

# A New COC

**Smaller, better, faster, stronger: adapting command and control for peer to peer combat**

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**C**ommand Post of the Past  
“Their main command post was just destroyed.” Everyone in the 3d Bn, 8th Mar (3/8) warfighting command stopped what they were doing and looked at the radio operator. He had the speaker up to his ear and continued to relay the transmissions out loud, complete with a palpable sense of urgency and disbelief, “Hit with enemy rocket artillery.” For a minute, the only movement under the camouflage net was the operations officer dropping his hand from the map board.

The message started to sink in. Our sister battalion’s primary command post (CP) was destroyed—all of its decision makers and command and control (C2) capabilities. The companies were probably still out running missions, but how long would they last without their headquarters? They were now winging it—no C2, no fires coordination, no logistics. And what exactly did this mean for the rest of our division? We were fighting an enemy three times our size; every bit of combat power lost felt like a gut punch—and this was an entire battalion headquarters.

Unfortunately, it was not all that surprising. That CP had been a veritable monster—enormous tents, towed generators, dozens of computers, projector systems for battle tracking, and concertina wire around the perimeter so they could run secret computer systems in accordance with security directives. The signature on that thing must have been massive, and it was set up at a road crossing where there was plenty of parking for their fleet of headquarters vehicles.

It is possible that the 3/8 staff could have predicted this disaster. Twenty

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*One of 3/8’s warfighting command posts: lean and highly mobile. (Photo by author.)*

minutes before, when we had received warning of enemy jets in the area, our joint terminal attack controller “hacked” into the aircraft’s video downlink. It was not exactly skilled hacking; in this exercise the same jets were acting as both friendly and enemy. The joint terminal attack controller simply used the scan function on his Soldier ISR [intelligence, surveillance, and re-

connaissance] Rover, or SIR, to search active frequencies and get a positive handshake from the jet’s pod. Watching the enemy pilot search for our own command was haunting. The jet’s imagery was excellent, and there was obviously no hiding from it. The pilot scanned down main roads and swung his pod 500 meters to either side, zooming in on anomalies. It appeared that most

did not meet his targeting threshold; our 3/8 command area, which was just a couple trucks tucked under camo net well off the main road, clearly did not warrant fires. However, a giant multi-tent command post did.

CPs with high-speed digital mapping, realtime tracking technology, and plasma screens are *not* the battalion CPs of the future. They are not even the CPs of the present. The new operating environment is multi-domain—land, air, sea, space, and cyberspace—and includes peer and near-peer enemies who can achieve temporary dominance in *any* of those domains. The CPs of the global war on terror—hulking, high-tech, do-all systems—are no longer assets, but liabilities. What had been conceptually clear to the 3/8 staff before participating in November’s MAGTF Warfighting Exercise (MWX) became abundantly so when the fighting began: to survive and thrive in the chaotic battlefield of today, we must run lean, low-signature, mobile, lethal, and adaptable warfighting commands.

### **A Lean, Mobile, and Redundant Warfighting Command**

To the enemy pilot in the air, our command area looked like a low-threat operation, while our sister battalion’s CP looked like a high-payoff target. In fact, we were both infantry battalions running comparable operations, but our command survived the entire exercise and the other was obliterated within hours. The lesson was clear: modern warfighting commands do not need to be extravagant; they need to be small, agile, and redundant.

Even when viewed from the ground, our 3/8 command area was low profile; it had no tents, no generators, no desks and chairs, and no staff computers. It had instead three joint light tactical vehicles (JLTVs) in a U-shape; two were parked parallel to each other with about twelve feet in between, and a high-backed logistics variant JLTV was parked at the front and perpendicular to the others. A map board and relevant products hung on the side of each of the vehicles. The high-back at the front held the operations board and battalion common operational picture, the right-



**The location of operations, intelligence, and fires functions allowed the commander to rapidly gain situational awareness in support of key decisions. (Photo by author.)**

side vehicle had the intelligence board and map, and the left-side vehicle had the fires board and map. There was only one table in the warfighting command, located in the high-back, which served as a future operations planning space. A camouflage net stretched over the top of all three vehicles to make it less visible from the skies. Additionally, a fourth high-back was parked about 100 meters away under its own camo net; this vehicle was used to store food, water, and rucksacks.

Largely because it was small and sleek, this warfighting command was highly mobile. Our emplacement battle drill was simple: the operations officer would dismount from his vehicle and stand right where he wanted the operations board to be. The high-back would then pull up perpendicularly in front of him, and the two additional JLTVs would pull up next to him on either side. The rest of the team would then dismount and hang the map boards. We could make the warfighting command operational in just five minutes. Hanging the camo net to complete the rest of the setup took an additional eight minutes and tearing the entire operation down to move took just ten. Although it was difficult to manage because of communications challenges and working on the move, the

staff could conduct C2 while driving if required.

Our 3/8 warfighting command was also completely redundant, with an identical second command center at another location on the battlefield. The two commands were *not* primary and alternate but had equal capabilities and authorities; primary staff members were evenly split between the two. The warfighting command that had the fight adopted the “battalion main” call sign and assumed complete control of the battle, while the other command conducted displacement and rest. Finally, the commands had mirrored setups so that the battalion commander could step into either site and easily find the information he required.

Each of our 3/8 warfighting commands was made up of nineteen battle-ready warfighters: representatives from each of the battalion shops, a fires coordinator, air officer, artillery liaison, and a handful of Marines who doubled as drivers and radio operators. Additionally, a third command, “Charlie command,” operated from the rear. This was the logistics and medical node, and it included the H&S company commander, adjutant, supply chief, motor transport, and battalion aid station staff. The Charlie command’s primary responsibility was to coordinate the flow

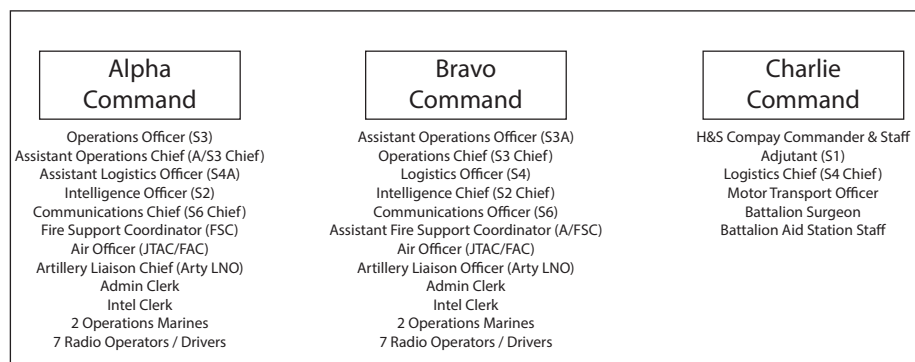


Figure 1.

of logistics in and casualties out of the battalion's battlespace while still receiving all direction from the warfighting commands. Figure 1 details how our 3/8 battalion staff was organized across the three warfighting commands.

Our staff had everything we needed to fight the battalion—communications, an up-to-date picture of the battle, and the information required to make and execute decisions—but it was lean and simple. We could move quickly if detected and adapt if compromised. We were in effect disguised, not hidden, and avoiding attention. Additionally, if the disguise failed, we were resilient through redundancy.

**A Low-Signature Comms Architecture for Today's Battlefield**

In our warfighting commands we brought back the basics—map boards, pins, and markers—but we also relied on a smartly designed communications architecture to keep us connected to the battle. This architecture was low signature and streamlined, and prioritized survivability.

First and foremost, the 3/8 warfighting command was low signature. Our communications suite was built around two MRC-145B variant JLTVs, systems that proved to house substantial communications capabilities. In addition to the two radios provided by the MRC-145B variant, we mounted a VRC-110, providing a total of four power amplified radios per vehicle; these were capable of running VHF, UHF, and SATCOM nets. Additionally, one Joint Battle System Command Platform (JBC-P) was mounted in each vehicle to provide a long haul, beyond line of

sight SATCOM chat capability. The 120 VAC outlets in the JLTV powered two Panasonic Toughbooks running HF tactical chat while an advanced battery charger maintained a healthy supply of BB-2590 batteries that powered the two PRC-150 HF radios. Two of these fully outfitted JLTVs were employed at each warfighting command to enable expedient, redundant, and highly capable communications. Despite all of these capabilities, the electromagnetic and physical signature was commensurate with other formations within the battalion's battlespace.

Our setup was streamlined and simple; between the two MRC-145B JLTVs at each command, one was dedicated to C2 and intelligence nets, while the other was dedicated to fires and air nets. The fires vehicle ran four voice/data nets: battalion mortars (VHF), artillery conduct of fire (SATCOM), tactical air control party local (VHF), and tactical air direction (UHF). The regimental fire support coordination center (FSCC) net was ran over one of the two PRC-150 HF radios, with the other in reserve. The C2 vehicle ran four VHF nets: battalion tactical 1 (Bn Tac 1), Bn Tac 2 Voice, Reg Tac 1, and Reg Tac 2 Voice. With maneuver traffic coordinated over tactical 1 nets, tactical 2 served admin and logistics functions.

The JBC-P SATCOM chat function was dubbed Bn/Reg Tac 2 Chat, as it provided messaging capabilities both within the battalion and up to the regiment. The two PRC-150 radios with tethered Toughbooks ran Bn Cmd 1 and Reg Cmd 1, both 3G+ nets that provided chat and voice capabilities.

It is important to note the survivability and versatility provided by these chat nets. When transmitting HF tactical chat messages over Bn and Reg Cmd 1, the radio emits a microburst of data that is seen as a flash on the electromagnetic spectrum. The chat function on the JBC-P operates in a similar manner when position location information services are deactivated. This translates to a minute electromagnetic signature, critical to maintaining survivability in a peer fight. Because admin, logistics, and intelligence messages tend to be long with very important details, these chat nets make passing data of that nature a breeze. Finally, counter to typical tactics, techniques, and procedures (TTP), we combined admin, logistics, and intelligence traffic into one net. For example, if tactical 2 voice and command 1 were both down (which occurred frequently due to rough terrain), all admin, logistics, and intelligence traffic flowed over tactical 2 Chat. Because messages over chat nets could be stored and revisited, even when the operational tempo was at its peak, this traffic was manageable. By building redundancy in nets and prioritizing traffic, this communications structure was highly versatile and survivable. Figure 2 below primary, alternate, contingency and emergency plan outlines how we prioritized traffic.

Our 3/8 team increased survivability by building a versatile primary, alternate, contingency and emergency plan and reducing the overall number of nets. Additionally, we decided *not* to

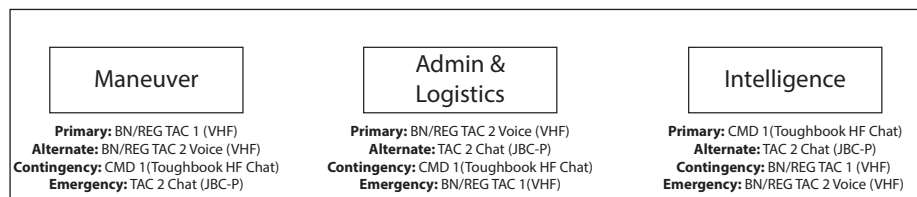
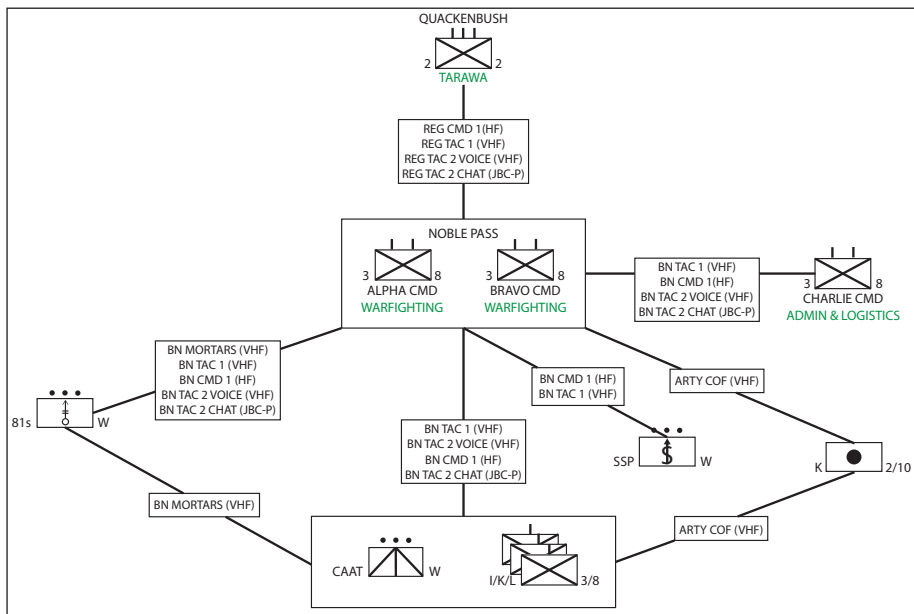


Figure 2.

maintain a separate antenna hill outside of the command (another common TTP). Although this TTP would have put some distance between the bulk of our electromagnetic signature and the team, it would have increased the time it took to setup and tear down our site. We determined mobility was most critical to our survivability, and that we would simply reduce our local electromagnetic signature as much as possible instead of trying to remove it. Additionally, we significantly reduced our communications architecture and electromagnetic signature during rest periods. After battle handover and displacement, the warfighting command on rest cycle shut off all of the nets except two: BnTac 1 and Reg Tac 1. A radio watch passively monitored these nets and initiated wake-up criteria for key leaders as required. For a detailed depiction of our MWX concept of communications support, refer to Figure 3.

**Lessons Learned from MWX; Modern Warfighting in a Multi-Domain Environment**

Although our staff uncovered several challenges and documented multiple lessons learned, ultimately, we found that our sleek, mobile command center improved communications allowed for



**Figure 3.**

rapid and decisive action, granting us the ability to generate tempo relative to the enemy.

Despite surviving the duration of the exercise while other battalions did not, our command certainly experienced some challenges: sustainment, security, handover, and exhaustion were chief among these. First, because we wanted to keep our command lean and mobile, we were limited in terms of sustainment. We found that we could feasibly carry

three days of supply in food and two days of supply in water and fuel without significantly increasing our footprint. As a result, resupply operations were a critical and constant concern, made increasingly worse by our lack of air parity. Additionally, our warfighting command did not have its own security, largely because of the fact that our battalion was significantly understrength when we deployed to the exercise. We mitigated this through terrain selection and at times collocating with other battalion elements (not preferred). The warfighting commands should have their own security elements—such as two UTVs with crew-served weapons and some dedicated security Marines. This would slightly increase the footprint but is absolutely critical to survivability. Another challenge we found was battle handover. Although we developed a fairly fluid method of conducting the handover, we ran into challenges ensuring that incoming data reports were forwarded to the appropriate element in command after handover had been conducted. Finally, our warfighting command was challenged by significant burn-out. The operational tempo at MWX was very high, accurately depicting the characteristics of modern, multi-domain warfare. We found out early on that it was essential to take rest cycles seriously; whichever warfighting command was



**The Assistant Fire Support Coordinator and the Artillery Liaison Officer discuss a pending fire mission. (Photo by author.)**

not in control of the fight had to drop down to no more than a radio watch in order to adequately sleep and reset. However, even when we enforced this, our team was exhausted by the end of the two-week exercise.

Despite meticulous pre-exercise planning, our 3/8 team learned a lot on the fly and continued to adapt our command throughout the exercise. One lesson learned was that displacement may not be advantageous in every situation. As infantrymen, we felt anxious about sitting in one spot for too long, but in an air-contested environment moving is a significant risk. Not only did displacing make us an obvious visual target but required us to run our vehicles and transmit a large, sustained heat signature. We determined early on in the exercise that we should weigh the costs and benefits of every movement. If we were compromised, we had to move immediately, regardless of the time of day. If we did not think we were compromised, we should carefully consider the risks of moving versus staying put. If possible, we tried to move during the thermal crossover period—the time around dusk and dawn that thermal imagery pods are least effective. In fact, we planned our warfighting command battle handover for one hour prior to thermal crossover, and then we used the remaining hour to tear down and prepare to displace.

We also learned several lessons about communications capabilities—less about what we *needed* and a lot about what we *did not need*. Staffs today feel tethered to computer-based applications like email and PowerPoint; indeed, some of the regimental staff were shocked when we told them that 3/8 did not plan on using computers for anything other than HF tactical chat. However, our staff fought the battalion effectively for two weeks without building a single PowerPoint slide or sending a single email. In our opinion, the only computer-based applications needed at the battalion level are HF tactical chat for point to point HF messaging, and possibly a lightweight server-based chat such as Transverse, over secret computer systems only. While we did not use Transverse, it would have been benefi-

cial in providing another beyond line of sight capability, so long as a lightweight, mobile transmission method was used. Mobile Objective User System SATCOM appears to be the future for accomplishing this; however, more training and familiarization at the battalion level is needed. Ultimately, we only utilized HF tactical chat and still successfully received and transmitted essential information.

Additionally, we captured some significant lessons learned about managing our electromagnetic signatures. We were determined to not bring generators in order to reduce our signature; however, we had to turn on our vehicles roughly fifteen minutes every hour to power the equipment which created noise and heat signatures. It may have been more efficient in terms of signature and fuel to utilize a small generator—3k or 5k—to run our equipment while operating from a static position. We did find at one point that placing ruck sacks over our vehicle engine blocks reduced the heat signature slightly and we made this a TTP. However, there may be a more efficient and effective way to reduce signature—such as suspending a tarp about a foot over the vehicle hood, for example.

One major theme of MWX was *disguise, not hide*. We realized, especially when looking through the F-18 lightning pod, we could not feasibly hide from enemy intelligence, surveillance, and reconnaissance systems. However, there was a human behind the ISR whose plan we could outsmart and out-adapt. The visual and thermal signature of our command was structured to replicate many other assets spread across the battlespace, thus creating a challenge for the enemy to identify and select them for targeting. This enabled us to operate below his targeting threshold by not meeting his requirements for the unmasking of key fires assets.

Finally, we recognized that we would have to adjust our setup for all-weather conditions. Because MWX was in the desert at Twentynine Palms, we did not have to deal with the effects of rain. If we had, additional precautions would have been necessary to keep our vehicles, systems, and planning area

operational. At night we hung a tarp under the camouflage net to block our lights from view, and this is something we could have potentially done during the day for rain as well. However, hanging the tarp was cumbersome and time consuming, especially since we had to work around the vehicle antennae. Additionally, we were not forced to address the effects that extreme cold could have on our command structure.

For all of the challenges and lessons learned, we proved that our lean warfighting commands improved our lethality through simplicity and speed. In today's environment the fog of war for a commander is often not a lack of information, but an overabundance of information. By reducing the nets we had to manage, limiting the command's physical area, and removing staff computers we found that we were forced to prioritize and focus on the important information. Staff members were not in constant computer defilade but were receiving and reporting information in full communication with one another. The team communicated constantly, and collaborated openly, and the result was that the operations officer and commander were able to maintain situational awareness, filter out key information quickly, and act decisively. Not to mention, using whiteboards, map pens, and person-to-person conversation, reduced the requirement for charging stations and backup batteries. In the end, it was not sexy, high-tech equipment that enabled our battalion in the new age of warfare; with charts, darts and acetate we were more effective, more lethal, and more adaptable in a multi-domain environment.

### Designing a Capability Set for the Warfighting Command of the Future

Before MWX we planned out our command operations in detail, and we also learned and adopted new TTP in the course of the fight. Ultimately, however, we were limited by a battalion capability set that was designed for the last war. With just a few well-designed pieces of equipment, we could have greatly improved the resiliency, survivability, and mobility of our plan. All of these requirements have already been discussed in this article. To sum-

marize them, we found that we needed the following: better electromagnetic signature mitigation equipment, better all-weather equipment (potentially a tarp/camo net combo that could be used to block rain and light from coming into the area), and a more efficient (but low-signature) means of running communications equipment, such as a 3k generator. We also think it is important to note that the JLTVs, which are still being fielded, were incredible assets. These vehicles handled remarkably well off-road and on steep grades, and easily housed all of the communications architecture that we required for effective command and control.

### Conclusion

We have a tendency to believe that the future is destined to be higher-tech ad infinitum. However, the infantry battalion CP of the future—indeed, of the present—does not fit that mold. The modern multi-domain battlefield is characterized by incredible capabilities on every side, and there is a need and a place for new science, innovative technology, and savvy members of the joint team who can wield it. But to continue its domination of the *tactical* battlespace, the Marine Corps needs battalion staffs that are brilliant in the basics and can operate, quite literally, under the radar. We will win the

next conflict, not by fighting behind keyboards in comfortable CPs, but by executing mission-type orders with our boots in the dirt like the agile, adaptive, lethal, tactically proficient, and highly intelligent warfighting team that we are.

