**LESSONS LEARNED BY A LAV CAPTAIN**
**PART 3 OF 3 – TACTICS / FIELDCRAFT / MISCELLANEOUS**

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The final part of this three-part article is meant to tie up some observations and lessons that did not fit neatly into offensive or defensive operations.

## Vulnerability

I think the key theme that influenced our fieldcraft, SOPs, and tactics was the vulnerability of the LAV 6.0. We seem to employ the LAV as a Heavy Armoured Personnel Carrier (HAPC) despite its name implying otherwise, and based on its vulnerability I have become more and more prone to consider it an Infantry Fighting Vehicle (IFV). I often felt the need to keep the LAVs hidden as opposed to dominate ground with them because they are so vulnerable; not just to enemy tanks from a long distance, and personal or crew-served anti-armour weapons hiding at short and medium ranges, but basically any observation because it was often accompanied by indirect fire.

In a rifle company, one LAV down often means an entire section lost, or if not you now had a transportation issue. To lose two or three LAVs could render a company combat ineffective for a short period of time and to lose more than that, in my opinion, the sub-unit would be effectively "destroyed" since it would require a long time to deal with the mess and reconstitution / reorganization to continue.

With that said, our tactics changed. A leaguer formation, to me, was no longer a preferable way to hold up and wait. If open ground couldn't be avoided, then I tried to site them in some kind of depression, and if it were a smaller depression I preferred to risk not having enough dispersion because that was better than being seen from a distance and having artillery called in on us. I would honestly prefer to push a few dismounts out to the crests to provide 360 degrees observation but we generally pushed out a few LAVs and had them observe from a turret down position. Preferably, waiting areas would be sited somewhere within some closed terrain where dismounts would provide security and we could remain relatively sure we weren't being observed from a distance. Essentially, any time you could see open ground, you were in danger. I realized the IFV in what was really an armoured fight should do as dismounted infantry do… remain hidden until the last possible moment. When an objective was defined and an attack was ready to start, only then was it really appropriate to unmask the LAVs.

I mentioned the use of the LAV as an HAPC instead of an IFV. I think a real debate and some honest testing needs to be had about the merits of our current tactics which see the LAVs driving up onto the objective and dismounting. We had to conduct one hasty attack with WES during the exercise, the light infantry company from the UK in the woods with a few javelins literally destroyed our company; truthfully, before the dismount point had even been reached. Again, I think we overestimate the capabilities of the armour and the ability of LAV crews to win a game of quick-draw against a dismounted force with proper anti-armour weapons.

An article worth reading on this topic is "Chariots on Fire – Misemployment of the LAV?" by Major Cole Petersen, which was published in Vol 1, Issue 3 of this newsletter. The concerns expressed in this article were certainly in the back of my mind during the exercise and were, for me, confirmed.

## Camouflage & Concealment

In the age of thermal optics, UAVs, and electronic warfare, cam & concealment is more difficult than

ever, but it is certainly not rendered irrelevant as some have argued. The enemy has limited resources too, so the idea that a LAV or a LAV hide can't remain hidden from enemy detection or identification is false, it's just harder to accomplish than ever before. As infanteers, our piece of this is not counter-UAV, which is a tough pill to swallow considering if those jobs aren't done well our cam & concealment efforts could be vain. But if we do a good job with our tactics, cam & concealment, and in executing the counter-EW plan, we certainly mitigate the risks to our mission and our personnel when something slips through the cracks of the counter-UAVplan.

**Concealment -** The LAVs are big, square, and a very dark green colour that appears black from a relatively short distance. You couldn't really design them to be any less concealable. I think the first thing we'd have to do if we entered into real conventional conflict is to paint them (this really should be done now, train as you fight and all). The base colour should be something light-coloured like coyote brown or desert tan, because it's a lot easier to cover up a light colour with surrounding dark vegetation than vice versa (many tried, and failed miserably, to conceal the LAV using the only vegetation around Wainwright in the spring… yellow grass and dead twigs). I'd recommend it be painted with some kind of pattern to help break up the very square outline of the LAV, no matter what the base colour is. The most effective thing we saw was the use of hessian fabric which helped break up the outline and cover up the colour fairly well. It is especially effective for the turret considering the relatively small surface area, the way it helped the turret blend into the grass when adopting a hull down position, and the fact that it didn't impede the turret from its main purpose.

Overhead concealment is always a challenge, especially in temporary situations where there isn't a lot of time to prepare it or take it down. With young wood and deciduous vegetation that is not in season especially, there is almost no natural concealment provided. Our cam nets alone are not really enough especially for something that we plan to keep hidden for a sustained period of time like a hide for a defensive position. One trick was to wrap para cord from the trees on one side of the LAV to the other, and then pull it tight, to help bring the vegetation directly over top of the LAV. In order to leave, you just had to cut the para cord, or I suppose if you were in a real hurry you could just drive right through it.

**Choice of terrain -** For choice of ground, we practice external (facing out) perimeter and linear hides a lot. I think this is one of those examples where we overestimate the LAVs armour. I'd prefer to choose an internal (facing in) perimeter hide or an internal herringbone in the woods along a black track or cutline. While the cannons are rendered useless, I suspect if we are detected in our hide our cannons wouldn't be much good to us anyway. If our hide is detected by enemy recce, we're probably facing artillery and attacks from the air, so I would prioritize concealment due to our vulnerability over the ability to respond with 25mm direct fire which would likely be of no help.

**Proximity to the defensive position** (if relevant) is key for two reasons. The closer to our battle positions we place the hide, it's likely the easier we will be to find since we'll be closer to the dismounts as well. Of course, the trade-off is, the further away, the longer our response times and the harder it becomes to deal with broken / damaged LAVs during the battle, etc. Everything gets harder. But, given the advancement in enemy recce assets, it may just be a reality that we have to place our hides further from the position than currently conceptualized. The further away it is, the harder it will be to find. The other key reason is it is relevant is minimizing movement.

**Movement**. LAVs moving are easy to detect and they will give away the position of everything else. Consider the LAV moving from the mechanized OP back to the hide. While the LAV eventually moved under concealment, it's not practical to think it could be concealed from everything at all times. It's fair to say that if the enemy is using EW, UAVs, etc, that the LAV having been detected by an enemy sensor such as a recce patrol moving off of the position in a certain direction, could turn into the entire hide being compromised. Minimizing movement on / off the position reduces the chances that you are moving

under observation. Replacing this OP twice per day is better than replacing it four times per day, etc. It's a tough balancing act to juggle between preparations and security versus keeping the hide from being pinpointed.

**The LAV's Role in Surveillance & Target Acquisition (STA)**

We've become convinced on using the LAVs optics for STA because of the excellent capability of the optics. No doubt the LAV 6.0 IRTAS provides the best optical capability integral to a rifle company, and in my first year as a LAV Captain I put a lot of emphasis on trying to make the crews proficient in creating STA traces at the crew and platoon level so the company STA trace could be accurate and useful. However, I am beginning to question whether our focus on this capability is misplaced.

In part 2, I spoke of the employment of a mechanized OP in the defensive position. We kept one active at all times during our defensive preparations. In hindsight, I believe a permanent, dismounted OP with dismounted thermal optics would have been more appropriate. The reason for this is that the LAVs signature is so great that it would have at least gotten the mechanized OP destroyed but much worse, I believe it would have led to our hide location being pinpointed. As noted in cam & concealment, the LAVs colour, square shape, and of course it's thermal signature to not help it remain concealed. In order for the optics to be used, the LAV needs to be in a hull-down position and in this position it would not remain undetected for every long. Even if the turret was well-camoflagued (a unique challenge on its own), it would likely be detected by thermals or movement when the LAVs are switched out. The extra movement would also likely lead to the hide's general location being given away and eventually pinpointed, which would be disastrous when exploited by the enemy.

So, consider that the only way to employ a LAV as an OP without giving away its position and the position of the hide is to adopt a turret down position and observe with binos, and that even doing so is no guarantee that you would not give away the position of the hide through movement… what is the LAV actually bringing to the OP that a dismounted OP isn't? In my opinion, just a whole lot of extra risk.

**IFF**

From my point of view in a rifle company, IFF in the army is a bit of a nightmare right now to say the least. I know that at least as high as the Brigade level there were discussions of trying to create an effective IFF standard, and we certainly trialled more than one method at the unit level. I have some ideas but I don't know the answer to this problem. I did learn a few things we need to keep in mind though, as we try to tackle this problem.

I think there are a few key vehicles that have to be clearly identifiable to the rest of the sub-unit, and because of this having an IR glow stick on every vehicle is a bad idea. During the day, it's generally easy to make myself identifiable to the crew / platoon I'm trying to communicate with. At night, standing on top of the turret, transmitting "Look to your 9 o'clock" to find me waving at them so I can point them in the right direction, etc, does not work like it does in the day time. The LAV Captain's vehicle must be clearly identifiable to everyone. One idea I had was to tape an IR glow stick to a 3-4 foot long pole that can be placed in the turret's bustle bin. This can be grabbed and waved quickly, but with 15 glow sticks waving around on antennas of other vehicles it would be fairly ineffective. Not to mention, with that many glow sticks your MNVGs become ineffective because all you see through it is green light and darkness. I tend to think it would be a lot safer if we reduced the amount of IR light so that we could actually see the vehicles we're trying not to shoot. Final point on this, whatever we do use should be mounted on the back of the LAV, not the antennas, so that it is visible only from the rear, and it needs to be minimal.

**TAC-NAV System**

This is a very useful tool that we need to become the masters of. In Part 1 I spoke about an objective we missed causing us to conduct a "roll left" manoeuvre. We almost missed this objective because we failed to employ the TAC-NAV system. There were a string of failures that led to our sub-unit almost missing the objective, but the bottom line is if all of us, particularly myself, would have put the objective grid reference into the TAC-NAV system, we would have made up for the failures in other areas and hit the objective without conducting a bold manoeuvre at night after crossing an obstacle. After that, myself and the LAV Sgts agreed that we needed to be dictators until the crews appreciated the capability it provides them. The LAV gunner / crew commander courses really don't teach you how to use this thing. One thing I tried to do was get my crews the time to take the LAVs out and just travel cross country at night. I could have maximized this time by putting more emphasis on the use of the TAC-NAV.

**MAST – Main Armament, Armour, Secondary, Troops**

During consolidation, we realized there is a gap in our doctrine and execution of the ammocas. Doctrine has the Pl 2IC consolidating it and sending it up to the CSM, however the Pl 2IC is usually located far from the LAVs during this phase, often not even within range for a dismounted radio and certainly those comms are getting stepped on if he is. We wanted to have the LAV Captain consolidate the ammocas for the LAVs which was good because it kept the LAV Captain apprised of the ability of the LAVs to continue and he could inform the OC.

Our CQMS suggested the use of MAST for "main armament, armour, secondary, troops (crew members)." This is actually more than just an ammocas, it was essentially a SITREP on the LAVs. The LAV Sgts, who are within range to drive up to each of their LAVs, consolidated a MAST and sent it over the radio to the LAV Captain. It minimized time on the net and gave a quick but detailed assessment of each platoon's status. To briefly explain in case you wish to employ this, main armament reports ammo, armour reports veh state, secondary reports ammo for secondary weapons, and troops reports whether there are casualties amongst the crew members.

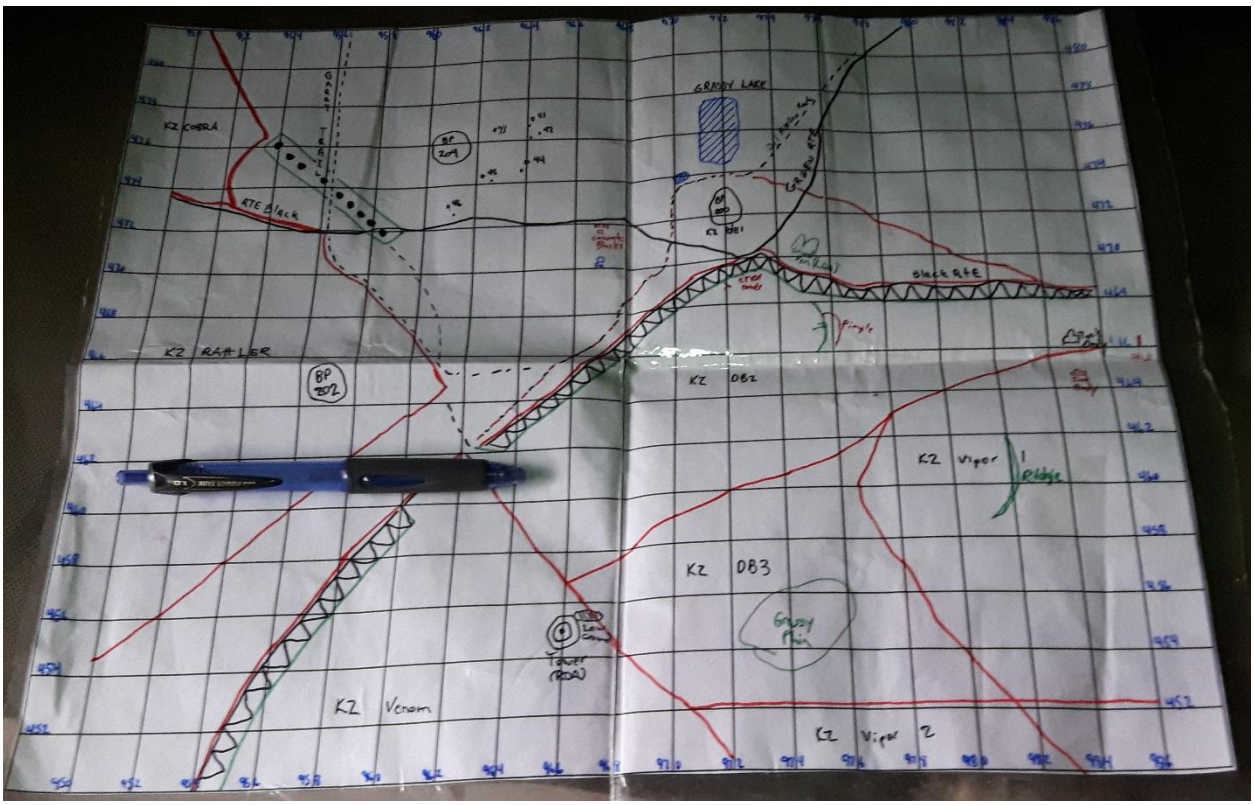
**Range Cards / Target Info Sheet and Control of Fire**

Range cards are something that haven't been used properly in a long time. When I learn something I always need to know the "why," and I could never get that answered both through the training system and in Battalion, and I couldn't figure out "why" we did them, so I knew there was something missing. Through much digging and talking to the right Warrant Officers (many of whom had to dig deep into their own memories), I have concluded that the range card provides an excellent tool for control of fire and communication. The key step we always miss is step 1, having the commander christen the ground. This ensures everyone is singing off the same sheet of music. That info is then pushed down at each level, and the individual soldier is naming prominent features on his range card the same as everybody else. This means that when an individual says "I see one section 100m west of 'Two big rocks,'" everybody in the company understands and can locate that section, including all the big players such as the company commander, the CP, and the FOO, etc. The company target info sheet tells the company commander which of his weapon systems can engage "two big rocks," so that he can quickly designate a weapon system (aka… "MG #1" or "C16 #3") to target that section. This stops everyone that can see it from wasting resources by firing at the same time and unmasking the entire position.

It is not appropriate to do the platoon range card and company range card on a semi-circle that is half of a letter-sized piece of paper. The piece of ground they have to fight is too big and it doesn't provide grid references or enough detail. Graph paper at 1:10 000 scale provides the appropriate amount of detail

while also balancing the need for the range card to be a practical size (14” x 14” is a sufficient size for a platoon at this scale, the OC / CP / LAV Captain can get the entire company picture on something).

The LAV range card offered an additional challenge. Because the plan was to employ the LAVs through occupying run-up positions, and I wanted the flexibility to put any LAV into any run-up, they needed one range card that could be used at any position. The answer to this also became the 1:10 000 scale range card being used by the company / platoons, because after arriving at the run-up position it could simply be oriented correctly to be used. This means the platoon, company, and LAV range card can all be the same product, and a copy can be given to the FOO party as well. The other benefit to this is that most of the info can actually be gathered during the recce and the product can be 90% complete prior to occupying. It can be used as a briefing tool, a rehearsal tool, during the main defensive battle if needed, and a handover tool if being ripped out.



A range card created during Ex MAPLE RESOLVE 17 by one of the crews. The range card shows the named target references, run-up positions, the hide, named routes, obstacles, friendly disposition, EN key terrain, and more. At about 16” x 12.5” and with a scale of 1:10 000, each grid line is 200m and the total area represented is 4km x 3.2km. The pen is pictured for context.

We never got to this point, but my plan was to create a LAV target info sheet similar to the company target info sheet. But whereas the company target info sheet indicates which weapons can engage a certain target, our version would indicate which run-up positions could engage certain targets. This meant if someone detected “3x BMPs in vicinity of ‘Two dead trees,’ ” I could quickly reference the target info sheet to know which run-up positions I could choose to engage it from, and task the appropriate entity to do so. So in that case, I could task “23L engage targets IVO two dead trees from positions 403 and 406,” 23L can then task two of his LAVs and dictate the firing pattern to be used (e.g. “cross-fire, centre adjust”), and those crews can then move to their positions and execute. After enough rehearsals the crews have come to know the ground so well that these actions can be done automatically. The driver doesn’t need directions and the crew commander doesn’t need the range card to find the target (because he has

become intimately familiar with the various features on it), making target acquisition very proficient. One of the advantages of the defensive is supposed to be that you know the ground better than your enemy, since you have been there for much longer and have time to prepare the position. Without having done these steps, we have failed to maximize the “use of ground” that is so fundamental to successful defensive operations.