

The Critical Link

The Force 2025 cyber-enabled Marine in action

by Maj Paul L. Stokes, USMC(Ret)

*South China Sea, 2025
Expeditionary Landing Team Alpha
(ELT-A), H+2*

As the five MV-22 Ospreys carrying ELT-A approached MEU Objective Alpha, the five 06XX Marines (one per MV-22) who comprised the ELT-A communications (Comm) team maintained continuous command and control (C2) voice, data, and imagery connectivity with each other, the MEU landing force operations center (LFOC), and the battalion landing team (BLT) combat operations center (COC). Sgt Smith, the senior 0621, transmission systems operator, was in direct support of the company commander. Cpl Jones, a 0631, network administrator, was busy maintaining the common operational picture (COP) on his C2 personal computer (C2PC) and the ELT data links to the LFOC and COC. LCpl Sparks, another 0621, was embarked with 2d platoon and kept constant watch over his moving display and gave his platoon commander updates on their position. Cpl Kowowski, a 0671 data systems administrator assigned to 3d Platoon, was working on fixing a glitch in his Secret Internet Router Protocol Network (SIPRNet) terminal that was interfering with his CO but that did not deter him as he maintained voice connectivity on the MEU and BLT tactical single-channel radio nets. But of all of these communicators, it was LCpl Rodriguez, a 0627 satellite transmissions systems operator, who faced the toughest challenge. He was the Marine entrusted with weapons platoon's PRC-117G and PRC-150 radios, which were proving to be ELT-A's lifeline because the ultra high-frequency tactical satellite (UHF TACSAT) and high frequency (HF) radios aboard the other MV-22s were having a hard time staying in sync. Like legions of Comm Marines before him, he

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became "the critical link" as a full-time radio relay operator.

USS Tenaru, LHD-12, LFOC

Concurrently, the MEU commander, Col Ramrod, received a brief on the progress of the seizure of the two enemy-held manmade islands that were blocking the free transit of trade between the Indian Ocean and the Western Pacific. However, at a critical juncture, the main COP display went blank, turned blue, and became full of white-lettered gibberish. Maj Crusher, the MEU electronic fire support coordinator [FSC also known as a S-6 communications officer], a 2023 graduate of the MAGTF Communications Planners Course (earning him the MOS of 0603), immediately recognized that there was a failure in the LHD command, control, communications, computers, and intelligence (C4I) suite and notified his MEU Comm chief, MGySgt Stryker, a 0699 with extensive network integration, to "get cracking" and solve the problem. Immediately, the master guns formed a team with his best network-and-data systems Marines, and they soon came to the realization that the outage was a software glitch in the interface between the MEU's C2PC server and the Navy's tactical data system. The next thing you know, SSgt Tenacious, the MEU S-6's 0673 data applications developer, and SSgt Wolf, a 0688 cybersecurity technician, were busy searching for the "bugs" in the ships' SIPRNet. Meanwhile, SSgts Johnson, Chin, and Wilson, the MEU S-6 0629 transmissions, 0639 network, and 0679 data systems chiefs, and their

Marines were engaged with the MEU staff, ensuring that they were getting the traffic through the myriad of C2 systems within the LFOC and other command spaces within the ship.

ELT-A, H+3

As the five Ospreys began their descent, a flight of F-35B Lightning IIs zoomed by and dropped multiple tons of munitions on a variety of surface-to-air missile and anti-aircraft artillery sites on Objective Alpha. The orange fireballs and subsequent secondary explosions gave the Marines confidence, but they all knew there were still plenty of enemy soldiers left who were ready to defend that manmade island. And their presence became readily apparent as the sky filled with 23mm and 14.5mm tracers as soon as the F-35Bs headed home. The skipper immediately grabbed the fourth generation KIL-SWITCH¹ device from Sgt Smith and plotted the locations of the anti-aircraft artillery positions on the other flat screen. Simultaneously, this information popped up on targeting displays in the lead F-35B in both the MEU supporting arms coordination center (SACC) and the combat information centers of the two supporting Zumwalt Class guided missile; and, once clearance was granted, the targets were engaged by strafing from the F-35Bs and long-range Naval gunfire. But, unfortunately, this effort was too little, too late—in an instant, one MV-22 exploded in midair, another had one nacelle shot-out and fell into the sea, and a third was peppered full of holes like a Swiss cheese.

But ELT-A had trained for such contingencies, and, of the MV-22s left, they still had three platoons and three communicators between them—Cpl Jones, Cpl Kowowski, and LCpl Rodriguez—and the time had come to prove that these Force 2025 cyberenabled Marines had what

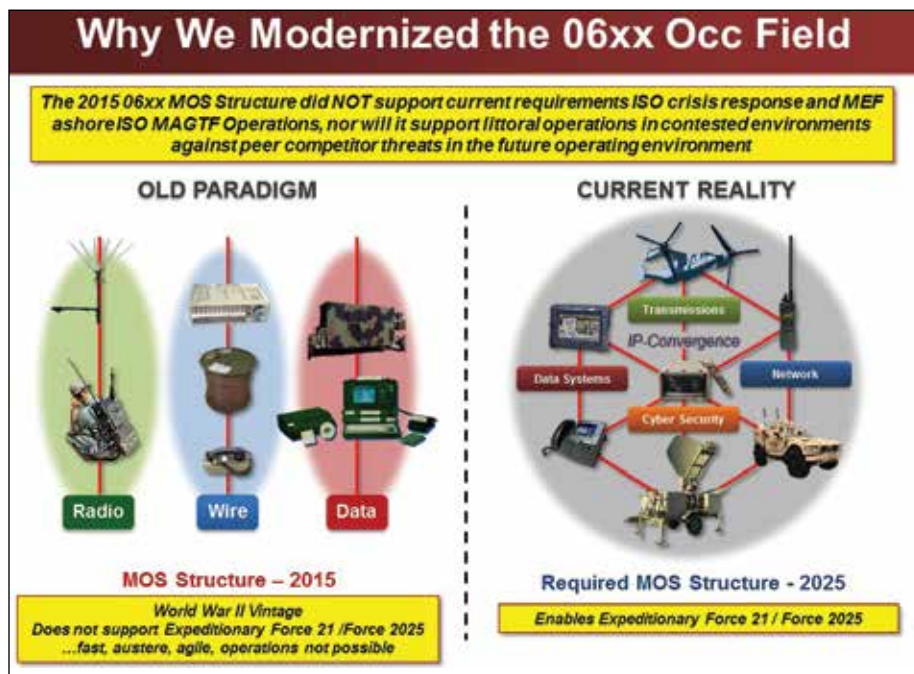


Figure 1.

it takes to convince “the gods of war” to grant them victory.

Fall 2015, Grey Research Center, MCB Quantico

A 21st-century version of “the Chowder Society” was in session as leaders representing the Director, C4, Headquarters United States Marine Corps; the Marine Corps Communication-Electronics School, Deputy Commandants, Combat Development and Integration, and Plans, Policies, and Operations; Deputy Commandant Manpower and Deputy Commandant Installation and Logistics, Training and Education Command, Training Command, and the Operating Forces conducted an operational planning team (OPT) to chart the future of the 06XX (Comm) occupational field (Occ Fld) in support of what was then called *Expeditionary Force 21*. This program evolved into *Future Force 2025* because it was clear that the then current World War II vintage “stovepiped” model (see Figure 1) of planning installing, operating, maintaining, and improving communications would not meet the Commandant’s stated goal that “MAGTFs need to be capable of planning, employing, and leveraging offensive and defensive cyber capabilities for warfighting and crisis response.”¹

After days of spirited debate, the OPT agreed that the 06XX Occ Fld needed to be restructured into four mutually supporting tracks—transmissions, network, data systems, and cyber-security (see Figure 2)—built around a common basic communications course, which would make every 06XX a “cyber-enabled Marine” who possesses the

basic voice, data, and networking skills to ensure that

commanders will have the capability to maneuver and adjust the network to provide C2 at decisive points and time and allocate limited C2 network resources at decisive points, in the same manner as shifting and concentrating fires, to impart the desired effects on an adversary.³

Over the months that followed, this OPT evolved into a 06XX force modernization team comprised of a core group of dedicated professionals⁴ who—in accordance with Deputy Commandant, Combat Development and Integration, approval for the execution of the 06XX force modernization team on 9 March 2016⁵ and the *Marine Corps Order 5311.1D, Total Force Structure Process*—were able, by first quarter fiscal year 2018, to implement the beginning of the modernization of the 06XX Occ Fld and training continuum (see Figure 3). In the years that followed, the vision of the “2015 06XX Chowder Society” was transformed into a reality as this renaissance of the Marine Corps’ Comm community reaped benefits that went far beyond a simple reorganization. Commanders would now have cyber-enabled Marines who could effectively support

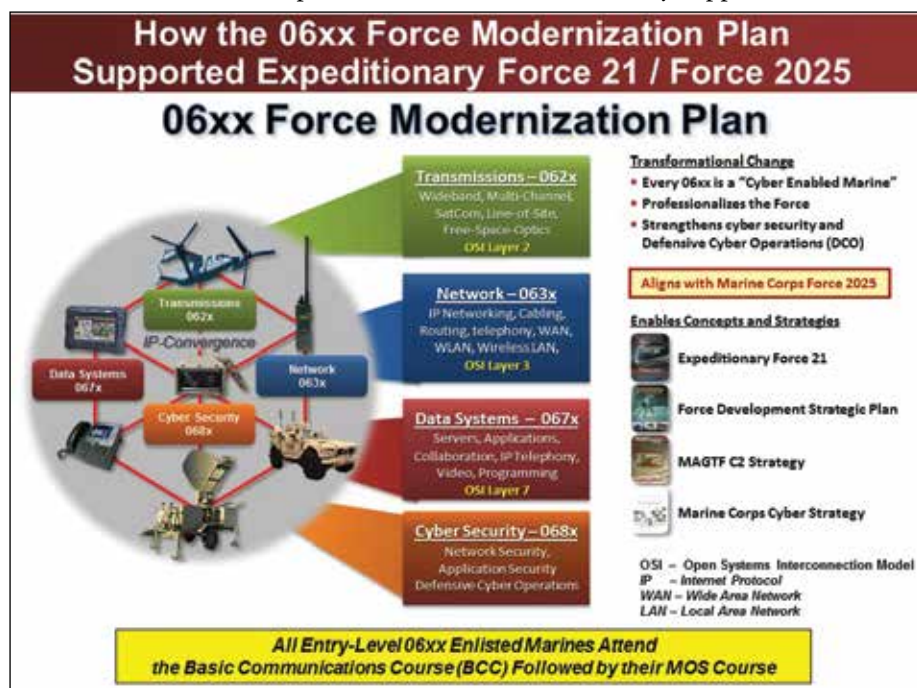


Figure 2.

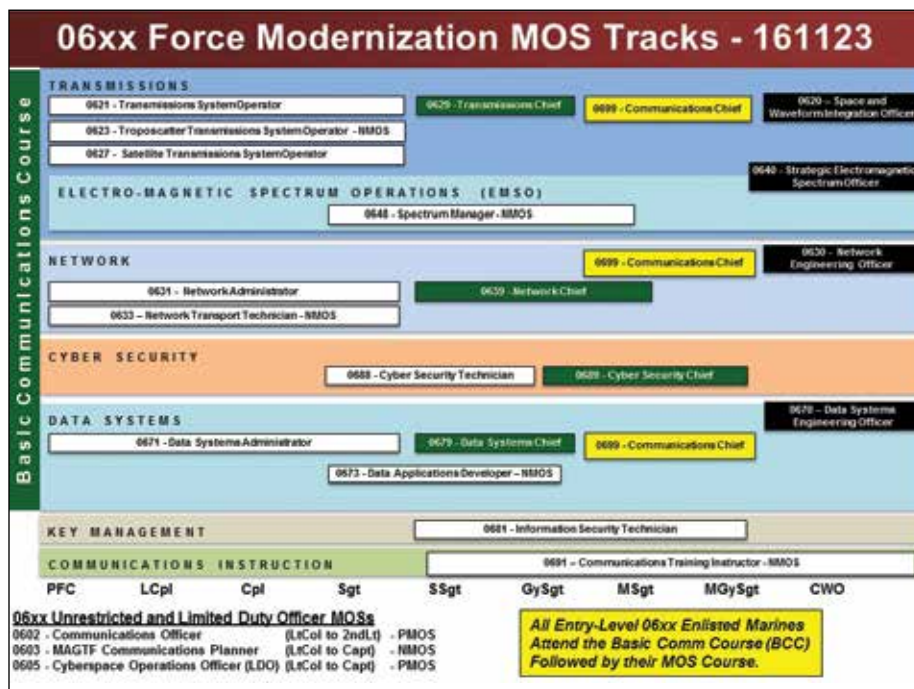


Figure 3.

Information Operations, Cyber, and Electronic Warfare capabilities at [MARFOR] and [MEF] levels to enhance the capabilities of forward deployed forces ... in deliberate, holistic, total force planning to shape the Marine Corps of 2020–2025 and beyond based on future operating concepts and capabilities.⁷

Furthermore, the 06XX force modernization team created a culture of seeking out and implementing advances in technology, which created opportunities to adjust tables of organization to meet current and future force operational requirements for the Corps as a whole. This results in the mindset that a commander can always rely upon his Marines—who, at “the point of spear,” were able to “think fast on their feet” and integrate voice, data, and video C2 systems in any environment.

**South China Sea, 2025
ELT-A, H+4**

The three MV-22s made a hard landing at the landing zone and immediately take small arms and mortar fire from the enemy garrison. Under the command of 1stLt Hawk, the Company XO, the survivors of ELT-A established a perimeter and engaged the enemy with well-aimed,

controlled rifle and light-machine bursts. Cpl Jones, the senior Comm Marine, took charge of the situation and ensured that the work was evenly divided between Cpl Kowowski and LCpl Rodriguez. The good news was that they were all in one piece and still had all of their gear. But the bad news was that there was not much of it until the follow-on echelon returned from the Tenaru, they had planning, installing, operating, maintaining, and improving C2—even if that meant keeping the radios together with slash wire and chewing gum.

Linking up with the ELT joint tactical air controller (JTAC), Cpl Jones confirmed that they still could talk to the LFOC, SACC, and the forward air controller (airborne) and they subsequently began to direct Naval gunfire on several enemy hard points that were raking the ELT position with heavy machine gun fire.

Suddenly, a mortar round exploded right in front of them. Once he recovered from the shock, Cpl Jones realized that the JTAC had been decapitated, his KILSWITCH and GPS terminals were piles of junk, and his high-gain UHF TACSAT antenna was sliced in two. Instinctively, he reached into the A-bag of his PRC-117G and pulled out a line-of-sight antenna

and rolled over to the MEU radio relay unmanned aerial vehicle to re-establish voice Comm with the MEU on the fire support net. Once that was completed, he pulled out his compass, took two azimuths, completed a resection, plotted his position on the map, and waited for the word that CAS was enroute.

Concurrently, Cpl Kowowski was setting up a makeshift ELT COC in what was once an old guard post at the edge of the airfield of Objective Alpha while LCpl Rodriguez was sticking like glue to 1stLt Hawk, maintaining C2 with the platoon and sections via the ELT tactical net. Cpl Kowowski had always kidded “the dumb radio operators and the wire dawgs” about how the 0671s were “the crème de la crème,” but there he was, under fire, wearing a headset, holding a handset, on his C2PC terminal and simultaneously talking to the MEU, BLT, and platoons via voice, mIRC⁸ chat and SIPRNet on UHF TACSAT, HF, and very HF (VHF) radios. Another Marine might have thrown in the towel when placed in similar circumstances, but not this cyberenabled Marine—this is the kind of pressure that he trained and lived for—because he had become the critical link that favored with victory.

USS Tenaru, LHD-12, LFOC H+5

At the 0600 MEU systems control center meeting, SSgt Tenacious and SSgt Wolf reported that they isolated “the bug” in the form of a Trojan Horse virus that disabled the interface between the landing force and amphibious ready group COPS. Although it took him an hour to write a patch that restored the link, SSgt Tenacious’ successful efforts took effect at another critical moment—the successful seizure of MEU Objective Bravo by a combined air and surface assault by ELT-B and ELT-C.

This development was crucial to the overall landing plan because Col Ramrod now had the real estate he needed to establish a high-mobility artillery rocket system (HIMARS) firing position in support of ELT-A, and once that island was secured, freedom of navigation in the South China Sea would be restored.

USS Vera Cruz, LPD-16, H+5

Upon receiving the order to land on-

call serial Delta 512, LtCol Rockwell, the BLT commander, called down to the tactical logistics center and within 30 minutes, 1st Platoon, ___ Battery, ___th Battalion, ___th Marines was enroute to Red Beach One on MEU Objective Bravo.

The plan was simple; establish a HIMARS firing position that could support ELT-A⁹ once they were reinforced by the follow-on echelon—which was in the process of embarking from the Vera Cruz's flight deck into another stick of Ospreys. Concurrently, his 0639 network chief, SSgt Brown, was busy ensuring that all of the appropriate imagery/support data was being transferred to ELT-C data terminals while his Marines were completing the final equipment checks in the command MV-22. Within minutes, the Ospreys were loaded up with motivated, aggressive, and well-armed Marines who were more than happy to make the enemy pay for their audacity on MEU Objective Alpha.

ELT-A, H+6

Cpl Jones could not believe his ears when the MEU FSC asked him to spot for a HIMARS mission. It was a dream come true because the CAS and Naval gunfire missions were proving to be ineffective, the enemy had built deep redoubts that were impervious to 500-pound precision guided munitions and 155mm high-capacity rounds. Furthermore, the Marines were running low on ammo and water, compounded by about three dozen KIA/WIA. It was as clear as day that they were in a hurt locker, and Cpl Jones knew that this madness would soon be over—as long as his solar panels and batteries held out under the constant enemy fire. He subsequently called 1stLt Hawk on his handheld radio and let him know what was coming, followed shortly by Cpl Kowowski chiming in that ELT-C was enroute and that he was sending targeting information back to the MEU LFOC in preparation for the HIMARS mission. Not to be outdone, LCpl Rodriguez was proving to be the real “anchor man” of the ELT-A comm Marines. Picking up an M27 infantry automatic rifle from a dead Marine, “LCpl Rodriguez dual-hatted as a communicator and a grunt defended his position against several enemy ground assaults while directing 20mm

and rocket fire from a AH-1 Cobra on a variety of targets—confirming once again that “every Marine is a rifleman.”

ELT-C, Feet Wet, H+7

Cpl Perez, the 0621 transmission systems operator assigned to Capt Kruger (the skipper of ELT-C), pulled up his COP display and established voice and data connectivity with Cpl Kowowski, the MEU FSC, and the HIMARS platoon. Once they synchronized their targeting information and updated their displays, the decision was made to engage the enemy in a horseshoe pattern that would neutralize, if not destroy, the enemy bunkers by providing covering fire for the insertion of ELT-C. Once this was completed, he tapped the skipper on the shoulder and gave him the thumbs-up that everyone was locked for the insertion. The skipper then keyed his handset and conferred directly with the ELT-A XO; they synchronized watches and established a verbal time hack that was received in realtime by all of the stations on the net.

The time had come for the “rain of fire.”

ELT-A, H+7

The early morning sky was filled with the banshee screams of a half a dozen rockets flying overhead as the Marines of ELT-A kept their heads down in preparation for what was to come. In an instant, all enemy fire ceased as six pillars of fire consumed their positions, followed by a series of secondary explosions that shook the earth, destroyed flesh and bone, and turned the enemy bunkers into a moonscape. Seconds later, the first of the four MV-22s carrying ELT-C landed in the landing zone and began to reinforce ELT-A. Capt Kruger hooked up with 1stLt Hawk; Cpl Perez and his team of communicators reinforced Cpl Kowowski's position, and LCpl Rodriguez stayed by the XO's side as his personal cyberenabled Marine and bodyguard.

After a quick council of war, the skipper took command of the situation as his Marines fell on top of ELT-B's position while the wounded were loaded up on the MV-22s for the return trip to the Tenaru's tirage center.

USS Tenaru, LHD-12, LFOC H+7

Immediately, all of the MEUs' and

ARGs' SATCOM nets were silent, the COP displays went blank, and the only C2 links still working were the forces' HF, VHF, and UHF line of sight single-channel radio nets. GySgt Lee, the 0648 spectrum manager assigned to the MEU cyber/electronic warfare coordination center, realized that the enemy had exploded a nuclear device in the upper atmosphere and the resulting electromagnetic pulse and blast had effectively denied/destroyed all satellite-based communications. Fortunately, the MEU/ARG was well-versed in how to conduct operations in a spectrum-denied/degraded environment, and he subsequently notified the MEU systems control of the situation.

Upon receiving the word that all SATCOM was “toast,” Maj Crusher corralled his master guns and Capt Garand, his S-6A, and directed that they implement Information Management Condition A (InfoCon Alpha), which limited all radio transmissions to mission-critical traffic. He then called the ARG N3 (operations officer) and N6 (C4I officer) and asked them to join the MEU XO and S-3 in the LFOC to discuss the situation. Once the quorum was established, they reviewed a number of options to mitigate the loss of the satellites, and the best option was the activation of the radio retransmission/relay capability on the ARGs' two freedom-class littoral combat ships (LCSs).

The LCSs were fast, light, and agile, and their C2 suites would overcome the VHF range gap between the Tenaru and both MEU objectives. Furthermore, they served as a screening force in the event of an enemy surface attack, which was becoming more likely as resistance weakened on Objective Alpha.

Objective Alpha, H+8

When all the SATCOM links went dead, the ELT communicators did not miss a beat. For the past year, they trained for just such a contingency and immediately switched over to their HF radios to retain connectivity with the MEU CE; UHF line of sight to talk to the F-35Bs, forward air controller (airborne), and Cobras; and the VHF and runners with all the company elements on the ground. Well-versed in land navigation, the loss of GPS had minimum impact because they all had their grid coordinates plotted on their in-

dividual maps. Furthermore, they marked all key locations with air panels so that the odds of fratricide were significantly diminished, although there was always a chance that one of the pilots would inadvertently attempt to put his load into the pickle barrel too soon and fall short of the target. The challenge they were now faced with was how long they could sustain their momentum when they were expending ammunition at the cyclic rate.

The skipper was in a tight spot. The insertion went well and he was able to land all of his ELTs intact and evacuate the wounded, but he was still receiving fire from what appeared to be another ring of bunkers between him and the airfield tower/support complex. After conferring with his JTAC, he decided to employ a coordinated HIMARS and CAS time-on-target mission followed by an all-out ground assault; but the “devil in the details” was coordinating the activities of all of the elements involved. The last thing he needed was to wind up in the impact area. So the skipper turned to a proven asset—Cpl Jones, a cyberenabled Marine—and sent him hand-written messages on yellow canaries.

Cpl Jones began to work his magic, but he started receiving a continuous wave signal on his HF radio; enemy jamming had effectively knocked out all of the Marines’ long-range comms. Immediately, he notified the skipper, who then had the JTAC contact one of the on-station Cobras to land so he could give the pilot several hard-copy messages to relay to the MEU FSC once he was airborne.

Cpl Jones then attempted to re-establish on MEU Fire Support Net 2—the VHF back-up net. At first, his attempts were futile, but suddenly the MEU was coming in loud and clear—the LCSs had saved the day, and Cpl Jones and the JTAC began passing calls for fire to the SACC. Concurrently, Cpl Kowowski was able to re-establish a C2PC data link on MEU Command 2 (VHF), and once again, the ELTs were passing targeting data directly into the Tenaru’s, SIPRNet.

USS Tenaru, LHD-12, LFOC H+8

As the targeting data rolled from ELT-C (Rein), the CIEWCC and the N6 were able to locate the source of the enemy jamming—a high-speed gunboat was running amok in a large quadrant

between the Tenaru and Objective Alpha. Once the approximate plots were stabilized, a Cobra was fraggged to intercept and destroy it with 20mm cannon fire.

Fortunately, the LCSs’ radio retransmission/relay suites held firm and the SACC was able to coordinate the combined HIMARS and CAS mission for H+9. The MEU S-3 subsequently notified Capt Kruger that the fire support was locked on, and two more MV-22s were enroute with another platoon and ammo.

Objective Alpha, H+9

The combined fire support mission went like clockwork, and Capt Kruger and his Marines finally broke through the final line of bunkers. Cpl Jones, Cpl Kowowski, and LCpl Rodriguez fought like lions, and these cyberenabled Marines maintained the C2 voice and data connectivity that was critical to the successful securing of the airfield.

As soon as they eliminated the last pockets of resistance, MV-22s and CH-53 Super Stallions began to roll in like an assembly line, along with several LCACs worth of men and material, as the MEU began to establish a forward arming and refueling point. While the LCSs and the escorting DDGs prepared for a possible counterattack from enemy air and naval forces.

Once again, the Marines were rewarded with victory.

Epilogue

The success of this operation was a direct result of the 2015 06XX Force Modernization Chowder Society’s innovative thinking and willingness to take risks and exercise honest, aggressive, clear-headed, and pragmatic leadership. Furthermore, it took the time to conduct a critical, objective study of how to prepare the 06XX community for the challenges of providing effective C2 voice, data, and video communications in any clime and place. Like any admirable goal, the ten-year journey to accomplishing the leadership, confidence, adaptability, and C2 capabilities demonstrated in this vignette was a hard one. But, at the end of day, the fact remains that the Force 2025 06XX cyberenabled Marines are the “rods of steel” that hold the MAGTF together.

Notes

1. KILSWITCH—Kinetic Integrated Low-cost Software Integrated Tactical Combat Handheld is a Defense Advanced Research Projects Agency program that is designed to enable Marines to coordinate attacks with precision from miles apart using specially equipped Android tablets. This technology has been demonstrated during the TALON REACH series of exercises conducted by the Marine Corps’ Infantry Officer Course.

2. Gen Joseph F. Dunford, Jr., *36th Commandant’s Planning Guidance: 2015* (Washington, DC: January 2015).

3. Deputy Commandant for Combat Development and Integration, *Marine Corps Concept for Command and Control*, (Washington, DC: September 2015).

4. The 06XX FMT was composed of leaders from HQMC C4, MCCES, TECOM, TRNG-CMD, DC CD&I, DC I&L, DC Aviation, DC M&RA, and the Operating Forces.

5. Deputy Commandant, Combat Development and Integration’s, 9 March 2016 Approval Endorsement of Director C4 Memo Ser 5000 C4 dtd February 2016; Subj: Execution of HQMC C4 06XX FMP,

6. Headquarters Marine Corps, *Marine Corps Order 5311.1D: Total Force Structure Process (TFSP)*, (Washington, DC: February 2008).

7. Gen Robert B. Neller, *FRAGO 01/2016: Advance to Contact*, (Washington, DC: January 2016).

8. mIRC is an Internet relay chat client software for Windows that it is widely used by the Operating Forces.

9. A similar tactic was employed during the capture of Tinian, Marianas, from 24 July to 1 August 1944. Marines’ 155mm gun batteries were positioned in Southern Saipan and provided fire support to the 4th MarDiv throughout its successful campaign to secure that strategic island.

