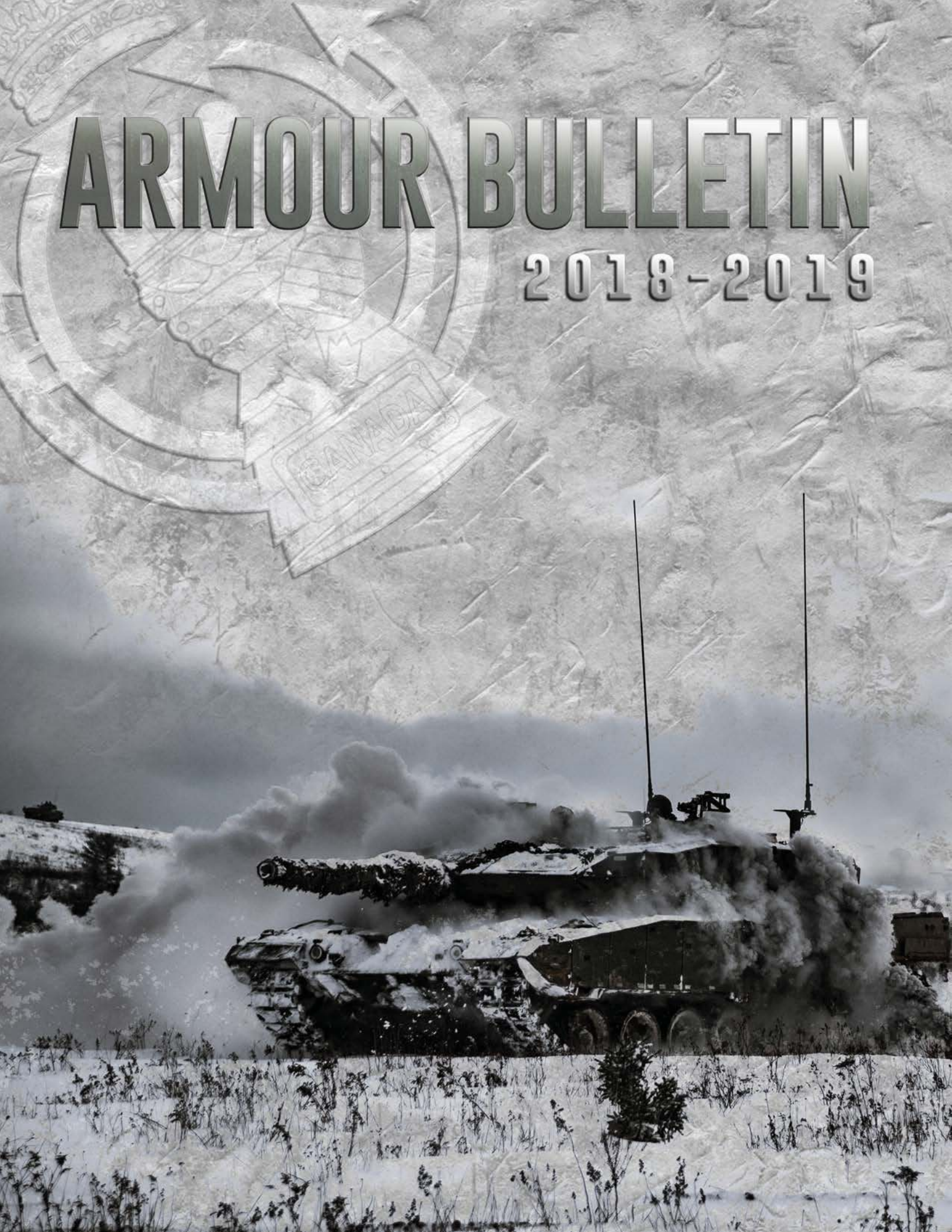
ARMOUR BULLETIN

2018-2019



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Vision Statement

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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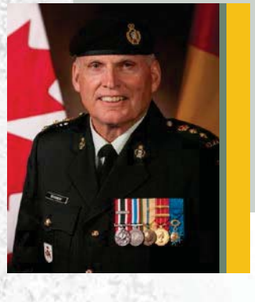


Col (ret) Georges Rousseau G.
Colonel Commandant

Dear members and friends of the Royal Canadian Armoured Corps

Firstly my thanks go out to all who have contributed in creating once again a tremendous publication.

In the past three editions, since becoming Colonel Commandant, I have expounded the merits of our Bulletin as an instrument in fostering "discourse" amongst our large constituency. This year's edition has provided yet again ample opportunities to read discuss and learn. Although not always expressed in a public domain I believe that "conversations on matters affecting our Corps" have been plentiful. We must continue to take our message beyond the realm of our family, with intent to gain support from those who may not understand or deny our relevance within the Army and Canadian Forces. Such dissemination becomes the responsibility of all our members regardless of rank and status. I have always believed that our greatest "marketing tool" is the AFV crew at the county fair and the trooper at work helping citizens during a flood or an ice storm, to name but a few.

We have been successful in achieving some relevance as shown in the recent inclusion of our Regimental HQs in the establishment of deployed Battle Group HQs. To showcase such accomplishments we must first know our business and recognize how we all fit in the larger picture. Moreover, we must know "what" and "who" are best in our team.

One way to help achieve propagation and attract new readership could be through the addition of non-traditional materials to the Bulletin. May I suggest as a starting point that our units introduce a statement(s) relating an event and/or one (or team) outstanding member(s) of their regiment. In essence, without steering from the crucial technical issues, we could put a personal "face" to our publication.

I must admit that when asked about our Corps, I as many automatically steer my answer toward the success we have achieved in acquiring, training, delivering and pairing exceptional people with "state of the art equipment" and further deploying these assets in ever increasing complex operations. What we should acclaim with fervour are the tremendous "people" that form our profession. By focusing on the latter we may further tweak the interest of the rank and file and by extension increase the overall knowledge of our occupation. In the end, it is my hoped that all will become better informed emissaries. Living in a world consumed by "Facebook", "Twitter" and the like, a little self-promoting should not be overlooked and/or unwelcomed.
As always it has been an honour and privilege serving as your Colonel Commandant. I am looking forward to my fifth year in the service of our terrific Corps.

Worthy!

Georges
Rousseau G.
Colonel (ret)
Colonel Commandant

Forward

A word from the Armour Corps Director Colonel Graham

Col S.G. Graham
Armour Corps Director

It is with great pleasure that for the first time as the Director of Armour I welcome you to our Armour Bulletin. It is an exciting time to be Director as the Canadian Armed Forces today faces a challenge that it has not had in many years: how to grow. Our country's Defence Policy, Strong, Secure, Engaged, lays out an ambitious plan containing 111 new initiatives, which collectively will see a great deal of change across all the services. Many of these initiatives will impact the Armour Corps, but in what ways remains to be seen.

That is where forms such as this Bulletin are so valuable. Work is ongoing at the strategic level within CFD on the new Force Mixture and Structure Design and within the Army on a review of the Managed Readiness System. In order to ensure the Corps is able to participate in these activities we need to be ready to offer input and recommendations with a unified voice. The articles contained within this Bulletin are a method for us collectively, as a Corps, to do that; by staying engaged with each other, discussing ideas and best practices, and stimulating thought on how we meet the challenges posed by all of this change.

This 2018 Armour Bulletin and the articles contained in its pages are a testament to how busy things are in the Corps today. The still being developed LRSS is on track to be a world leading capability in surveillance. For the first time in a generation both the Regular and Reserve Regiments are equipped with a common platform. The Leopard II will be getting turret upgrades that should standardize parts across the different variants and reduce the current maintenance burden. And the Land Vehicle Crew Training System will represent a fundamental change to the way we train AFV crews, Troops, and Squadrons. Each of these initiatives present us with a challenge, but also a great opportunity. Let's seize it. It is a great time to be part of the Royal Canadian Armoured Corps.

Worthy!

S.G. Graham
Col
Armour Corps Dir

Year in Review

2018 - 2019

JANUARY

- Ex STRONG CONTENDER: 22 – 26 Jan 18 (Edmonton)
- Ex UNIFIED RESOLVE: 26 Jan – 9 Feb 18 (Valcartier)

FEBRUARY

- Ex VIRTUAL RAM 18-01: 5 – 16 Feb 18 (Edmonton)
- Ex STEELE SCHOLAR: 5 – 8 Feb 18 (Fernie)
- Ex STEELE CASCADES: 12 – 23 Feb 18 (Iquique, Chile)
  Ex STEELE STALINGRAD: 20 Feb – 2 Mar 18 (Edmonton)

MARCH

- Ex STEELE KING: 14 – 15 Mar 18 (Calgary)
- Spring Break Block Leave: 27 Mar – 8 Apr 18
- Moreuil Wood 100th Edmonton Commemoration: 19 – 23 Mar 18 (Edmonton)
- Moreuil Wood 100th France Commemoration: 28 Mar – 1 Apr 18 (Moreuil, France)
- Ex STEELE LANCERS: 23 Mar – 2 Apr 18 (United Kingdom and France)

APRIL

- Ex REFLEXE RAPIDE: 20 Apr – 4 May 18 (Wainwright)
- Joint Warfighting Assessment: 20 Apr – 11 May 18 (Germany)

MAY

- Ex MAPLE RESOLVE 18: 13 - 27 May 18 (Wainwright)
- Op LENTUS 18-3: 16 – 23 May 18 (Kelowna)
- Ex PRAIRIE STORM: 22 May – 4 Jun 18 (Suffield)

JULY

- Calgary Stampede / Spruce Meadows: 5 – 16 Jul 18 (Calgary)
- Nijmegen Marches: 12 – 24 Jul 18 (The Netherlands)
- Regimental Fishing Tournament: 12 – 13 Jul 18 (Pinehurst Lake)
- Regimental IBTS Concentration: 9 – 26 Jul 18 (Edmonton, Wainwright)
- MCpl Golf Tournament: 27 Jul 18 (Edmonton)
- Summer Block Leave: 28 Jul – 19 Aug 18

AUGUST

- Ex GRIZZLY DEFENDER: 17 – 19 Aug 18 (Calgary)
- Fall PCF Cycle: 21 Aug – 21 Sep 18 (Edmonton, Wainwright)
- Family Day: 25 Aug 18 (Edmonton)
- Op LENTUS 18-05: 26 Aug – 12 Sep 18 (Vernon)

SEPTEMBER

- Ex TOUGH CONTENDER 18: 5 Sep 18 (Edmonton)
- Ex MOUNTAIN MAN 18: 6 Sep 18 (Edmonton)
- Ex UNIFIED RESOLVE Part 1: 19 – 28 Sep 18 (Edmonton)
- Army Run: 21 – 25 Sep 18 (Ottawa)
- Regimental PCF Gun Camp: 26 Sep – 5 Oct 18 (Wainwright)

OCTOBER

- Ex STEELE SABRE 18: 9 – 21 Oct 18 (Wainwright)

NOVEMBER

- No Stone Left Alone: 5 – 9 Nov 18 (Edmonton)
- Ex VIRTUAL RAM 18-02: 7 – 22 Nov 18 (Edmonton)
- Ex LYNX DUKE: 19 – 26 Nov 18 (Yakima, USA)
- Grey Cup Support: 20 – 25 Nov 18 (Edmonton)
- BLACK HAT Professional Development Week: 26 – 30 Nov 18 (Edmonton)

DECEMBER

- Ex RESILIENT STEELE 18: 3 – 14 Dec 18 (Edmonton)
- Kids' Christmas Party: 8 Dec 18 (Edmonton)
- Christmas Block Leave: 15 Dec 18 – 6 Jan 19

RSM Clarke takes over the Moreuil Wood Parade, Edmonton, AB Credit: Cpl Mitchell Blair

LdSH(RC) Guidon Party, Centennial of the Battle of Moreuil Wood, Moreuil, France Credit: Unknown

B Squadron, LdSH(RC), training in the kill house, Edmonton, AB Credit: MCpl Herald Mijares

Capt Dan Nixon, A Squadron, LdSH(RC), during Ex MAPLE RESOLVE 18, Wainwright, AB Credit: 5 CMBG

MCpl Mark Weir, A Squadron, LdSH(RC), during Ex MAPLE RESOLVE 18, Wainwright, AB Credit: 5 CMBG

MUAS Raven Tp, Recce Squadron, LdSH(RC), Suffield, AB Credit: WO Tom Underwood

Prince of Wales (A Squadron), LdSH(RC), during Ex MAPLE RESOLVE 18, Wainwright, AB Credit: Unknown

LdSH(RC) Nihmegen Team, Edmonton, AB Credit: Sgt Alan Rogers

Cpl Ben Cocker and Cpl Scott Fraser, Strathcona Mounted Troop, Headquarters Squadron, LdSH(RC), Edmonton, AB Credit: Unknown

Members of B Squadron, LdSH(RC) mounting up during Ex STEELE SABRE 18 Credit: Unknown

Members of B Squadron, LdSH(RC) conducting an After Action Review during Ex STEELE SABRE 18 Credit: Unknown

LdSH(RC) CO and RSM visit T-22 at Gottfriedsen Mountain, Op LENTUS 18-05 Credit: Cpl Daniel Wynen

LdSH(RC) PCF Gun Camp, students hit the range, Wainwright, AB Credit: Unknown

LdSH(RC) PCF Gun Camp, Wainwright, AB Credit: Unknown

LdSH(RC) PCF Gun Camp, Wainwright, AB Credit: Unknown

Updates from
the Regiments

Update

RCD Regimental Update

Maj J.C. Maerz

Over the past 12 months, The Regiment deployed back-to-back rotations of an Armoured Recce Troop to LATVIA as part of the enhanced Forward Battle Group on Op REASSURANCE and force generated the Headquarters element of Rotation 5 of Op UNIFIER. There were also many smaller contingents of Dragoons deployed to Egypt, Jordan, Kuwait, Iraq and Lebanon. The Regiment, at any given time, had over 100 soldiers operating in theatres across the globe.

In spite of nearly two-fifths of The Regiment deployed, as well as a busy spring and summer training schedule, The Regiment maintained their ceremonial dedication to the history of The Regiment. In addition to the celebrations surrounding the anniversary of the Liberation of the town of Leeuwarden on 15 April 1945, The Regiment marked the passage of The Col of The Regiment duties from MGen (Ret) M. Macdonald to BrigGen (Ret) P. Atkinson. In June The Regiment changed command from LCol F. Auld to LCol R. Marois and a new Regimental Sergeant Major was appointed with a handover from CWO J. Hebert to CWO J. Leamon. Additionally, The Regimental family came together during the month of November in order to celebrate the 118th Anniversary of the Battle at Leliefontein. In addition to an outstanding parade that saw the Governor General's Horse Guards provide mounted escort to our two Victoria Crosses and the Leliefontein gun, this year The Regiment hosted the 1st annual Leliefontein Gala. With soldiers sporting their very-best suit and ties or cocktail dresses, and accompanied by their significant others, it was an event to remember for all those who attended and danced the night away.

Throughout the fall and winter of 2018 and 2019, as squadrons began to return to full strength training focused on continued integration of the Tactical Armour Patrol Vehicle (TAPV) and Light Armoured Vehicle 6.0 (LAV 6.0). B Squadron was reconstituted after a year in which its soldiers were dispersed supporting various international deployments. Concurrently, D Squadron along with RHQ Squadron continued to evolve the RCD Battle Group Headquarters, with focus on developing a tactically agile headquarters adept at leading a combined arms Armoured Battle Group across the full spectrum of conflict. From an exercise perspective, this year was much like others previously. Foundational exercises such as Exercise WALKING DRAGOON, Exercise CHARGING DRAGOON and Exercise SABOT DRAGOON occurred in Petawawa, while C Squadron conducted Exercise CENTURION ARCHER and supported Exercise COMMON GROUND.

Moving forward, 2019 will see The Regiment assume the lead of the 2 Canadian Mechanized Brigade Group Immediate Response Unit and enter the Road to High Readiness in the summer. There will continue to be a focus on maintaining crew integrity, supporting Squadron identity and cohesion, evolving and validating a new Battle Group HQ structure and putting a strong emphasis on integrating training with our RCAC ARes units, in Ontario, Quebec and the Maritimes.

Bold and Swift

Updates from the Regiments

Strathcona Training Events: Water, Fire, and Steele: 2018

Sergeant Rob Kearns
LdSH(RC) RHQ

2018 has been another non-stop year for the Lord Strathcona's Horse (Royal Canadians) (LdSH(RC)) and we wouldn't want it any other way.

In the spring, a select number of Strathcona soldiers were sent to France to commemorate the 100th Anniversary of the Battle of Moreuil Wood (one of the Regiment's most celebrated victories and defining moments in our history). During their trip, the lucky soldiers enjoyed in-depth battlefield tours and even a re-enactment of the "last Canadian cavalry charge", as demonstrated by our very own Strathcona Mounted Troop.

After a particularly snowy winter, the sun's exuberant return caused the snow to melt, one would say too quickly, leading to an excess amount of water without anywhere to go. Fortunately for LdSH(RC), where better to go when visiting Western Canada than "wine country?" As the Okanagan Valley quickly filled with the water, the many picturesque rivers and spillways expanded to disastrous levels. With civilian property and infrastructure in danger, the Canadian Army was called out to prevent loss or damage. As the Lead Mounting Unit (LMU) for the Immediate Response Unit – West (IRU–W), the Strathconas drew first blood and deployed on Operation LENTUS 18-3. With the Advance Recce Party hitting the road first with a LAV 6.0, three TAPVs, a Bison, and some pickup trucks, we pushed through the night, across the Rocky Mountains into Kelowna, British Columbia – our temporary home. After about nine days of building grandiose sandbag structures that protected million dollar homes and critical infrastructure, our weary team once again took to the highway, but this time we were headed for home.

After such a wet spring, the troops were looking forward to a hot and dry summer leave, complete with patio beers and beach trips. However, as the long days of summer wound down, the air became thick and hazy with a familiar smell of smoke on the breeze. It appeared that the Strathconas had done too thorough of a job defeating the floodwaters earlier in the year as wildfires begun to wreak havoc throughout the province of British Columbia. Once again tasked as the LMU for IRU–W, LdSH(RC) pushed west through the Rockies, this time in a fleet of pickup trucks, setting up its Headquarters in the Vernon Cadet Camp with another satellite camp being established in Merritt. Deploying on Operation LENTUS 18-05, the LdSH(RC) Area of Operations took several hours to traverse, criss-crossing mountain ranges, river valleys and small pockets of urban infrastructure. With the fires raging worse than ever before, the days proved to be long and exhausting with every able-bodied soldier rotating on the fire line. Through hard work, perseverance, and a little help from the Mother Nature, fire danger levels slowly started to drop. As elements of the Primary Reserve started to trickle in, a Reserve Coy was established to relieve LdSH(RC) and allowed our troops to return home tired, dirty, and once again victorious.

With what turned into a long summer behind us, it was time to return our focus to soldiering. The autumn months always mean two things to Strathconas: Primary Combat Function (PCF) Gun Camps and Ex STEELE SABRE. Regimental Headquarters (RHQ), chiefly the Regimental Gunnery Warrant Officer, coordinated the PCF Gun Camp and kept a high tempo at Range 16 in Waignwright, qualifying a new batch of gunners across multiple platforms and tank loaders. Another Strathcona success, the Regimental PCF Gun Camp was another demonstration of the capabilities of the Regiment with Leopards, LAVs, and TAPVs all firing at once; even the Commander 1 Canadian Brigade Group and our Commanding Officer came out to shoot from their LAV 6.0s.

With the PCF Gun Camp complete, the Regiment kicked off with Ex STEELE SABRE, which is a chance for the Squadrons to conduct live and dry tactical training at the Troop level. Lean and hungry, Ex STEELE SABRE saw a combination of tenacious young troops, ambitious Officers, and battle hardened Senior Non-Commissioned Officers, creating the "perfect storm" of effectiveness. Stealth was the name of the game and RHQ were the obvious winners. Call-Sign Zero lived deep in the woods behind layers of wire and security; tents were no longer an option as the troops happily adopted slip trenches and "hooches." Sentries protected the hide 24 hours-a-day and the only sound emanating from the wood line was the faint echo of constantly dropping net IDs on the radio. With the coveted "tour positions" on the line, every soldier was driven to perform to their maximum potential. The weeks spent in the field this year somehow seemed shorter and longer simultaneously, but like all field exercises it eventually culminated in a mighty "smoker" in the tank barn once occupied by the CWES personnel. Hard living leads to hard celebrating.

Settling back into Garrison routine, the tempo never slowed for the Regiment as we supported multiple 3 Canadian Division and 1 Canadian Mechanized Brigade Group priorities, computer exercises, and the Grey Cup. Finding some time to shift gears, the Regiment celebrated Black Hat in style with a Professional Development week and Ex RESILIENT STEELE just prior to Christmas Block Leave. Suffering through another harsh winter in Western Canada, LdSH(RC) are poised to respond to future expected Operation LENTUS calls and another high tempo spring training cycle.

Updates from the Regiments

Improving Capabilities and Crew Skills of the Canadian Leopard 2

Maj James Anderson
OC B Sqn, LdSH(RC)

Lt A.R Fenton
2IC B Sqn, LdSH(RC)

Although Lord Strathcona's Horse (Royal Canadians) fulfills more than solely a heavy armour role within the 1st Canadian Mechanized Brigade Group (1 CMBG) and the CAF writ large, when one sees the name LdSH(RC) it is synonymous with heavy armour and the Leopard 2. As the sole unit responsible for force generating tank squadrons 2 of every 3 years, and occasionally providing the vehicles on the third year, it is not difficult to understand that when you are speaking about Canadian armour, you are generally speaking of the Strathconas.

Maintenance. The word maintenance is simultaneously a curse word and a blessing with respect to tanks. As the Leopard 2 platform enters its 12th year of service in the CAF, it has become an Army level priority to ensure at least one full tank squadron is capable of operating for each iteration of Level 5+ collective training; training that is usually in the form of Exercise MAPLE RESOLVE at the Combat Manoeuvre Training Centre (CMTC) in Wainwright, Alberta. Being a tanker gives you a special appreciation for the support trades required to keep the Leopard fleet running. The ability to properly conduct our jobs rests squarely on the shoulders of our maintenance team; without the men and women performing maintenance on our vehicles there would not be tanks driving across our compound, let alone forming the tip of the spear while manoeuvring across the CFB Wainwright training area.

The authors in front of 29er's tank.

The ability to properly obtain parts, find vehicle technicians, and locate an overhead crane, are all paramount in keeping a tank squadron on the move. This year has seen LdSH(RC) take significant steps in all three areas. Parts are beginning to move through the system quicker, more vehicle technicians are being assigned to the unit (temporarily re-allocated within 1 CMBG), and the ability to use some of the maintenance bays at the new Tactical Armoured Patrol Vehicle (TAPV) building at Canadian Forces Base Edmonton has more than tripled the number of tanks that can be worked on simultaneously.

The Tactical Mobility Implements (TMI) project was at full speed during 2018 and reached its crescendo with the delivery of new mine plows and rollers to the LdSH(RC) compound. The TMI project is nearing completion and the use of implements is once again being taught to crewmen on their D&M course.

In 2019 it seems strange to think that in the early 2000s there was serious talk of stripping the Canadian Armed Forces (CAF) of their tank capability and replacing it with a wheeled, unproven, direct fire platform. If not for the immediate requirement for heavy direct fire assets in Afghanistan in 2006 the direct fire capabilities of the CAF would look significantly different than they do today.

An essential direct fire capability is becoming increasingly important as we continue to train the Army for conventional, near-peer, and higher threats. With the introduction of the TAPV to both the Regular and Reserve Armoured Regiments across Canada, the requirement for direct fire support is extremely important. Reconnaissance squadrons have identified the lack of firepower and armour as a significant risk when they find themselves exposed to T72-Bs and T90s on the front lines of the adversary. This problem has led to a changing dynamic in the groupings of armoured units on the battlefield and tanks are being grouped with reconnaissance squadrons in an effort to provide our "sneak and peek" brethren with a large stick to fall back on when necessary.

A and B Sqn Leopard 2s preparing for night shoots during the LdSH(RC) Gun Camp 2018 in CFB Wainwright, AB.

B and Recce Sqn soldiers conducting an AAR after a successful level 3 live fire attack during Ex STEELE SABRE 18 in CFB Wainwright, AB.

A B Sqn Leopard 2 fires on a level 3 live range, with a TAPV in the foreground.

With tensions rising around the world and the resurgence of Cold War like tendencies in Europe, the requirement for an armoured direct fire platform is higher than ever. Tanks will continue to be the tip of the spear in conventional operations and may even begin to take on a more pronounced role or coordination with reconnaissance squadrons. Regardless of what the future holds, tanks will undoubtedly continue to lead the way.

Updates from the Regiments

Integration of the Tactical Armoured Patrol Vehicle: A Strengths-Based Approach

2Lt Tom Clackson
Tp Ldr, Recce Sqn,
LdSH(RC)

Lt Andrew Kelly
2nd Tp Ldr, Recce Sqn,
LdSH(RC)

For two years, Reconnaissance Squadron, Lord Strathcona's Horse (Royal Canadians) (LdSH(RC))has employed the Tactical Armoured Patrol Vehicle (TAPV) in conventional Ground Manouevre Reconnaissance (GMR) Operations. This integration has presented unique challenges, and how best to optimize its GMR employment now dominates our approach.

Considering the incorporation of the TAPV, Coyote and LAV 6 platforms, there was an initial attempt to retain our traditional ORBAT structure as much as possible. Pairing the TAPV with 25mm platforms generated mixed results and proved interesting, yielding different challenges. Additional trials with Troop compositions of 50% TAPV and 50% 25mm platforms also produced divergent results. We tested these configurations on several brigade and interoperability exercises as well as with our allies from the United Kingdom in Suffield.

Due to its larger size and four tire configuration versus six, the TAPV was at times awkward for experienced crews to successfully utilize the vehicle in complex terrain. Our key takeaway was based on mobility, which was highlighted by the lack of recovery assets; the mass of the vehicle limits its ability to self-recover from areas where crews were traditionally used to traversing with the Coyote. As is no surprise to anyone in the Corps, there is already shortage of heavy recovery assets, which combined with a reduced self-recovery capability severely limits the areas in which we can utilize the TAPV. In turn, the TAPV's movement became constrained and it is challenging to conceal the vehicle during both mobile and static operations. As a result we began to better understand the characteristics of the TAPV and learned to stop attempting to employ it as a "one for one" replacement for the Coyote, and rather focused on its inherent strengths.

TAPVs and G-Wagon finishing pre-deployment checks prior to Ex PRAIRIE STORM 18. Suffield, AB. Taken by – 2Lt Thomas M. Clackson.

TAPV stuck in notional river that was crossed successfully by an entire BG and a G-Wagon prior. Photo credit – 2Lt Thomas M. Clackson

LdSH(RC) TAPV in Suffield training area during Ex PRAIRIE STORM. Photo credit – 2Lt Thomas M. Clackson

What the TAPV lacks in off-road capability and concealment, it makes up for in on-road use. The platform stands out on tasks such as vehicle checkpoints, local security, convoy escort, and excels when working closely with dismounted soldiers. The Remote Weapons System provides respectable firepower to targets at short-to-medium ranges, making it ideal for close range force protection. Additionally, the vehicle's extra storage space provides flexibility to carry the Miniature Unmanned Aircraft System (MUAS) Raven platform, and/or situation dictating, offer VIP transport.

Reconnaissance Squadron, LdSH(RC), investigated dedicating some TAPVs to our MUAS Raven Detachments as their sole delivery vehicle. They were integrated as a mobile/depth reconnaissance element, centrally located a bound behind two-three conventional troops, offering flexibility. Each MUAS TAPV was crewed by five personnel; the additional soldiers acted as the Raven Detachment Commander and/or Operator. Of significant importance was how this facilitated the conduct of stationary MUAS screening operations, on-the-move as part of a Zone Recce, Advance to Contact, or in the Delay. Although this role effectively repurposed some TAPVs in favor of an aerial surveillance-based approach, it recognized the strengths of the platform and amplified them; the balance will ultimately be based on troops to task, VOR and manning restrictions. The initial trial exercises proved to be a success, it offered the members of Reconnaissance Squadron the opportunity to reflect on the TAPV's capabilities in unorthodox roles.

Perhaps this is one of the key lessons that we as members of the Corps, operators and planners need to understand; the TAPV will only be as effective as we enable it to be. As the face of armoured reconnaissance shifts toward the inclusion of aerial and long-range surveillance platforms, the TAPV has the potential to shine as an effective complimentary asset in the GMR role. We must all strive to better understand its strengths to ensure it will be employed successfully as we move forward.

61, LdSH(RC) taking time out during Ex STEELE SABRE 18. Credit – Cpl Daniel M. Wynen

Updates from the Regiments

Realistic, stimulating training for the Sherbrooke Hussars

Capt Jean-François Wehrung
The Sherbrooke Hussars

In 2017–2018, the regiment focused on individual training, with one Armoured Reconnaissance Crew Commander course, two Tactical Armoured Patrol Vehicle (TAPV) driver courses and two TAPV SAT Operator courses. The collective training for 2018–2019 was given off base.

We decided to begin the training at the patrol level for the first two exercises, then finish it at the troop level. The objective was to strengthen the effectiveness and cohesion of our patrols, thereby ensuring a solid base for improving our troops' skills.

Accordingly, Ex HUSSARS DÉBUTANT, the first fall exercise, was conducted at the patrol level. Our members set up traffic control posts (TCPs) and vehicle check points (VCPs), practised medical evacuations (extraction of casualties from TAPVs) in partnership with 52 Field Ambulance, and performed vital point defence.

We continued our training with Ex HUSSARS AGUERRI, the second fall exercise, which was also conducted at the patrol level. Our members began with route reconnaissance, then deployed an observation post, moved on to CBRN recce, and wrapped up the exercise with zone reconnaissance.

Civilian and military VIPs being escorted are briefed by the officer in charge of the convoy just before its departure for the Sherbrooke airport. Tarps were hung between the vehicles to conceal the activities. Compton, 25 November 2018

Troop training on reactions under contact during a convoy escort. Compton, 24 November 2018

During Ex HUSSARS ENDURCI, we escorted political figures from our region, including Steve Lussier, Mayor of Sherbrooke; Sylvie Lapointe, Mayor of Cookshire; Bernard Vanasse, Mayor of Compton; and Pierre-Luc Dusseault, federal Member of Parliament from Sherbrooke. They played themselves in the exercise. Our objective was to transport them safely to their destination, where they would enter into ceasefire negotiations with the enemy.

The 50 km route included five contacts and presented a highly motivating challenge for the members of our regiment. Together with members of 52 Field Ambulance, we performed casualty extractions from a combat zone. We also received support from 35 Signals Regiment (Sherbrooke) for the deployment of a command post.

"The training was a success and all of the objectives were achieved. The members greatly appreciated the participation of the local elected officials in the escort exercise, which made the training much more realistic. That gave our members the opportunity to develop their skills in a true-to-life, stimulating environment in their own region," said Major Samuel Beaudette, Commander of A Squadron, Sherbrooke Hussars.

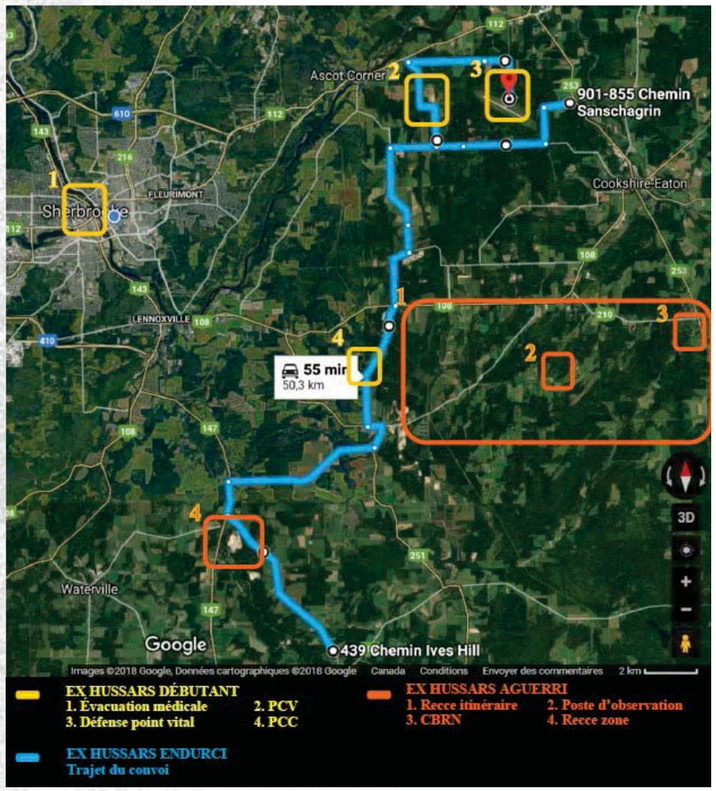
During the off-base training, the diversity and quality of the sites made it possible to deliver stimulating, realistic training to the members of the regiment. Cookshire-Eaton, 28 October 2018

Working with members of 52 Field Ambulance to simulate a medical evacuation. Cookshire-Eaton, 27 October 2018

Simulated extraction of a casualty from a TAPV. Sherbrooke, 29 September 2018

Throughout the fall, members' attendance was steady (61 to 63 members) and their motivation was particularly strong.

Summing up the success of the training season, Lieutenant-Colonel Éric Beaudoin, Commanding Officer of the Sherbrooke Hussars, had this to say: "The involvement of the political figures enabled us to mobilize local media – including Ici Radio-Canada – and to raise our regiment's profile in the area. By 18 December 2018, we had already reached our recruitment target."



Map showing the Sherbrooke Hussars' training sites for fall 2018.

Updates from the Regiments

First Hussars

2Lt J. R.W. Damstra
First Hussars

2018 was a productive year for the First Hussars (1H). The Regiment enjoyed a full training cycle of weekly parades at both its garrisons in London and Sarnia, Ontario, as well as monthly weekend exercises in the rural municipal area and local Canadian Forces Bases. Hussar troops honed a variety of individual battle task standards, field craft, domestic operations, and armoured reconnaissance tasks. Training activities culminated with a one-week brigade level exercise, Ex ARROWHEAD SHEILD 18, at Camp Grayling, Michigan.

Meanwhile, the First Hussars launched three members overseas on operational tours. Maj C. van den Berg deployed to Afghanistan on Op ADDENDA; LCol B. Schied deployed to Dubai on Op IMPACT; and MCpl D. Reckman deployed to Latvia on Op REASSURANCE.

1H had a busy ceremonial year as well. With LCol Schied's deployment in the spring, the Regiment advanced its change of command scheduled from September to 21 April 2018. LCol Allan Finney took command of the First Hussars at a formal parade at its London garrison. The Regiment and community celebrated our outgoing and incoming Commanding Officers at a formal dinner that evening at the Regiment's historical home, the Delta London Armouries in downtown London.

Later in the year, 1H's new Commanding Officer led the Regiment's Cavalry Troop on an historic trip to France to complete a Centenary Commemorative Ride of the Pursuit to Mons. In September 2018, seven members of the First Hussars Cavalry Troop joined more than 60 others from around the world taking part in the centennial expedition. This expedition retraced the grueling trek that the allied forces took when they pushed the Germans back from Cambrai, France to Mons, Belgium, along the Western Front, during the final 100 days of the brutal conflict. The trip was an overwhelming success for all involved and a highlight of the Regiment's year.

Finally, to celebrate a long, hard training year, and several momentous occasions for the Regiment, the First Hussars gathered at our Sarnia garrison for our annual Soldiers' Festive Meal. With a day of training and sports, followed by a traditional Christmas Feast served by Hussar Officers and NCOs to the deserving troops, 1H marked the close of its 2018 year. The Regiment departed for a holiday break to reset and recharge for an excellent 2019.

Hodie non cras

Updates from the Regiments

2018 in The King's Own Calgary Regiment (RCAC)

Sgt Ryan Lincoln
RWS Gnr Course

2018 was an amazing year of growth for The King's Own under Strengthening the Army Reserve (StAR). Decentralization of recruiting to the Armoury Floor over the last couple of years has enabled the Regiment to increase its strength by approximately 50 soldiers up to 180 all ranks. The arrival of three Tactical Armoured Patrol Vehicles (TAPV) last spring has helped attract new recruits and retain serving members. The new Full-Time Summer Employment (FTSE) program was a great success with approximately 55 soldiers from the Regiment signing up for full-time employment for at least part of the summer. This allowed many soldiers to complete Basic Military Qualification, Basic Military-Land Qualification, Basic Armoured Crewmember, and/or Tactical Armoured Patrol Vehicle (TAPV) Driver or Gunner courses during the summer. We also had NCOs graduate from Armoured Crew Commander and Troop Warrant Officer courses as well. FTSE is a key component of strengthening the Army Reserve and is allowing our Regiment to train many more soldiers much more quickly than in recent years.

The King's Own had a strong presence in the Calgary Stampede Parade fielding 2 x TAPVs, and it also staffed the Army Reserve recruiting display during the 10 days of the Calgary Stampede. The Regiment conducted many other community relations and recruiting events throughout the year. Beyond community relations, The King's Own deployed five soldiers to British Columbia to fight wildfires near Princeton as part of the 3rd Canadian Division contingent. The soldiers redeployed in mid-September.

Sgt Ryan Lincoln RWS Gnr Course

The King's Own continued to work closely with our flanking RCAC units this year, hosting Exercise KING'S COMMAND in January 2018. Ex KING'S COMMAND was focused on troop level tasks in a composite Squadron that included KOCR and SALH TAPV troops, and a LdSH(RC) tank troop. In August 2018, The King's Own hosted a TEWT that involved the LdSH(RC), SALH, and units from across 41 CBG. The TEWT examined several tactical and sustainment problems that a composite recce squadron could encounter during a Brigade advance. Site visits were made to several points of key terrain between Nanton and Okotoks in Southern Alberta. The King's Own also sent an armoured recce patrol to LdSH(RC)'s Exercise STEELE SABRE during October 2018. In addition to generating armoured troops, The King's Own has also had 41 CBG's Influence Activities (IA) Coy placed OPCOM to the Regiment. 41 CBG IA Coy has been busy coordinating IA courses for 41 CBG soldiers and supporting 3rd Canadian Division's Road to High Readiness (RTHR). With 41 CBG IA Coy as part of The King's Own, our TAPV crews have begun to work closely with IA teams, and are developing TTPs for how an armoured recce patrol can provide battlespace mobility and security to an IA team. These concepts will be put to the test in 2019, when the Regiment generates an armoured recce troop to support 3rd Canadian Division's High Readiness IA Coy during Exercise MAPLE RESOLVE.

ONWARD!

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Corps Update
and Discussions

Corps Update and Discussions

The Armoured Corps in 2020: In search of an identity – findings and possible solutions

Maj Pascal Croteau
RCACS Standards Sqn Comd
RCAC Corps Major

Since my arrival at the Armour School at Gagetown in 2018, I have been immersed in the strategic files of the Canadian Army (CA) and the Armoured Corps. In addition to being the commander of the Standards Squadron, my secondary duty is that of Corps Major. I regularly sit on working groups and often have the privilege of representing the Royal Canadian Armoured Corps (RCAC) at the CA level. During those meetings, I have noted that the RCAC faces many structural and identity-related challenges.

My initial findings were not positive, and they deeply unsettled my military and armour identity. That reality check motivated me to continue reflecting in order to identify the issues, see how we could improve the situation, and find solutions to the Corps' problems. Wanting to enhance my analysis and understanding of the issues, I decided to involve as many people as possible in the process, in addition to employing the bright young brains of my squadron. Major Blaise Saint Amour, formerly the G3 Production (National Calendar) at CTC Gagetown and now the commander of the RCD's C Squadron, had also noticed the same issues. Even though we operate in different spheres––force generation on the one hand (Recruitment, Army G1, AMOR, BTL, list of personnel awaiting training, and individual training) and capability development on the other––we came to the same conclusions. We felt that it was our professional duty to try to inform as many people as possible about the problems that existed in our profession and draft some solutions. That is how Major Saint Amour and I ended up spending countless hours discussing the health of our profession in order to rectify the situation. The purpose of this document is not to address the recruitment, training and retention side of things; that would require a full article in and of itself. Rather, we wish to focus on the structure of the Corps and how to meet the challenges we are facing. We sincerely believe that the regiment could play an important role in initiating and demonstrating the effectiveness of some of the changes.

In order to fully understand the situation, we had to review the history of the Corps since the end of World War II, and we also had to conduct a thorough mission analysis of the role of the Corps within the CAF and the CA. We focused our thought process on one fundamental question: Are the armoured units structured in a way that enables them to carry out the tasks assigned to the RCAC? The purpose of this paper is to provide you with a summary of that analysis, stir reflection and provoke discussion. Ultimately, we hope to encourage the Corps to regroup and find solutions collectively. We wish to expose the situation, not only as perceived by the RCACS Standards Squadron, but also as observed by many of our officers and NCOs in key positions within the CAF.

We are therefore offering you an unvarnished overview, free of buzzwords or pretension. This document does not target specific people or organizations; rather, it addresses systemic issues. The first step in seeking a solution is to admit that there are problems. Some of those problems affect the CAF as a whole, while others are specific to the Corps. This thought exercise is necessary now because some of the problems may become widespread. In the long run, we hope that it will make it possible to update the role of armour within the CA and that it will be used by a series of working groups that will take place over the course of the year and will involve all units. Our reasoning is based on open-mindedness and a willingness to look at what we are doing before discrediting a platform or an SOP.

STATEMENT OF PROBLEMS

1-Historical and strategic context

The Armoured Corps' identity problems began with the dismantling of the Soviet Bloc, but they were exacerbated by the post-Afghanistan vacuum and the return to conventional warfare training. For over a decade, the Corps deployed reconnaissance and tank squadrons to Afghanistan. The ten years spent there affected a generation of soldiers and were positive for the Corps (consider, for example, the highly specialized counter-insurgency training, the purchase of new tanks in 2006, the almost unlimited funding for task forces (TFs), the combat experience, etc). In short, it was an exciting and exhilarating time for the regiments. However, if we analyze the situation objectively, putting our personal experiences aside, we see that the war in Afghanistan thrust the Corps into its current identity and structural crisis. It also transformed the regiments into force generators for infantry soldiers, preventing us from assuming leadership of the battle groups in combat.

The mission in Afghanistan provided us with low-intensity combat experience but altered our view of conventional operations in terms of TF size, the limitations and constraints of our direct fire and communications capabilities, and our understanding of resource allocation priorities and sustainment concepts, among other things. Our understanding of the tactical and operational realities of fighting an enemy with capabilities equal to or greater than our own has been eroded over the past 20 years. As a result, a significant number of officers and NCOs have a poor understanding of the doctrinal role of armour and how to use us. For many of them, especially infantry soldiers, tanks are now a support weapon. The Afghan mission, due to the terrain and the type of enemy, placed armour in a one square kilometre box in the service of infantry. Basically, the armoured force is the weapon of choice for infantry soldiers to help them hold ground, whereas our DNA is completely the opposite. That trend is still ongoing, as armoured squadrons are tethered to infantry companies, preventing them from manoeuvring, creating shock effect, pursuing, counter-attacking and exploiting––in short, from doing their job. The return to conventional operations has clearly demonstrated that, since the mechanized infantry has lost its long range (mobile) anti-tank capabilities, it does not have enough firepower to hold ground against an armoured force. Tanks remain the only direct, ground-based fire option for fighting enemy armoured forces. As there are so few of them, there are not enough tanks to both support infantry soldiers and conduct our own armoured operations so, by default, and owing to a lack of understanding (sometimes even within the Corps), the armoured portion of an operation is simply no longer considered. Manoeuvre-based operations require a state of mind, experience, agile or even highly mobile command and control, and high-performing logistical support. With the dismantling of 4 Brigade in Germany, we have gradually lost the experience we need for this type of operation, and the Armoured Corps has quietly entered the infantry area. It also true that it is very difficult to carry out a field exercise that can reproduce the conditions of manoeuvre warfare, which requires a lot of space. We therefore rely on simulation exercises, which unfortunately cannot faithfully reproduce reality and the frictions that may be encountered in the field. To compensate for that challenge, the brigades should conduct even more combined arms professional development sessions where the lessons learned from large-scale theatres could be reviewed. What is more worrisome is that our analysis has shown that there is a clash between the perception we have of our profession and the day-to-day re-

This document does not target specific people or organizations; rather, it addresses systemic issues.

ality. We still present ourselves as the experts on mounted warfare, whereas the general level of understanding of the officers and NCOs of the Corps simply does not measure up. That clash has merely fuelled the identity crisis that we are currently experiencing.

Like all of our allies who are intensively involved in counter-insurgency warfare, the post-Afghanistan period has created a significant identity void within the Corps because we have returned to conventional training without necessarily deploying troops in this context. A whole generation of experienced soldiers who had been focused on the Afghan conflict suddenly found themselves training to deal with a potential conventional enemy, without any real concrete objective. Older soldiers who served in the 1980s and early 1990s can understand the challenges of training without ever deploying. Meanwhile, armies such as those in Russia and China continued to develop their skills in conventional warfare. Those countries never stopped investing in their strategic capabilities and they stayed focused on conventional training, while our defence policy (SSE) has been concentrated on a multitude of simultaneous missions across a broad spectrum, from domestic operations to counter-insurgency to observation, training, and conventional heavy operations, which drives our military to generate forces that are agile, dispersible, modular, and easily integrated with those of our allies. Naturally, that raises questions about the utility of mechanized conventional forces and the raison d'être of armoured forces. The current asymmetrical structure of the Corps also underscores the CA staff's misunderstanding of how an armoured unit can actually support the country's defence policy. Having six reconnaissance squadrons and three fighter squadrons makes it difficult for brigades and infantry units to understand our role and place in the ORBAT when six out of our nine sub-units perform combat support tasks while our natural role is to generate and command combined arms combat forces. Our mission analysis has shown us that the current regimental structure is one of the major issues that the Corps must deal with quickly. We will discuss that in more detail when we address the structural issues.

And yet, analysts of geopolitical issues are fairly unanimous in saying that, in the past 30 years, the threat of conventional conflict in Eastern Europe has never been greater. The return of nationalism and isolationist political forces, national anti–Europe zone pressures, systemic economic crises pushing countries to want to get their hands on regions lost following World War II or the end of the Soviet empire, major migratory movements, the marked presence of organized crime in energy fields, particularly natural gas, and the accessibility of new natural resources due to global warming, are just a few of the issues at play. The document Close Engagement produced by the CA Land Warfare Centre is an excellent reference tool for future conflicts, and we should reflect on how to integrate a heavy armoured force into future conflicts mainly in urban areas. At the senior level, armour's relevance is constantly being questioned by headquarters staffs and a number of senior officers. Time and again, when discussing the 2021 restructuring (now Force 2025), we have been asked to justify the need for tanks. Armour is seen as a problem rather than as an option by CA staffs. They think that it is too complicated and that it has too many logistical implications, with fleet operationality below 50% and costs that make DND finance officials break out in a cold sweat. The fleet of 112 Leopard platforms (including ARVs and AEVs) costs as much to maintain annually as the entire LAV fleet, which is six times larger. In that regard, we are sometimes our own worst enemies: we poorly explain the problems associated with maintaining a fleet of vehicles and blame the lack of resources instead of rolling up our sleeves and truly placing the priority on keeping the tanks operational.

At the strategic level, the priorities seem different and more closely linked to political objectives. Our purpose here is not to criticize the strategic environment but to demonstrate that the post Afghanistan era realignment and a new defence policy is causing the CA to review all of its procedures, equipment, infrastructure and capabilities, as well as its force generation model. The agreement signed with NATO in early 2020 on the deployment of a land force on 30 to 45 days' notice also contributes to compelling an in depth review of the force generation model and the deployment of its forces. Given the CAF's very broad and varied mandate and our limited resources, we as an organization must rethink our structures and the way we need to organize ourselves to accomplish all the tasks assigned to us. That is the backdrop against which our Corps must justify its existence and its relevance.

2-Structure of the Corps

The lack of standardization within the Corps is the source of many difficulties. The 3 Regular regiments and 18 Reserve regiments are structured differently and use its platforms differently. Thus, we find ourselves with armoured reconnaissance squadrons with groups of eight, five or four vehicles. Worse still, the perception of use of force differs from one regiment to another. The integration of the TAPV has exacerbated the phenomenon, while the vehicle is not able to fulfill all of the armoured tasks. Contrary to the initial assumption, the TAPV, both technically and tactically, has shown that it has difficulty performing in the field in a conventional warfare setting. The Corps' units are now aware of the challenges surrounding the use of this new vehicle and the need to try to minimize its weaknesses, particularly in terms of its armament. The TAPV matter has highlighted the differences between units and the challenges of the Corps' regimental policy. Speaking with one voice is extremely difficult and a daily challenge for the RCAC team. As a result of this lack of consistency in our structure, the formation HQs and the other arms no longer know how to make good use of us.

This phenomenon does not exist in the infantry. Their structure of mechanized Pl, Coy and Bn is the same from one unit to another. A mechanized infantry Pl is composed of four LAVs––not five, not six: four. Their Corps decision-making structure is different from ours, while the director of the Infantry Corps is supported by a formal General Officers Advisory composed of members from all regiments who gather to discuss and decide the Corps' direction. Unit commanding officers obviously have a say, but they are not at liberty to restructure their units as they see fit. Perhaps the Armoured Corps should adopt a similar structure in order to give more weight to the director's decisions and keep our senior leadership aware of the various issues involving our profession. That would give the Corps a coherent, cohesive approach and better position it to influence and educate the various CA staffs so that they understand what is unique about the capabilities of an armoured unit.

At present, we are often reprimanded by the CA staff, who tell us that each regiment sends a different message and that we need to agree amongst ourselves if we want to remain credible. That is extremely frustrating and makes it difficult for us to take our place in the decision-making process, while a consistent and standardized structure would make things so much easier tactically and strategically. It would also make it easier for our own officers and junior NCOs to understand what their troops need to accomplish in the field.

with the retirement of the Coyote (divestment planned starting in 2021) and the entry of the TAPV and the new LAV RECCE (LRSS), the Corps will lose more than 130 25 mm turrets.

The other structural issue is that there are too many reconnaissance squadrons and not enough fighter squadrons that can conduct combined arms operations in both official languages. We have conducted a full review of all major documents produced by the strategic staffs since 2010, namely the defence policy, orders, visions, intentions, assigned and implied tasks of the CA (including the recently signed NATO readiness plan), and individual and collective training tasks, and we have concluded that our current structure does not allow us to carry out all our responsibilities effectively. This problem seems fairly easy to solve: we simply have to convert three of the recce squadrons into fighter squadrons. However, the current redistribution of platforms within the Corps makes the implementation of this solution more complex. Firstly, we do not have enough tanks to equip the three squadrons. Secondly, with the retirement of the Coyote (divestment planned starting in 2021) and the entry of the TAPV and the new LAV RECCE (LRSS), **the Corps will lose more than 130 25 mm turrets.** Thus, reintroducing a structure like the one from the 1980s and '90s with wheeled fighter squadrons in Cougars is one possible solution but would require reallocating the LAV 6.0 within the CA, and doing that in the current strategic context would be quite a challenge. Our assessment found that, if the Corps wanted to establish three wheeled fighter squadrons, we would need to recover about 40 LAV 6.0s. Not impossible, but it would require the involvement of our senior officers and the development of a marketing plan to explain the tactical use of wheeled fighter squadrons because, unlike in the Cougar years, the logic of a training fleet would not be recommended, given that Canada does not have a tank fleet in reserve and ready to mobilize in the event of a major conflict. In any case, there is a real tactical role and relevance to this type of squadron, which we will discuss later in the text.

3-The relevance of our reconnaissance SOPs

When conducting our analysis, we also needed to find out how the allied and Russian armies were structured and how they operated in terms of reconnaissance and fighting. We wanted to avoid comparing armies in terms of capabilities (size and equipment), so we focused on concepts and employment philosophy. One of the more interesting analyses was conducted by Captain Vladimir Kessia, who is currently an instructor at the Armour School. He knew that my team was working on the Corps restructuring and he had some time on his hands, so he took the initiative to approach me and offer his services. He wanted to contribute to our thought process and had a wealth of knowledge from his recent experience as an instructor, notably on the TAPV. I therefore had him analyze how the allies and the Russians are doing reconnaissance in 2020, my logic being that, before discrediting a platform, we must analyze the relevance of what is being done. He analyzed several armies, including those of the United States, Australia, France, Russia and the United Kingdom. I would like to thank Major Manu Pelletier-Bédard, who is currently in England, for opening doors for us and contributing to the thought process. Vlad is fluent in Russian and had access to several open source Russian and Ukrainian documents that enhanced his analysis. Here are the highlights of his research, in broad terms:

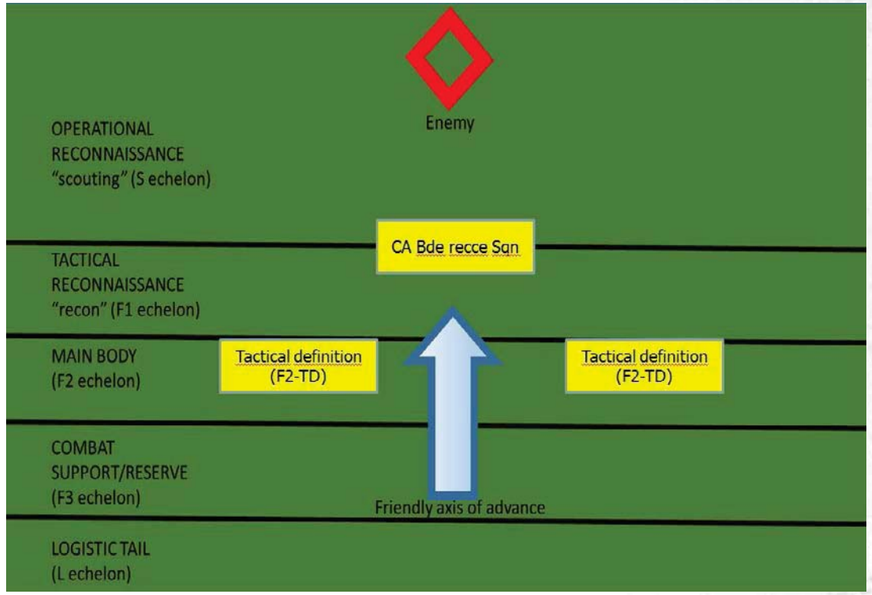
a. Apart from the Russians, no one does sneak-and-peek scout recce with mechanized forces anymore. That type of recce is kept at the divisional level and carried out by a mix of light mobile forces (small vehicles, special forces, PSYOPS, etc) and technological tools such as drones.

b. At the Bde and mechanized BG level (elements comparable to ours), the recce elements are essentially recce in force elements based on speed and risk management. The knowledge of the entire situation is sacrificed in favor of maintaining momentum. You have to fight for information.

c. Mechanized reconnaissance forces can be light wheeled (LAV) or heavy tracked (Bradley or AJAX), but they all have one thing in common: they are equipped with anti-tank weapons.

d. Russia makes extensive use of cyber, EW, infiltration and extortion tactics to shape the battlefield before ground forces even come into play. Their BRDM-based ground recce elements always conduct scouting, since their indirect capabilities are superior to NATO's.

e. No sub-unit combines reconnaissance, surveillance and CBRN within a single sub-unit or unit. Those areas, which require specific and different skills, are assigned to different units. Even with reconnaissance, allied nations divide their forces according to level and objective and do not require the same sub-unit to conduct reconnaissance as a tactical force while being able to conduct reconnaissance operations at the operational level. In short, smaller, more specialized forces are preferred over generalist forces.



Actual Allies recce elements

Therefore, it is essential to further analyze the tasks that we assign to our reconnaissance squadrons and to see if our allies' approach would be applicable in the Canadian context. If so, what would need to be changed and what steps would be taken to achieve that in terms of structure, equipment, training and communication of the changes?

4-Has the situation changed?

The short answer to this question is YES. Since signing the agreement with NATO last year, the CAF must be ready to deploy battle-group- and brigade-sized land elements at any time on 30–45 days' notice. For the Armoured Corps, that means one tank squadron and two armoured squadrons with their echelons. Therefore, in 45 days, almost an entire armoured regiment can be deployed somewhere in the world as part of a NATO coalition. The impact of this new reality is that the preparation cycle has been modified, and the consequence is that, this year, two brigades will be built up at the same time. Training and using the equipment we have is now essential. Our squadrons, if ever called upon, will be on the ships/aircraft within 30–45 days. Once the build-up is complete, those forces must be ready to deploy to Europe at any time. It is imperative that we review our organization, our training and our SOPs in order to adequately prepare our squadrons (and the echelons, of course) for this new reality. Our units must adopt the same deployable at all times mindset as that of the Air Force or Navy. With that mindset and that level of operational readiness, the Armoured Corps will truly be an asset to the CA and the CAF.

a.Russian detection capabilities

At the tactical level, one of the lessons learned from the conflict in Ukraine is that the Russian Army applies the 10-10-10 rule: ten minutes to detect, ten minutes to engage and ten minutes to move and re engage. In simple terms, that means that, once detected, our troops have a maximum of ten minutes to move 1,000 m. Since their detection capabilities are very powerful and sophisticated (based on drones), we can assume that we must move at least every ten minutes, otherwise there is a high likelihood of being engaged by indirect fire. Bear in mind that the Russian Army relies largely on its indirect fire capabilities, and their range of fire is beyond 50 km. This rapid response is mainly due to the fact that they decentralize command to the lowest level of their indirect fire resources. Therefore, our troops should be as dispersed as possible and constantly change location, from the reconnaissance echelons to the main brigade area. Command posts or any other elements emitting a thermal or electromagnetic signature must be dispersed as much as possible, operate in degraded mode, make maximum use of camnets and move about every ten minutes––in short, they must do a lot of things that were not necessarily essen-

tial during the ten years in Afghanistan. Older soldiers will tell you that fighting in this context is nothing new and that it is exactly the way the CA was training at the height of the Cold War, and they are partly right. However, a once technologically inferior enemy is now on par with us and even superior in a number of areas. That is the real game changer. It means that our troops must be dispersed throughout the area of operations and be able to regroup dynamically on the fly when ordered to strike an objective. The era of the square combat team with the tank in the lead and the infantry company following behind in 2 Up T formation is over. The question is, why are we still training this way? Are we training properly to do quick regroupings or to constantly move our command posts and practise the famous "step up"? By definition, RCAC members should be comfortable operating in this context, but the expertise for this type of combat needs to be rebuilt. In fact, we see an opportunity for the Corps to develop that expertise and truly make it our specialty. When a commander receives an armoured element or an armoured commander gets combined arms elements attached to their organization, the expectation will be that we are specialists in regrouping while on the move and that we have small, agile and highly mobile command posts. Our DNA is not to hold ground but to take it. We are the specialists in taking it, and they guard it. That is something the Corps needs to train on and specialize in. That is what we can contribute to the CA's capabilities. To accomplish that, we must be structured accordingly, use the minimum amount of equipment, master the basics of our profession (platform, camouflage and tactical movements) and train our people well in the manoeuvre mindset.

b. Cyber, EW and jamming

The threat of electronic and electromagnetic interference has always existed in conventional conflicts, but added to that are the cyber threats now being used offensively by the Russians. Whether they are pirating essential infrastructure (such as a hydroelectric power station), creating a sex scandal involving an enemy general, or simply sending hate messages or false death notifications to families of military members on operations (by accessing their Facebook accounts or their personal email using unsecured Internet communication towers), the Russians have mastered of the art of influencing the battle without firing a shot. The conflict in Crimea is a good example: they were able to take the territory without fighting in the military sense. By controlling natural gas, electricity, the internet and local organized crime (which extorted the local political leaders), they have been so successful in influencing the region that they have no need to use their military forces to take control (apart from a show of force at the borders). Since Western military personnel are addicted to technology and social media, one can assume that our troops will be vulnerable and that the CA will have to implement measures limiting access to electronic communication tools. For generations that are used to being in constant communication that represents a significant challenge for maintaining morale.

> **In terms of jamming, the Russian army has demonstrated impressive capabilities for blocking all electromagnetic emissions over a large land mass.**

In terms of jamming, the Russian army has demonstrated impressive capabilities for blocking all electromagnetic emissions over a large land mass. Not only are they able to rapidly detect any electromagnetic field, but they can also block and render inoperable the majority of our electronic equipment. Therefore, we need to operate without radios or GPS; master the use of our weapon systems and our equipment in degraded mode; and use liaison officers, dispatch, coordination points and visual signals. All these things already exist, and our experience with them needs to be rebuilt. It requires a great deal of effort and imagination; above all, it obliges us to operate outside our comfort zone (both physical and mental).

c. Development of Russian air defence capabilities

Since NATO makes extensive use of air operations (so much so that the Russians base their strategy on indirect fire), the Russian army is now equipped with an abundance of anti-aircraft weaponry. At all levels, they now have the capacity to engage our aircraft, with the primary objective of protecting their forces from indirect fire.

d. Lethality of our platforms

Another reality that our armoured troops must deal with is the overall decrease in the lethality of our weapon systems. Without going into too much detail, since much of that information is sensitive and classified, we can say that all of our effective ranges are wrong, for both the 25 mm and the 120 mm. Currently, we are unable to engage and destroy a Russian T 90 tank at a distance greater than 2,000 m, and the effective range of our 25 mm would be closer to 1,200 m than 2,400 m. I use the conditional because, even for the school, which is the CA centre of excellence for direct fire, it is very difficult to obtain the Level II documents regarding the performance of our firing systems, due to a combination of organizational culture and protection of the industry, which does not want to be told that its products do not live up to their claims or that they have simply been overtaken by Russian capabilities. As a result, we are unable to adapt our firing techniques and our tactics to counter the shortcomings. Our approach to the situation is more one of denial, which means that we are still focused on the status quo despite the real changes in the situation on the ground. The defensive and reactive armour of the Russian platforms simply outperforms the penetration capacity of our current munitions. Consequently, in the event of an attack, instead of applying a delay strategy using a highly mobile force supported by a dug-in heavy force engaging with their tanks at long range, we need to reverse the situation: manoeuvre our heavy forces very close to the enemy in order to engage them at a shorter distance. The challenge is to change our mindset of "heavier armour + more weapons = better chance of survival" to "more mobile/faster & engagement at short distance (1,500 m or less) = better chance of survival." After years of fighting enemy that had little or no ability to destroy our combat vehicles with direct fire, it is extremely difficult to change the perception that more armour equals greater security. The other challenge for the Corps in terms of lethality is not only the current capacity of our munitions but also the loss of more than 130 25 mm turrets between now and 2023, in favour of a weapon that is even less lethal. The TAPVs, equipped with a 40 mm grenade launcher, are having significant difficulty hitting the target. Currently, our reports indicate that only 20% of the shells hit the target at 550 m, with either live or practice ammunition. We understand that, because it is a dispersion weapon, its purpose is to fire multiple shells in a limited area. However, for almost three years we have observed that the dispersion is clearly greater than that of the same grenade launcher when it is mounted on a tripod. The school, in collaboration with the Test and Evaluation Unit at Gagetown, is going to conduct a range this year in order to gain a better scientific understanding of the dispersion problems and to try to find a way to improve the situation. The fact remains that more than two years of testing of the vehicle have shown that the weapon system on the TAPV is one of the vehicle's biggest shortcomings for an armoured unit and severely limits its use in a context of conventional warfare.

e. The declining technical skills of our crews

The platform-agnostic or generalist approach was developed at the end of our involvement in Afghanistan, but it is rooted in the 1990s, which saw multiple UN missions and the end of the Cold War. For armour, that means that whatever the platform, an armoured unit, a sub-unit, a troop or a crew are able to carry out all of the tasks assigned to our trade. Depending on the size and strength of the enemy, a commander will decide to regroup sub-units and use the platforms based on his or her analysis. That approach is excellent in a long conflict like World War II, in which the crews develop exceptional technical skills through combat experience, but it is very difficult to apply in the current context. As a result of a number of factors—the limited training budget, the reduced window of exposure to large-scale mechanized exercises, the absence of basic leadership due to the plethora of institutional tasks and small operational missions that are onerous for the leaders, the constant movement of personnel, the sizeable increase in domestic operations, the reduced time available for practising basic techniques, the constant movement of personnel, the large increase in domestic operations, the reduction in time available for practising basic techniques, the sub-sub-unit SOPs, the very high VOR rate, and the retention challenge at the sergeant and captain levels—it is very difficult to train effectively and to develop armour crews that excel in all aspects of the profession. The generalist approach

requires that our crews be able to shift between platforms and perform all of the armoured tasks, from light reconnaissance to fighter operations. Our allies have also experimented with this approach, and all of them returned to specialization of their crews and their units.

This approach is difficult to apply in our context because it leaves out the human factor. It is also difficult to explain the approach and to get the troops to accept it. Our crew members want to be competent and specialized. Their pride and motivation stem from their expertise and their knowledge of the platform. Being told that they will be jumping from one platform to another makes no sense to them. Although flexibility has always been a strength of our profession, claiming to simultaneously be tankers, reconnaissance operators and experts in urban combat, as well as having dismounted patrol skills, does not make sense either. We need to restore the balance between flexibility and specialization. As an average-sized army, we need to generate troops that are flexible in different contexts, and that is why, as a Corps, we need to refocus on and restore the vital skills of our profession and strive to excel at them. The team's technical skills and its ability to synchronize its actions are what will ensure its survival in combat. By trying to eliminate the reconnaissance versus tanks duality, we have sown confusion among our soldiers and profoundly affected the Armoured Corps' identity. That approach directly undermines the psychological foundations that underpin understanding of the goal, self-fulfillment, and pride based on technical skills, all of which have a significant impact on morale, motivation and, in turn, retention. Our allies have arrived at the same realization, and that is why they have all refocused on training their non-commissioned officers on the technical aspects of and concentrated their efforts on the vital skills common to mounted operations, namely "Move, shoot and communicate."

With the loss of technical skills, we gradually lose our knowledge of what our platform can and cannot do. At all levels, we lose touch with reality, and that results in a series of tactical exercises and manoeuvres that do not in any way take into consideration the vehicle's capacities. I am not talking here about our limited knowledge of what an enemy or a conventional threat can do, only of what our platforms can do: movement, firing distance, effectiveness of fire, penetration, observation, etc. There has been an overall decline in basic knowledge of our platforms. At the Armour School, we have gradually moved away from specialized courses or have rendered them insignificant. Is a 13-day advanced gunner course (ADFE) without a range and an industry visit really "advanced"? That is just one of many examples. Fortunately, we are working now to reverse that trend: we have re-introduced an advanced driver course, and my team is working on re-establishing an Advanced Direct Fire Specialist course. But it is still extremely difficult to bring back a course that has been eliminated, or to increase the number of days for a course. It's a matter of funding and credibility. Once again, it comes down to our lack of cohesion in the Corps, which greatly hinders our ability to change training courses or to create new courses. Each time, I have to justify to the staff of the CTC that the school's initiatives are not those of individuals, but are what the Armoured Corps wants. The other Corps excel at this, particularly Artillery and Engineering, who manage to justify their very high-budget training courses (which sometimes cost millions of dollars) while we struggle to get people to accept changes to the advanced gunner course, which, in the big picture of individual training, costs practically nothing.

The arrival of the TAPVs and their integration into the Corps have also contributed to this unfortunate trend—a new platform for our troopers to understand and use. In an effort to be good team players and integrate this vehicle, we have been trying since 2016 to use it every way imaginable without really accepting its limitations. The TAPVs are supposed to have a range of 1,200 m, but their effective range is less than 600 m (and I am being generous), and we are talking about using this vehicle as an assault force or to conduct area reconnaissance. In short, this vehicle is no longer being used for the purposes for which it was conceived, designed, and purchased by Canada, and we are pretending that it can do the job. We can do what we want with a platform using blank ammunition or when we don't take the enemy's real capabilities into account. Currently, there is what we sarcastically refer to as a lot of smoke and mirrors, where each attack or exercise is said to be a resounding success. That poor use of our vehicles is quickly understood by our troops and greatly affects the credibility of our leadership and the morale of our soldiers.

The basis of the generalist approach is commendable and was intended to eliminate the never-ending battle between reconnaissance and tanks by putting everyone in the same boat. No more problems and internal conflicts between the regiments? Instead, in levelling down by putting everyone in the same boat, we have created the opposite effect, destroying the feeling of pride on both sides, as well as the technical expertise on our machines. I remember the era of the "pigs from D," and I can tell you that there would not have been one tanker from B Squadron who would have dared to cross their squadron lines while laughing at them because they were not serving on the tanks. Without falling into the trap of nostalgia (as we do not necessarily want to re-create that atmosphere today), we can nevertheless re-create the spirit of pride that prevailed in the squadrons at the time. In trying to please everyone by saying that there is no longer any such thing as recce or tanks, we have contributed to accelerating this loss of identity, which, in the era of Generation Z, would be a precious tool to move our young people away from individualism and integrate them into a collective project that makes them special individuals. I don't want to stray into pop psychology, but I suspect that a majority of them are seeking that experience and that, unfortunately, the Armoured Corps does not seem to be able to offer it to them as others—for example, a light infantry battalion or a para coy—can. We have the most attractive toys in the CAF, yet we are unable to stoke the fire of the younger generations. The loss of our identity, or our confusion about it, that has resulted from the generalist approach is largely responsible for this.

f. Fighting in complex terrain and urban environments

The lessons learned in recent theatres of operations and the analysis of future combat (close engagement) demonstrate that tanks and mechanized infantry are heavily used and are very effective in urban areas. As you know, the tanks of the 12th Armoured Regiment (Three Rivers Regiment) fought many times in towns in Italy. Nevertheless, urban operations in the CA are handled by infantry and concentrate solely on seizing and clearing buildings, even though urban operations involve much more than that. In order to clear a building, you have to get there first! The expertise within the Corps has all but disappeared, whereas our allies have armour in urban operations cells. We had the pleasure of visiting the French army in 2019, and we were very impressed with their knowledge and the level of mechanized training they were delivering. The Armour School and the Tactical School, in collaboration with the Infantry School, have set up a combined arms mechanized urban operations cell.

> **as a Corps, we need to refocus on and restore the vital skills of our profession and strive to excel at them.**

POSSIBLE SOLUTIONS

The situation is critical, but not unredeemable. The Corps has everything it needs to recover quickly. It has exceptionally competent, dedicated and committed people in its ranks. All that is required is to take the time to understand what the CA wants from us, to inform them of what the Corps has to offer, clear and simple direction by the senior leadership of the Corps, for the units to follow the direction taken and explain it to their brigade chains of command, and a few structural changes.

1-What is the CA asking us to do?

According to the official documents, the CA is asking us to generate three brigade reconnaissance squadrons and three tank squadrons (for one roto only) and to be ready to generate an armoured BG. The new agreement signed with NATO (Enhanced NATO Response Force (E-NRF)) requires that the Armoured Corps be able to deploy a tank squadron (version M) and an armoured squadron and their echelons within an infantry BG in 30 days and a brigade reconnaissance squadron with its echelon in 45 days. The agreement represents a real change in the Army's mentality and pushes the Corps to analyze its capacity to meet those requirements. The Corps must also provide tank support for all level 5 (live) fire training for build-up TFs. Since the spring of this year, all CA combat subunits have had to train "dry" at Level 5. The CA, through the Strengthening the Army Reserve (StAR) directive, is asking reserve units to generate at least one reconnaissance troop per regiment, including three CBRN reconnaissance troops. The CA is also asking the Corps officers and senior non-commissioned officers to be familiar with manoeuvre and with fighting tactics. Quickly, on ATOC and AOC courses, armoured officers are being asked to discuss and plan tactical operations that require a good understanding of mechanized manœuvres. Is the Corps' current structure and training sufficient to enable it to perform its assigned tasks? The current asymmetrical structure complicates the effective execution of our mandates and causes confusion among HQ staff. The first step in analyzing possible solutions is to review and understand the tasks assigned to the Corps and to structure it in a way that will enable us to execute our tasks effectively. Currently, with six recce squadrons and three tank squadrons, we are unable to do all of our assigned tasks well. We must eliminate regimental politics and set aside our egos and our interpretations of what our tasks should be.

RCAC ASSIGNED TASKS

E-NRF (no duration deployment):

- FG 1x Tank Sqn of 19 tanks + ech under Inf BG within 30 days.
- FG 1x Armd Sqn+ ech under Inf BG within 30 days.
- FG 1x Bde Recce Sqn+ ech under Bde within 45 days.

LoO 3& Jupiter (sustain deployement)

- FG 1x Tank Sqn of min 15 tanks + ech under BG within 90 days.
- FG 1x Bde Armd/recce Sqn+ ech under BG within 90 days.
- FG 1x ARes PSS tp under BG within 90 days. (Reg F to support at roto 0)
- FG 1x ARes TAC SEC tp under BG within 90 days. (Reg F to support at roto 0)
- On order, FG an Armd BG.

OP PLAN CA 2020-21

- Train and Support level 5 dry (annual foundation training) with any Armd direct fire Sqn.
- Train and support level 5 (live) with tanks including Ex MR and EX Common ground II.

StAR frago 2:

- FG 3x ARes CBRN Tps. (1x per RegF CMBG)

Individual training

- Conduct all necessary IT to support CA field force operational & CT mandates.
- DP1 Armd NCM to DP4 SSM, DP1 officers & advance courses.
- Technical support all CA Direct fire courses.

2-Accept the reality of our situation and take responsibility

All solutions inevitably require us to accept that our profession is divided into two specialties and that the Corps' main effort must be to produce the maximum number of combat forces operating in a combined arms setting. Consequently, fighting, which makes up 80% of armour tasks, should once again become our main effort. Armoured reconnaissance should be a specialty of our profession, as it is for infantry. The solutions should also focus on our force, specifically the specialization of our crews with the development of a number of advanced courses. That way, the Corps will be aligned with the statements made by recruiters during the hiring of our future troopers. The marketing of our profession is focused on fighting, but the reality is different. By shouldering our responsibilities and structuring ourselves symmetrically, we will be able not only to accomplish our assigned tasks, but also to attract more candidates. We need to accept the limitations of our platforms and use them the right way, with due regard as to why they were developed. We need to stop pretending. A TAPV is not a Cougar, and we cannot reproduce the 1980s–1990s model with that platform. Let's accept that the infantry will win the brigade's winter games, and instead focus all our energy on the brigade's 25 mm firing competition. Let's refuse to be beaten in the turret, as happened in the last two Worthington competitions, while an R22eR crew won the 25 mm firing. Let's have our say in the design of schemes of manoeuvre to ensure that we are not placed in the 1 km2 box. In short, let's assert our DNA and keep the focus on our skills in mounted close combat.

3-Adopt a consistent, simple, symmetrical structure focused on combat effectiveness

The current structure of the Corps is not optimal. According to most observers, it requires a significant adjustment in order to reverse the proportion of fighter squadrons versus reconnaissance squadrons. There are a number of possible options, and we also think that it is important to adopt a structure that will be valid no matter what platforms the Armoured Corps must work with in the future. We must approach the restructuring step by step, while keeping the end state in mind. Here are a few possible solutions:

The solutions should also focus on our force, specifically the specialization of our crews with the development of a number of advanced courses.

1 All of the regiments should be symmetrical, with 3x manoeuver Sqns. 1x light, 1x medium and 1x heavy. All Tp of 4x car.

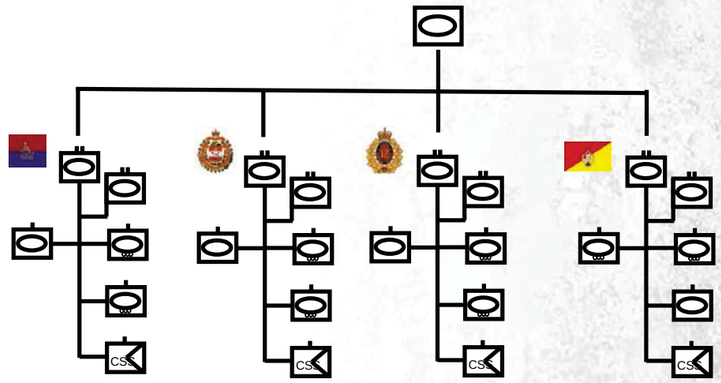
PROPOSED REGT BY 2025

Principles

- Symmetrical structure (3x Light, 3x medium & 3x heavy).
- Based on 4 car tps. Task tailored / modular regroupings.
- No more Bde recce Sqn detached to Bde HQ.
- Vision of a Regt manoeuver. CO decide witch Sqn lead. C2 is assume fully by CO and RHQ.
- Advance to contact/recce in force at Regt level.
- RCAC structure and IT orientated to sabre tactics. Recce tasks are inherent to all ops.
- Operational mind set. Ready to deploy at all time.
- Sabre Sqn sup lvl 5 dry and Tank Sqn sup lvl 5 live.
- LRSS are integrated to Sqn as 4 car. Sqn BCs in LRSS.
- ARes is integrated as a Sqn or Tp for TAC SEC ops, support of Regt 60 and 50 tasks.
- RCAC will need addition of 15x LAV 6.

Light Armd Sqn

- 3x tp 4 TAPV.
- 1x tp 4 LRSS.
- OC TAPV, BC in LRSS.
- Combine arms if req.
- Anti-tank capability.
- Possibility to atts MUAV, CBRN tp or Assault tpe if req.



Sabre Sqn

- 3x tp 4 LAV 6.
- 1x tp 4 LRSS.
- OC LAV 6, BC in LRSS
- Dual qual LAV 6 & Leo 2
- Combine arms if req.
- Raids, exploitation, penetration in dept, disloc en forward element, fix.

Tank Sqn

- 3x Tk Sqn of 20.
- 4x tp 4 tanks.
- Outside MRP cycle.
- Supp IT, CT and ops output/readiness.
- Tanks M version in Op stock-storage.
- 41x A4 & 4 A4M.
- Possible to att tp LRSS or TAPV.

RCACS

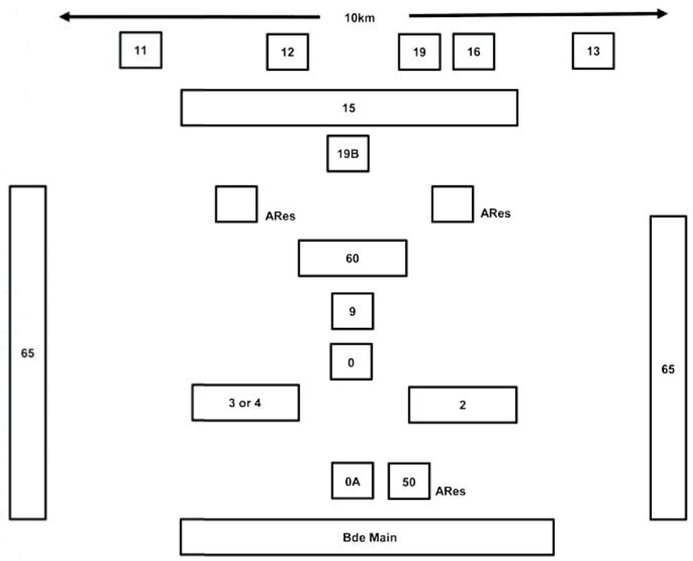
- FCoE for all CA mounted op courses.
- No tanks, wheel fleet.
- DP1 Armd NCM to DP4 SSM, officers and advance courses.
- CA Mounted Direct fire rep.

Light Armd (PRes)

- 3x tp 4 TAPV
- 1x tp CBRN.
- Regt cbt support tasks.
- Tac Sec, IA, CIMIC
- Assault tp.
- Can support 60 tp / 50 tasks.

2 Rethink the concept of armoured reconnaissance and focus on the tasks that are vital and tactically realistic. Specialize our reconnaissance in tactical tasks and focus training effort on fighting to obtain information. Instead of a Bde recce, vision of Armd Regt in front of the bde with 3x sub-units.

POSSIBLE REGT FORMATION



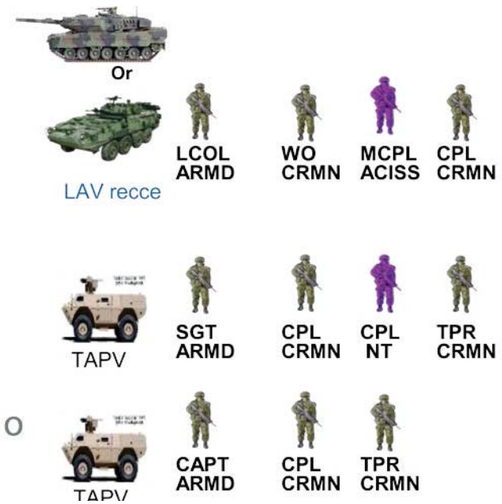
3 Implement smaller, highly mobile regimental HQs based on continuous movement.

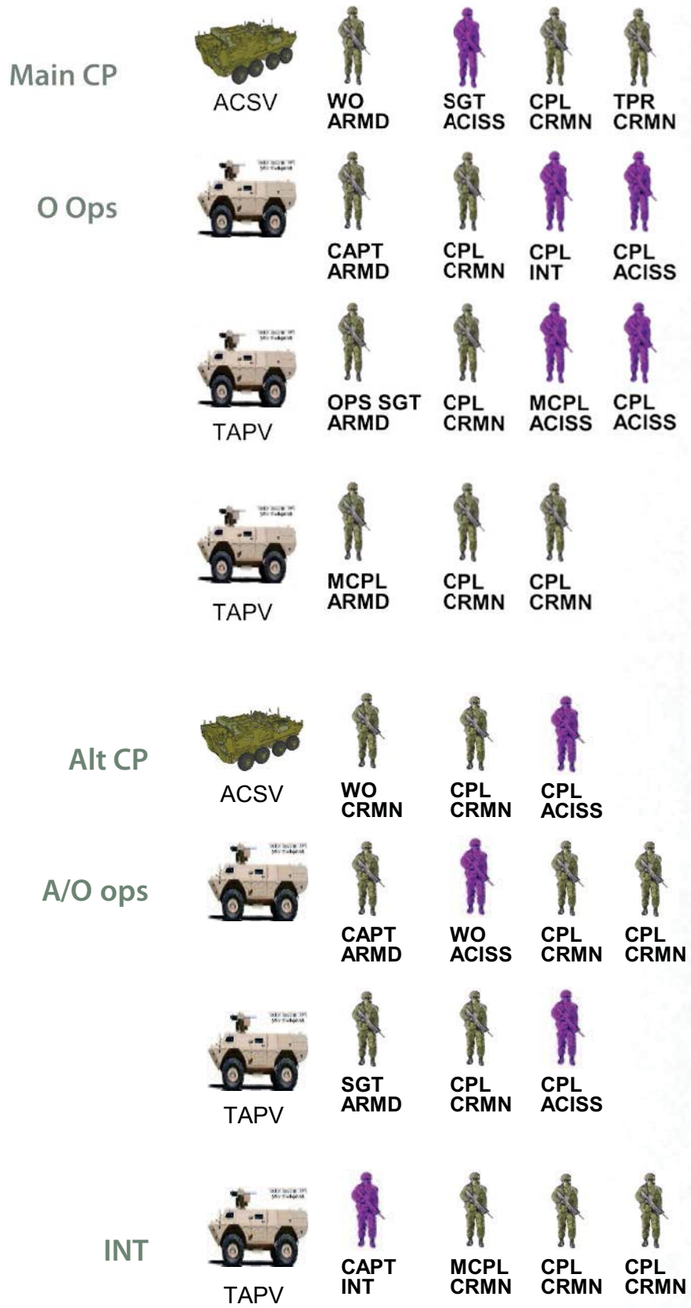
MOBILE RHQ

RHQ Principles

- RHQ Principles
- Mobility, mobility, mobility.
- Small and dispersed.
- Build to work in degraded env.
- Relay information.
- Constant step up.
- DCO and RSM at Plan cell B ech.
- Adv Echo & Golf added if req.

OFF		NCO	
Lcol	1	CWO	
Maj		MWO	
Capt	4	Wo	3
Lt/Slt		Sgt	4
		Mcpl	4
		Cpl	20
		Trooper	3
TOTAL			39





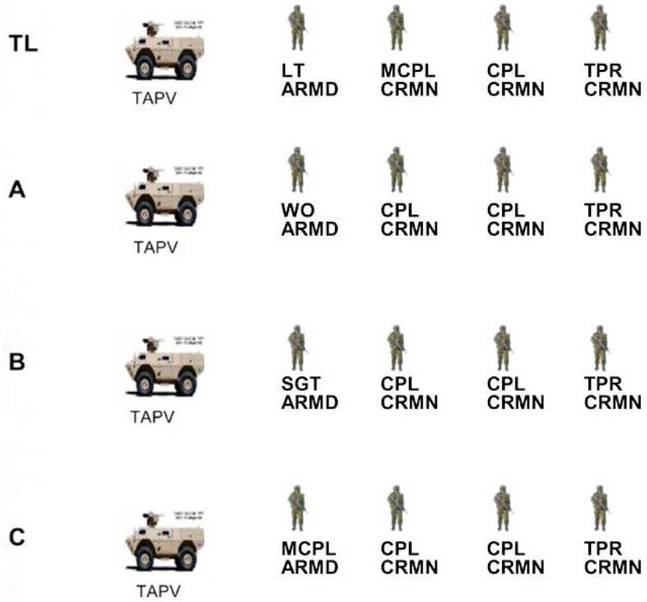
4 Rethink the integration and tactical use of the LAV recce surveillance system (LRSS). It is more than just a "boosted" Coyote. Sense troops integrated to each Sqns and Regt troop.

REGT TPS (ALL COAS)

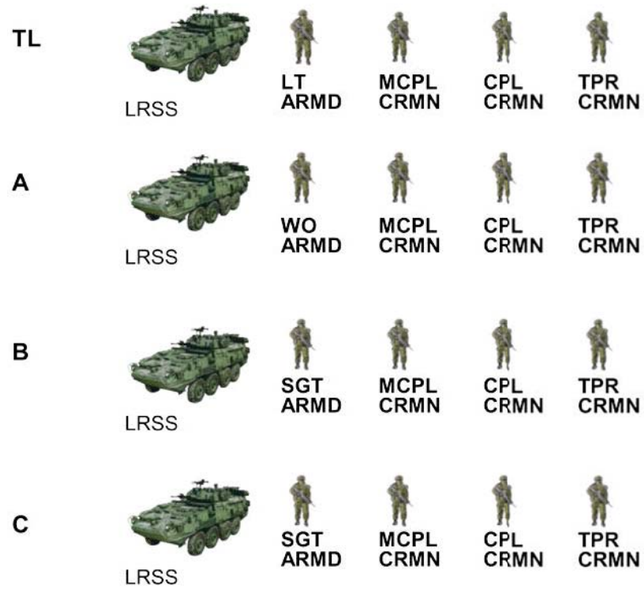
Tp 60 Principes

- Close recce & enemy definition and mobility obstacle.
- Maintain LoC, road recce, point recce, bridge classification.
- Assault tp – armd pioneer. Same capabilities of old Tp 44.
- Tp of 4 TAPVs possible to divided in 2 fire teams.

TP 60



TP 65



Tp 65 Principes

- RHQ Sense fonction.
- Employed as a troop and can by divided in 2x fire teams.
- Support Regt ops and ensure no gap in Sense function between forward elements and rear.
- Flank security of Main body.

TP 50 (ARES)

Tp 50 Principes

- Maintain Regt LoC. BPT support Tp 60.
- Convoy escort or security for B ech.
- RHQ security when static or LRSS local security if req.
- Assault tp – armd pionneer.
- Mobility & security for CP 8 and CP 0.
- Regt reserve.

5 Adopt the operational mind-set of the Air Force and the Navy. Be ready to deploy at any time.

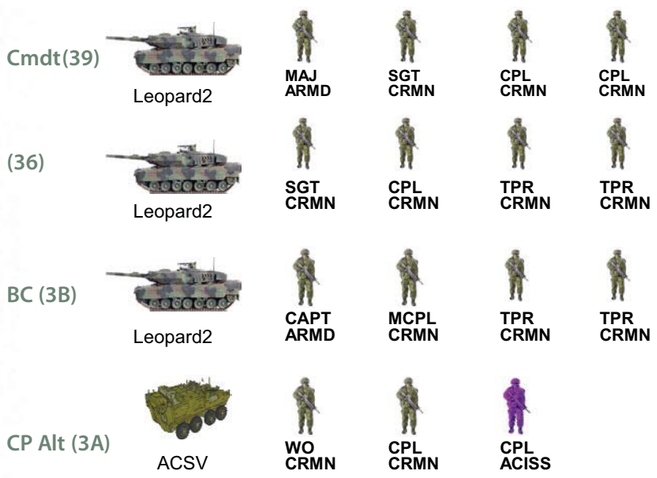
6 Create squadrons that are more homogeneous in terms of platforms.

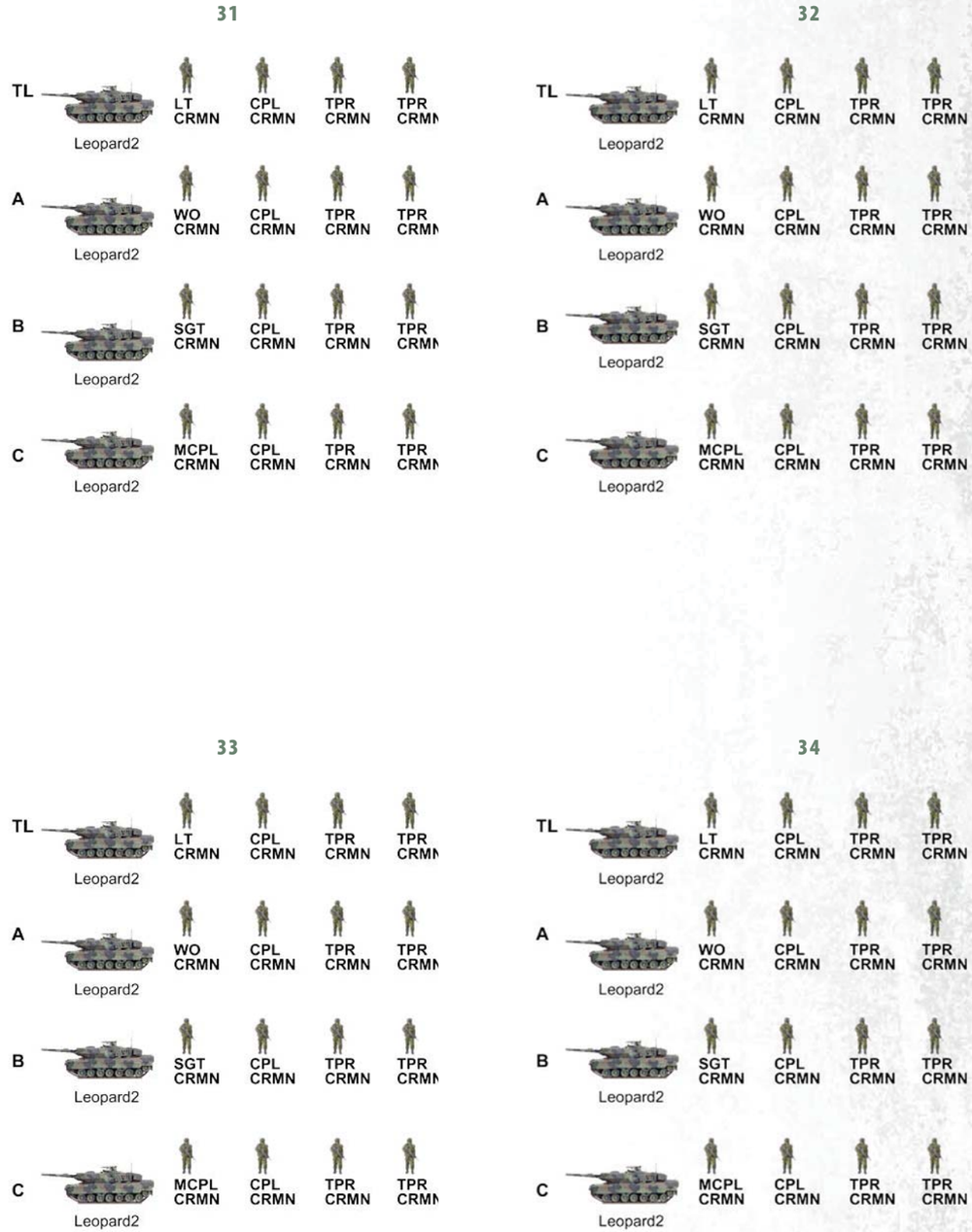
TANK SQN (C SQN)

Principles

- Advance to contact Tp sup Tp under 39 C2.
- Main tasks Fixe, Strike, neutralise mounted eny capabilities.
- Tp of 4 Tanks able to work as fire team if req (urban ops/complex terrain).
- All drills conducted as 4 car Tp like all other armd sub-units.
- Combines ops possible with inf, Eng, FOO.
- Breaching equipt.
- LRSS or any Armd Tp can be atts as a fourth Tp.
- Alt CP is possible co-located with A1 ech.

OFF		NCO	
Maj	1	MWO	0
Capt	1	Wo	5
Lt/Slt	4	Sgt	6
		Mcpl	5
		Cpl	21
		Trooper	36
TOTAL			79





7 Increase the number of fighter squadrons able to operate combined arms.

8 Maximize the use of turreted platforms (armoured fighting vehicles (AFVs)) in the combined arms squadrons. Once the Corps has maximized the use of the AFVs, we need to put a plan in place for obtaining more LAV 6.0s in order to conserve the current number of fighting vehicles and equip our wheeled fighter squadrons.

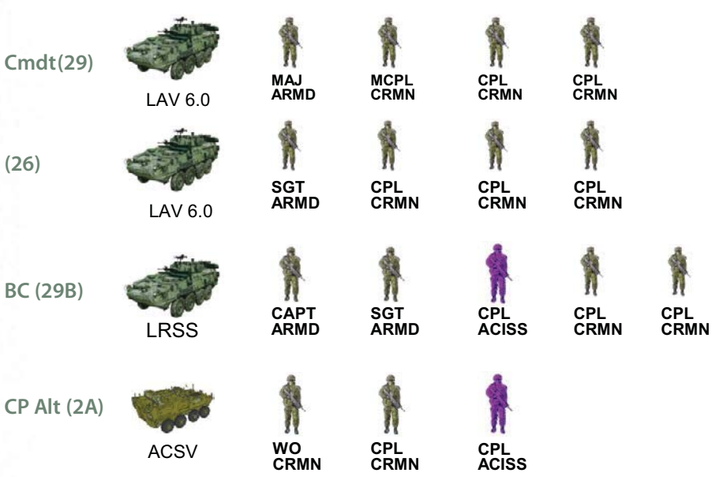
9 Create three wheeled fighter squadrons (4 LAV 6.0s per troop). Create a tactical role based on the needs of our brigades. Put a plan in place for obtaining more LAV 6.0s.

MEDIUM /SABRE SQN

Principles

- Advance to contact Tp sup Tp under 29 C2.
- Main tasks are Find, Fix, penetration, exploitation, raids & disloc forward eny.
- Tp of 4 LAV 6 able to work as fire team if req.
- All drills conducted as 4 car Tp like all other armd sub-units.
- LRSS Tp in caterpillar movement controlled by the BC. Combines ops possible with inf, Eng, FOO, IA, EW or any ISR assets.
- Can atts CBRN tp or any ARes Tp. Follow and support tasks or used to augment ground covering.
- LRSS to be atts to each Tp for OP task/ screen.

OFF		NCO	
Maj	1	MWO	0
Capt	1	Wo	5
Lt/Slt	4	Sgt	6
		Mcpl	11
		Cpl	26
		Trooper	25
TOTAL			79



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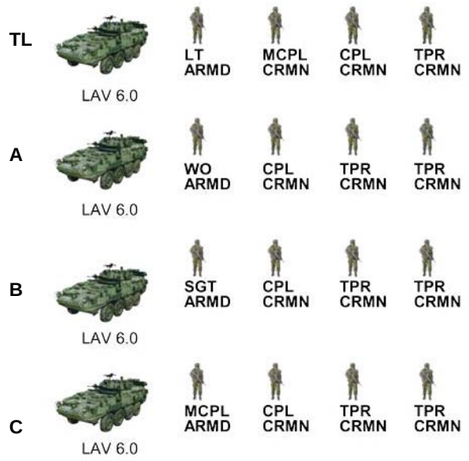

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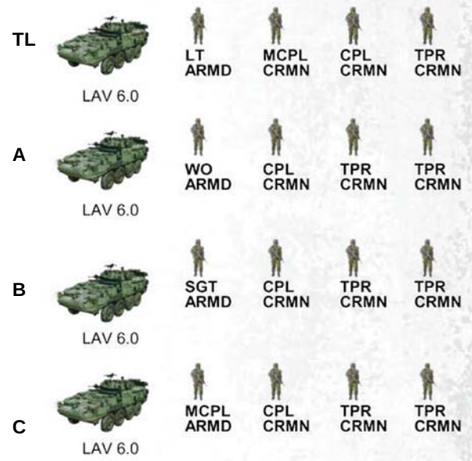

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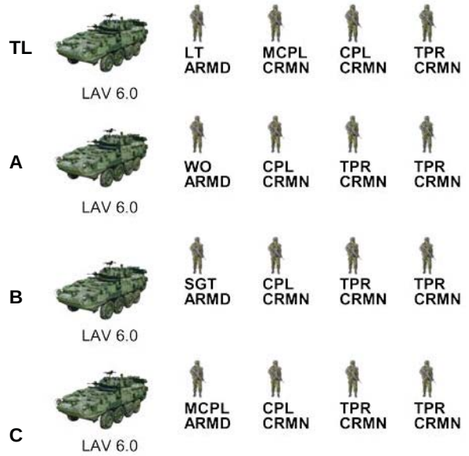

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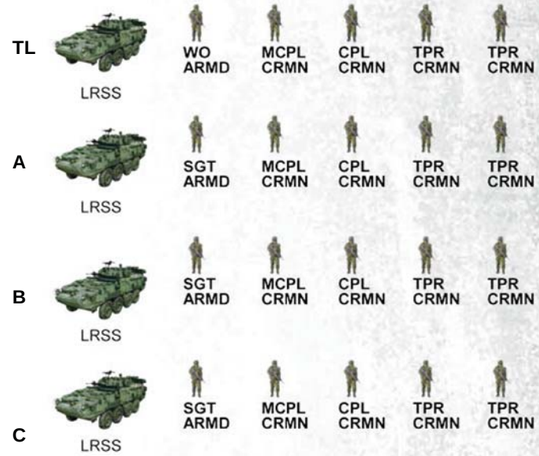

10

Use the TAPVs accordingly to the situation like all other platforms. Light Sqns can be combine arms and doing combat ops if not, in a support role to Regt ops namely reconnaissance, command and control, and TAC SEC.

LIGHT ARMD SQN)

Principles

- Zone & recce in force / advance to contact Tp sup Tp under 19 C2.
- Primary obj is to find, keep pressure and neutralized forwards ennemy elements.
- Tp of 4 TAPV able to work as fire team if req.
- All drills conducted as 4 car Tp like all other armd sub-units.
- LRSS Tp in caterpillar movement controlled by the BC. Direct fire support for TAPV Tp.
- Combines ops possible with inf, Eng or FOO.
- Can atts CBRN tp or any ARes Tp. Follow and support tasks or used to augment ground covering.
- LRSS to be atts to each Tp for OP task/ screen.
- Mounted AA capabilities.

OFF		NCO	
Maj	1	MWO	0
Capt	1	Wo	5
Lt/Slt	4	Sgt	6
		Mcpl	12
		Cpl	23
		Trooper	13
TOTAL			65

Cmdt(19)


TAPV

MAJ ARMD | MCPL CRMN | CPL CRMN

CB (19B)


LRSS

CAPT ARMD | SGT ARMD | CPL ACISS | CPL CRMN | CPL CRMN

(16)


TAPV

SGT ARMD | MCPL CRMN | CPL CRMN

PC Alt (1A)


ACSV

WO CRMN | CPL CRMN | CPL ACISS

11

TL  TAPV — LT ARMD | MCPL CRMN | CPL CRMN

A  TAPV — WO ARMD | CPL CRMN | TPR CRMN

B  TAPV — SGT ARMD | CPL CRMN | TPR CRMN

C  TAPV — MCPL ARMD | CPL CRMN | TPR CRMN

13

TL  TAPV — LT ARMD | MCPL CRMN | CPL CRMN

A  TAPV — WO ARMD | CPL CRMN | TPR CRMN

B  TAPV — SGT ARMD | CPL CRMN | TPR CRMN

C  TAPV — MCPL ARMD | CPL CRMN | TPR CRMN

12

TL  TAPV — LT ARMD | MCPL CRMN | CPL CRMN

A  TAPV — WO ARMD | CPL CRMN | TPR CRMN

B  TAPV — SGT ARMD | CPL CRMN | TPR CRMN

C  TAPV — MCPL ARMD | CPL CRMN | TPR CRMN

15

TL  LRSS — WO ARMD | MCPL CRMN | CPL CRMN | TPR CRMN | TPR CRMN

A  LRSS — SGT ARMD | MCPL CRMN | CPL CRMN | TPR CRMN | TPR CRMN

B  LRSS — SGT ARMD | MCPL CRMN | CPL CRMN | TPR CRMN | TPR CRMN

C  LRSS — SGT ARMD | MCPL CRMN | CPL CRMN | TPR CRMN | TPR CRMN

11 Develop a plan for modifying the wpn system of the TAPV by adding anti-tank capacity and HMG .50.

12[1] Develop our knowledge and our training in mounted operations in urban areas. Debunk the myth of "tank country." The mechanized forces are useful and essential in all types of terrain. Develop urban scenarios and integrate them into individual and collective training.

13 Align and simplify individual training to produce specialized non-commissioned officers and officers who are competent in mounted combat maneuver. "Move, shoot and communicate troop of 4 car." More training at shooting on the move.

14 Reduce the Reserve's mandate based on the TAPV platform and their training capacity. Assign them the task of providing support to the BG and reinforcing C/S 60.

15 Train in degraded modes (without GPS or radio) and with hatches down.

16 Provide our support and maintenance personnel with better training. Debunk the myth that sustainment is the responsibility of the support trades.

We are proposing a structure that divides armoured tasks according to capabilities and that gives the armoured Regt/BG top priority. Generating a mobile, flexible, and lethal armoured Regt/BG should be our raison d'être. All of the regiment's sub-units must exist for the purpose of supporting Regt/BG operations.

In conclusion, the purpose of this document was to share our observations and to stimulate reflection. The current problems raised in this text are not unchangeable. The debate about them must rise above regimental affiliations and personal experiences. It is vital to maintain cohesion within the Corps, because the fight for resources in the CAF is ferocious. In spite of everything, we remain optimistic that, with a bit of awareness of the issues facing the Armoured Corps, we will be able to act quickly, step by step, on the things we can change.

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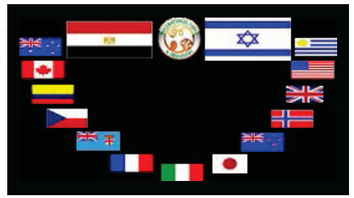
Corps Update and Discussions

Multinational Force and Observers

CWO S. Daigle
Force Sergeant Major

The MFO is to observe, verify and report potential violations of the Treaty of Peace and Agreed Activities and facilitate military dialogue between Egypt and Israel, in order to build trust, enhance transparency, and support enduring peace between Egypt and Israel in the Sinai.



FROM SINAI EGYPT

The Force Sergeant Major (FSM) is the senior enlisted soldier of the Multinational Force and Observers. As a personal and closest advisor to the Force Commander and the COS he is responsible to advise on all matters concerning Conditions of Service, protocol, Quality of life, Discipline, Dress and Deportment, safety and moral. FSM interacts directly with the Contingent SMs on these matters as well MFO Senior Staff on any areas of concern.

ORIGINS OF THE MULTINATIONAL FORCE AND OBSERVERS

Since the declaration of the independence of the State of Israel, in May 1948, the region had been dominated by numerous wars. In the late seventies, Israel and Egypt agreed that this more or less continuous State of War was not in their best interests. Therefore, negotiations started. 1977 President Sadat's visit to ISR and speech in the Knesset. Camp David Accords – setting the framework for the peace treaty. During the period leading up to the signing of the Treaty of Peace, it was understood by all concerned that it might prove difficult to obtain Security Council approval for the stationing of a United Nations peacekeeping force in the Sinai. Therefore, on March 26, 1979, the day that the Treaty of Peace was signed, President Carter sent identical letters to President Sadat and Prime Minister Begin that specified certain U.S. commitments with respect to the Treaty of Peace. These commitments included a promise by President Carter that the U.S. would take the necessary steps to ensure the establishment and maintenance of an alternative multinational force should the United Nations fail to assume this role. In July 1979, the mandate of United Nations Emergency Force II (UNEF II) expired. The United Nations did not formally consider a new mandate for Sinai peacekeeping. As the Treaty of Peace provided for a role for United Nations forces in the process of the phased withdrawal, an immediate substitute was needed.

The new independent, international organization would be funded, in equal parts, by its two Receiving States (Egypt and Israel) and the United States (the Funds Contributing States). This arrangement assured that each of the governments would take an active interest in the operations of the organization.

Egyptian and Israeli financial participation could be expected to produce a healthy sense of identification with the organization, while obligating the negotiators to devise methods of ensuring objectivity and independence. These negotiations between the Treaty Parties, carried out against the backdrop of the phased Israeli withdrawal from the Sinai, culminated on August 3, 1981 with the signing of the Protocol to the Treaty of Peace, establishing the Multinational Force and Observers.

CHANGE OF APPOINTMENT

On 21 July 2019 after 13 months as Force Sergeant Major, CWO Dave Tofts give back the Drill Cane to the Force Commander MajGen Simon Stuart and incoming Force Sergeant Major, CWO Steph Daigle receiving it during the ceremony. The day before we took the time to highlight to both of us with our foundation with the Regimental flag. 12e Régiment blindé du Canada.

Corps Update and Discussions

An Armour Officer at North American Aerospace Defence Command (NORAD) Headquarters

Capt J. Daley

"What's a Tanker doing here anyways?" That's the first thing that the CDS said during a town hall meeting last July in response to a question I asked about the CAF way forward with respect to ballistic missile defence. In all fairness, I was wondering the same thing about three years ago when I was asked about a posting to Colorado Springs as a NORAD Missile and Space Domain (MSD) Deputy. Over the three years I've realized that it provides a very unique experience and has given me much better understanding various topics and issues that I would never have been exposed to otherwise. The aim of this article is to provide readers with a description of what this job entails and then describe what this experience brings to the Corps.

The NORAD mission is to conduct aerospace warning, aerospace control and maritime warning in the defence of North America. The MSD supports this mission by providing aerospace warning for all ballistic missile and space vehicle events that occur around the world. The role of the MSD Deputy is to quickly and accurately interpret information provided by a network of sensors, including satellites and ground-based radar, to characterize missile events around the world to senior NORAD leadership so that they can rapidly determine whether or not North America is under attack and, if necessary, take appropriate tactical actions. In performing these duties, an MSD Deputy gains an in-depth understanding of the capabilities of various sensor networks that exist around the world. Additionally, they gain extensive knowledge on the threats from ballistic missile that currently exist at both the strategic and theatre level and the future threats that are emerging from near-pear enemies such Russia and China. Working in this job also provides and Armour Officer with a much greater understanding of how space assets can be used for military purposes and how they are an enabler in the conduct of land operations.

NORAD Headquarters is closely integrated with the United States Northern Command (USNORTHCOM) to the point that they are both commanded by the same four-star general and have a combined command center. This provides an opportunity to work in a four-star headquarters that is truly JIMP: Joint (Army, Air Force, Navy, Marines, and US Coast Guard), Interagency (Federal Aviation Administration, Federal Emergency Management Agency, Department of Homeland Security, etc), Multinational (Canada-United States) and Public (NORAD tracks Santa, etc). Working in such a headquarters allows one to understand the type of thinking and decision making that occurs at the strategic level when briefing national leadership on high interest events and allows us to observe how our allies to the South conduct domestic operations and take some of the lessons learned back to Canada.

In summary, there is a position for a junior Armour Officer at NORAD HQ in order to provide a rare opportunity to gain extensive knowledge about the threats that ballistic missiles pose to Canada and Canadian troops on operations while at the same time getting exposed to the type of thinking that occurs in a four-star headquarters operating in a truly JIMP environment.

Corps Update and Discussions

The AMS Advantage for the Armoured Corp

Capt Besmir Shurdha
ATSOP Student

The Army Technical Warrant Officer/Staff Officer (ATWO/ATSO) Program is an Army level program meant to provide NCOs and Officers with a technical background in project management so that they can be employed in procurement projects. The philosophy of the program is "a mile wide, an inch deep" which encapsulates the intent to provide exposure to a wide range of subjects but not delve too deeply on any particular one. The program focuses on a broad range of subjects; from basic Math, Chemistry and Physics, to more specialized subjects such as Weapons Design and Military Communications. Amid the deluge of technical subjects the students also learn Critical Thinking, Systems Engineering and Defence Management in Canada. This extensive range of subjects serves two primary purposes; to expose the students to the sheer complexity of the procurement process and to emphasize the importance of relying on subject matter experts to inform high level decision making. Thanks to the education provided by the course, the students become very well versed in analyzing complex subjects. This proficiency is useful not only in the procurement world, but also in other areas such as Capability Development and Testing and Evaluation.

One of the greatest benefits of the ATSO program is its ability to provide perspective on how high level decisions are made. By understanding the process, officers and NCOs are able to shape their arguments to achieve the desired effect. A good example that illustrates the importance of appreciating the procurement process is the acquisition of the TAPV. The vitriol of the RCAC towards the TAPV has been palpable and it was difficult to comprehend the series of decisions that were made at every level to end up with such a platform. However, after a careful analysis of the entire project, it was evident that the staff at the time were simply responding to the security environment. In 2008-2009 the CA was fully engaged in Afghanistan and there was no evidence that we would leave any time soon. Therefore, the concept for the TAPV was to procure a platform that would sacrifice lethality and protection in order to enhance responsiveness, deployability, and mobility. When looked at it from a holistic point of view, the TAPV project was very successful as it achieved exactly what the CA wanted.

The RCAC should continue to encourage officers and NCOs to attend the ATWO/ATSO program. The education that is provided by the programme is second to none and it enables each officer and NCO to become a powerful advocate for the Corp during the procurement process. Their expertise and insight can go a long way towards ensuring that the Corps receives the most appropriate equipment to conduct its mission.

Corps Update and Discussions

LAV 6.0 RECCE Update: Move. Find. Communicate.

Capt Walter Bryan
Deputy Project Director
LAV Reconnaissance and Surveillance System Project, DLR

The $624 Million LAV Reconnaissance and Surveillance System (LRSS) Project was awarded to General Dynamics Land Systems Canada (GDLS-C) to integrate the Surveillance system (DRS Technologies) onto the LAV 6.0 platform. The Project will field 66 dually-capable LAV 6.0 RECCE, replacing 141 sensored Coyotes. The Army Project Director continues to be Maj Frank Lozanski, CD, MSc, RCD.

CAPABILITIES

LAV 6.0 RECCE will have the same capabilities as other turreted LAV 6.0 and most hull capabilities are the same.

The mast will extend to full height in approximately one minute. Full sensor elevation is 10 metres above the ground while static. Continual rear interior protection is provided by segmented hatches with the mast stowed or raised.

A stabilized mast Gimbal mounts three imager pods which are High Definition Day, Short Wave Infrared (SWIR), a Medium/Long Wave IR Imager plus a Laser Range Finder/ IR Laser Pointer (IRLP), a Global Positioning System (GPS) and an Inertial Navigation Unit (INU). Target grid accuracy is computed combining LRF, GPS and INU information. IRLP can illuminate targets up to 10 km for troops using night vision devices. The MSTAR v6 Radar can also be mounted when stationary. Sensors can be slewed to Radar contacts for investigation.

Mast Gimbal with Sensors and MSTAR v6 Radar

Gimbal and Sensor Pods without MSTAR v6 Radar

Advanced software on the Operator Control Station (OCS) incorporates Sensor Command and Control Planning Suite (SC2PS) allowing Crews to send data through the Tactical Battlefield Management System (TBMS). The OCS also has processing capability including fusing and blending of Day, SWIR and IR camera images.

All LAV 6.0 RECCE can conduct Mast and Remote operations. Mast-mounted sensors are stabilized for use On-The-Move for heights between 3.5 to 5 metres. The integrated 200 metre remote cable reel has powered retract and provides constant communications connectivity from the OCS to the remote location.

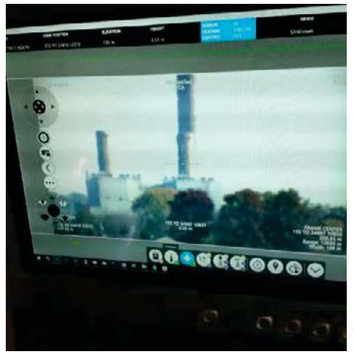
The fully-functional Secondary Mission Management Unit (SMMU) is a ruggedized laptop which can control the sensors. Crews can send reports independent of the OCS and it is used to operate the radar while untethered.

The MSTAR v6 Radar can Detect a moving vehicle over 25km away. Using Day and Thermal cameras, vehicle-sized targets can be Detected at greater than 20km and Identified at greater than 10km.
Removable hard drives require crypto-like security and must be locked away to prevent loss or compromise.

The Silent Watch Battery Pack (SWBP) occupies the winch pocket and provides five to eight hours of surveillance power. It will be capable of starting the engine if required.

PROGRESS

Delays continue due to equipment re-engineering to ensure required capabilities. Sub-systems are in qualification testing to confirm contract requirements are met. The Risk Reduction Unit (RRU) was built to reduce human factors impacts and is now used to integrate production-grade equipment. Working groups were conducted to capture design feedback, ensuring logical functionality. At least two additional User Demonstrations are planned.



DI Pod

SI Pod

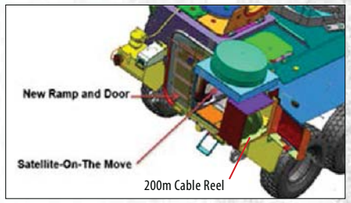
NI Pod

Three different views of the same target at maximum zoom, Range: 12.7km

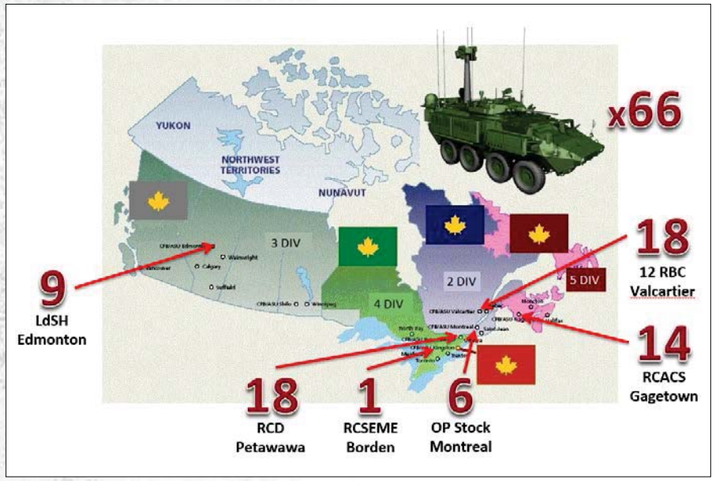
Operator Control Station Main Installations

Radar Control Screen Concept

EO Sensor Control Screen Concept



Rear Right hull concept – Cable Reel and SOTM



Planned LAV 6.0 RECCE Distribution

Crewmen will load all vehicle and crew gear onto the RRU, during the Stowage Trial slated for April 2020. Blast testing in 2019 will characterize effects on the vehicle, surveillance equipment while emphasizing crew survivability. Mobility Trials are set for late 2019 to confirm specifications.

Reliability, Availability, Maintainability and Durability (RAMD) Training in slated for autumn 2020. The four-month RAMD Trial is scheduled for winter 2020 and will give the RCAC the first true taste of the capabilities and perhaps provide an opportunity to confirm initial SOPs and TTPs. It may possibly involve a Squadron's worth of soldiers including support personnel.

To ensure any issues identified on RAMD can be resolved before fielding, Initial Cadre Training (ICT) will occur a few months after RAMD ends. Initial Operational Capacity (IOC) begins after ICT ends.

THE FUTURE

LAV 6.0 RECCE will change how mounted Recce and Surveillance is conducted. Foremost it is a reconnaissance platform with a surveillance capability. Here are some key considerations…

Surv Ops will need arcs and will be observing on the move and when halted.
The Surv Op is an integral member of the crew while moving tactically, providing better definition for points of interest and early warning for hazards beyond weapon ranges.

Information can only be collected when the Surv Op is in the seat. Does the tactical situation warrant dismounting the Surv Op to conduct Obstacle Drills? The Crew Commander now must consider where and how to employ the Surv system to accomplish the mission while moving tactically.

Combined Tactical Armoured Patrol Vehicle (TAPV) and LAV 6.0 RECCE scaling may require changes to Squadron compositions. Patrols might be 'plug and play' groupings to best suit the mission.

The planned distribution is eight vehicles plus a spare for each Squadron.

RCAC TRAINING PREPARATION

With schedule delays, there is still time for the Units to get prepared. Units require LAV 6.0 Crew Commander, Gunner, Driver qualifications. TBMS and SC2PS are vital programs needed to operate the OCS. These qualifications are required to support RAMD testing, and later fielding. Initial Cadre Training (ICT) will follow shortly after RAMD is complete.

CONCLUSION

LAV 6.0 ISC is already at the Regiments… LAV 6.0 RECCE will follow soon. Technology advances on this platform will increase our capabilities to gain information, save it and most importantly share this data with the Squadron, Battle Group and Task Force.

This capability needs fielding in a timely manner; however it has to be right. The LAV 6.0 RECCE is the most complex vehicle ever fielded in the Canadian Army. This platform will serve us for generations. We will again be the envy of the Armoured Recce Community.

Move. Find. Communicate.

Corps Update and Discussions

TAPV Implementation in The Royal Canadian Dragoons

Maj A.J. Graham
OC B Sqn

Lt A.R Fenton
3 Tp Ldr A Sqn

This article will provide an overview of first year of Tactical Armoured Patrol Vehicle (TAPV) fielding within The Royal Canadian Dragoons (RCD). Particular attention will be paid to how the vehicle has been utilized over the last year, the lessons learned, and how those observations have shaped the employment of this platform within the Regiment.
Representing a significant portion of the Regimental "A" fleet the TAPV is, and will remain for the foreseeable future, a significant component of the Regiments' fighting vehicle strength. To that end, we critically assess the employment of this platform within the Regiment and its use in the various Armour Battle Task Standards (BTS).

TAPV Initial Cadre Training (ICT) started in September 2017 with the Regiment receiving its first TAPVs January 2018. Between 1 April 1 2018 to 31 March 2019 the RCD as part of the TAPV implementation plan, have run seven TAPV Driver courses and six TAPV Remote Weapons System Operator (RWS) Courses.

The TAPV represents a significant portion of the Petawawa based "A" vehicle fleet. RCD have been allocated 45 TAPVs, representing 53% of the armour vehicle holdings for the Petawawa based Regiment. The Regiment conducted also a significant number of Ex with the TAPV from level 1 to 5.

The TAPV is currently being utilized within mixed patrols (TAPV and Coyote/ eventually LAV LRSS) within the Medium Armour Squadrons (A and B Sqns) and are the exclusive platform for Battle Group Recce (60) and Transport Troop (84). The use of mixed patrols within A and B Sqn is primarily driven by both the need to optimize the current Coyote fleet and eventually, LAV LRSS across the Regiment when it is fielded as only 18 are will be allocated to the RCD. The use of mixed patrols also falls in line with the employment concept for the TAPV[1].

There is a general sense that the TAPV, while bringing increased capability to the battlefield in certain areas (sensors, mobility), is on the whole a less than complete package as a replacement for the Coyote, particularly when conducting certain Armour and Reconnaissance Battle Task Standards (BTS). It is clear that this platform was designed and purchased with an eye to Afghanistan type counter insurgency operations (COIN). The assessment from our CT experience is that the TAPV does not reflect the best balance of requirements and capabilities of an Armour Fighting Vehicle (AFV) to

compete over the complete spectrum of conflict. For example, the TAPV prioritizes crew survivability related to mines/IEDs over lethality in sustained major combat against peer/near-peer equipment.

The RCD have over four CT events had the opportunity to utilize the TAPV in a variety of tactical tasks across the spectrum of Armour and Armour Reconnaissance BTS. RCD experience with respect to the employment of the vehicle across the spectrum of Armour and Reconnaissance BTS has largely mirrored those observations from the 12e RBCGenerally speaking, the TAPV excels when employed conducting Rear Area Security (RAS) Tasks. The limitations of the vehicle are more pronounced and risks increased, particularly against peer or near-peer threats. Careful consideration must be given to the operating environment (OE) and enemy situation to ensure the platform is utilized effectively and not subject to overmatch when compared against adversary capabilities.

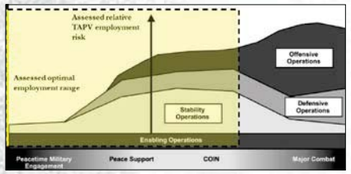


Fig. 1 – Assessed optimal TAPV employment range

Both A and B Squadrons within the Regiment are built around two mixed Troops (6 cars each) containing both Coyote and TAPV. Troops are organized in 3 x Patrols, each with 1 x Coyote (Patrol Commander) and 1 x TAPV (Junior C/S). The use of mixed patrols allows the capabilities of the Coyote and TAPV to complement each other. The inclusion of a 25mm capability increases the firepower of the patrol while the TAPV provides an increased sensor and night fighting capability. Overall, the experience from the collective training conducted to date has indicated that the use of mixed patrols has been broadly successful. Squadron echelons have also had success fielding the Administration Sergeant (25A) in a TAPV as it provides an additional protective element within Admin Troop as well as a recovery capability for TAPV beyond a Mobile Recovery Vehicle (MRV). Specialized troops such as Battle Group Reconnaissance (60), Combat Support Troop, and Transport Troop within the Regiment are mounted in TAPV exclusively.

From a sustainment perspective, the mixture of vehicle platforms and weapon systems creates its own unique challenges. In addition to consuming more fuel than the Coyote, the TAPV also now requires Squadron echelons to carry additional types of ammunition, spare parts and tooling, and multiple varieties of Petroleum, Oil, and Lubricants (POL). While less critical in low-intensity operations, the ability to streamline support requirements (Class I, III, V and VII) is an important factor to battlefield success in high intensity operations/major combat and may necessitate the reorganization of TAPV within subunits under these conditions. Internal to Patrol recovery is also a concern as the Coyote is unable to conduct recovery of a TAPV, although the introduction of LAV 6.0 LRSS should alleviate this. Finally, the overall storage capacity of the TAPV is also a limitation which was frequently identified during training, particularly in the winter when individual kit requirements for crew members increase. Although the specific requirement for the TAPV was to be able to operate 72hrs in all conditions, the assessment from training experience is that this is not possible given the limited space for ammunition, fuel and kit. At best, the TAPV can operate for 24hrs, before requiring replenishment from the Squadron echelon.

The effectiveness of the C16/RWS remains one of the biggest concerns regarding the TAPV. Units across the Corps have reported concerns with the effectiveness of the C16 engaging at ranges beyond 1000m, due to both time of flight and dispersion of rounds. These limitations call into question the ability of gunners to achieve effective first round hits at reasonable engagement ranges. With respect to the effectiveness of the 40mm round, against armour targets good penetrations of up to ¼ inch armour plate (equivalent thickness to the TAPV), other types of targets, such as prepared and semi-prepared positions for example, have shown that the inclusion of minor standoff drastically decreases the terminal effects of the 40mm round. It is recommended that the effective range of the C16 for the purposes of training be limited to 750m and no overhead fire with 40mm high explosive rounds be conducted.

The RWS provides a significant increase in sensor capability. Unfortunately, these capabilities are often negated by the lack of foul weather protection for the RWS. With no system to keep sensor optics clear, rain, sleet and snow significantly degrade sensor performance. Similarly, the necessity to lase targets in order to obtain ballistic solutions and the lack of any type of backup graticule means that the weapons cannot be employed effectively in an EMCON reduced environment or in situations where the laser/ballistic computer link is interrupted. The TAPV is the only front line Armour Fighting Vehicle (AFV) platform without an analogue backup to the primary fire control system within the protection of the vehicle.

The TAPV demonstrates superior mobility over many types of terrain as compared to the Coyote. This was particularly true during winter operations in deep snow. Further, vehicle sensors available to the driver and Crew Commander (CC) for low light/no light driving and navigation are superior to the Coyote and enhance significantly the ability of the vehicle to operate at night. From a driver training perspective, based on observations through RCD CT, it is recommended that the ratio of off-road driving/on road driving during training (currently 85/15% respectively) be adjusted to cover more on-road driving to better reflect the actual use and employment of the platform. As almost all rollover incidents have occurred while driving on roads, adjustment of the training plan along with the imposed 90km\hr speed limit should reduce accidents with the vehicle.

There are no recovery assets within first line maintenance organizations that can effect a suspend tow of a TAPV due to its weight. This greatly limits the ability of the Regiment to conduct 1st line recoveries or extractions, especially in rough terrain. This typically results in the diversion of other AFVs from their tasks to support recovery operations, or a significant over reliance on 2nd line (Service Battalion / Base) assets. In both cases the end result is often a disruption to the tempo of operations.

The significant experience gained over the last year from a number of training events has shown that when employed with a good understanding of its strengths and limitations, the TAPV is a capable vehicle. That said, it is far from the ideal platform for the conduct of major combat operations against a near peer or peer enemy. While the Canadian Armed Forces (CAF) is not currently engaged in operations involving major combat, excellence in this domain remains the focal point of CT. As such, proper understanding of the TAPV's strengths and limitations is required so that they can be mitigated as required, in order to ensure confidence in the vehicle and success on the battlefield. RCD and 12e RBC especially share a common understanding of the limitation of the platform.

A briefing note is available true the authors

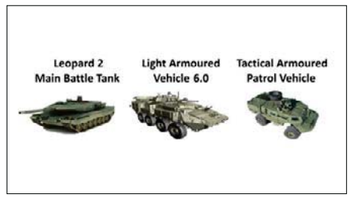
1. *Statement of Operational Requirements – Tactical Armoured Patrol Vehicle, Mar 12*

Corps Update and Discussions

The Next Generation of Integrated Virtual training for our Armoured Crews: The Land Vehicle Crew Training System (LVCTS)

Capt P.O.J. Lair

Representation of the LVCTS synthetic environment showing a high degree of realism.



Principle combat vehicles to be simulated in the LVCTS.

OVERVIEW OF THE HORIZON

The LVCTS project will introduce a transformational virtual training system to the Canadian Army which will allow the crews of its principle combat vehicles (the Light Armoured Vehicle 6.0, the Leopard 2 Main Battle Tank and the Tactical Armoured Patrol Vehicle) to train as frequently as required at their home garrison locations.

PROJECT DELIVERY

The LVCTS project entered the Definition phase in July 2018 and is expected to enter the implementation and project closeout phases in 2024 and 2027 respectively. A midlife upgrade is planned 15 years after project closeout.

Components

The LVCTS will deliver the following four (4) major components:

1) A training system consisting of learning management and AAR capabilities, terrain and scenario databases, instructor/operator stations and three different types of simulators:

A) Full mission simulators for the LAV 6.0 infantry variant and LEO 2 MBT[1] consisting of driver and turret modules that can operate together and independently. This type of simulator approximates the human machine interface (HMI) with a high[1] degree of fidelity and will enable the crew to perform all the functions associated with fighting the vehicle.

Possible representation of a full mission simulator.

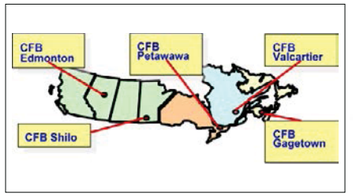
B) Reconfigurable simulators that can act as either the LAV 6.0 (several variants including reconnaissance, artillery and engineer), LEO 2 MBT and TAPV by switching peripherals such as hand controls. This type of simulator approximates the HMI with a medium[2] degree of fidelity and enables the crew to perform most of the functions associated with fighting the vehicle.

C) Multi-purpose simulators implemented on desktop computers that can act as any combat entity including, but not limited to enemy forces, neutral forces, unmanned aerial vehicles, close air, logistical elements, etc. This type of simulator does not accurately portray the HMI and is used for tactical training or for role playing.

Possible representation of a reconfigurable simulator

Possible representation of a multi-purpose simulator.

2) Purpose built infrastructure at Canadian Forces Bases (CFB) Gagetown, Valcartier, Petawawa, Shilo and Edmonton with enough space to house all simulators, classrooms, AAR rooms, support equipment as well as expansion space for potential future simulation systems



Possible representation of a reconfigurable simulator

Possible representation of a multi-purpose simulator.

3) Training network. Networks able to support the conduct of multiple simultaneous training activities and capable of being linked to external sites without necessarily providing the link itself.

4) Contractor conducted service support. A long-term logistics support contract that will provide personnel to set-up, operate and maintain the simulators.

ROLES

The LVCTS will be used in the following roles:

To provide virtual individual training for armoured vehicle students in accordance with applicable qualification standards and course training plans.

1) To provide virtual collective training for armoured vehicle crews for levels 2 through 5.

2) To support higher level collective training as a component of a distributed multi-system simulation exercise.

3) To support force development experimentation.

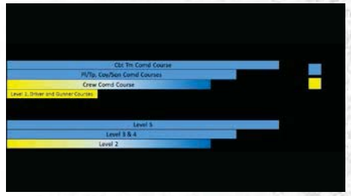


Diagram depicting the optimal simulator type as a function of training activity. Note that technical training requires the use of full mission simulators while tactical training may employ a mix of all three simulator types. Source: LVCTS Project.

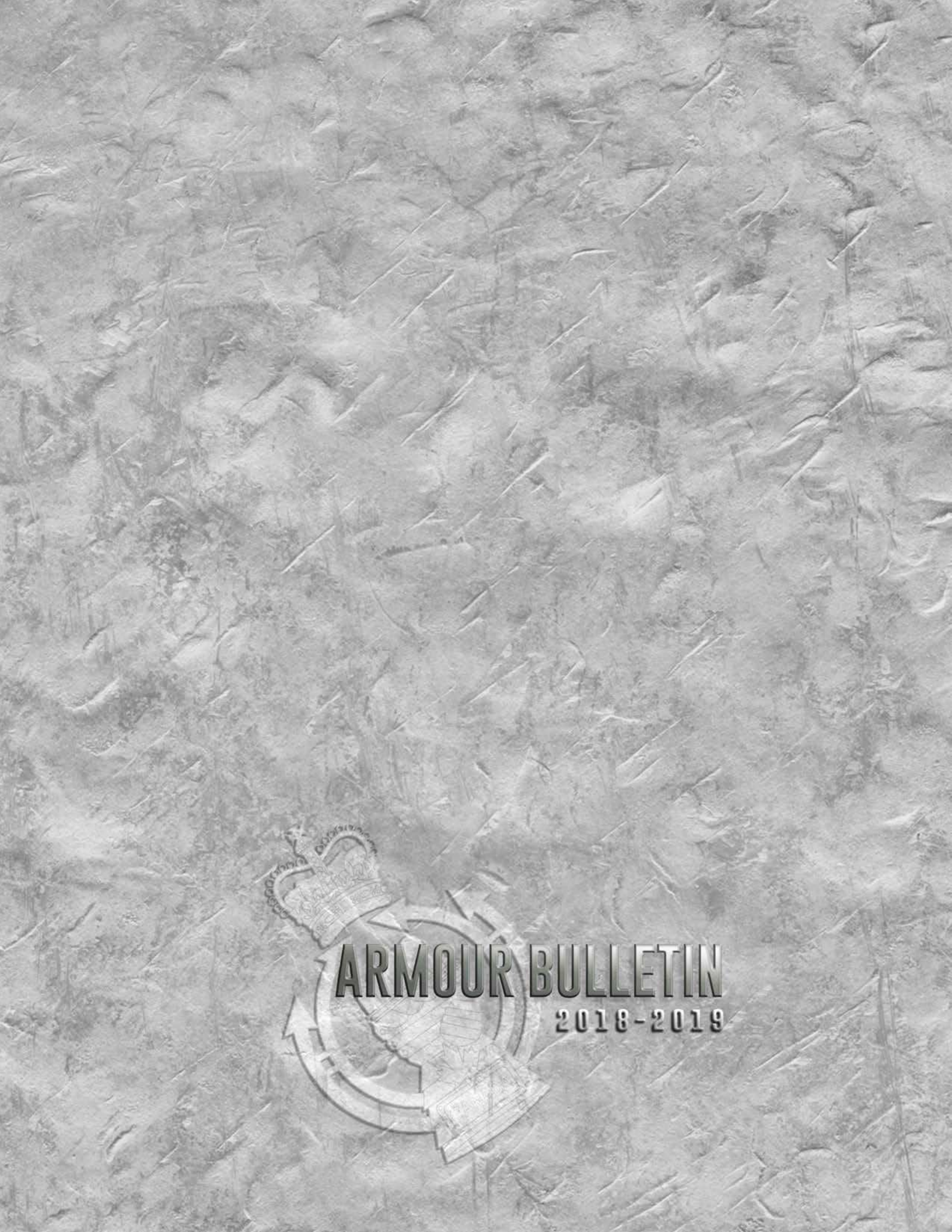
CONCLUSION

The LVCTS will allow the Armoured Corps to conduct more efficient and effective training thereby increasing its ability to provide highly trained crews in support of operations.

WORTHY!

Capt P.O.J. Lair and Sgt A. Hébert on a Leopard 2 A4M during the Technical Experimental testing of the joint Applied Military Science and Master's in Business Administration project of the "Leopard 2 Main Battle Tank Crew Commander Hand Controller Improvements: Ergonomics & Efficiency". Royal Canadian Armour Corps School, Canadian Training Center, 5th Canadian Division Support Base Gagetown. Source: Army Learning Support Centre, 16 March 2018.

1. *The fidelity of the simulator shall be significantly greater than the current Leopard Gunnery Simulation Trainer.*
2. *The fidelity of the simulator shall be similar to the Interim Crew Gunnery System.*


ARMOUR BULLETIN
2018-2019