

4th CAB Leaves Combat Power on the Table

Comms challenges

Maj. Kyle J. Pare
4th Combat Aviation Brigade

The 4th Combat Aviation Brigade (CAB) recently completed a command post exercise (CPX) as part of 4th Infantry Division's (ID) Lethal Ivy 2024 exercise. Although it was no surprise, the CAB's limited communication capabilities leave significant gaps in the division's combat power on the table. Challenges with old equipment, lack of redundant data transport methods, and the absence of on-the-move upper tactical internet (TI) capabilities result in degraded communications with higher, adjacent, and subordinate headquarters.

Old Equipment and Limited Bandwidth

The first communications challenge 4th CAB faces is old Warfighter Information Network-Tactical (WIN-T) equipment. The CAB still operates on Increment 1C, using Lot 9 Satellite Transportable Terminals (STTs) and Command Post Nodes (CPNs), some approaching 10 years old. Brigade headquarters in training cycles routinely receive low bandwidth allocations on legacy satellite communications (SATCOM) access authorizations. Although units in combat will receive higher priority, this keeps staffs from training on their individual mission command information systems (MCIS). To be optimally effective on the battlefield, we must train as we fight, and aviation brigades require reliable, high-throughput communications capabilities to coordinate with joint enablers as well as higher and lower echelons. This is simply not possible with current communications packages at 4th CAB.

Part of this issue is the finite satellite resources the Army owns, but a large part is old equipment. While newer STTs are not necessarily allocated more bandwidth, they do not face the same chronic maintenance issues as decade-old equipment. All of this translates to hours of wasted time in the CAB Network Operations (NetOps) section, troubleshooting STTs that won't transmit, and CPN routers with broken internal components. There is also a critical gap in training signal technicians on firewalls. Issues with firewalls at the division and brigade levels accounted for at least 80% of connectivity issues in the recent exercise.

A final reason to explore alternate transport means is the size of the current package. The 4th CAB's headquarters is not "field-expedient" in any sense. Removing a requirement for an STT would shrink the main command post by one vehicle and reduce network setup time by about 30 minutes. While this may not seem substantial, any incremental improvements will pay dividends in the next large-scale engagement. Expeditionary

Signal Battalions-Enhanced (ESB-E) are fielding new, smaller satellite terminals that are rapidly deployable anywhere in the world, but these systems are years from making it to units like 4th CAB. There seems to be no answer for the immediate problem of how to enable the CAB to talk.

Lack of Redundant Transport Methods

A second challenge 4th CAB faces is lack of redundant data transport methods at the brigade and battalion levels. When coupled with old and unreliable equipment, this significantly inhibits the CAB from rapidly applying combat power in support of multi-domain operations. Currently the CAB has two ways to tactically connect to the Secure Internet Protocol Router (SIPR) and Non-secure Internet Protocol Router (NIPR) nets – SATCOM via the STT, and the High-Capacity Line of Sight (HCLOS) system. Practically, this translates to being tied to a Regional Network Enterprise Center-managed fiber Point of Presence (PoP) pedestal in the Fort Carson, Colorado, training areas, further inhibiting the commander's freedom of maneuver. To provide flexibility, the CAB first used SATCOM as its primary data transport method (FDMA, NCW, and TDMA in that order), then swapped over to a HCLOS-enabled pedestal connection. This accomplished two things: increased available bandwidth and connection reliability for enterprise-based services, and improved connectivity to division services. Both enabled a more robust connection to 4th ID's network, which tied to the pedestal network via Global Agile Integrated Transport.

Neither of these methods are optimal. As with the STTs, 4th CAB's HCLOS systems are old and due for a reset and upgrade. This doesn't help the battalions, who are limited to Joint Battle Command-Platform (JBC-P) as the only way to pull a common operating picture (COP) if their STTs fail. A shared Network Centric Waveform (NCW) mesh for the battalions was not enough bandwidth for them all to effectively leverage SIPR systems simultaneously. Even though one of the battalions was able to use a new TSI Small server connected to their node, they never effectively leveraged it to use Command Post Computing Environment (CPCE) as their COP. While there were training shortfalls, the small pipe rendered it difficult to use, at best.

There are multiple options for transport in today's Army. The most obvious and popular is the proliferated low Earth orbit (pLEO) solution – a constellation of satellites that provides a low-latency, highly resilient connection to units. Commonly known as Starshield, these systems provide much higher bandwidth and availability than Department of Defense's Wideband

Global SATCOM constellation at a fraction of the cost. Low Earth orbit satellites are not the only solution, however, Cradlepoint routers with a commercial cellular network SIM card can provide another option for data transport (as long as a unit has cell coverage).

For this exercise, 4th CAB's brigade main was in a training area with poor cell service. If the unit had a Mobile Broadband Kit with such cell service, this could have been mitigated through site selection and leaders' recons. The CAB's limited HCLOS systems are a limitation as well. With only three systems authorized, the brigade can establish redundant links to only two of five subordinate battalions. Even then, those units will be limited by the brigade's SATCOM bandwidth.

Another possibility is providing units the capability to rapidly tie in to existing civilian telecommunications infrastructure. This would be especially beneficial in urban or suburban environments where such communications would be plentiful and help units reduce their electromagnetic spectrum signature, thus increasing survivability.

At-the-Halt Only

The third issue that prevents the CAB from fully applying its combat power in large scale combat operations (LSCO) is its lack of on-the-move upper TI systems. According to U.S. Army Training and Doctrine Command's analysis, future battlefields require brigade command posts that can rapidly and constantly displace while maintaining situational awareness. This is echoed throughout current doctrine, but notably, Field Manual 6-02 describes challenges the Signal Corps faces in the operational environment. CABs have not been fielded the WIN-T Increment 2 capability set, and there is no plan to in the foreseeable future. Inc 2 is not fully on the move, but it provides capabilities through systems such as the PoP, the Soldier Network Extension, and the Highband Networking Radio connection that enable more mobile command and control solutions than Inc 1.

During the exercise, the brigade main completely broke down, leaving only a small Tactical Command Post (TAC), the S6, and the brigade signal company. This TAC required a single connection to the division, but due to the limited comms equipment the CAB possesses, it required a disproportionately large package to maintain. Instead of a small signal package, this single connection required two HCLOSs, an STT, a Joint Network Node, and the brigade's two server stacks. This is simply unacceptable and results in a CAB that cannot rapidly displace in a fast-moving LSCO scenario.

Although 4th CAB plans its operations around the assumption that it is in the division's rear support area (and thus relatively safe from enemy fires), this gap becomes inhibitive when you consider the unit's requirement for Forward Arming and Refueling Points and forward-placed C2 elements.

Without an on-the-move upper TI capability, these critical assets are limited to JBC-P and perhaps Tactical

SATCOM radio communications, severely hampering their ability to command and control the mission while staying in touch with their higher headquarters. This reduces the aviation brigade's responsiveness and agility in a dynamic environment, which ultimately impacts the division commander's ability to mass combat power at critical decision points.

The Way Ahead

Even though communications gaps are substantial, there are ways to work around them. The pedestal connection is one way to deal with limited bandwidth and unreliable STTs, but conducting crew drills on these systems is absolutely critical to maintain proficiency and increase network availability. The brigade was successful in fighting off JBC-P, but continued training is needed to improve operator proficiency with sharing overlays and COPs, as well as using them for planning product distribution. The brigade staff saw tremendous success with implementing a monthly battle rhythm where weekly staff syncs were held over a rotating set of communications systems. This forced staff to turn on their JBC-Ps and connect it to the satellite at least monthly, which allowed the S6 to identify and get ahead of issues before the field exercise. This does not address electromagnetic signature concerns, but that is on purpose.

The 4th CAB's mindset is that although there is no real sanctuary on the modern battlefield, aviation assets will routinely be maintained in the division's rear area, far removed from the majority of kinetic threats a division may face. There is arguably also an overabundance of caution on sacrificing C2 for a low emissions signature. The Army has significantly more work to do on doctrine for emissions control and how commanders can strike a better balance between C2 on the electromagnetic spectrum and survivability.

The fact remains that the CAB requires higher and more reliable upper TI to truly be a force multiplier for the division in an LSCO fight. This article did not discuss how the improved connectivity would make the Grey Eagle company more lethal for the division G2 and Fires elements. For unmanned aircraft systems to be truly effective, they need to be dynamically re-tasked and controlled directly by the division, which is simply not possible given the CAB's current network architecture. The brigade staff is repeatedly prevented from producing and distributing products to the battalions because of its limited SATCOM connectivity, and the battalions are almost completely prevented from effectively leveraging their own CPNs.

As it currently stands, the CAB must borrow from other subordinate units to fill some of these communication gaps. The modern Army division needs to leverage its technological advantage to the fullest to prevail in its first fight with a near-peer adversary. Critical communications shortfalls in key combat enablers leave advantages on the table.