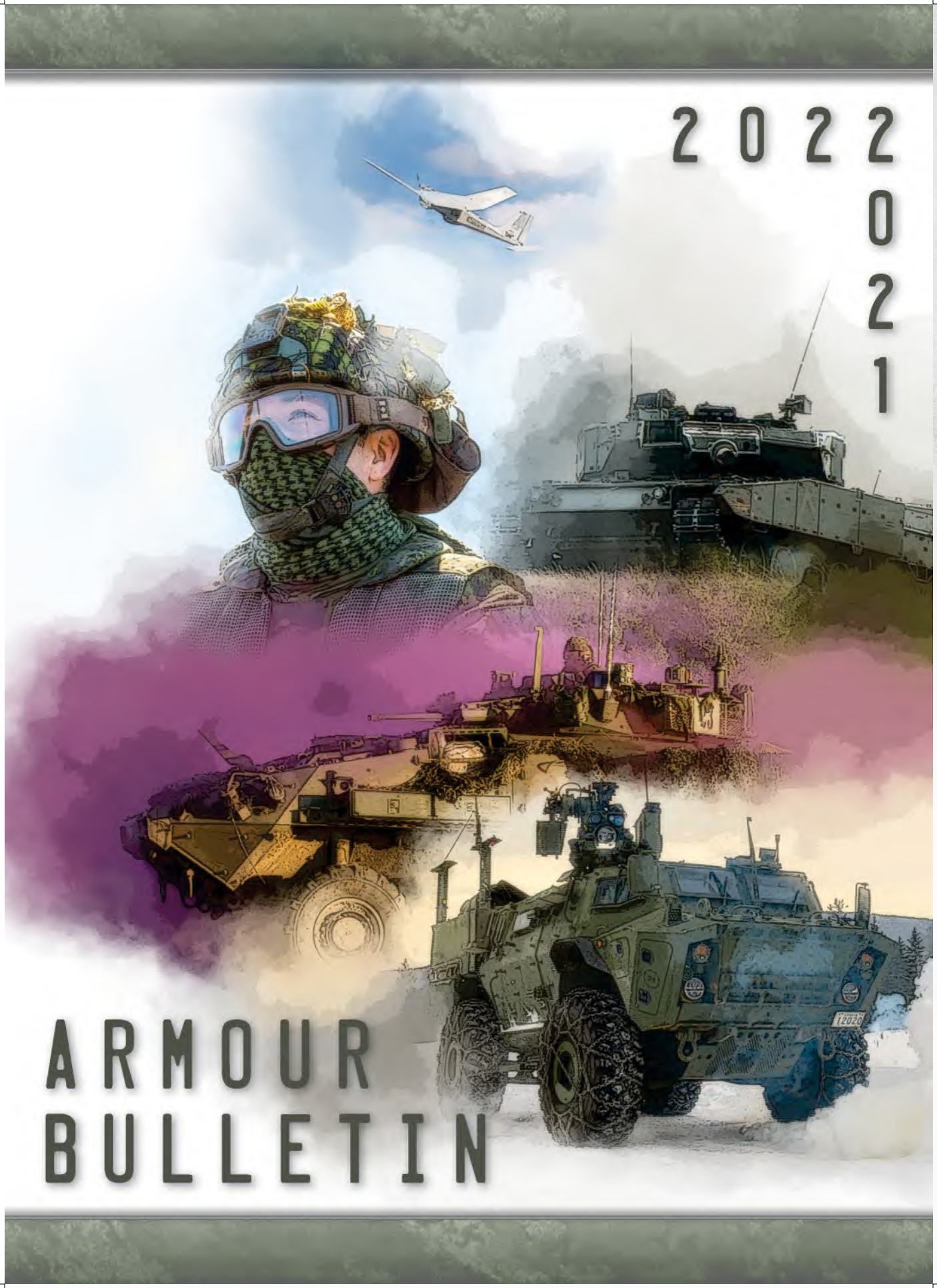
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The Armour Bulletin is the official journal of the Royal Canadian Armoured Corps. The Mission of the Armour Bulletin is to annually publish unclassified, bilingual articles of professional interest, with a view to stimulate discussion and exchange ideas concerning topics germane to the Canadian Army and RCAC.

The views and opinions expressed are those of the authors and do not necessarily reflect official Department of National Defence policy.

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COLONEL COMMANDANT FOREWORD

GENERAL (RETIRED) W.J. NATYNCZYK
CMM, MSC, CD

Dear Members of the Corps Family!

It is a privilege to contribute to this year's Armoured Bulletin. I wish to thank the leadership of the Royal Canadian Armoured Corps School for continuing to publish a quality document, our Corps' professional journal in order to stimulate healthy discourse and the sharing of innovative concepts.

We are certainly living in turbulent times! As of this foreword's drafting, war is ravaging the Ukraine, millions are displaced and the most vulnerable are suffering tremendous loss and pain. The requirement for our Royal Canadian Armoured Corps to prepare and train to serve as an integral part of the combined arms team, alongside the Army and our Joint partners, our allies, and friends has not been more important than since the Second World War.

Our leaders and troops must focus on the fundamentals, to learn the lessons being revealed each day in ongoing combat, to adapt and to train to be ready for our duty tomorrow. It is vital that we are flexible and willing to innovate, rather than be bound to unhelpful dogma. As the saying goes, "the best steaks come from Sacred Cows!"

Similarly, as we learn, adapt and innovate, let us enjoy healthy discussion, banter and negotiation. But once decisions are made, let us speak with one voice with the singular purpose of ensuring the relevance of the Corps in the new realities of modern warfare, especially as we engage with our Army and Joint partners. Unity of purpose, vision and message are all essential to maintain coherence amidst the cascading changes that are being undertaken.

Throughout the exercise of the evolution of the Corps, let us be ever mindful of the impact on our soldiers, the quality and effectiveness of their training, the management of the tempo they are expected to sustain and the impact on their well-being as well as on their families. A soldier-centric approach will serve everyone's interests.

So much has already been accomplished. In this vein, I would like to convey sincere thanks to the outgoing Armoured leadership team, Director of Armour Colonel Robbin Dove, Deputy Director of Armour Colonel Chris Brown, Corps Regimental Sergeant Major Rob Clarke and Army Reserve Chief Warrant Officer Dave Munroe. They led the Corps during a very challenging period of the pandemic, while implementing the Cavalry concept and the numerous second-order effects on the Corps' personnel management and training.

On that note, the Corps Conference was an absolute success, especially as we managed to hold the first in-person session in over two years. The spirit of the Corps is alive and well, especially with the warm hospitality of the Ontario Regiment and the inspiring surroundings of the Regiment's Tank Museum. The Black Hat Mess Dinner and the unique dinner tradition, the "Leek Ceremony," certainly melted the ice allowing the attendees to strengthen cross-Corps relationships and enabled closer integration across components.

So, while only in the first months of serving as your Colonel Commandant, my assessment is that our Corps is strong. Without doubt there are many challenges and problems affecting our Regiments and soldiers, but we have exceptional leaders who are determined to find solutions to prepare us for the uncertainties of tomorrow. Let us advance as one Corps Team and as one Corps Family with the RCAC Association to share the burden and boldly advance in the spirit of Major General Worthington and his lasting legacy. WORTHY!

BULLETIN DIRECTOR FOREWORD

COLONEL R.D. DOVE
DIRECTOR
ROYAL CANADIAN ARMOURED CORPS

Salutations to fellow officers, soldiers, family and friends of the Royal Canadian Armoured Corps (RCAC) as we mark another great year of service, professionalism and innovation through this edition of the RCAC Bulletin! Change, and the capacity to adapt accordingly, is the norm within our profession, and the past year has been no different – although the nature of some of the challenges, with large scale ground combat on a conventional European battlefield, has certainly highlighted both opportunities and threats for our Corps as the tip of the Canadian Army spear.

It has been more than a year since we embarked on the journey of the Armoured Cavalry Concept, which represented "a conceptual pathway from the provision of a limited and narrow dual-stream direct fire and furtive reconnaissance combat support capability, to a single, cohesive mounted close combat manoeuvre force." During my discussions, visits alongside the Colonel Commandant and Corps Sergeant Major to various regiments and divisions, and most recently at the Corps Conference, the Cav Concept has certainly been one of the topics that has incited the most interest and debate. We have worked with the Corps leadership, Command Teams and the Army to ensure that we define what this concept means and how it can be operationalized. The single biggest critique – which is conversely seen as its' biggest strength – is that the Cav Concept is nothing new to the Corps. This is true! We are using slightly updated doctrine, extant battle task standards and existing equipment to re-define ourselves by our ability help the commander define the battlefield and to seize opportunities through manoeuvre, firepower and integrated sense functions - to support the broader Canadian Army Modernization Strategy (CAMS) and Force 2025 (F2025) initiatives. This is a key critical aspect of the Cav Concept, one which is important for all RCAC members to seize and internalize.

Opportunities are certainly abounding for the Corps, with NATO looking to increase its presence on the Eastern flank, and investments being examined to address known gaps in our swing – most notably anti-tank guided missiles. Operational tempo and on-boarding of new equipment, notably the LAV Long Range Surveillance System (LRSS) and Armoured Combat Support Vehicles (ACSV), will continue to challenge our ability to increase training output – which is in itself is critical to improving the health of our Corps at the junior officer and Sr NCO rank levels and, ultimately, the health of the Canadian Armed Forces (CAF) in a reconstitution context. As such, the Corps will ensure that our modernization efforts, from training to structure and equipment, continue to be aligned with ongoing and future institutional initiatives – seeking to be leading edge of the Army rather than on a break-away. To this end, the operationalization of our regular and reserve Corps structures and tasks will focus on outputs to Canadian Army readiness, with a flexible mentality to optimize integration of various Ready Force Level elements in a cohesive way.

As the Canadian Army solidifies our direction towards F2025, it is up to us as leaders and professionals to read, write, and continue to examine the direction of our Armoured Corps and our Army through the force development continuum. Framing the debate around roles – to include tasks, tactics and Armd Cav as a combat & combat support element – is the area that is most likely to bear fruit. As you read this Armour Bulletin, please take note of your reactions and turn them into something positive – the first article for the next edition!

It has been a pleasure to serve with and for you as part of the Armour Corps leadership team, alongside the Deputy Directors and Corps Sergeant Major and the Corps HQ at the RCAC School. I thank all who have contributed to leading and shaping our Corps and its troopers over the past year, and am confident that you will continue to forge ahead into the future with the same panache and grit as always. To remain relevant, we must embrace change and move forward; our flexibility and agility, earned on the battlefields of the past, will allow us to adapt to the next conflict.

Worthy!

DEPUTY DIRECTOR ARMOUR (RESERVE) FOREWORD

COLONEL C.W. HUNT
DIRECTOR
DEPUTY DIRECTOR OF ARMOUR RESERVE

"One Army Integration" is a theme that is a key component the Canadian Army Modernization Strategy (CAMS) and drives dozens of initiatives across the Army and in the Royal Canadian Armoured Corps (RCAC). It speaks to doctrine, force generation, training, equipment, career management, and frankly most of what the Army does. CAMS defines One Army Integration as occurring "when Regular and Reserve components are mutually supporting. Together they provide sustained in sufficient mass to sustain the concurrency of operations."

The fact is both the Regular and Reserve components share many of the same challenges, and integrated solutions across the Army are the best way to address them. Both components need to increase trained effective strength under Canadian Armed Forces (CAF) Reconstitution. Both components have struggled with a 'hollow middle' and the subsequent high up-tempo and workload on those middle leadership ranks, which then also impacts retention. Both components have certain vehicle fleets at or near end-of-life, and outside the tank squadrons, there is a general deficit of the firepower required to successfully conduct mechanized operations. One Army Integration requires an integrated RCAC, and fortunately the RCAC is already taking important steps forward by returning to one trade, and common career courses across both components that teach the same foundational tactical skills, that can then be applied to any armoured fighting vehicle platform with the appropriate platform specific technical training. This approach means that every armoured soldier and officer, and every troop and squadron across both Regular and Reserve components in the RCAC, is part of the force generation pool and can be re-rolled to whatever platforms are needed during a managed readiness cycle.

Regular and Reserve units are structurally equipped and staffed, and collectively trained to different levels of readiness. Force 2025 seeks to enable integrated force generation by designating different "Ready Force Levels" (RFL) at different notices to move to clarify those distinctions and allow RFL 3 Reserve mission tasked elements to reinforce and integrate with RFL 2 and RFL 1 elements with appropriate notice. Integration would be enabled through the Army's Managed Readiness Plan (MRP), providing predictability and appropriate advance warning to Reserve units to allow them to generate tasked full-time capability for specific periods of time from part-time soldiers.

~52% of RCAC personnel are in the Primary Reserve, which includes a trained effective strength of over 1,600 personnel. Effective integrated force generation will help make the up-tempo for Regular Force personnel more sustainable, and it will provide better training and military employment opportunities for Reserve Force personnel. These benefits will improve retention in both components separately, as well as collectively improve retention as more people transfer between components, both ways, rather than release. Most importantly, One Army Integration within the RCAC will ensure the Corps has sufficient mass to successfully conduct concurrency of operations.

BRIGADIER-GENERAL FOREWORD PEYTON

BRIGADIER-GENERAL P.J. PEYTON
SENIOR ARMY ARMOUR OFFICER

Members and friends of the Royal Canadian Armoured Corps (RCAC),

It is a pleasure to welcome you all to this year's edition of the Armour Bulletin. These last few years have been incredibly challenging. Nevertheless, as they have consistently in the past, RCAC soldiers continue to persevere and deliver with the utmost dedication and professionalism. I want to thank you all for your hard work and commitment. You are pivotal to the Corps' success today and into the future.

We find ourselves at a pivotal transition point for the Corps as the Canadian Army focuses on modernization. Force 2025 will see the Corps modernize to deliver both Heavy and Medium sense and manoeuvre functions, based on the Leopard II Main Battle Tank centralized under one formation in Alberta, and Armoured Cavalry with an increased sense capability. Later this year we will start to see the first delivery of the Light Armoured Vehicle Reconnaissance Surveillance System (LRSS), our newest state-of-the-art surveillance system, which will replace our aging Coyote fleet. We will also continue to lead in One Army Integration efforts, as we identify opportunities to optimize Armour Reserve and Regular Force outputs, seeking the ideal integration framework for Ready Force Level (RFL) 1 to 3 elements within the Army's force structure.

We cannot not slow our efforts to modernize. We must remain focussed on the delivery of a resourced, trained and sustained RCAC that provides relevant output. Events in the past 12 months have reminded us of the necessity of hard power. We rely on the creativity, energy and professionalism of our Corps members to ensure we are best positioned to deliver that power today and in the future. As we do the necessary work, let's remind ourselves to encourage contributions from everyone in the Corps, and to recognize and celebrate their accomplishments.

As a final point I would like to acknowledge the retirement of many of our members and senior leaders over the past year. Thank you for your dedication to the Corps and your many years of service to the Canadian Army. We are better for your efforts. I wish you great success in whatever future you have chosen, and I hope that you remain engaged with your Armour Corps family.

Thank you to all those who contributed to this wonderful publication. It is a fantastic representation of the talent that exists within the RCAC!

Worthy!

2021-2022 CORPS CWO FOREWORD

CWO R.J. CLARKE

Colleagues and fellow black hats. Welcome to this edition of the Armour Bulletin; my last contribution as your Corps Sergeant Major. To say that the last two years have been both personally and professionally fulfilling would be an understatement. To say that our Corps is getting stronger by the day - led by several dedicated teams from coast to coast - would be equally understated. In my humble opinion, our Corps is leading the way on all fronts.

With my final bound as your senior non-commissioned soldier coming to a close, I have witnessed all-encompassing change at your side. I watched as our institution struggled to keep us unified in the face of global adversity, adapted to meet associated pressures and restructuring, and through it all, I was blown away by your professionalism and agility. From the bay floor, the turret, the classrooms within our training institutions - and even the odd cubicle - our Corps came together. In fact, I personally believe we are tighter than ever. A clenched fist in an unsteady world if you will.

With that said, and a view to respecting the word count, I will keep this short. As most of you are aware, CWO Jeramie Leamon will have already replaced me as your Corps SM by the time you read this article. A leader through and through, Mr. Leamon brings an exceptional amount of diverse experience to the table, and with it, your best interests. He is an armoured soldier to the core, and he will undoubtedly help keep our beloved Corps rolling toward the objective. Best of luck my friend.

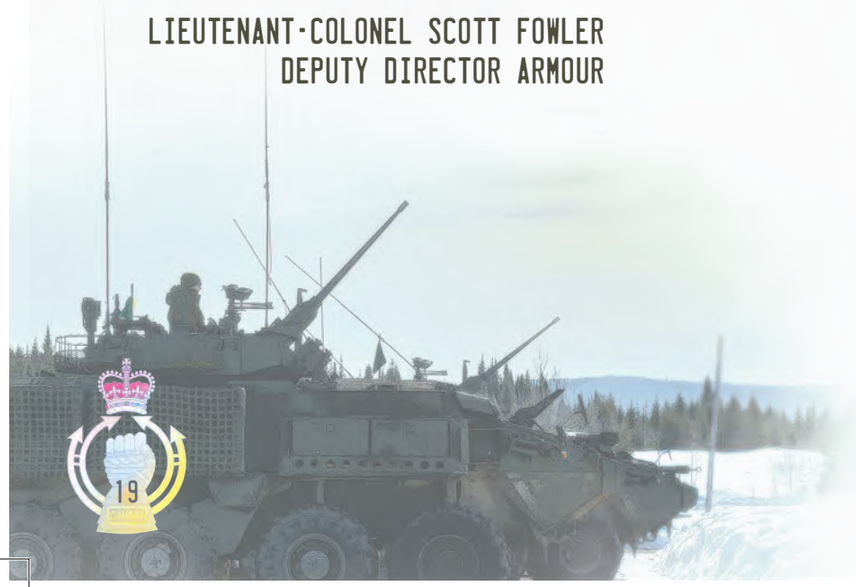
To all RSMs. You have been rock-solid in the face of adversity, and it was your agility, enthusiasm, and dedication that kept our soldiers focussed on a stronger future. A struggle at times due to the ever-changing climate, but your efforts, and those of your NCMs and NCOs held the course. Thank you.

Lastly, to all ranks of the Corps writ large. Thank you for everything you do. Thank you for proudly wearing the black beret, and when called upon, representing the Corps with an unquestionable mix of tenacity and flair. When in doubt, turn inwards and do everything you can to safeguard our most valued commodity; the crew. It defines our character, our cohesion, and our effectiveness on the battlefield. We ARE different, and what we bring to the battlefield CANNOT be replicated by another arm…..so fire it up!

Worthy!

EDITOR-IN-CHIEF FOREWORD

LIEUTENANT-COLONEL SCOTT FOWLER
DEPUTY DIRECTOR ARMOUR



Members, friends, and champions of the Royal Canadian Armoured Corps (RCAC), what a year it has been! As we take the time to reflect on the accomplishments of our Corps over the last 12 months and the challenges that lay ahead, I offer you the 2021-2022 RCAC Bulletin to fuel those reflections and stimulate your desire to embrace the challenges yet to come.

This year's edition contains many articles that capture the essence of the modern realities of the Corps. From preserving our heritage, to capturing our recent accomplishments for historical record, to looking to the future of training, Corps structures, and Whole Force integration, the articles contained in this edition will no doubt stimulate productive reflection and dialogue within our Corps.

Fueled by strategic initiatives, modernization strategies, ambiguity, and geopolitical instability, the recent tempo of Corps evolution is unprecedented and is likely to endure for the foreseeable future. Through it all, the professionalism and dedication of our members will continue to enable us to proactively shape the future of the Corps and ensure our continued relevance as we look to the battlefield of the future.

Finally, I would like to thank the contributors to this edition of the Bulletin without whom this initiative would cease to exist. Your articles serve as an essential catalyst for the type of healthy discord that fuels evolution and is absolutely essential for the Corps; I truly appreciate and applaud your efforts.

Worthy!

ARTICLES

THE EFFECT OF THE CANADIAN CAVALRY CONCEPT
AND THE FIELDING OF THE TAPV ON TTPS

MAJ DUAINE FETZNER

BACKGROUND

To fully explore the Cavalry model, A Sqn executed a broad spectrum of tasks during its training in 2021. Simply put, the need to train RAPZ and tactical security tasks remained, while a particular focus had to be placed on conventional offensive and defensive operations (direct fire tasks) as well. This focus was put in place not only to ensure a comprehensive training approach, but also to emphasize the bold and aggressive nature by which these tasks need to be executed.

During the year, the Sqn was organized with four troops of four vehicles (as shown in figure 1). There were three major factors that affected the Sqn ORBAT as a whole. First, an aging Coyote fleet made it extremely difficult to field two full Coyote troops on a consistent basis. As a result, Coyotes often totalled two three-car troops or one four-car troop within the Sqn. Second, staffing adjustments proved to be complicated when personnel lacked qualifications on multiple platforms. Finally, the Sqn often competed with other Sqns for valuable resources to fill its Echelon. While this friction is not a new one, it must be noted that the benefits gained through having assets, such as an MRT, directly attached to the Sqn during training were significant.

Figure 1: Outlines A Sqn ORBAT throughout the training year. The A & B Ech was amended based on resources available from HQ Sqn.

IMPACT OF THE FOUR-VEHICLE TROOP STANDARD

When conducting traditional reconnaissance and tactical security tasks, the four-vehicle troop construct was significantly limited. For example, when conducting a screen, a troop could often only occupy one observation post, with a second stretching its personnel thin and creating sustainment challenges. Coordination between multiple troops, providing depth and breadth in the screen, was the most effective way to ensure proper coverage, as four cars were insufficient when employed alone.

Conversely, when conducting direct-fire tasks such as a delay or an attack, the four-vehicle troop was extremely effective. Maintaining four cars as the basic fire element, troop leaders could more quickly and clearly allocate fire to their crews, as opposed to a troop comprised of six or eight vehicles, which would rely on subordinate commanders to further refine target allocation to their junior call-signs.

As training progressed, what became evident was the importance of transitioning quickly from cavalry to more traditional reconnaissance tasks. Troops were frequently challenged to identify targets that could be destroyed within their own means compared to those that required battle handovers. It is also important to note that when transitioning to reconnaissance tasks, expertise in dismounted reconnaissance was required. If not for NCM experience and formal training in this skill-set, success would have been difficult to achieve. As such, knowledge in dismounted patrols and point reconnaissance needs be maintained through formal training and doctrine.

Transitioning between direct fire tasks and reconnaissance tasks also required the Sqn to shift its SHQ footprint. During the execution of reconnaissance and tactical security tasks, SHQ's footprint mirrored the traditional Recce Sqn command post (CP). However, during the completion of direct fire tasks, the Battle Captain dislocated from C/S 1, operating mounted and was responsible for controlling the movement of troops in depth, commanding a fire base and managing communications in coordination with the CP. The Sqn CP remained mobile to ensure effective lines of communication were maintained with the Regimental CP.

IMPACT OF MULTIPLE PLATFORMS AND THE TAPV

The employment of different vehicle types within the F Echelon presented a few notable tactical challenges to the Sqn. First, vehicle characteristics limited how a troop could be tasked during certain types of operations. The limited range of the 40mm RWS largely restricted the TAPV's employment in a firebase during an attack or its effectiveness in a delay. Additionally, the aging Coyote fleet's optics put it at a disadvantage at night, and while attempting to identify targets on the move. Given these limitations, the Sqn sought to compliment the TAPV's optics with the Coyote's range as much as possible. Often, the TAPV would be employed forward in a scout role, identifying targets while the Coyote was kept in depth to move forward and engage enemy targets on order.

Multiple platforms also impacted recovery and resupply within the Sqn. Due to the mixed fleet, multiple ammunition types need to be carefully organized and moved within the A Echelon. There is also a necessity to carry the larger TAPV spare tires in the A Echelon. Both of these cases outlined the need for increased lift capacity within the A Echelon. When conducting recoveries, the A Echelon lacked sufficient assets to recover all vehicle types. In order to completely satisfy the recovery demand, a MRT for each platform would have been required. Finally, the requirement for multiple EO Techs or multiple technician qualifications in order to effectively manage weapons repairs was important during live fire training.

CREW RESPONSIBILITIES

Some of the greatest challenges experienced within the Sqn were adapting crew responsibilities operating in the TAPV. Due to the Crew Commander's restricted field of view, gunners often directed the vehicle into a hull-down position. Additionally, the field of view from the back-up camera on the TAPV was often obstructed by mud and debris, not allowing the Crew Commander to observe rearward. Whether jockeying during an advance or adopting a position in a hide, the Observer was required to direct the Driver while in reverse. MNVGs were prioritized for issue to the Observer to ensure the vehicle could be safely moved at night. The Observer proved to be so important towards ensuring the crew's effectiveness that the position should be prioritized for staffing over the Gunner position; making the Observer the vehicle 2IC.

An additional characteristic of the TAPV that created a challenge was the position of

the RWS, which made it extremely difficult for the Gunner to observe forward without using the actual weapons system. The limited RWS visibility and position of the Crew Commander make adopting a position on the left side of a route during a route reconnaissance problematic, as the vehicle would be more exposed to observation and fire. Consequently, the Crew Commander and Gunner needed to closely coordinate when taking these types of positions and time spent in position needed to be minimized as much as possible.

CONCLUSION

While the four-vehicle troop construct and the diverse vehicle fleet did create challenges for the Sqn, it is important to note that solutions to mitigate their effects were always obtained. Certainly, many of these solutions will require further development, just as some existing TTPs must evolve. But, as the RCAC continues to refine 'the Canadian Cavalry Concept', it will be important to enforce the importance of flexibility and ingenuity, at all levels, to ensure that innovation continues into the future.

EX MAPLE RESOLVE 2022

TANK SQUADRON OBSERVATIONS

CAPT NICK HOMERSKI

TANK SQUADRON OBSERVATIONS

With the Canadian Army's current lack of anti-armour capability, tanks are an essential element of battlefield combat power. As such, proper combined arms operations are critical to tactical success and is a fundamental of the employment of armour. C Squadron, The Royal Canadian Dragoons (C Sqn RCD) was deployed to Wainwright, Alberta for Exercise MAPLE RESOLVE 2022 (Ex MR 22) to act in an enabling capacity for Level 5 and 6 validation for the 1st and 2nd Battalion, The Royal Canadian Regiment (1 / 2 RCR). As such, this provided some latitude to apply doctrine flexibly and test different Tactics, Techniques, and Procedures (TTPs). The squadron operated under a 15 tank construct, as required by our NATO remit and employed by other NATO nations, as well as tested refined echelon structure and TTPs. Extremely valuable feedback and insight into partner nation interoperability was afforded to the squadron by the team of Observer, Controller, Trainers (OCTs): notably two majors from the United States and France, and a Captain from Australia.

COMMAND RELATIONSHIPS

The "dynamic regrouping" of the tank squadron with different Battle Groups (BGs) and infantry companies across the brigade has created the notion that splitting a squadron into sub-sub-units or less mitigates the gap left by the lack of anti-armour capability. Although doctrine is to be applied with flexibility, deviation must be grounded in logic in order to achieve the desired effect. The Armoured Regiment in Battle, Chapter 2, Section 5, Paragraph 7 explicitly states:

The squadron is structured to fight as a single entity. The functions of the Officer Commanding (OC) and Battle Captain (BC) are complementary, not redundant. The Squadron administrative echelon is not double banked in critical support vehicles and tradesmen. It must not be allotted by half -squadron to different battle groups. Within the battle group, splitting the squadron in half or detaching troops must only be done after careful deliberation and with full acceptance of the risks of ignoring one of the fundamentals of employment: concentration. The control and administration of detached elements below squadron level are unwieldy and reduce endurance. It must be remembered that, although the troop is the basic fire unit, the squadron is the basic manoeuvre unit.

The role of a tank squadron is to enable BG operations through the use of its firepower and battlefield mobility. It conducts a task to support the BG mission by way of squadron level manoeuvre, much the same as other arms provide a certain function. At the BG level, it has been the norm to see a tank squadron attached Operational Command (OPCOM). As outlined in Command in Land Operations, Chapter 3, Annex A, "command terms are normally used with the manoeuvre arms…" and "control terms are normally used with support or service arms … where a technical authority exists to advise on the employment of the resource." Whereas the squadron is structured to fight as a single entity, the squadron OC becomes the technical authority to advise its employment and command its operations. Therefore, an Operational Control (OPCON) command relationship for armour is more appropriate at the subunit level. The only constraint this applies on the BG commander is that they cannot assign separate employment of components of the squadron. This would ensure that tanks are being employed as they are structured to and as it is outlined in armour doctrine. During Ex MR 22, although the squadron was almost exclusively tasked in some sort of sub-unit combined arms grouping, the level of joint planning input from the OC or BC was often minimal. Most involvement came after the estimate process and was during the refinement of the COA, whereby there could no longer be input into the squadron's task or employment. There was no opportunity afforded for joint planning between Troop Leaders and Platoon Commanders which resulted in inefficiencies or ineffectiveness of combined arms tasks on the ground.

With the reality of limited tank squadrons available within brigades, no more than one tank squadron is available for attachment to a BG. This often results in the splitting of a squadron to provide armour between two infantry companies. When attached OPCOM to a BG, this is the commander's prerogative. However, "training scars" and training area limitations have falsely convinced combined arms commanders that this is a feasible Course of Action. Firstly, as mentioned, the OC and BC are complimentary and not redundant in function. Moreover, sustainment is a critical lynch pin for the squadron. Tiny manoeuvre corridors, such as 5 CDSB Gagetown (the frequent location of the Combat Team Commander's Course(CTCC)), have allowed Squadron Sergeant Majors (SSMs) to quickly move their recovery, medical, and sustainment assets between halved squadrons supporting separate company advances on a Battle Group frontage. This may not always be the case when terrain is properly used or is expansive. The tank echelon is not structured with duplicates to support such dispersed and independent operations. For example, they could not react in a timely manner to casualty evacuation, considering a tracked ambulance is an important asset and wheeled infantry company ambulances often cannot reach where tanks operate for extraction. This is also assuming that these two infantry companies with their half squadrons are operating in a linear, continuous battles pace on symmetrical advances. Furthermore, when attached to another sub-unit, the squadron will operate on that company's frequency, requiring support elements to find a way to monitor more than one sub-unit radio net, retain situational awareness of the entirety of the BG AO through the BG command net, and have link back to unit or brigade Combat Service Support (CSS) elements for rearward evacuations and sustainment.

RECOMMENDATION

In order to maintain the relevance of amour on the modern battlefield, we must ruthlessly apply our doctrine and expertise in a combined arms context. To reinforce the way we fight to achieve our effect, staying true to the fundamentals of armour, the tank squadron must be enabled by the OPCON command relationship. When attached OPCOM, OPCOM can be delegated. Too often do the infantry view tanks as individual direct fire or anti-armour weapons to be sited. As Combat Teams are formed, the infantry Combat Team commander has the ability to employ the tank troops as they understand best. This nearly erases the command and control an OC has over their squadron.

MANOEUVRE

The conflict in Ukraine has brought to light different vulnerabilities of the tank to modern weapons and capabilities. Notwithstanding that the destruction of these tanks, seen widely on social media, are one on one ambush engagements whereby the use of armour is incorrect or they are not properly supported by infantry, the tank can no longer be considered an invincible juggernaut on the battlefield. Hostile nations have developed into peer or peer plus in terms of armour, armament maximum effective range, and armour penetration capabilities. Movement and fire can no longer be effected by dominating crest lines with tanks; thus, we must re-envision how we achieve manoeuvre.

EMPLOYMENT WITHIN THE BG

Throughout Ex MR 22, C Sqn RCD most often assigned with tasks that lead the BG and created a buffer between enemy forces and the infantry companies: ADVANCE TO CONTACT, DELAY, and GUARD. BG Reconnaissance Platoons and snipers were tasked to SCREEN forward; however, they were employed in a medium, mounted reconnaissance role for which they were not well suited and could not conduct fast enough not to affect the squadron's momentum. The squadron was always committed to find, fix, and strike the majority of enemy contacts.

The majority of the time, combat teams were formed within the BG for the duration of or long phases within the operation. Varying levels of understanding of net priority and net discipline between companies made command and control difficult. As defined in Combat Team in Operations, Chapter 1, Section 1, Paragraph 0106, "The BG Comd will regroup elements of their sub-units to form a combat team in order to achieve a limited mission, task, phase or stage, while recognizing that it is temporary and that the assets will subsequently be regrouped to complete the remainder of the BG mission." However, it seemed that there was a reliance on the combat team to achieve the BG's mission.

When a combined arms solution was required to solve a problem, concentration of force swiftly dealt with it. Once the tanks were released from infantry support, the squadron would form a GUARD until the dismounted fight on the objective culminated. Priority on the net to the infantry, partially due to the risk of the higher powered mounted communication stepping on dismounted radios, quickly became exclusivity. Unlike what is frequently practised on CTCC, platoons do not operate isolated from mutual support. This meant that the tank squadron would be into the subsequent fight of fixing the mutually supporting depth platoon position or remainder of the company. The tank squadron now needed the capacity to direct its fires to achieve this effect until the BG could quickly consolidate or reorient another company.

The most effective application of combined arms was when the squadron was given the freedom to operate as its own subunit. Effective BG command and control, with close coordination of sub-unit commanders over BG command net, ensured there was no gaps in form or function. When a specific effect required tanks and infantry to work closely on the ground and intertwine below the sub-unit level, an ad hoc combat team was formed and the two would work on the leading sub-unit's radio command net. They would divorce as quickly as they would marry when the task was complete in order to ensure each sub-unit could effectively carry on with its mission within the BG context.

PERSONNEL AND VEHICLE TEMPO

Being the firepower crutch for the BGs, it was obvious that vehicle tempo as a limitation to combat power projection needs to be better defined for tank squadrons and understood by employing commanders. The Leopard 2 required a significant amount of daily operator maintenance in order to ensure Vehicle Off Road (VOR) remains low. Exercises such as Ex MR drive the forces being validated through high tempo but short duration operations (one to two weeks). Environmental factors, the dust in Wainwright, required frequent cleaning of the air filters and flushing of the radiators to combat overheating issues. Overheating limited the speed at which the Leopard could move and caused frequent stalling. Where the operational tempo was high, even over the period of a couple days, this was a major factor that affected combat power projection.

Moreover, consistently leading and being vigilant, expecting to be the first in contact, is mentally taxing. Coupled with high intensity fighting and operator maintenance requirements, tank squadron personnel burn out happens quickly. Fatigue leading to loss of personnel for various reasons (loss of combat strength) in addition to slower reaction times under contact are two major factors which quickly reduce combat power available for decisive action. Tempo factors must be accounted for in the commander's estimate process when assessing troops to task.

MODERN BATTLE ELD THREATS

The lethality of top attack Anti-Tank Guided Missiles (ATGMs) has been spotlighted by the war in Ukraine. Cover behind crest lines in turret down positions may no longer afford the protection we assume from direct fire weapons systems. Close Air Support or Close Combat Attack and Unmanned Arial Vehicles are more a more prevalent threat, as the assumption of air superiority is being challenged, making remaining concealed until required ever more important. Moreover, being outranged by superior munitions or armament and high volumes of indirect fire further drive the idea that moving from crest to crest will not provide tactical advantage.

RECOMMENDATION

There are aspects of high intensity, kinetic operations that cannot be replicated on exercise. What can be managed is the tempo driven by the tasks in order to ensure the combat power projection of a tank squadron that is truly needed can be sustained by factors within a commander's control. Tanks are acknowledged as a key asset to combined arms operations. A balance must be found between applying the squadron for decisive action to effect shock action and preserving combat power for the subsequent action.

A key component to combat power management will be redefining armoured movement. The use of terrain is equally important in the offense as it is in the defense. C Sqn RCD experimented with movement, whereby the squadron remained concealed and only unmasked when required for decisive action. This challenged crew commanders as they frequently were not able to see the next bound, remaining in the low ground until a contact was identified. Only one vehicle, likely the Troop Leader, would adopt a position to see around the undulating terrain in order to be able to identify enemy between bounds. This required the OC to closely monitor the frontage and ensure there were no gaps in coverage; however, it allowed for more control over engagements, as the squadron retained the initiative of not being spotted first. Closer engagement ranges and fighting in the low ground evened the weapons range disparity. The OC coined this method as "knife fighting with tanks."

This is particularly relevant as the Royal Canadian Armoured Corps applies similar tasks to LAV 6.0 based squadrons in the Calvary Concept. The depression of the 25mm turret is a major limitation to being able to conduct engagements from an elevated position and the vulnerability of the light armour is mitigated through cover and surprise. Furthermore, applying the future capability of the Light Armoured Vehicle Reconnaissance Surveillance System (LRSS) to this manoeuvre concept could see squadrons moving completely concealed. The LRSS would provide the find function to launch the squadron into the fix and/or strike.

SUSTAINMENT

The fact that tank squadrons are habitually attached to infantry BGs and a fundamental misunderstanding of tank squadron / attachment sustainment necessitated a study in order to develop a viable echelon structure. It needed to be resourced, structured, and trained to act as an independent element, whereby "dynamic regrouping" of the squadron would not affect the cumbersome support dependencies developed. Moreover, the modern battle space demands longer Ground Lines Of Communication (GLOCs) and the ability to conduct Adaptive Dispersed Operations (ADO). Squadrons cannot expect to operate in a clean linear contiguous Area of Operations (AO). In order to achieve this, the following structure was trialed at Ex MR 22 (Figure 1):

1. A1 – SSM's "fast pack" – 1 bound behind Squadron Forward Line of Own Troops (FLOT);

2. A2 – Admin Sgt's "slow pack" – 2+ bounds behind Squadron FLOT (3-5kms);

3. B1 – 1st line maint, 2nd line surge capacity, sustainment C2 – rear of BG AO (6-10+ kms from Forward Edge of Battle Area (FEBA) depending on indirect fire (IDF) threat); and

4. B2 – remainder of parts scaling and QM stores – Brigade Support Area (BSA) (25+km from FEBA depending on IDF threat).

During the review of doctrine and the conduct of the exercise, the below key oversights were found:

1. Where / how maintenance and recovery happens in the AO in order to support high tempo operations; and

2. Carrying capacity required to provide sufficient 120mm ammo and fuel resupply by unit & formation level echelons.

The Maintenance Cycle (Figure 1)

The nature of armoured cavalry operations requires the ability to quickly move and achieve effects across a large AO. Sustainment of armoured combat power relies equally as heavily on fleet maintenance as replenishment. First line maintenance must be conducted as close to the F echelon as tactically feasible to maintain combat power forward and minimize the time in returning serviceable equipment to the battle. To facilitate this, forward staging of routine or high consumption first line parts scaling must be held with the C Sqn RCD model's B1. For a vehicle fleet with high daily requirement of routinely replaced parts, echelon mobility become severely reduced. A Leopard 2 may require frequent changing of track pads, road wheels, sprockets, idlers, and even entire tracks – depending on the terrain. Most of these types of replacement are relatively quick operator maintenance jobs; however, time to complete these tasks is exacerbated by the parts not being immediately available. Though these types of parts are quickly consumed, they are still accountable; thus, the rearward movement of non-serviceable parts must be factored into the replenishment cycle. Operator maintenance is noisy and that vehicle will have a limited ability to fight and/or move while repairs are ongoing. Maintenance in troop hides close to the FEBA or in a SCREEN / GUARD comes at the risk high of detection while immediately available combat power is reduced. Planning sustainment must take into consideration the sequencing of operator and first line repairs against location and requirement to maintain combat power to a task or contingency.

To manage a large AO, necessitated by the squadron's requirement to support the entire BG during Ex MR 22, there required to be a larger maintenance element pushed further forward. Decentralization from unit CSS allows the squadron to manage its own tempo and geographical considerations, which are not understood by the BG. One ARV is required in the A1 for emergency support and the second ARV is required in the B1 to assist with operator and 1st line maintenance; therefore, 2nd line support had to be surged forward from the BSA, as the Svc Bn did not have an integral ARV to conduct this. It was also important for the second ARV to be further forward in the AO to minimize GLOC distances that the A1 ARV was required to move for recovery. This minimized the time that the A1 ARV was away from the emergency support disposition. Equipment that required movement to the Back Loading Point (BLP) at the BSA should be done by the B1 ARV via the Svc Bn Delivery Point (DP) cycle and brigade battle space managers. This created an intimate link between the Svc Bn and the squadron directly.

The Replenishment Cycle (Figure 2)

The Replenishment Cycle (Figure 3)

The Replenishment Cycle (Figure 4)

It was assessed that 1st line parts scaling at the B1 for high / routinely / daily consumed parts would be two sea cans and one PLS worth. This created an increased DP demand, whereby direct technical interface and handoff was required between B1 and B2 Quarter Master and spare parts section personnel to ensure B1 parts scaling and forecasting was being done in order to minimize VOR time. Further, a complete Leopard 2 squadron's 120mm ammunition load can require up to six echelon trucks. High tempo ops could see this expenditure, particularly of the heavy high explosive nature across a day. High High Explosive expenditures were seen frequently throughout Ex MR 22 as the squadron was frequently tasked with sustained periods of Direct Fire Support. In a static defensive context, dumping programs can be the solution. For all other operations, ammunition needs to be pulled via routine or emergency resupply. Therefore, the unit and Service Battalion must have the carrying capacity to mirror the squadron's requirement. This unit level and higher replenishment resource issue extends to tank squadron fuel consumption which may exceed 20k L/day. A Leopard 2's range is 280km on 1160L, plus the 27 echelon vehicles and number of SEV/trailer/CP generators.

Doctrinally, a Squadron's A1 should mirror the A2 in order to allow direct exchange of commodities in a unit centralized or decentralized approach. The realities of the equipment afforded do not allow this – especially when considering the demand of a tank squadron. Both the RCD's HQ Squadron and an Inf BG's CSS Coy cannot effect direct handover of the 3rd DOS and maintain the sole connection to the Service Battalion DP. With larger and larger AOs, the decentralized method of sustainment is the only one feasible outside of a deliberate, rear area reconstitution operation. A tank squadron needs to be enabled to operate independently in order to effect dynamic regrouping. This requires the support dependency to link directly to the Service Battalion. The sheer scale of daily replenishment required necessitated C Squadron's A2 to move directly back to a Svc Bn DP to conduct a physical exchange with its own B2 assets.

THE ROLE OF THE SQUADRON 2IC

Another key limitation is the limited Leopard 2 technical expertise within higher sustainment organizations. A Squadron 2IC must be held accountable for conducting their doctrinal role in sustainment. Sustainment is defined in the Defence Terminology Bank as "…the provision, maintenance and administration of personnel, materiel, health services and infrastructure to maintain the combat power of a military force."

A 2IC must be forward in the AO to effect total oversight of the back end of sustainment: echelon battle space management, conduct and coordination of the DP cycle, commodity requests, casualty evacuation to unit or brigade medical resources, equipment back loading, personnel administration, technical expertise to resupply and maintenance operations – to name a few. Therefore, the Squadron 2IC needed to have direct link to the Service Battalion in order be able to ensure sustainment requirements were met. Lack of Leopard 2 and general sustainment experience at unit and higher levels necessitated that the 2IC work directly with formation sustainment and 2nd line maintenance. Additional layers of unnecessary oversight and control only hindered sustainment efforts and jeopardized combat power projection. The most effective sustainment relationship developed at Ex MR 22 saw the Squadron 2IC liaising with BG 89A for battle space management and coordination of Service Battalion DP timings only, while being required to maintain a direct link to Brigade Log Ops daily in order to ensure there was no critical sustainment failures.

RECOMMENDATION

A properly equipped A and B echelon has more vehicles than the F echelon. Sustainment remains the foundation from which the tip of the spear, the combat force, is built upon. In the same manner that there is mandated foundational collective training by gateway levels for the F echelon, there needs to be validation requirements for the complex sustainment systems. Proven doctrinal structures exist to be flexibly adapted to the realities of the situation; thus, A and B echelons with their task tailored subcomponents should be validated annually in a Level 3 context. C Sqn RCD ran a five day echelon exercise, independent from the tank troops, to train echelon soldiers across Level 1 to 3. The exercise served to confirm or adjust the conceptual system developed prior to Level 4 to 6 events across the remainder of the year. This informal validation solidified this foundation from which came confidence and refined TTPs that directly contributed to maintaining a low VOR – high combat power projection.

URBAN OPERATIONS

Urban sprawl and human populations forming megacities has further forced war into built up areas. Fighting in Ukraine has seen urban centers

the focus for capturing of key terrain. The RCAC has, however, shied away from urban operations. Despite the Armoured Regiment in Battle outlining that "tanks are very usual in [fighting in built up areas]," it only contains two short paragraphs. Ex MR 22 ended each BG's iteration with an attack on a town. Each BG used the tank squadron very differently and each had very different outcomes.

The first iteration had the tanks restricted from effecting fire into the built up area. The squadron bypassed the town and was used as an outer cordon to prevent mechanized counterattack. Though the squadron successfully repelled a large force, it took significant losses from fires within the town. The disposition of friendly forces and battlefield geometry made effecting self-defensive fires impossible. Further, the battalion took heavy casualties from enemy armoured vehicles that were well sighted within the built up area.

The second iteration had tanks effect fire into buildings, confirmed by snipers to be solely occupied by enemy forces, from a firebase location. The BG also had tanks move into the village in an intimate support type role. This protection afforded to the dismounts enabled the supported company to quickly deal with armoured threats. The company commander also used the tanks to direct fire onto enemy sniper or machine gun positions which impeded dismounted movement through the streets.

RECOMMENDATION

Urban operations success was, nevertheless, rough. Discussions with the partner nations OCTs made it clear that there is much the RCAC needs to develop for modern urban operations TTPs. Initiative in pursing professional development sessions with the infantry at the squadron, down to the crew level, is imperative to refining this.

- How does a tank move under 360 degree protection from dismounts?

- How is battlefield geometry controlled considering secondary effects of the 120mm blast effects?

- How is communication done without tank phones?

- Does the crew commander and gunner dismount to look around corners with the infantry commander to identify lay of gun before exposure?

- What signals can be used to warn friendly dismounts that main gun is about to be used?

The RCAC must better sell the capabilities of the tank in the urban fight to the infantry corps; yet, it must also understand the intricacies of how the infantry fight in the urban environment to support these operations. Unfortunately, the tank becomes more of a weapon system for the infantry to sight and direct on the ground; however, conducting urban operations is key to maintaining relevance and employability across all future battlefields. The complexity of urban operations necessitates the development of prescriptive TTPs.

CONCLUSION

The size and scope of Ex MR creates perhaps the only true environment to exercise a squadron through a consistently live environment with dynamic higher headquarters control. Unfortunately, this training only comes around once every few years and is the positional right time / right place for the training audience. Nevertheless, the observations and lessons that are learned should not be lost or encapsulated in individual experience. The RCAC's transition to cavalry and review of doctrine is the perfect time to challenge the status quo and build better fundamentals for tomorrow's fight.

HELLFIRE

THE HALIFAX RIFLES RCAC REDISCOVER THEIR HISTORICAL ASSET

CAPT OWEN PATTERSON

Figure 1

Hellfire, a M4A2E8 Sherman Tank, was unveilved as a monument to those who served with the Halifax Rifles (RCAC) 2 June 1968 by the Lieutenant Governor of Nova Scotia, Colonel, the Honourable Henry MacKeen, CD, QC, a few years after the regiment was stricken from the active list of Canadian regiments in 1965.

Hellfire was placed on the Halifax Commons where it was climbed on, slept in, and generally neglected until 1988, when it was moved next to the North Park Armoury where it sat until 2018 when it was moved to CFB Shearwater while the NPA underwent repairs.

TFigure 2

Figure 3

Figure 4

Figure 5

Hellfire sat next to the ocean on an Air Force base for twelve years and was essentially forgotten until it was "discovered" by 2 Lt Patterson. He managed to purchase Hellfire from the Halifax Rifles Armoury Association for $1.00 and have the memorial placed onto the Non-Public Property assets of the regiment as a historical artefact, a move which allows public funds through O&M to be used to assist in restoring the artefact.

Hellfire was moved from CFB Shearwater to the regiment's vehicle compound where an initial assessment occurred and the restoration project started. It was decided that due to the cost, the project would be conducted in phases, with phase 1 being the external stripping and repainting of the tank back to a 1940's pattern which would be recognised by any member of the unit who served in the Second World War.

Figure 6

Figure 7

Thus far over two years, the hull has had all of the paint and rust ground off using angle grinders. It is estimated that 5 kgs of paint was removed as the hull had approximately 14 layers of paint added over the years. The hull was brought back to at least the original red anti-rust coating from when it was manufactured, wiped down and given a good coat of anti-rust primer.

Figure 8

Figure 9

Figure 10

The top coat, an olive green, is a semi-gloss while the original was a flat paint so as to not reflect light. This was at the suggestion of the National War Museum due to the longevity of the semi-gloss vice flat.

Figure 11

Figure 12

Phase 2, is to replace or recreate many of the stolen or destroyed parts such as periscopes, gun holder, as well as closing off entry from the engine compartment. It is also desirable to restore functionality of the hatches if possible.

Hellfire will be moved back to the Halifax Armouries in the near future and rededicated as a memorial to our members of the regiment who have passed.

Donations for this project are welcomed with donations over $20 receiving a tax receipt from CFMWS. As well, limited edition prints from renowned artist Peter Robichaud are available for $50 with all proceeds going to the Hellfire Restoration Fund. Please contact Captain Patterson at patterson.op@forces.gc.ca for further information.

Figure 13, "Hellfire"

TANK COURSE

THE CANADIAN ARMY INSTRUCTOR GUNNERY TEAM RUNS THE RST SERIAL OF THE ARMY DIRECT FIRE SPECIALIST

CAPT BRIAN COBBY

Figure 1

From 28 March to 26 of April, the Canadian Army Instructor Gunnery (CA IG) Team ran the first serial of the Army Direct Fire Specialist-Tank (ADFS-T) course. The ADFS-T is the first advanced gunnery course to cover the armaments and fire control systems of the Leopard 2 Main Battle Tank (MBT).

The ADFS-T evolved from the Army Direct Fire Specialist (ADFS) course which ran its pilot serial in the spring of 2021. The aim of ADFS is to allow personnel to plan and conduct individual and unit continuation training for Armoured Fighting Vehicle (AFV) crews and provide expert advice regarding the capabilities and employment of direct fire weapon systems. Both courses share common performance objectives that include:

• PO 301 – Construct and Armoured Fighting Vehicle (AFV) Danger Area overlay manually;

• PO 302 – Plan unit gunnery training; and

• PO 303 – Advise on AFV weapon systems capabilities.

After students learn to produce Danger Area Overlays (DAO), both manually and with the Canadian Forces Range Information System (CFRIS) application, they are required to plan a live fire exercise. Candidates also learn to produce a briefing note on an approved subject relating to mounted direct-fire gunnery. Whereas ADFS includes PO 304 - Troubleshoot LAV Mounted Weapon Systems, the new ADFS-T substitutes this PO with PO 305 - Troubleshoot the Leopard 2 Turret Systems. Both courses run over 20 days and build on the lessons learned from the previous advance direct-fire course, the 13-day Army Direct Fire Expert (ADFE) course. The additional days of training provide in-depth technical training from Electro-Optics (EO) and weapons technicians on either the LAV 6.0 or Leopard 2 weapon systems, allowing candidates to better diagnose and troubleshoot faults on their respective platforms. Both courses receive advanced lessons on ballistics and weapons design from the Corps's Technical Adjutant, Capt Valeri Popenko and Master Gunner WO Corey Bulmer, allowing graduating candidates to effectively advise their chain of command on current and future weapons systems capabilities.

Candidates on ADFS-T are also taught the Leopard 2's recently developed semi-indirect firing technique, which allows Leopard 2 crews to engage targets far beyond the tank's maximum range of 4km (during trials, targets were engaged up to 8 km).

Another highlight for both courses, candidates receive extensive briefings from project representatives at Director Land Requirements (DLR), providing the latest updates on Canadian Army AFVs including the LAV 6.0, Leopard 2, Tactical Armoured Patrol Vehicle (TAPV) and the Army Combat Support Vehicle (ACSV). Candidates also receive an intelligence briefing on threat vehicles and tour of a Russian-made T-72 main battle tank and a BRDM reconnaissance vehicle.

Working closely with field force units, the CA IG Tm continues to improve direct fire techniques and procedures within the CA. ADFS and ADFS-T delivers a significant increase in skill and lethality to CA AFV crews.

EX MAPLE RESOLVE 2021

LESSONS ON FIGHTING RECONNAISSANCE

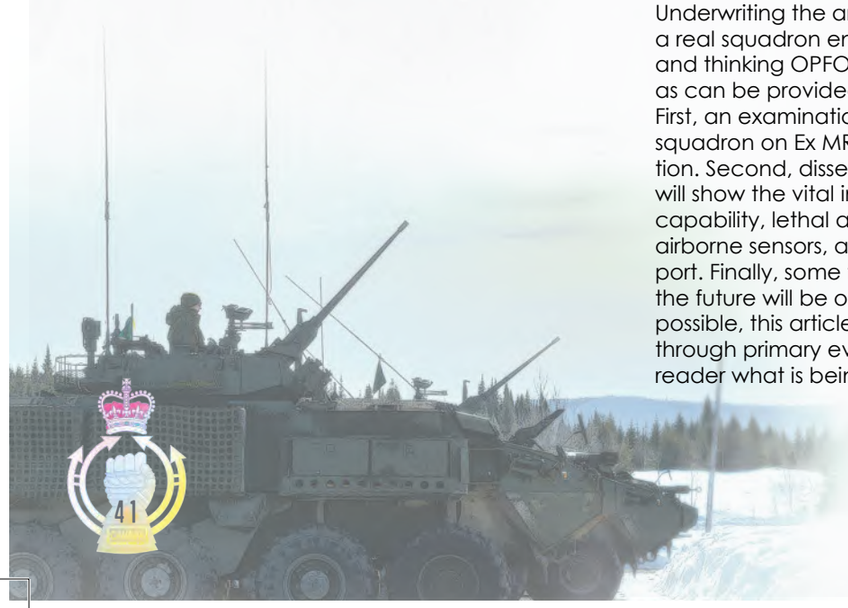
CAPTAIN MILES SMITH

Caption: A soldier shoulders the Carl Gustav during Ex MAPLE RESOLVE 21. Credit: Combat Camera

INTRODUCTION

Upon return from Exercise MAPLE RESOLVE (Ex MR) 21, the members of what is now called "D Squadron" hung a memorial group photo beside the entrance to their lines. The caption of the photo was "The Last Recce Squadron," as the Royal Canadian Armored Corps (RCAC) was officially rebranding its squadrons as cavalry from reconnaissance or tank. Despite the sentiment, that group of officers and soldiers employed tactics on Ex MR 21 that other nascent cavalry squadrons of the RCAC may find valuable to examine. This article will highlight the experience of Lord Strathcona's Horse (Royal Canadians) during Ex MR 21 to present salient lessons for consideration while the shift to cavalry is being implemented within the RCAC.

This article will argue that the RCAC must reconsider its heightened emphasis on mounted performance of tasks at the expense of dismounted expertise to ensure that sub-units are trained and equipped with capabilities required to succeed in their new role as cavalry on the battlefield. Underwriting the argument is the experience of a real squadron engaged against a motivated and thinking OPFOR under as realistic conditions as can be provided in a training environment. First, an examination of the problem facing the squadron on Ex MR 21 will provide the introduction. Second, dissecting experience on Ex MR 21 will show the vital importance of a dismounted capability, lethal anti-armour systems, integral airborne sensors, and indirect fire in direct support. Finally, some thoughts on improvement for the future will be offered. To the greatest extent possible, this article seeks to support its arguments through primary evidence in order to show the reader what is being argued, rather than resting on theoretical arguments or historical analysis. This will be done through Weapons Effects System (WES) GPS map overlays, excerpts from orders, and accounts of first-hand experiences from those who were in the squadron.



BACKGROUND

AN APPRECIATION OF THE PROBLEM

For context, Ex MR 21 saw two successive iterations of 1 PPCLI and 2 PPCLI battle groups (BGs) facing off against the other in Wainwright. The friendly BG for each iteration was largely defending, and was always under the command of 1 CMBG HQ. The brigade provided higher control and also retained the brigade reconnaissance squadron, whose frontage matched that of the BG. Doctrinally, therefore, the squadron's employment straddled the definition of close and medium recce. They were employed by a formation, but were operating strictly within the BG's area of interest. Additionally, the infantry battalions still possessed their integral reconnaissance platoons. Although the OPFOR was not allocated real Leopard 2s, a company of OPFOR LAV 6.0s had their WES systems programmed as T-90s. Perhaps the simplest way to explain the task and inherent problem facing the squadron during Ex MR 21 is to tell the Officer Commanding (OC) tell it in his own words. Major Dan Gray explained:

Our task, which we should expect more of if we are transitioning to cav, was to identify and destroy enemy reconnaissance, identify the main-body (implying we had to do something with the vanguard and lead element), and destroy the enemy recon-strike complex. This all had to be done while minimizing FF casualties because we were a limited resource and expected to be in place for 3+ days. These are not tasks that a TAPV or Tp of TAPVs can accomplish, especially in the terrain we were operating in where the only cover is rolling hills with no trees and limited vegetation (the badlands). Identification of enemy elements was easy to do with the optics of the TAPV along with layered MUAS but you can't simply sit there any allow the enemy to bypass you because they will kill you.

There lies the rub, the squadron was ordered to accomplish a task that it was simply not organized, equipped, nor augmented for – especially potentially facing elements of a company of T-90s. The Commander directed the squadron to shield the preparation of the main defensive area and, if required to do so, engage in mounted close combat. The squadron was tasked to take advantage of any opportunity to seize the initiative. A critical consideration of the mission was to avoid decisive engagement and preserve combat power for follow on tasks.

Drilling down to the foundation of the argument being laid here, consider the following: first, the brigade commander's concept of employment for the squadron was no different than what is being promoted by the cavalry concept. Second, the difference between the force design of the future cavalry squadron and the squadron employed on Ex MR 21 is that the future would have the squadron organized in four troops of four vehicles, put less emphasis in squadron level training in dismounted tasks (with mobility and assault troops held at Regimental level), while arming light armoured vehicles with mounted ATGM capability (aspirational, a capability being considered in the medium-to-long term). Ex MR 21 therefore provides an example of a tactical environment where an armoured reconnaissance squadron was tasked to conduct offensively minded tactical security tasks similar to what we envision for cavalry squadrons.

During Ex MR 21, squadron operations occurred in an environment where the key limiting factor for mounted forces was low battlefield density. Curtis Taylor defines battlefield density as "a measure of the amount of energy a reconnaissance force must apply to distinguish a threat from its surrounding environment." He goes on to clarify that "this variable is really the combined effect of two battlefield conditions, one based on the terrain and the other on the enemy." More to the point, when operating in the Wainwright badlands against an OPFOR equipped with thermal sights, night vision equipment and UAS, a static vehicle mounted screen would be easily detected and would have stood little chance of meaningfully engaging the enemy to achieve Commander 1 CMBG intent.

The TAPV, while possessing excellent optics, simply does not have the armour, firepower, nor mobility to engage in a mobile battle against tanks. Neither the 25mm cannon nor the vehicle mounted ATGM capabilities which the RCAC is pursuing would do much to help in the fight against tanks here either. A TAPV or LAV 6.0 is simply too visible in the terrain of the Wainwright badlands to avoid detection. Further, although the terrain is open and enemy vehicles are also relatively easily detected, they are not easily engaged as the undulating terrain presents fleeting opportunities for destruction. It cannot be forgotten that most vehicle mounted ATGM systems require the firing platform to be static or near-static, demand lon-

ger acquisition times than laying a gun, are slow firing, have limited extra ammunition and have a prominent weapon signature when fired. The same is true for ATGMs in the dismounted role, however dismounted teams are far less visible and more difficult to return effective fire against at range.

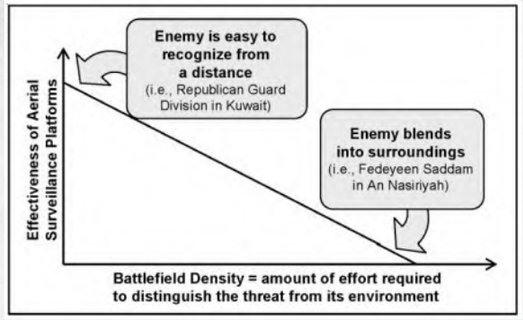


Figure 1 – a simplified visual representation of the relationship between battlefield density and detectability. During counter-reconnaissance and the task assigned to the squadron, staying undetected until within anti-armour range was vital.

The squadron second-in-command, Captain Thomas Gray of the Royal Lancers (UK), identified the crux of the issue as that reconnaissance forces require time and space to be effective against enemy manoeuvre forces. In his assessment of the situation, neither were afforded to the squadron in this example:

Without two of their key requirements, how do they fight to provide sight to ground forces? The answer is an increased aggression within the Cavalry. There is more to the counter recce battle than just blinding the enemy's eyes. Whilst this is hugely beneficial for FF (friendly forces), counter recce will also significantly slow down the EF (enemy force). This will allow time for cavalry squadrons to go to work. Secondarily it will force EF to utilise UAS, giving information to FF on likely enemy routes and direction of travel.

Freedom of movement and battlefield mobility of the squadron was limited by the tempo with which the enemy was expected to advance. Although Ex MR 21 saw the squadron organized in three six-car troops, a variant of the 2008 reconnaissance squadron outlined in Ground Manoeuvre Reconnaissance, the combat power of the enemy was assessed to be far greater than what the squadron possessed. In many ways, this fact was turned against the enemy force. As Captain Gray explains, "having performed our estimate, we came to the conclusion that their recce would be lightly supported, saving a majority of their fighting power for their main force. Secondly we assumed that their recce couldn't perform a detailed search and would instead look for safe routes rapidly, under armour."

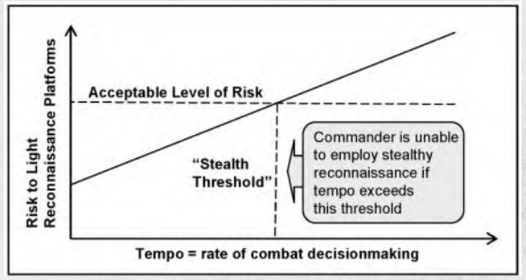


Figure 2 – a chart depicting the risk to light reconnaissance (or cavalry) as a function of the tempo at which they are being ordered to operate. Although the original author, Curtis Taylor, conceived this applying to offensive reconnaissance operations, the same applies to defensive operations. Dismounts cannot operate without severe risk to being overrun by an armoured enemy pushing at high tempo.

In the figures that follow, note the engagement ranges shown. Opposing forces are nearly joined before a real engagement begins, certainly below 1000m. A long range engagement even with vehicle mounted ATGM would struggle to achieve a DISRUPT, let alone a FIX or DELAY. The shortcomings of the TOW system below 1000m are well-documented within the Army and CANSOFCOM (see endnote). In these reports from both operations and scientific experiments, the overwhelming conclusion is that neither SOF nor the regular Army has an effective capability between 400m and 1000m to reliably destroy enemy armour, with the capabilities of the 84mm Carl Gustav recoilless rifle and TOW missile systems both leaving much to be desired in terms of lethality, detectability, and overall performance. Main battle tanks are excluded from this statement, naturally.

To summarize, the squadron needed to first detect the enemy without themselves being detected. Once done, the squadron needed to strip the lead elements while preserving combat power for following engagements. Finally, the squadron needed to either slow the tempo of the enemy to match their battlefield mobility, or employ methods that allowed them to cope with the tempo of the enemy's advance while maintaining contact during the withdrawal. All of this needed to be accomplished with a severe capability deficit, as a squadron of mostly TAPVs facing potentially a battalion (-) equipped with main battle tanks.

WHAT TO DO
THE EXPERIENCE OF EX MR 21

Returning to the example at hand, in the words of the OC:

Our solution was to create dismounted AT teams based on 4 pers with Carl G(ustav)s. We had limited access to ATVs and Tac Hel for movement/infiltration and they had a fall back plan to the nearest OP. Their task was to destroy recce and vanguard elements as they advanced towards the main screen line. The enemy had done their estimate and were looking for Coyotes and TAPVs (which were easy to find in that terrain) but were not looking for/could not find small, well placed AT teams. These teams were extremely effective in hitting the enemy before they could be seen and cause attrition, chaos and a lack of SA (situational awareness)/recce for the enemy. These teams were extremely effective, destroying 30+ vehicles throughout the exercise. Since we had limited resources and dismounted teams are slow by their nature, it required detailed terrain analysis to identify the 2 or 3 likely manoeuvre axis which is where we would set up the teams.

There is a certain threshold for both battlefield density and tempo within which mounted reconnaissance forces can effectively operate. If these conditions are not favourable and stealth reconnaissance is not an option due to a combination of high tempo and lack of cover, cavalry forces must be prepared to fight for information. The employment of combined arms teams in this scenario, completely changes the estimate. With the low signature offered by small dismounted tank hunting teams (THT), offset by their ability to remount their patrol's vehicles and to be inserted rapidly by ATV or CH-146, light dismounted teams may achieve disproportionate effect against the enemy. As Captain Gray alluded to in his comments, the shock of encountering these teams and their devastating effects achieved enough of a DISRUPT (or, in some cases, localized FIX) to slow the enemy's advance. Aggression and ambush allowed the squadron to dictate the tempo. Figures 3-5 below show an overview of one example of these THTs in action during Ex MR 21.

Troop leaders were enabled with significant freedom on how to employ their THTs, allowing them

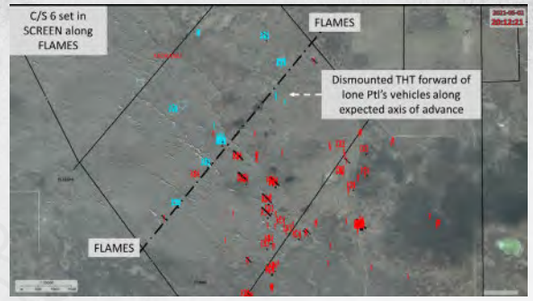


Figure 3 – A WES "God Screen" overlay that shows the initial disposition of the squadron in blue against the enemy's initial probing efforts in red.

to adapt their employment to the circumstances on the ground. In some cases troop leaders opted to collocate them with their OPs to provide additional direct fire anti-armour capabilities, while others pushed their THTs further forward as a separate element. For Captain Scott Veale, a troop leader in the squadron, the real value was the additional firepower to augment capability in patrols. The surveillance operators who may otherwise have been idle during the battle were amalgamated from each crew to form a THT. In all cases, THTs themselves were afforded significant freedom to site their positions. Given that troop leaders in the RCAC are not trained in the employment of dismounted anti-armour weapons, this is really the only option available. The record of decision for the draft qualification standard of the new troop leader course contains two notable questions: "Are we going to maintain hand-held anti-armour weapons within the Corps?" and "In a recce context, (dismounted) anti-armour weapons do make sense, for the Corps restructure does this make sense?" Given

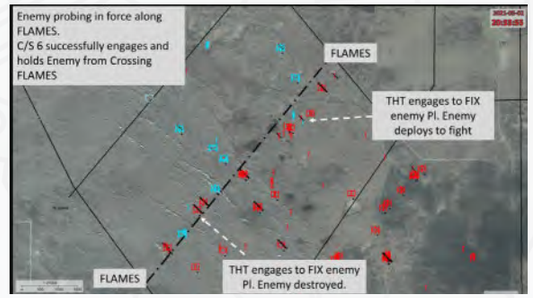


Figure 4 – THTs engage enemy forces attempting to penetrate the screen line with devastating effect. Enemy vehicles with black strikes denote their destruction. Note the difference in distances from OPs between the THT in the north and the THT in the south, as well as the low friendly casualties.

the experience on Ex MR 21, the answer to both questions should resoundingly be yes.

A robust dismounted capability equipped with anti-armour weapons is only one part of the larger equation. The use of integral sensors at the troop level, most notably miniature unmanned aerial systems (MUAS) was critical to ensure that the teams were placed along the enemy axis of advance, identified through the careful appreciation of the ground which Major Gray mentioned. While the appreciation of the ground could coarsely place the THTs, MUAS ensured that they were finely adjusted. In the words of Captain Alex Schofield, a troop leader in the squadron during Ex MR 21, "we had noticed that the BGs were massing in WAs and then pushing forward quickly along easy to track routes. We were able to combine MUAS feeds to find the targets and define them – based on this information, the (tank hunting) team would move to a new location if it was close enough/feasible. The MUAS proved to be critical to this execution." She continued to state that the MUAS was so important to the success of this tactic that troops coordinated to ensure near constant coverage of the line's frontage when others had to land to recharge.

In considering the needs of a cavalry squadron operating independently, indirect fire support, or lack thereof, is another important consideration. Doctrine minces no words in asserting that indirect fire is crucial to successful counter-reconnaissance and, indeed, almost any operation undertaken by reconnaissance forces. Doubly so when the squadron is not augmented with other manoeuvre arms. After-action review (AAR) analysis by CMTC personnel shown in the figures below demonstrates the difficulties that cavalry elements will face without an integrated indirect fire capability. Noting the time in the first figure, 21 minutes elapse between enemy forces being within 100m of the THT and the first rounds falling – not effective unsurprisingly, as the AAR noted, due to the time required for the guns to receive the information and fire and the rapid tempo of the enemy advance. The second fire mission was successful as by that point the enemy elements had been fixed. One way, admittedly among many, to minimize this delay is to integrate an indirect capability organic to the cavalry squadron, as is done in the United States (see figure 6). Although there are myriad factors affecting the responsiveness of indirect fire, a dedicated asset would also ensure continuous support on the demand for the squadron.

Note the integral indirect fire capability, FOO, and even a military intelligence analyst attached within the ORBAT of figure 6. One of the salient observations from the reconnaissance squadron attached to Op ATHENA Roto 1-08 was that intelligence analysis support, at minimum a

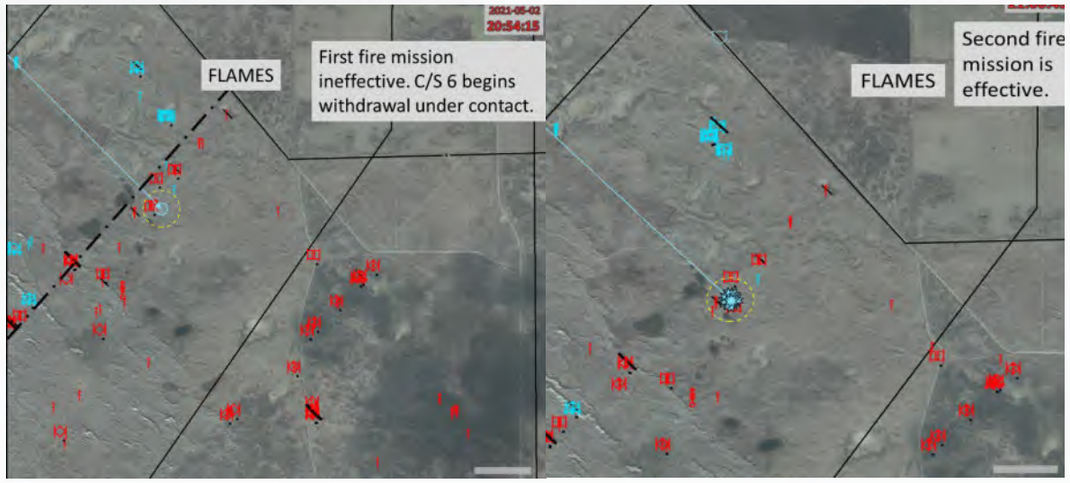


Figure 5 – The initial fire mission is ineffective due to the movement of enemy vehicles after it was sent to the guns. In the second frame, the fire mission is effective as the enemy vehicles had halted to engage the THT and deployed dismounts to clear the THT's position.

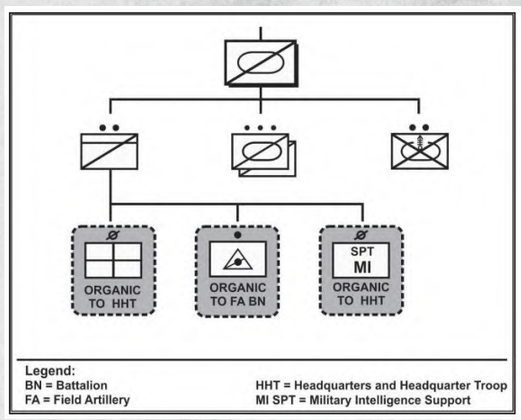


Figure 5 – The initial fire mission is ineffective due to the movement of enemy vehicles after it was sent to the guns. In the second frame, the fire mission is effective as the enemy vehicles had halted to engage the THT and deployed dismounts to clear the THT's position.

soldier trained in the Tactical Intelligence Operator Course, and should be integrated within the squadron headquarters as well. Although this is perhaps not as vital as the addition of organic indirect fires, it is yet another example of the importance of enablers that our preeminent ally believes a cavalry squadron requires for it to successfully perform its role. By extension, these organic enablers could be what truly differentiates a RCAC cavalry squadron from a similarly equipped mechanized infantry company using LAV 6.0.

Although friendly snipers detached from the BG were operating along the same screen line, the brigade attached them TACON to the squadron. Despite being assigned nearly identical roles in the brigade intelligence collection plan, the squadron could not control the snipers in any way except for coordination of movement and location to enable them to conduct their tasks. Integrating these organically into the squadron would be similar to the practice in US cavalry within Infantry Brigade Combat Teams, where each troop (equivalent to a Canadian squadron) contains a sniper section of three detachments – exactly the same as was operating with the squadron during Ex MR 21. In American cavalry doctrine, the role of the sniper is to provide precision fire, and also to "observe, collect, and provide critical, detailed information. Examples include snipers providing over watch during a dismounted portion of zone reconnaissance or adding depth to a screen in complex terrain." No doubt, the squadron would have made excellent use of the additional capability while arrayed in a screen in the complex terrain of the Wainwright badlands. Captain Scott Veale noted that the snipers operating in the same area provide utility in their ability to provide close definition of the enemy and maintain contact through layback patrols, although Captain van Heerden lamented the fact that the snipers were only attached TACON. Although their reports provided additional situational awareness, the inability of the squadron to direct how they went about their mission combined with the requirement to support their insertions meant that they were a burden more than an asset. If they were attached OPCON, or organic to the squadron, their employment could have been better integrated into the squadron scheme of manoeuvre.

TOWARD THE FUTURE

The question now facing the RCAC is whether the cavalry squadrons will be sufficiently resourced to fill their new roles, or whether they will find themselves in a similar situation to the squadron on Ex MR 21. This sub-unit was equipped and resourced for surveillance, but asked to perform tasks of a combat manoeuvre element. Without changes, this is certain to be the case. As the arguments above illustrate, the number of vehicles in a troop or patrol would have had almost no effect on the outcome of the battle due to the general dearth of capability. The squadron suffered heavy casualties throughout the exercise, but without the creative use of dismounted THTs synergized with MUAS and indirect fire, "it would have been 2-3 times worse and we'd have done no killing" in the assessment of the OC. Equipping cavalry squadrons with heavy direct fire weapons in the style of an AMX-10RC or Centauro as has been proposed within the RCAC would address the direct fire and lethality shortfalls between 400m and 1000m, but not the lack of dismounted capability. In any environment where vehicles would be easily observed from both ground observation and unmanned aerial systems, more heavily armed vehicles are not necessarily the solution.

As a tank troop leader on the same exercise, the author's own experience reflects as much. While attached to a company of zulu infantry LAV 6.0s to shield the dismounts digging a main defensive area position in the rear, the lack of available dismounts when arrayed in a guard line in the Wainwright badlands was acutely felt. Despite having significant direct firepower available in the form of Leopard 2s and LAV 6.0s, the key challenge was to observe and engage approaching ene-

my forces without being detected and engaged oneself. A single dismounted soldier with binoculars on a crest would have drastically altered the conduct of that mission, let alone integrated THTs with their own anti-armour weapons. On several occasions enemy dismounts were able to infiltrate through the line, and enemy vehicles could not be engaged until the last moment through careful route finding in defilade. Figure 7 illustrates this in detail from the perspective of the reconnaissance squadron. The RCAC must re-introduce a dismounted capability and continue to leverage the integration of MUAS at the lowest level to mitigate these challenges.

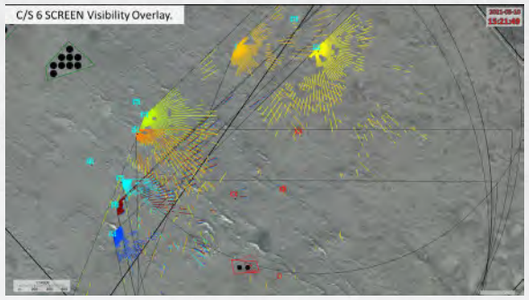


Figure 7 – A computer generated overlay of what a section of the screen line could observe and fire upon. Note the enemy vehicles in defilade at the centre of the image, no more than 1.2km from the screen line. Despite the low battlefield density and lack of vegetation, the undulating terrain made engagements very difficult to prosecute.

A robust combined arms cavalry squadron has the ability to be more lethal while minimizing its own signature. As explained in the introduction, dismounted soldiers are far less detectable in any battlefield density, and can remount when the tempo of the battle demands it. If equipped with the right weapons, they also have the potential to be far more potent. Exercise FUSILIER RECIPROQUE was studied by Defence Research and Development Canada to determine infantry anti-armour capability in the absence of air and MBT support. Unsurprisingly, the study noted the same shortcomings of the Carl Gustav and TOW missile systems, but also tested the allocation of C14 command detonated "off route" rocket-propelled mines along with traditional magnetic anti-tank mines. As expected these both significantly augmented the anti-armour capabilities of the dismounted infantry, but are currently only

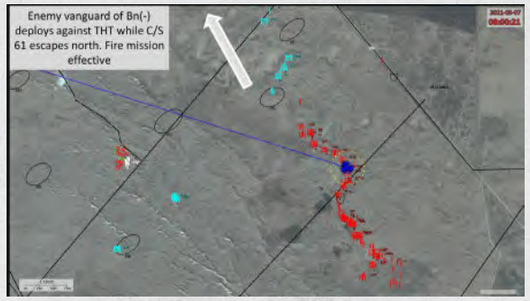


Figure 8 – A dismounted THT deployed ahead of its troop forces the deployment of the enemy vanguard from the line of march, temporarily halting the enemy battalion (-)'s advance. A fire mission called from the troop observation post strikes the column in depth.

available to engineers in the Canadian Army. The RCAC could explore the use of these weapons organic to cavalry squadrons.

Having deployed with the Carl Gustav to Op IMPACT, CSOR found the weapon unsuitable in combat beyond 300m. The subsequent statement of requirement to procure a replacement made it clear that the TOW system was similarly unsuitable due to its immobility when not vehicle mounted, and that the Carl Gustav's ammunition would be extremely limited against modern battle tanks. Instead, the Javelin and Spike systems were suggested for their portability, lethality, and perhaps most importantly their ability to lock on to targets both before and after launch. This would allow cavalry soldiers to be exposed for a minimum amount of time before returning to cover, and would have doubtlessly changed the calculus of the squadron's experience on MR 21. The RCAC must prioritize the acquisition of these weapons for use in dismounted, and if possible, mounted roles.

Finally, as LCol Hunt identified in the latest edition of the Armoured Bulletin, the dismounted capability of cavalry squadrons must be augmented by reserve units but not solely provided by them. Not only is there a lack of equipment and training resources to accomplish this task effectively within the reserve force, but units and sub-units must train with the capabilities that they can expect to employ. This applies equally to the troop-sized organization focussed on dismounted tasks, which must understand how the Regiment or squadron will employ their capabilities. The utility of a troop tailored to augment manoeuvre thought execution of dismounted tasks is too great to train in isolation, particularly since it would add considerable capability to nearly all tasks that could be assigned to a cavalry squadron. The RCAC must not only ensure that there is a dismounted troop element comprised of regular force soldiers at armoured Regiments, but it should also seek to incorporate these into every cavalry sub-unit (as was previously the norm).

CONCLUSION

Thomas Friedman once stated that a vision without resources is a hallucination, and likewise a reconnaissance squadron reorganized without robust organic capabilities is not a cavalry squadron in any way but name. Having first examined the problem that the LdSH(RC) reconnaissance squadron faced, how it adapted to perform the task, and finally provided suggestions for the way forward, it should be clear that Canadian Army cavalry requires structural changes to its capabilities in order to function in the way that the RCAC envisions. The capabilities of tank squadrons and cavalry squadrons are not the same, nor are their optimal roles on the battlefield. While there are certainly tactical tasks that are complimentary, attempting to impose a universal structure would leave cavalry hamstrung and unable to provide decisive battlefield effects.

Far from being a comprehensive review, this article has largely focussed on LdSH(RC) Recce Squadron's ad-hoc use of dismounted anti-armour teams during Ex MR 21. The benefit of organic indirect fires and MUAS integration at the lowest level were also discussed. An engineer capability would create a truly independent cavalry squadron capable of the full spectrum of tasks, but this was beyond the experience of the squadron on Ex MR 21 and therefore beyond the scope of this article. It should be emphasized that the dismounted capability envisioned in this article is a multi-purpose sub-sub-unit optimized for dismounted tasks with capabilities that combines characteristics of previous iterations of assault, support, and pioneer troops. The RCAC certainly must pursue the acquisition of anti-armour systems for use in both dismounted and mounted roles. Finally, the RCAC should caution that Canadian Army against assigning the task of generating a dismounted capability solely to the primary reserve, as training in a vacuum would benefit neither the regular nor reserve force Regiments.

Caption: Two soldiers occupy an observation post with a commanding view of the Wainwright badlands during Ex MAPLE RESOLVE 21. Note the minute silhouettes compared to a coyote turret, mast, or TAPV RWS. Credit: Combat Camera

I'd like to extend a special thanks to Major Dan Gray, Major Bryce Simpson, and Captain Thomas Gray for their assistance with this article. In reality many of the ideas expressed here were shamelessly stolen from them, and this article would not have been written without their time and help. Captains Alex Schofield, Scott Veale, Leon van Heerden and Lieutenant Thomas Underwood also contributed valuable assistance and took time to answer questions about an exercise that occurred well over a year ago. Finally, the figures included in this article would not have appeared without help from the good people at CMTC, most notably Kenneth McMillan, MBE, and Warrant Officer Keary McAtasney.

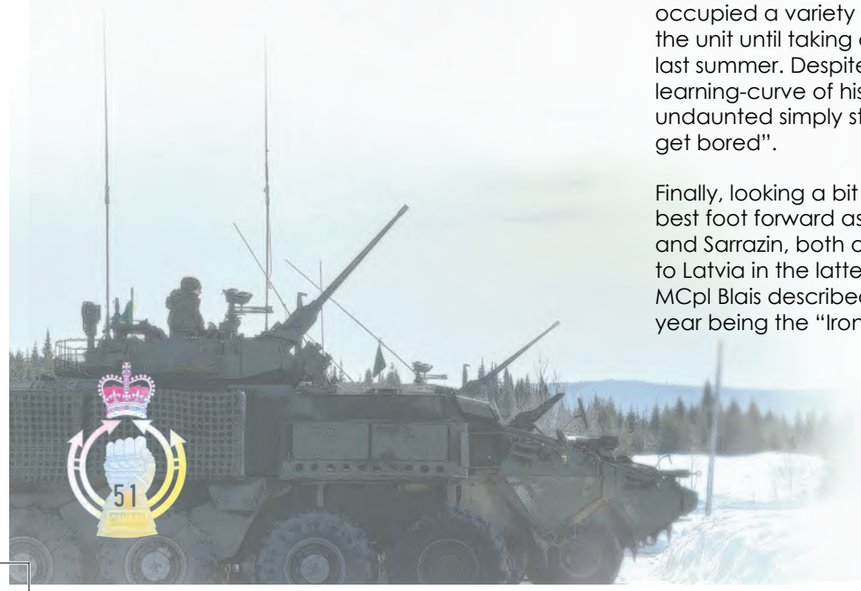
About the Author: Captain Miles Smith served as a tank troop leader in A Squadron, Lord Strathcona's Horse during Ex MR 21. He was most recently employed as the Regimental Plans Officer and will be posted to the Army Technical Staff Officer Program by the time of publication. Once graduated from the program, he hopes to help procure any and all of the capabilities discussed within the article.

1. B-GL-394-002/FP-001, Ground Manoeuvre Reconnaissance. 30 September 2015, page 1-3-3.
2. Major Daniel Gray, "RE: Request for AAR from MR 21 - Recce Sqn." Email, 23 June 2022.
3. Curtis Taylor, "Trading the Saber for Stealth: Can Surveillance Technology Replace Traditional Aggressive Reconnaissance?" The Institute of Land Warfare, Arlington, VA, September 2005. Page 15.
4. Captain Thomas Gray, "RE: Request for AAR from MR 21 - Recce Sqn." Email, 23 June 2022.
5. ibid.
6. Curtis Taylor, "Trading the Saber for Stealth: Can Surveillance Technology Replace Traditional Aggressive Reconnaissance?" The Institute of Land Warfare, Arlington, VA, September 2005. Page 14.
7. For further reading on the subject, see the following:
8. 1. Dr. Michel Couillard and Major Julien Chaput-Lemay, "Scientific Letter: On the Canadian Army Infantry Anti-Armour Capability." Defence Research and Development Canada, 27 February 2017. This was a resume of Exercise FUSILIER RECOPROQUE, designed to test whether a CA infantry company could defeat an enemy force of MBTs during defensive operations without the support of air assets or MBTs;
9. 2. URGENT OPERATIONAL REQUIREMENT ANTI-ARMOUR OP REASSURANCE ROTO 8, signed by then-Colonel W.H. Fletcher Mar 2017;
10. 3. Capability Development Experiment 2010, produced by DRDC May 2012;
11. 4. Major Julien Chaput-Lemay, "Re-Imagining the Close Range Anti-Tank Fight." Canadian Army Journal, Volume
12. 5. Lieutenant-Colonel Alain Cohen and Major Julien Chaput-Lemay, "Up The Creek Without a Paddle," Canadian Army Journal, Volume 17.3, 2017.
13. These are just a few examples of the recurring effort to make clear within the Army that there is a significant gap in anti-armour capability.
14. Major Daniel Gray, "RE: Request for AAR from MR 21 - Recce Sqn." Email, 23 June 2022.
15. Captain Scott Veale, "RE: Request for AAR from MR 21 - Recce Sqn." Email, 23 June 2022.
16. A-P8-002-ACM/PG-B01, "Rank Qualification Armour Officer Qualification Standard and Training Plan. Draft, Page C1-7/21.
17. Captain Alex Schofield, "RE: MR 21 Dismounted Anti-Armour Questions." Email, 22 June 2022.
18. Captain Alex Schofield, "RE: MR 21 Dismounted Anti-Armour Questions." Email, 22 June 2022.
19. B-GL-394-002/FP-001, Ground Manoeuvre Reconnaissance. 30 September 2015, pages 3-2-5, 3-4-3.
20. ATP 3-20.97, "Cavalry Troop" 1 Sept 2016, page 1-4.
21. 3350-1/BG (UNCLASS) 2 PPCLI BATTLE GROUP POST OPERATIONAL REPORT – OPERATION ATHENA ROTO 5, 14 September 2008, Annex O – page 5/8.
22. Colonel Liam Rutland, "1 CMBG FRAGO 001 Op SHIELD RAM." 28 April 2021, page A-1/2.
23. Colonel Liam Rutland, "1 CMBG Op Order 001 Op SHIELD RAM." 26 April 2021, Annex B, Appendix 2 – Intelligence Collection Plan.
24. ATP 3-20.97, "Cavalry Troop." 1 Sept 2016, page 1-6.
25. ATP 3-20.98, "Cavalry Platoon." 4 December 2019, page 6-31.
26. Captain Scott Veale, Phone Interview, 25 June 2022.
27. Captain Leon van Heerden, Phone Interview, 25 June 2022.
28. Major Daniel Gray, "RE: Request for AAR from MR 21 - Recce Sqn," Email, 23 June 2022.
29. Dr. Michel Couillard and Major Julien Chaput-Lemay, "Scientific Letter: On the Canadian Army Infantry Anti-Armour Capability." Defence Research and Development Canada, 27 February 2017, page 4.
30. Dr. Michel Couillard and Major Julien Chaput-Lemay, "Scientific Letter: On the Canadian Army Infantry Anti-Armour Capability." Defence Research and Development Canada, 27 February 2017, page 6.
31. Captain Parnell Pachal, "Canadian Special Operations Regiment Long Range Anti-Armour Missile Statement of Requirements." 5 February 2015, page 1.
32. Captain Parnell Pachal, "Canadian Special Operations Regiment Long Range Anti-Armour Missile Statement of Requirements." 5 February 2015, page 6.
33. Lieutenant-Colonel Christopher Hunt, "Fostering One Army Team within the Royal Canadian Armoured Corps." Armour Bulletin, 2020, pp 60-65 page 63.
34. B-OL-305-004/FT-001, Armour Volume 4: Reconnaissance Troop Leader's Manual. 6 July 1977, page 1-2.

PICKING UP SPEED

THE YEAR AT 12RBC

LT MARCOUX



The COMMITED year for the Regiment was quite a busy one, from the return to near normal training conditions to deployment preparations and exercises that validated our troops. The year culminated with Regiment's members being proudly employed abroad in many theaters of operation, namely on OP IMPACT, OP UNIFIER and OP REASSURANCE.

"Année rocambolesque!"; that is how MCpl Blais of 44 troop (D Sqn) characterised the year 2021-2022 here "au Douzième". While the pandemic continued to curtail the Regiment's full spectrum of activities, the past year decidedly saw a quickening of tempo and a slow but steady return towards normalcy. While certain events could not quite come to fruition, such as the annual exchange activity with the French Army's 4e Régiment de chasseurs, others like the traditional dîner de la troupe, returned. But who best to describe the year that was than the members of "le Douzième" themselves?

For the regiment's current youngest member, Tpr Matos Rivard of 65 troop (D Sqn) who arrived at 12e RBC in December of 2020, his first year at the unit got off to a somewhat slow start and culminated with a literal "bang"! Despite arriving in the doldrums of heavy COVID restrictions, Tpr Matos Rivard rounded-off 2021 with an M-72 range which he fittingly described as "explosive". Shortly thereafter, he received the customary honour of swapping ranks with our commandant for the duration of the dîner de la troupe. Needless to say, Tpr Matos Rivard has set the bar high for 2022.

When asked to describe his first year at the Regiment, Lt Rouleau was hard-pressed to overemphasize just how busy it had kept him, but also just how much he had learned. As one of the more junior officers at 12e RBC having completed his ATL 1.2 in December of 2020, Lt Rouleau occupied a variety of administrative roles at the unit until taking charge of 43 troop (D Sqn) last summer. Despite the high tempo and steep learning-curve of his first year, Lt Rouleau remains undaunted simply stating that there is "no time to get bored".

Finally, looking a bit further afield, 12 RBC put its best foot forward as exemplified by MCpl's Blais and Sarrazin, both of 44 troop (D Sqn), deployed to Latvia in the latter half of 2021. For his part, MCpl Blais described one of the highlights of his year being the "Iron Spear" competition: a test of armoured skills similar to Worthington Challenge but held in Latvia. Employed as a gunner, MCpl Blais's crew placed 4th out of 16; however, they were the best performing crew on a wheeled platform (LAV 6.0). Meanwhile, MCpl Sarrazin enjoyed the opportunity to develop and share his skills on the RAVEN-B MUAV platform with international partners; "we demonstrated that UAV assets are a must-have. Those who never used them before started out skeptical, but quickly realised they are an excellent asset". Both members will surely capitalize on their experience gained overseas to the benefit of their comrades here in Valcartier. By the end of the year the Regiment's focus has switched to Individual Instruction with an emphasis on preparing us for the BUILD year to come. ADSUM!

Figure 1- Lesmembre du Régiment lors du tir de M72 – Cpl Stéphane Raymond

Figure 2- Les mmebre du Régiment à Gagetown lors des fêtes régimentaire - Cpl Stéphane Raymond

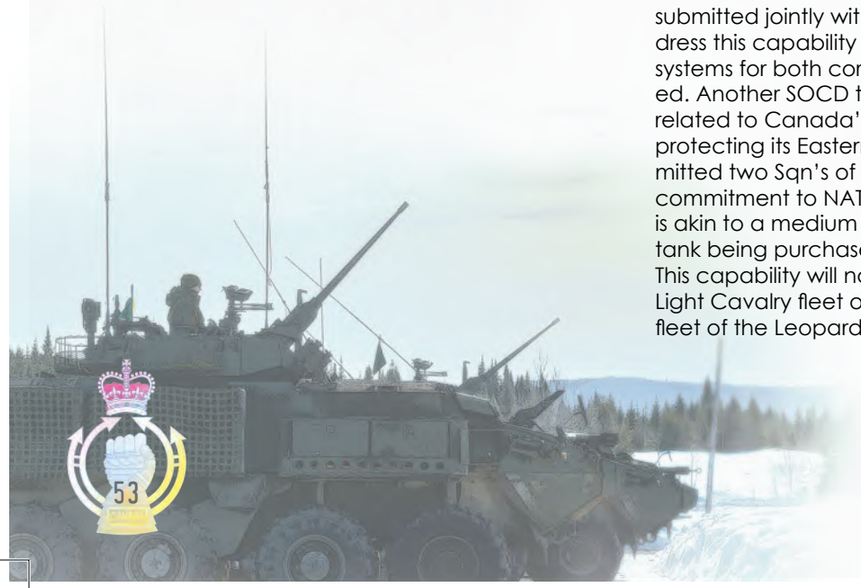
Figure 3 – Change of Command 21 May 2021 - Cpl Stéphane Raymond

Figure 4 - Le Régiment s'entraînant au tir- Cpl Stéphane Raymond

AN UPDATE

FROM THE ROYAL CANADIAN ARMOURED CORPS SCHOOL (RCACS) TECHNICAL ADJUDANT

CAPT VALERI POPENKO



The last year has brought many changes to the equipment side of the house within the Royal Canadian Armoured Corps (RCAC). The RCACS no longer has a tank fleet and will fully concentrate on a wheeled fleet. This year will also see many LAV VI variants begin to be delivered to the RCACS, beginning with the LRSS and ACSV Troop Cargo. The school has also submitted multiple Statements of Capability Deficiency (SOCD) to enhance the capabilities of the RCAC. These include a mounted Anti-Tank Ground Missile (ATGM) system for the LAV VI fleet as well a requirement for a Medium Tank. Finally, the semi-indirect project is advancing, with a successful test of service ammunition to verify the lethality of the IMHE-T 253NM round.

The ACSV Troop Cargo variant and LRSS will begin to arrive to the RCACS in early 2023. RAMD for the ACSV Troop Cargo variant is currently ongoing with ICT occurring at CFB Gagetown in October this year. This vehicle will replace the BISON fleet currently in service. The Troop Cargo variant will be employed within the Armoured Cavalry echelon system. The LRSS is replacing the COYOTE fleet that is currently being divested. The LRSS vastly improves the sensory and surveillance capabilities of our Armoured Cavalry fleets while further enhancing the digitization of the battlefield through systems such as satellite on the move.

As part of improving and acquiring new equipment to support the RCAC, the Corps has submitted multiple SOCDs to enhance our vehicle fleet capabilities. Currently the only real anti-tank system that the Canadian Army (CA) possesses is the Leopard 2 Main Battle Tank (MBT). However, as seen with the conflict in Ukraine, the CA is very likely to encounter enemy armour in both the maneuver arm as well as part of a reconnaissance team. With this in mind, a SOCD was submitted jointly with the Infantry Corps to address this capability gap and recommend ATGM systems for both corps, mounted and dismounted. Another SOCD that the RCAC submitted is related to Canada's commitment to NATO and protecting its Eastern Flank. Canada has committed two Sqn's of Medium Cavalry as part of its commitment to NATO security. Medium Cavalry is akin to a medium tank, such as the Griffin II tank being purchased by the United States Army. This capability will narrow the gap between our Light Cavalry fleet of LAV VI and Heavy Cavalry fleet of the Leopard 2 MBT. A medium tank would allow for rapid strategic and tactical rapid deployment while maintaining the ability to engage tanks with the main gun and provide the ability to negotiate obstacles.

The RCACS also conducted a trial to verify the lethality of the Leopard 2 MBT in the semi-indirect role. Using service ammunition, the 120mm HE NM 253 IMHE-T round. A target area was setup to simulate a Soviet style trench system at a distance of approximately 7400 meters. The trial was a resounding success, with 19 out of the 20 rounds hitting the target area, indicating that the semi-indirect firing technique is an effective tool further expanding the capabilities of our Leopard 2 fleet.

The past year has been busy at the school, while the future will likely be even busier with a number of platforms being delivered to the CA. The RCACS will continue to meet these challenges while looking for ways to ameliorate the capabilities of our vehicle fleet.

TRAINING OPTIMIZATION TROOP

LT M.R. LEVIS

RCACS Optimization Troop modernization plan took on full effect in 2021. However as we all know nothing goes as planned once you hit the Line of Departure (LD). As the Combat Team crossed the LD we were forced to adjust our plan. After the first couple bounds on the offensive the Troop Leader conducted his appreciation and realized that the original four year Modernization plan had to be re-designed to face the numerous challenges ahead of us.

OBSTACLES FACED

i) During the summer the Canadian Army decided to drop a red smoke grenade by directing units to start running Basic Military Qualification Land (BMQ-L) courses within their own trades.

ii) The loss of 13 x Leo 2 platforms in the fall without a backfill of turreted platforms.

iii) All Regular Force (RegF) and Army Reserve (ARes) courses be taught the exact same material.

iv) Aligning RegF and ARes qualifications remains a big problem in the Corps.

The first set of obstacles we encountered was during the RQ Trooper course. After completing the QSTP board late in 2020, Tactics troop was forced to react quickly to ensure the machine remained down the proper path maneuvering through the obstacles encountered along the way. As mentioned above, the Canadian Army decided to give BMQ-L to the schools to run. Picketing that obstacle, MWO Scott Holmwood and Sgt Rachel Warren spearheaded a new 20 day RQ Trooper course, including dismounted drills (previously BMQ-L). Attempting to align RegF and Reserves courses continued to be a challenge. The fact that not all Reserve Units have the same resources available to train made it difficult to maintain the same standard required within the RQ Trooper course. Communication, and Standard Military pattern vehicle (SMP) are required to be completed prior to the RQ Trooper course, and a TAPV course afterwards to be fully qualified DP1.

RQ Officer was the next hurdle that required to be addressed. The QSTP board started early in the year lead by Capt Morgan Oliviero and then handed over in the spring to Maj Mike Dullege and Capt Ben Bennett to finalize the schedule, assessment and courseware. Capt Ben Bennett was instrumental in ensuring everything was in place and allowed for best product to be taught to the students. This new nine month course was piloted in the fall to include an ATV portion to familiarize the students with basic crew commanding skills. After conducting an After Action Review (AAR) this course has now be shortened down to a 64 day course plus the LAV VI and TAPV RWS gunner course to reflect the challenges thrown at us during the year.

During the fall, Lt Neil Miller was busy re-designing RQ ACC (required to get promoted to MCpl). This new course included basic crew commanding and dismounted drills (formally PLQ Mod 4). At the same time, aligning the new RQ Sgt (formally ACC) and RQ WO was made a priority. These two new 15 day courses were designed to align both onto the same 10 day FTX. This will reduce resources significantly on both vehicle requirements and staffing. WO's Craig White and Joe Gushue combed through old courseware and documents to ensure the most up to date material was taught to the students.

In the meantime Optimization Troop took the lead in finding the best way forward to increase productivity while reducing resources required. By keeping courses short, sharp, and focused we were able to address vehicle shortages. An area of concern during the back brief remained the lack of turreted plaforms. Tactical courses were set-up in such a way that didn't overlap to ensure sufficient platforms were available for tactics orientated courses. This was made a priority to ensure this "plan" was manageable.

This has been a challenging year for all members of Optimization Troop creating and adjusting all 7 tactics courses into the same PO structure. All seven courses will be set-up into the same PO structure. These PO's will look like this: (1) Prep and Plan, (2) Movement, (3) Shoot, (4) Communicate, and (5) Sustainment.

Courses now may not be what they look like next year. Stay tuned!

USE OF CAVALRY

IN DOMESTIC DISASTER RESPONSE OPERATIONS

COLONEL C.W. HUNT

NINE YEARS AGO

I was the Officer Commanding (OC) for the Recce Squadron (-) in the 41 Territorial Battalion Group (TBG) that responded to the Calgary floods. I wrote about the lessons learned from that operation in the 2013 Armour Bulletin. As the Royal Canadian Armoured Corps (RCAC) implements the Armoured Cavalry Concept and reorganizes recce squadrons (sqns) into armoured (armd) cavalry and motorized (mtd) cavalry sqns, it is worth highlighting how these cavalry sqns can contribute to Immediate Response Units (IRUs) and TBGs deployed on disaster response operations.

Photo 1: Area recce in downtown Calgary during Op LENTUS 2013. Photo: Maj C.W. Hunt

Photo 2: Tactical Armoured Patrol Vehicles patrol flooded areas in Saint-Barthélemy, Quebec during Operation LENTUS, May 12, 2017. Photo: Sgt Marc-André Gaudreault

Route, Area, Point, and Zone (RAPZ) reconnaissance tasks are perhaps the most obvious tasks for a cavalry sqn during a disaster response operation. Cavalry sqns can disperseg their subordinate troops to rapidly deploy to areas of concern, aka. Named Areas of Interest (NAIs), and respond to information requirements from civil authorities and emergency management agencies. The status and condition of infrastructure is a common concern during floods, fires, and storms, and cavalry troops are trained to gather, collate, and quickly report back relevant information to decision-makers. Cavalry sqns and troops equipped with micro uncrewed aerial systems (UAS) add further flexibility for the conduct of RAPZ recce tasks.

Photo 3: Flooded infrastructure in downtown Calgary during Op LENTUS 2013. Photo: Maj C.W. Hunt

Cavalry troops can also be deployed to assist with access control to affected areas by conducting traffic control points in support of civil authorities. While civil authorities will normally maintain the lead and lead interactions with the public, the profile of military vehicles and additional personnel can help manage and maintain these points more sustainably.

The tactical mobility of the cavalry sqn's vehicles enables personnel and equipment transportation in difficult terrain. This could include evacuation of personnel from flood affected or fire threatened areas, or movement of disaster response personnel and equipment into areas where they are needed, and other transport options are limited. Both F and A echelon vehicles may be required across the spectrum of potential transportation tasks.

The cavalry sqn can also offer an important mobile C2 capacity to the TBG if it needs to operate over a widely dispersed area. Army Reserve (ARes) TBGs have limited communications capability compared to an IRU, especially one generated from mechanized units. Cavalry elements can act as mobile C2 nodes to help the TBG maintain C2 over widely dispersed elements. A sqn(-) should be the minimum cavalry element included within in TBG, because the C2 capabilities of the SHQ, combined with the integral CSS capabilities of the admin troop, provide the TBG with significantly more flexibility than can be provided by just cavalry troops. Many ARes RFL 3 cavalry units also include CIMIC elements, who skillsets are invaluable during domestic disaster response operations.

Photo 4: MSVS helps with evacuations during 2012 floods in Richelieu Quebec. Photo: CAF Combat Camera

Photo 5: SHQ provides effective comms throughout the AO. Photo: Maj C.W. Hunt

Photo 6: Assault Troopers are trained in the use of power tools. Photo: CAF Combat Camera

Finally, the cavalry sqn provides more equipment and personnel that can contribute to generic Domestic Response Company (DRC) tasks like sand-bagging, debris clearance, and fire-fighting. The mobility assault that is one of the subordinate troops in the proposed ARes Ready Force Level (RFL) 3 mtd cavalry sqn is especially relevant for these tasks, as it is trained and equipped to conduct basic mobility and counter-mobility tasks with power tools.

CONCLUSION

Cavalry sqns can make a valuable contribution to domestic operations and should be one of the first elements deployed. The mobility, information gathering, and communications resident in cavalry sqns provide extremely flexible and valuable capabilities for IRUs and TBGs conducting domestic disaster response operations.

ABOUT THE AUTHOR

About the Author: Col Christopher W. Hunt has served in the Canadian Army for over 29 years with time spent evenly between Regular and Reserve components. He has served in a variety of command and staff positions in both Tank and Recce squadrons, and at unit and formation level. Col Hunt served on Operation Kinetic Roto 0 in Kosovo, TF 1-06 in Afghanistan, and several domestic operations. Col Hunt commanded The King's Own Calgary Regiment, and was Deputy Commander 41 CBG. He has a Master of Arts in War Studies from the Royal Military College of Canada. He is currently 3rd Canadian Division Headquarters Assistant Chief of Staff (Support) and the Deputy Director Armour (Reserve).

1. Major Christopher Hunt. "Op – LENTUS – Lessons Learned For Primary Reserve Recce," Armour Bulletin 2013: pp. 63-65. Full_Armour_Bulletin_EN_cover.pdf (rcaca.org)

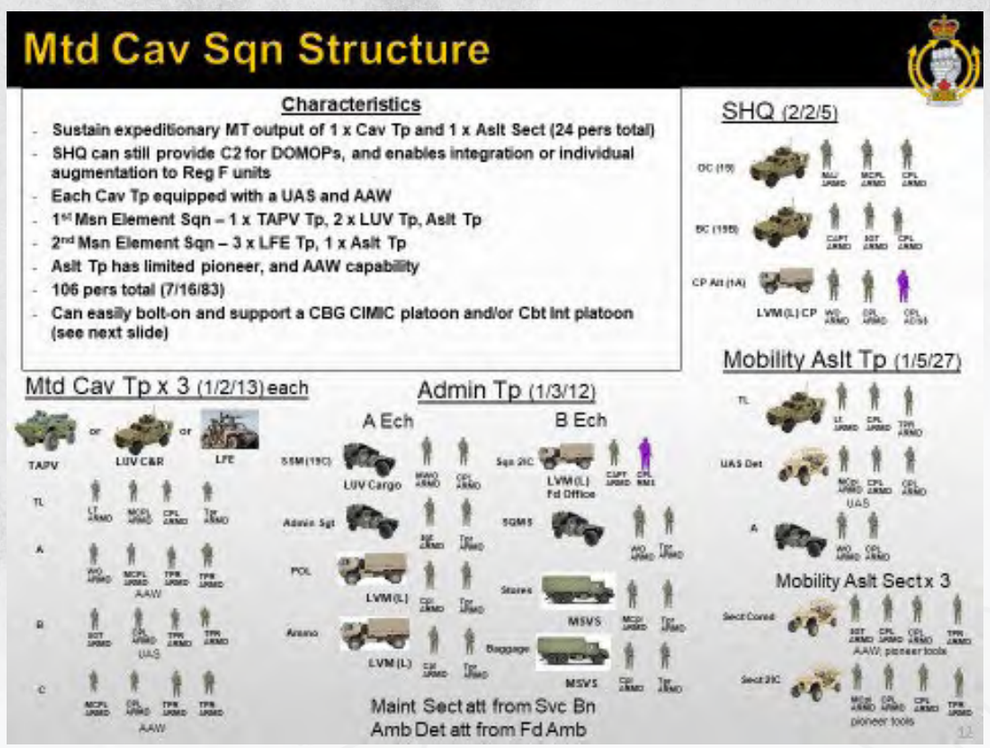


Figure 1: Proposed RFL 3 Motorized Cavalry Sqn. RCAC ARes Working Group.

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