

## **Mastery of the fundamentals of passive counter-reconnaissance to survive against a hybrid threat**

By CPT Joshua Christian

*The command post has just set in position, communications antennas erected, and the first pot of coffee is beginning to drip when the situation reports from the troops crackle over the radios. This operation is conducted by a Cavalry Squadron partnered with a Polish Cavalry Troop executing joint, inter-governmental, inter-agency, multi-national (JIIM) security operations at Grafenwohr, Germany as part of the annual training exercises at the Joint Multi-National Rotational center (JMRC). For now, the situation is going just as the S2 and S3 predicted during their analysis, troops have occupied the screen and are deploying their troop unmanned aerial surveillance (UAS) systems to attempt to gain contact with the enemy forces.*

*Just ten minutes after receiving situation reports from the subordinate units the S3 and S2 enjoying a cup of coffee and analyzing their information collection plan for the upcoming 48 hours. Suddenly they hear incoming indirect fire, all of the command post vehicles and individual MILES gear begins going off indicating that they have been killed. The observer coach trainer (OC/T) informs them that the command post has been destroyed by indirect fire to the argument of the S3 and S2 who point out that this is impossible, not a single one of their troops had made contact with the enemy. In addition to the lack of enemy contact, the Squadron had positioned the command post one terrain feature behind the main body just as they had learned to do from doctrine.*

*In the after action review, the OC/T points out the lack of focus and attention that the unit gave to passive counter-reconnaissance. During the after action review the opposing forces (OPFOR) described to the friendly unit how they had been able to utilize a common, off the shelf radio direction finder (available at radio shacks or ebay.com for \$50-500) to identify a line of bearing to the unit's radio transmissions. The OPFOR then flew a UAS along the line of bearing until it identified the Squadron's command post indicated by a series of tents, dress right dress vehicles, and a line of port-a-potties. The OPFOR had identified the Squadron command post as a high-payoff target during the planning phase and immediately massed its indirect fire assets to destroy the Squadron's headquarters.<sup>1</sup>*

FM 3-98 describes effective counter reconnaissance operations as allowing the unit to retain freedom of maneuver by denying the enemy the ability to collect information and identify opportunities to seize, retain, and/or exploit the initiative.<sup>2</sup> The counter reconnaissance this rotational unit used to conducting was active in nature, it was identifying and defeating enemy reconnaissance forces in a named area of interest (NAI) or target area of interest (TAI). So what is this passive counter reconnaissance that the OC/T referred to, is it new? Had the unit missed an update to doctrine or to its individual and collective tasks outlined in the combined arms training strategy (CATS)?

Passive counter reconnaissance is a unit's exercise of discipline when it comes to camouflaging and concealing their positions as well as exercising radio discipline and adhering to strict signal operating instructions (SOI) to reduce the electronic signature. The Squadron had not successfully employed protective measures of their command post such as digging in or camouflaging their

---

<sup>1</sup> Vignette presented in fictional in nature but created based on trends presented by JMRC in the Cavalry Council hosted by 3-16 CAV on 27JAN2016.

<sup>2</sup> Field Manual 3-98, Recon and Security Operations, July 2015.

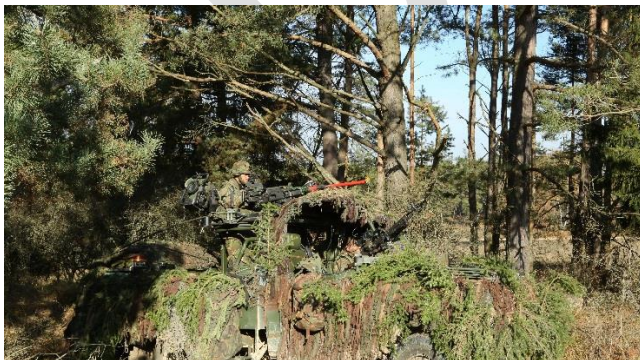
positions. Additionally, the unit had not considered its electromagnetic signature and the vulnerabilities it presented to their security.

### **Protection: Camouflage, Concealment, and Deception**

As units execute decisive action training they must account for the hybrid threat which will contain some near peer capabilities such as UAS or even off the shelf (civilian procured) UAS and radio direction finding capability. In July 2015, a DRAFT of Dr. Karber's "Lessons Learned" from the Russo-Ukrainian War circulated through TRADOC. In this paper, Dr. Karber expresses his personal observations of the conflict and describes an environment proliferated with unmanned aerial vehicles, more than 14 different varieties of them, generally complimented with BM-21 MLRS resulting in the ability to mass highly lethal indirect fires over extended ranges.<sup>3</sup> For many years of stability operations the U.S. and our allies have enjoyed complete supremacy over our enemies in every form of contact. As forces return to training for and fighting against a hybrid threat, that supremacy over all forms of contact is not necessarily lost, but our training must bring back some of the lost disciplines and tasks.

Units at the training centers used to "dig-in" their command posts just as they did for their fuelers or mortar firing points. This doesn't assist in concealment but it does increase the overall survivability. Camouflage nets fully deployed also won't completely conceal the unit, a well-trained UAS operator will be able to identify something is there, but will not be able to ascertain if it is a command post or not. Will the enemy decide to employ indirect fire if he cannot be certain it is a high pay off target? Likely the enemy will deploy another form of reconnaissance to verify this information, buying the friendly unit time. In addition to digging in and camouflaging positions, units need to plan critical friendly zones are in place over their command posts susceptible to indirect fire. By planning critical friendly zones, units ensure that target acquisition radar is within range and can identify a point of origin from incoming indirect fire to enable accurate and responsive counter battery operations. The use of critical friendly zones and counter battery will force the enemy to displace or destroy his indirect fire assets, reducing his ability to continue to mass on friendly positions.

In CATs underneath Collective Task Number: 07-3-9016 Establish an Observation Post there are supporting collective tasks 07-2-6045 Employ Deception Techniques, 05-2-3003 Employ Camouflage, Concealment, and Deception Techniques, and 05-3-3003 Camouflage Equipment. These tasks are rarely



*Netherlands reconnaissance truck camouflaged with natural materials in a concealed position*



*US M109A6 Paladin Artillery systems with no attempt at camouflage or concealment such as "shoot and hide" techniques.*

---

<sup>3</sup> Karber, P.A. (2015). "Lessons Learned" from the Russo-Ukrainian War [DRAFT]. *The Potomac Foundation*, pp. 12-13

ever trained or enforced, particularly against the threat of aerial surveillance. Currently some formations across the Army do train in employing camouflage and concealment but most often they evaluate the success of this from a direct frontal or flank observation and do not consider the threat of enemy UAS or how to counter it (actively or passively). Outdated but still relevant to today's warfare is FM 5-20, *Camouflage, Basic Principles* (1944) which discusses the need for concealment and some of the difficulty achieving it. Even in 1944 the writers of this manual identified the differences in concealment from ground and aerial collection efforts and reduced aerial into visual and photographic.<sup>4</sup> The difference in visual and photographic then and now are the angle of observation based upon the aircraft or collection platform. Helicopters avoiding radar detection and air defense threats generally fly low to the earth and therefore have a different angle of observation than a UAS or satellite orbiting at a high altitude and generally looking directly down onto an area have. During employment of camouflage and concealment, troops must consider what their locations look like from all of these vantage points and choose appropriate terrain that will assist them. Conveniently troops have Ravens or other similar UAS that also needs to fly to maintain proficiency and also ideally needs practice in identifying enemy positions. One way that a troop commander could increase his troop's survivability and capability to conduct passive counter-reconnaissance is to challenge his platoons to conceal their observation posts and at the same time challenge his UAS to identify them from the air.

Students in the Army Reconnaissance Course (ARC) face enemy air threat from both AH-64E and UH-72 helicopters. AH-64E primarily rely on thermal imaging for observation while the UH-72 relies on visual observation for conducting reconnaissance. ARC students employing concealment techniques are successful in remaining concealed (both mounted and dismounted) from these air threats for the duration of the station time of the air craft. ARC students have been so successful, cadre members narrowed the amount of terrain for the flight crews to reconnoiter to just one square kilometer and the aircraft still could not identify the ARC observation posts.

At the Cavalry Leaders Course, students are taught the importance of Commanders Reconnaissance Guidance and Commanders Security Guidance, specifically the importance of engagement, disengagement, and displacement criteria and how they are affected by enemy air threats. Students at both courses also learn about deliberate risk mitigation and management techniques. Scouts today are armed with a large array of sensors ranging from an LRAS3 to LLDR and standard binoculars. Sensors employed by the scouts require batteries in order to operate, the commander therefore must deliberately mitigate the risk incurred of running a vehicle in order to charge batteries. In his synchronization he can include run time (both the start time and shut down time) for vehicles in order to mitigate the increase in thermal and exhaust signatures. The risk mitigation begins with understanding realistic enemy capabilities, and when things such as exhaust are most vulnerable to observation or how long a recently ran vehicle will produce a strong thermal signature. These are just a few examples of considerations that should be evaluated by the commander when he develops his OPORD, specifically his reconnaissance or security guidance.

### **Reducing the electromagnetic signature of a unit**

Another form of discipline that is not new to the Army is the use of Signals Operating Instructions (SOI). SOI should be high on unit commanders' training priorities, particularly those

---

<sup>4</sup> Field Manual 5-20, *Camouflage, Basic Principles* (1944).

identified to conduct decisive operations in JIIM environments or as part of a regionally aligned force. What used to be a common skill and strictly enforced was the use of brevity codes, the constant evolution of frequencies, call signs, and key sets to avoid or mitigate enemy eavesdropping has become lost after years of enjoying supremacy over our enemies. The Five Eyes (FVEY) nations comprised of Australia, Canada, New Zealand, United Kingdom, and the United States maintain an agreed upon SOI that includes brevity codes as well as transmission guidelines to ensure things are not lost in translation amongst member nations.<sup>5</sup>

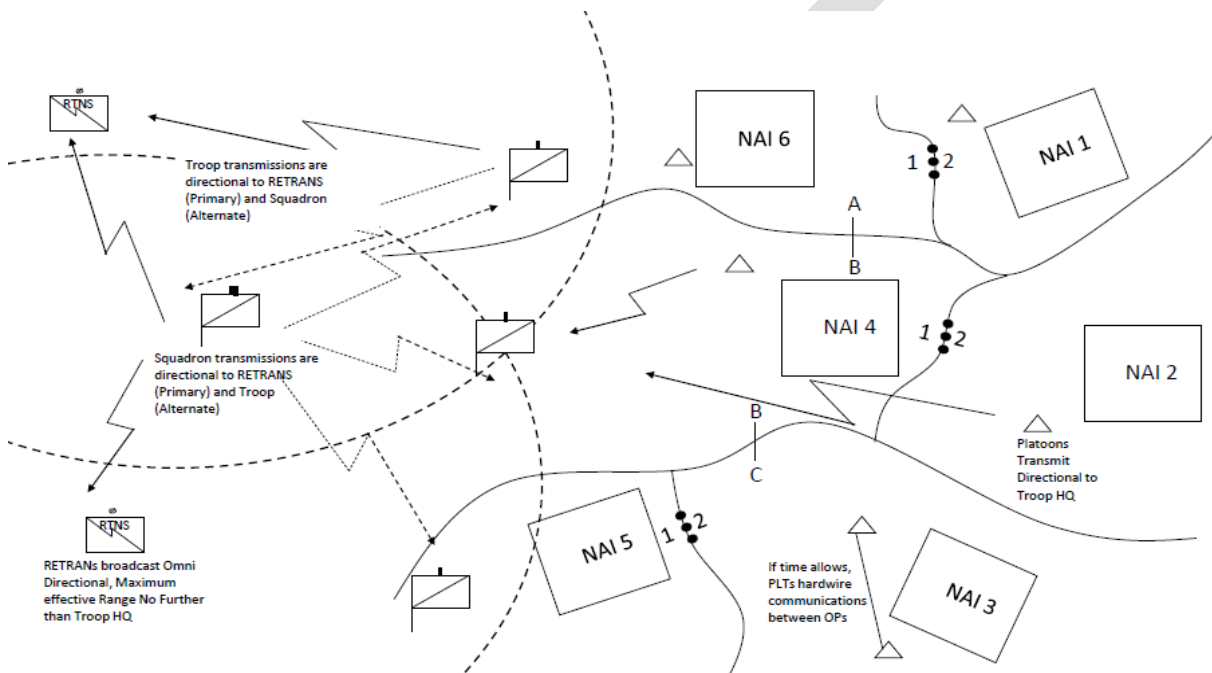
SOI is more than just brevity codes and staffs as well as commanders can assist the scouts in reducing their communications signature through the planning process. Though fully compatible with joint services in frequency hopping (FH), SINGARS are only partially compatible with multi-national radios, requiring transmissions over single channel (SC) non-secure mode to transmit to allies VHF radios. In the vignette presented above, to accommodate the Polish Cavalry Troop, the Squadron maintained one single channel ground and airborne radio system (SINGARS) channel on SC. The use of SC has also allowed the Squadron to increase the width of their Screen due to the extended range that it offers over FH. However, the use of SC is very susceptible to radio direction finding, a weakness that the OPFOR was able to exploit in the vignette but identifying a line of bearing from the communication and focusing their UAS operations along that line of bearing until they identified the command post. If units are going to use SC to communicate with allies, they must strictly adhere to SOI and ensure that communications are as brief as possible.

By refining PIR down to the yes, no, or number indicator for the scout on the ground, the staff and commander can reduce the overall amount of radio traffic. Scouts do not need to send up routine reports, a well-trained scout will inform his command when he identifies an indicator he was tasked with collecting or when he makes contact. The gaps in between those two times should be acceptable radio silence times, particularly in a JCR capable unit. Going forward against a hybrid threat, the strict adherence to smart SOI will not only increase unit's survivability against an enemy trying to DF them, but it will also ensure that units are interoperable with our multi-national partners.

---

<sup>5</sup> Allied Communications Publication [ACP] 131(F), Communications Instructions – Operating Signals, April 2009

Another technique to increase survivability of cavalry formations against hybrid threats while still relying on SCPT to talk to multinational partners is to rely on directional antennas such as the half-rhombic antenna instead of omnidirectional antennas like the common OE-254 and COM 201B.<sup>6</sup> Using a directional antenna aimed at the person you are talking to, coupled with the use of SOI brevity codes significantly reduces the overall communications signature that you are emitting. The S6 and S3 should evaluate the signal plan, it is more than just a list of frequencies, call signs, and succession of command. Units could utilize directional antennas with RETRANS in depth to reduce the overall electronic signature traveling forward towards the enemy.



Example network diagram to reduce electromagnetic signature

SINGARS operate on three variable power settings designed to allow a user to control the electromagnetic signature given off by the radio transmission and can be as little as 200 meters and as large as 40 kilometers (terrain dependent).<sup>7</sup> Units can dictate to the troops during which phases of the operation it is acceptable to operate on “high power” and when they need to operate their radios on “low power” and when they need to operate in a radio silence – listening only method. The goal being to reduce the overall electromagnetic signature emitted, it is advised that command posts only utilize the lowest possible power setting to maintain reliable communication.<sup>8</sup> If time is available, units should rely on hard wire communications ran between positions. To hardwire between observation posts, units used to rely on TA312 wire that has recently been turned in and removed from most unit’s MTOEs. Either a new solution is required to fill the current gap or the Army must re-issue the wire and phones to units to counter this threat.

<sup>6</sup> For more information on types of antennas and how they can assist in reducing a units susceptibility to enemy intercept and interference units should reference Chapter 10 of ATP 6-02.53 (2016).

<sup>7</sup> Army Training Publication 6-02.53, Techniques for Tactical Radio Operations, Jan 2016

<sup>8</sup> Ibid.

## Conclusion

Unit commanders plan training, in doing so “they must understand their expected operational environment...[and] replicate the conditions as closely as possible in training.”<sup>9</sup> Additionally, ADRP 7-0 points out that Troop, Company, and Battery commanders are responsible for tackling the fundamentals first, focusing on individual and small unit skills. The Army is currently focused on Europe, the Pacific, and Central & Southeast Asia, unit commanders must understand that adversaries in these regions possess near peer or similar capabilities and incorporate those threats in unit training plans. Failing to acknowledge the operational environment of adversaries and incorporating it into training environments is impacting the overall mission readiness of Army Forces capable of deploying to protect U.S. interests. The CTCs have acknowledged it and include it in their rotations, now the rotational units must ensure it is trained at home station through repetition after repetition until units regain competencies lost due to years of persistent conflict with an inferior enemy. Finally, by removing units from their comfort zones of large “Base-X” style command posts, not only do units train to increase their survivability against a hybrid threat but they also build resiliency into their systems and increase the adaptiveness of their leaders.

---

<sup>9</sup> Army Doctrine Reference Publication 7-0, Training Units and Developing Leaders, Aug 2012