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Assignment Title: *Dispersion in the Digital Age – Deploying a Gun Bty for the Modern Fight*

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This paper will look at one option for how the RCA can more effectively prepare for a peer-on-peer fight, understanding our limitations, and incorporating our potential adversaries' strengths. The suggestion that this paper makes, is that the RCA has the tools it needs to create new TTPs to fight against an enemy who drastically outguns us and that the greatest tool that we have, and that is barely being exploited, is digital communication. The suggestion that this paper makes, is to deploy what this paper will coin as a digitally dispersed position. Employing digital communications to most optimally keep the guns alive in a scenario with heavy CB fires from the enemy.

## "Peer" Fires

Canada has a problem in that we believe that in a peer-on-peer fight, we suddenly become equipped with a massive amount of American or British guns. I have yet to see a Computer Assisted Exercise (CAX) that does not include us playing as a Direct Support (DS) gun regiment with at least three M777 Bty's, each of these Bty's equipped with an initial six M777s. Yet we can only dream of a day that we would have enough field Bty's to be able to assume that as a deployed mechanized brigade, we could dedicate a Bty's fire support to a single Battalion. If war broke out tomorrow, we would be optimistic to scrounge up 18 M777s to form a complete DS Field Regt. The assumption that Canada would go to war without our major allies is not grounded, but we would need to rely on the assets and assistance of our allies much more that we are functionally able to assist them.

Our enemies on the other hand could have a series of papers on their capabilities alone, but for this paper, I will summarize our potential adversaries' fires capabilities with a quote from the former Russian Deputy Chief of Staff of Ground Forces, MGen Vadim Marusin that "Today

the cycle (reconnaissance – engagement) takes literally 10 Seconds."[1] Following a basic assumption that it takes the Russians anywhere from eight to twelve minutes to action the identification of a friendly gun bty with counterbattery (CB) fires, and if we were to assume that they will always fire on an identified gun bty, then if we are not rapidly leaving our position before the 10-minute mark, the cost of firing a single fire mission in support of maneuver, likely will be the entire battery. Our current platform, and how we have tried to employ it, are not suited to survive this type of devastating CB action.

## The M777

The M777 is a great platform for what Canada bought it for. A lightweight, Chinook movable field gun that can punch a 155mm round out far enough to provide indirect fires coverage almost anywhere a Canadian could need it anywhere in Afghanistan. Unfortunately, it has some deficiencies when we try to employ it in a scenario where the enemy is allowed to have a vote in the outcome, and they deliver their vote through CB fires from both MLRS and long-range field guns. With the limited time that our gun dets can be in the field conducting training, most of our training is focused on completing pre-determined tasks that result in the occupation of static positions to shoot what ends up being hours of long fire plans to meet the larger-scale training aims of Battle Task Standards and individual training requirements. However, we are rarely able to focus on the training of deployments such as maneuver points or firing points, and only in CAXs can the GPOs cease-fire, or potentially even end their mission, to get the guns off the position that is likely about to be engaged with CB fires. One feature of the M777 that has the

[1] Dr. Lester Grau & Charles Bartles, "The Russian Reconnaissance Fire Complex Comes of Age," Changing Character of War Centre Pembroke College, University of Oxford, May 2018

potential to allow for much greater survivability of the guns is through digital communication, as well as the guns' ability to rapidly record through DGMS.

## Adapting to the Digital Age

Despite the ability for our guns to communicate with the Command Posts (CP) without the need for a wired connection, we have adopted new hardware, with new capabilities, and forced its employment into the mold of a classic cold war bty deployment. That is despite having dropped one of the major constraints of the cold war, being line. Today, our guns can be kilometers away from the CP, and update their CP&FC, as well as send and receive both voice, and fires data digitally. The primary suggestion for this paper is based on the idea that the guns, in an extremely high CB scenario, are more likely to die from enemy CB fires than from a chance encounter from the enemy on the ground, and that how we deploy the guns should be based on this assumption. Over the frontage of a brigade, the Gun Bty's could be given a series of AMA's as authorized by the higher commanding station, but the GPO could assign an independent maneuver box to a gun. In practice, this would result in the guns being spread out across multiple square kilometers. The CP, on the other hand, could be in a hide, relatively close to the Bty Echelon, transmitting gun data to the guns through digital communications. The guns, each deployed in their own multi-kilometer AMA, would either be depending on the requirement for fires and the potential air threat, maybe on the move, in a hide, or waiting for a new mission at their next intended firing point.[2] Upon receiving a new fire mission, the det commander of that gun, who would have map recced out a series of goose-eggs in the assigned AMA, will with most haste, move to deploy the gun, reporting CP&FP to the CP, who is still located in a hide,

[2] Our current IFCCS burn (V.7.2.0.10805) will not allow CP&FC to be updated with a mission open, but that seems like a simple system fix.

potentially multiple kilometers away. At this point, when enough guns had reported their CP&FC to the CP, the CP would carry out the mission. Once end of mission was received, each gun would immediately cease firing, and get off their position asap, followed by a return to either their hide or the next firing location to await the next engagement. For simplicity, a deployment following these rough guidelines will be called digitally dispersed for this paper.

## Positives

The reason to attempt a digitally dispersed deployment with any gun, but especially a gun as slow to redeploy as the M777, is the risk of CB fire. If a Bty of 6 guns were to fire from a single location, even if dispersed according to our current doctrine, they would be identified, either by sound ranging, or radar, especially after delivering a large method. The result of deploying into a static position then is the likely destruction of a gun bty. If, however, we were deployed in a posture that the guns were so dispersed that sound ranging would not show a consistent report for an engagement, and that radar could either miss the projectiles or be overwhelmed by them engaging from enough different positions that the enemies choice to engage with CB, means that even if engaged, the cost, rather than being the entirety of a bty, would much more likely be a single gun. 1/6 rather than 6/6. The second positive is that this TTP could be rapidly employed by and improved upon by any future self-propelled field gun, ranging from the Archer to the PZH-2000, to the XM-1299. Modern SPGs would be well suited to engagements like this, potentially right on the road, and could easily employ Multiple Round Simultaneous Impact (MRSI) to ensure a massive weight of fire, while enabling a rapid redeployment of the guns.

## Negatives

The obvious sacrifice of a deployment as described above is local defense. The ability for a gun det, especially a with a towed M777 with no ability to engage enemy vehicles at ranges of longer than 300-400 meters without direct firing the howitzer, because of their lack of pintle mounted/RWS mounted .50s or 40mm AGLs' means that if they had a chance encounter with an enemy recce vehicle, even if that vehicle had only a 12.7mm HMG, we would likely lose a gun det. That risk however is only mitigated in a bty position because of the larger quantity of weapons, while opening the likelihood of CB. The biggest problem with a digitally dispersed deployment would likely be ammunition. If we had enough ammo vehicles to supply the number of rounds that we would need to even begin fighting a war, the challenge would be how to get ammunition to the guns while digitally dispersed. This might be mitigated using ammo dumps in pre-designated positions, perhaps at the troop level, that would allow a gun's dedicated ammo limber to move to the ammo dump to resupply the gun on the fly.

## Challenges - Doctrine

Currently, for indirect fire, our doctrine would not allow the employment of the above described digitally dispersed deployments. Immediately this is because we take such pride in the "Artillery Double-Check". This is true both for training, as well as for deployments that would not fall under training safety. To understand the requirements for a single gun to deploy into a position and fire indirectly with our current doctrine here is a quick look at Harassing Fire (HF) tasks. Once the gun gets onto position the detachment commander records the gun. The GPO or TSM goes with them to the position to independently verify the lay of the howitzer, and in training, and an additional officer or Sr NCO acting as the Safety Officer verifies the gun again. Without modern technology such as DGMS, a gun on an HF task would have been recorded by the Det Commanders prismatic compass, verified by the GPO's prismatic compass, and verified

again by Safety's prismatic compass. Today, however, the fastest, and most accurate means of recording the gun, whether deployed solo or in the middle of a fob with the entire artillery recce party ready to pass line, is the DGMS and INU mounted to the howitzer. The largest change to our current doctrine to at least enable the trial of a digitally dispersed deployment would be to allow the det commander to verify the lay of their gun by compass after the gun was recorded with DGMS, and in training, verified by safety. This would allow the detachment the ability to deploy independently, while still ensuring that the source of the howitzer's orientation has been verified by an independent instrument.

## Challenges - Technology

Other challenges that this deployment type would face include components of our IFCCS program. Key problems with IFCCS and a digitally dispersed position are the ability to accept new CP&FC from a gun while in a mission, and the removal of the max distance that a gun can report its ready state to the CP from. The obvious problem with the CP not being able to accept CP&FC, and therefore compute data for a gun while in a mission, means that with our current burns of IFCCS, the guns would need to have moved from their hides and reported ready before the CP is ever able to begin computing the mission. If the program allowed for a gun to be added to the mission mid-way through, this would allow for initial computations to take place, allowing for things such as engagement reports to be issued to higher HQs before all guns were in position to carry on with the mission. Secondly, the current burn of IFCCS does not allow a gun to be outside of 9999m. [3] (it limits the distance to a four-digit number). While not likely to breach this

[3] This is with IFCCS burn V 7.2.0.10805

distance, removing the limit, or extending it to be so far that it would not be breached would mitigate the potential problem that could be faced by a gun sitting just on the outside of the limit.

The RCA is not equipped to fight a peer enemy with our current equipment. Updating our TTPs will allow for the mitigation of some of the risks that deploying guns under traditional deployment methods bring in a modern peer fight. Deploying in a digitally dispersed position would allow for maximum survivability from CB and would enable a Bty to provide support at a reduced risk from enemy fires.