



MARINE CORPS Gazette

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A publication of the Marine Corps Association



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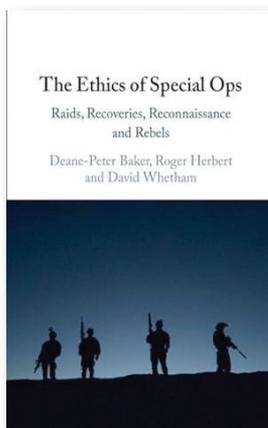
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Training and education are essential for DAO. (Photo by Senior Airman Brooke Wise.)

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MAY 2025

Editorial: Focus on Marine Aviation

This month's *Gazette* focuses on Aviation, the defining element of the MAGTF. Beginning on page 20 with an introductory letter from the Deputy Commandant for Aviation (DCA) LtGen Bradford J. Gering, we present articles from the DCA staff, Marine Aviation Weapons and Tactics Squadron One, and across the Aviation community covering key insights into the six key functions of Marine Aviation: offensive air support, anti-air warfare, assault support, air reconnaissance, electronic warfare, and control of aircraft and missiles. Noteworthy articles include on page 21, "2025 Aviation Plan Executive Summary" by the DCA staff, which defines the common aiming point across our new and legacy aircraft. Nine articles follow, including discussions of the emergent capabilities of unmanned aerial systems, distributed aviation operations, digital interoperability, training, and maintenance.

We also continue the "road" to the 250th anniversary of the founding of the Corps with three articles covering the period from 1900 to 1920. This era saw the Corps engaged in "small wars" across the Caribbean and Central America and served with distinction as part of the American Expeditionary Force in France during the final two years of World War I. On page 6, "Butler at Fort Riviere" by Capt H.W. Snyder tells the story of counterinsurgency in Haiti. Bloody fighting in the trenches of France is the subject of "A World War I Memoir" by Ivan E. Kennedy on page 10. This era also saw the Corps beginning its tradition of innovation and experimentation. On page 15, "The Marines Have Landed, at Nantucket, and the Situation is Well in Hand ...," by Mr. John S. Naylor describes some of the first exercises in amphibious landings.

Another highlight is on page 76, "Force Design: Making the First Thing First—Logically" by LtCol Noel Williams. This important article recognizes that to sustain the momentum of modernization, Force Design must be an iterative, continuous, and deliberate process conducted by a dedicated staff of qualified professionals. As the entire defense establishment enters an era of endemic disruptive change, the value of the approach outlined in this article extends across the Corps and the Joint Force.

This month also features the winners of the annual Gen Robert E. Hogaboom Essay Contest. Every year writers are prompted to write on the most original approach to various aspects of leadership. This year's winning essays begin on page 87 with the first-place essay "Approachability" by LtCol Merritt Mitchell. The second-place essay is found on page 91, "The Other Golden Rule" by Maj Dilan M. Swift, and the honorable mention is "Bloom Where You're Watered" by Maj Jeremy Goldstein on page 96.

Finally, I must recognize Memorial Day and the 50th anniversary of the end of the Vietnam War on 30 April 1975. On page 64, we have republished "Operation FREQUENT WIND" by LtCol James W. Washington from the May 2015 edition of the *Gazette*. As we reflect on those who made the ultimate sacrifice in Vietnam, MCA Premium Members can also access this month's *Leatherneck* online to read in our "Behind the Camouflage" department the story of sixteen-year-old Conor Nichol and his project "We Will Remember." Inspired by gratitude and a personal sense of duty, Conor has built a program dedicated to remembering all service members who gave their lives in defense of the Nation.

Christopher Woodbridge

Reunions

Org: TASK FORCE RIPPER
REUNION 2025

7TH Marines;
1st Bn 7th Marines,
3rd Tank Battalion,
1st Bn 5th Marines

Dates: 2-4 May 2025

Place: Westin Annapolis, MD

Distinguished Guests:

The Honorable James N. Mattis
Former US Secretary of Defense
General, United States Marine
Corps (Ret)

Carlton W. Fulford Jr.
General, United States Marine
Corps (Ret)

Christopher Cortez
Major General, United States
Marine Corps (Ret)

INFORMATION & REGISTRATION:

<https://www.nmcbn.org/tfripper2025/#rsvp>

Org: 60th National Convention
Montford Point Marine
Association Inc.

Dates: 23-27 July 2025

Place: Atlanta Hilton Hotel
253 Courtland Street NE
Atlanta, GA

POC: Ron Johnson
504-202-8552
vice_president@montfordpoint
marines.org
<http://www.montfordpointmarines.org>
<http://montfordpointmarines.org/event-5852451>
60th National Association Inc
Convention



CALL-TO-ACTION

Marines, *Gazette* readers, and all members of the MCA—help support ongoing research projects! Take advantage of this opportunity to share your first-hand experiences, reflections, primary sources, and original media related to the following topics:

- Gen Anthony C. Zinni's "Combat Concepts" PME (late 1980s—late-1990s)
- Marine Corps University's Military Society, founded in July 1991 with chapters at 8th and I, Quantico, Lejeune, Pendleton, and Okinawa
- Task Force Tripoli, Iraq, April-May 2003

If you have relevant insights, materials, or connections, please email as follows:

- **Combat Concepts:**
gazette@mca-marines.org; combatconcepts@pm.me
- **MCU Military Society:**
gazette@mca-marines.org; mcumilitarysociety@pm.me
- **Task Force Tripoli:**
gazette@mca-marines.org; taskforcetripoli@pm.me

Your contributions will help shape research papers and PME resources, and you may be invited to collaborate directly with the author.

Marine Corps Gazette

Upcoming 2025 Monthly Themes

July 2025 Edition

Themes: USMC History 1940-1960;
M&RA/Talent Management
Author drafts due: NLT 18 April 2025

October 2025 Edition

Themes: MCISRE;
USMC History 2000-2025
Author drafts due: NLT 18 July 2025

August 2025 Edition

Themes: USMC History 1960-1980
Author drafts due: NLT 16 May 2025

November 2025 Edition

Themes: 250th Birthday;
Current MAGTF Operations
Author drafts due: NLT 15 August 2025

September 2025 Edition

Themes: USMC History 1980-2000
Author drafts due: NLT 20 June 2025

December 2025 Edition

Themes: TBD
Author drafts due: NLT 10 September 2025

MEMORIAL DAY



Honor what was given.

They put on the uniform.

They answered the call,
knowing the risks.

They stood alongside their
brothers and sisters in arms.

They made the ultimate sacrifice
while serving our country.

Beyond what was lost,
let's remember all they gave.



usaa.com/memorialday



An account of one of 'The Rare Breed' in action

Butler at Fort Riviere

Maj Butler's strategy was simple: surround the fort, seal off all avenues of retreat, and storm the stronghold's entrance

by Capt H.W. Snyder

Smedley Darlington Butler was commissioned a second lieutenant in 1898, just 38 days short of his 17th birthday. Brevetted to captain in 1900 for his heroic action in China during the Boxer rebellion, he later won the distinction of being the only Marine officer ever to be awarded two Medals of Honor for separate acts of heroism.* Butler earned his first Medal of Honor at Vera Cruz, Mexico, when he commanded the Marines who landed there and occupied that city. He won the second during the capture of Fort Riviere, Haiti, in 1915. What follows is an account of the events leading up to and including the capture of Fort Riviere. Based on verifiable facts, it is an account which will bare out the fact that Butler, along with several other participants, were indeed stock cut from that "rare breed" of Marine heroes.

In order to place the Haitian Campaign in its proper perspective, a look at the background of this Caribbean nation is necessary.

Haitian history can best be characterized as one of considerable turmoil. In the 110 years prior to its independence in 1915, 26 individuals (2 emperors, 1 king, and 23 presidents) succeeded each other to power. During the period 1911–1915, seven individuals served as presidents of Haiti, most of whom were removed by revolutionary violence

Although the United States had some financial interest in Haiti, both France

>Originally published in the Marine Corps Gazette, November 1980.

and Germany had extensive investments there. Anxious to recover their financial investments, both of these European nations had threatened to intervene in Haiti's internal affairs. The Germans actually put a landing force ashore in 1914, only to learn about the outbreak of the war in Europe. After receiving this news, the Germans hurriedly withdrew without incident and sped for home.

In August 1915, Haiti was in reality without a government. The month before saw President Guillaume Sam

publicly dismembered by a vengeful mob for fiendish acts carried out by his administration, including the execution of nearly 170 political prisoners.

The basic thrust behind the revolution were the rebels that called themselves "Cacos." These were black mercenaries, who took their name from a native red-plumed bird-of-prey, which emits a cry something like "Kaaa-Koo" and lives by preying on weaker birds. These bandit-soldiers, who always managed to wear something red on their ragged clothing as a badge, were characterized by their hierarchy of preferences: for fighting instead of working and for looting rather than fighting.

During the 50 years previous to 1915, the Cacos controlled the Haitian political arena, installing any ruler who would pay them. When the national treasury ran dry, the Cacos would find someone else with sufficient financial resources, depose the penniless ruler, and install the new one.

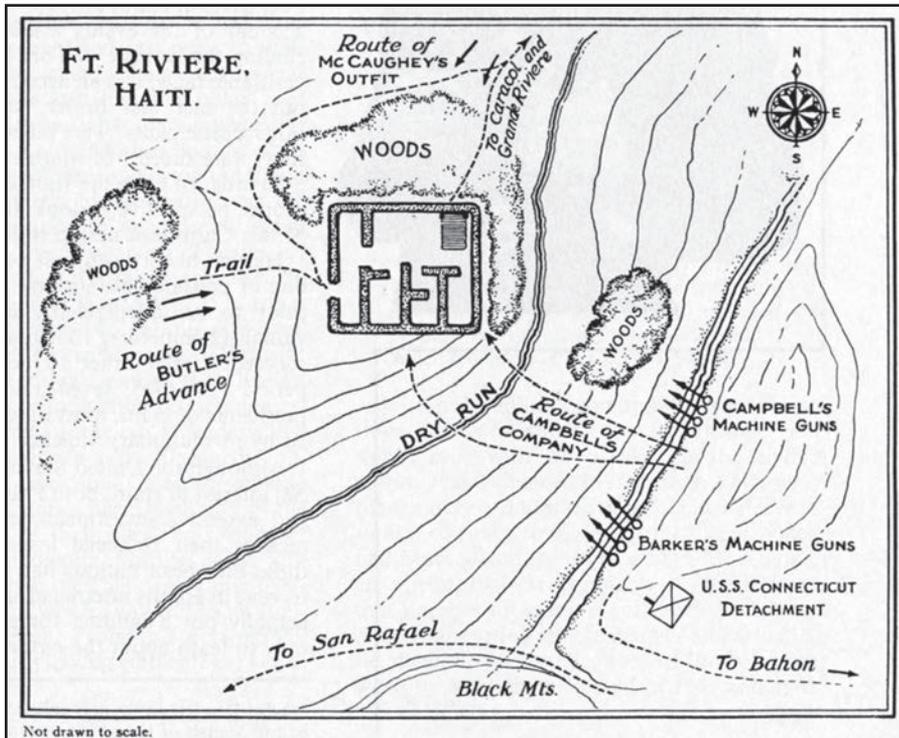
Before the Cacos could install their man in mid-1915, however, the United States stepped in and through tactful diplomacy convinced the Haitian National Assembly to conduct elections. As was expected, the American-backed candidate, Sudre Dartuguenave, garnered a first ballot victory.

In late July, a Marine detachment from the USS *Washington* seized the custom houses in the Haitian capitol of Port-au-Prince. The significance of this seizure lay in the fact that these custom houses were the principal source of revenue for Haiti. The politicians were hit where it hurt most—in their pocketbooks. It was thought that by



Smedley Darlington Butler.

*GySgt Dan Daly is the only enlisted Marine to be awarded two Medals of Honor for separate heroic acts.



Sketch was drawn by Maj Thomas E. Thrasher, Jr., 15 years after the attack on Fort Riviere. It appeared with his memories of the battle in the February 1931 issue of the GAZETTE.

rechanneling the customs revenues, Americans would have the finances available for any urgent projects, such as providing food and constructing badly needed public works.

By early November, a Marine brigade, composed of the 1st and 2d Regiments, as well as an artillery battalion, had been formed under Col Littleton W.T. Waller. All totaled, there were 88 officers and nearly 2,000 enlisted Marines, backed by several U.S. naval ships, including the cruisers *Washington* and *Connecticut* as well as several gun boats. Col Waller's credentials for command were impressive—33 years experience, which included action at Samar, in Egypt, and in China during the Boxer Rebellion. He also had been a brigade commander at Vera Cruz.

Between August and November, various Marine detachments were deployed northward to clear several pockets of Caco resistance. By mid-November, the Cacos had withdrawn to the supposedly impregnable stronghold of Fort Riviere. This 18th century French bastion, with thick walls of brick and stone, stood atop the 4,000-foot Montagne Noire. Each wall was about 200 feet long,

around 7 feet thick and varied in height from 20 to 25 feet. On three sides, the walls joined the mountain, forming a steep bluff, which overlooked the valley below. The fourth side contained the original entrance, which could be approached over a gentle incline.

One hot November afternoon, Maj Butler walked into the tent of Col E.K. Cole, Waller's second-in-command and commander of the 1st Battalion,

1st Marines. As Butler entered, several officers were discussing how difficult it was going to be to capture Fort Riviere, which had just been located by a reconnaissance patrol. Butler, in a passing remark, bragged that if he could choose 100 men, he could take the fort in a single day! Col Cole, being the man that he was, decided to take the major at his word and assigned Butler the task of capturing the fort.

Shortly thereafter, Butler formed 4 "companies" of 24 men each. Three of these were Marines from the 5th, 13th, and 24th Companies, and the other was made up of sailors from the USS *Connecticut*. These sailors had been serving with the Marines for two months and had learned a lot about bush warfare. The sailors were now wearing Marine uniforms, had learned not to shoot each other and, best of all according to Butler, had no senior naval officer with them playing soldier.

Butler's strategy was simple: surround the fort, seal off all avenues of retreat, and storm the stronghold's entrance. To carry it out, he stationed two companies of Marines at the main trail between Grande Riviere and Bahon, the company of sailors at Dondon, and the remaining Marine company at San Rafael. Choosing to stay with the company at San Rafael, Butler ordered his company commanders (Capts Baker, Campbell, and McCaughey) to start up the three trails in time to reach their assigned positions by daybreak.



Mules packed in dynamite to destroy fort.



Shortly before midnight on 16 November, the four companies began their arduous, eight-hour climb. Enroute from San Rafael, Butler and his Marines met and passed several women coming down the trail from Fort Riviere. These women wore bright red bandanas, the red badge of the Cacos, who always sent their women away before a battle

As Butler's men continued their climb, the sound of beating drums could be heard in the distance—the Caco wireless was beating out a warning message that was undecipherable to the white men. After pausing to listen to the drums for a moment, Butler realized his chances for a surprise attack were not very good.

By seven o'clock the next morning, the company of Marines that Butler was with was in position, poised to attack the entrance in the western wall. Shortly thereafter, it was learned that the other three companies were in position but could not attack—the northern approach was blocked by tangled underbrush covering the trail and the other approaches to the fortress were almost perpendicular. After reassessing the situation, Butler divided the company he was with in half—one part would attack across 200 yards of open field, while the other part would provide covering fire.

On a whistle signal from Butler, the attack began. Staying with the storming party, Butler led his Marines through the clearing and across a shallow moat, successfully advancing to the fort's western wall, as Marine machinegun fire kept the Caco defenders off the wall. The assault troops, however, quickly

charged from the Corps in 1918 as an epileptic and died in a veterans' hospital in 1934, at the age of 43. This trio was followed by 10 Marines from the 5th Company.

When the small detachment approached the drain opening, a shot rang out from inside. A closer look

As Butler's men continued their climb, the sound of beating drums could be heard in the distance ... After pausing to listen to the drums for a moment, Butler realized his chances for a surprise attack were not very good.

discovered that the original entrance had been sealed up with stone and brick. Advancing in a column, the Marines swiftly skirted the wall, hunting for an opening. On the south side of the fort, they soon located the Caco entrance—a water drain, about three feet wide by three and a half feet high.

Included among the Marines with Butler at this time were Sgt Ross L. Iams, a 35-year-old career Marine, who eventually worked his way up through the ranks to retire as a major in 1932, and Pvt Samuel Gross (nee Margulis), who was Butler's orderly. Gross was dis-

covered that the opening was partially blocked by a brick ledge, behind which the Caco sniper lay. Continuing their advance, the Marines dodged other wild shots, as the sniper retreated to the safety inside the fort, sending a stream of stray bullets through the tunnel as he fled.

Halting at the entrance, Butler peered in and saw that the drain extended backward for 15 to 20 feet, well inside the fort's interior. He hesitated, feeling it would be almost certain death to enter. He needed time to think things through, time to work up some courage. He



Marine patrols cleared pockets of resistance and forced Cacos to withdraw to Fort Riviere.

realized that he was at a point where a quick but firm decision had to be made. After all, his initial battle plan had just been scrapped and he had boasted in order to gain command of this expedition. Not only was his personal reputation at stake, the Corps also had a job to do and it was up to Butler to lead his Marines through the drain tunnel.

As Butler pondered his moves, the Caco sniper managed to keep a barrage of bullets crashing wildly through the damp tunnel. Butler glimpsed over his right shoulder at Iams. Perhaps it was Iams who read the indecision written on the face of “Old Gimlet Eye.” The scrappy Marine sergeant took one glance at Butler and said, “Hell, if you’re not going through, get out of the way and let me go on.” He brushed past Butler to enter the slimy drain tunnel. Right behind him was Gross. Then, realizing what had just transpired, Butler fell in line and entered the tunnel, too.

As the trio crawled through, the Cacos continued pumping wild shots down the drain but managed, somehow, not to hit anyone. Iams, with his rifle across his chest, continued creeping forward, pulling the trigger with his left thumb. He wasn’t aiming, but the Cacos at the mouth of the tunnel didn’t know that!

Finally, they reached the drain’s opening deep inside the fort. Iams pushed himself through and met the Caco guard, who was caught loading his rifle. Iams dropped to one knee and squeezed off a round that found its way into the Caco’s chest. Quickly, Gross and Butler pushed themselves inside and took up positions next to Iams, off to one side of the drain.

Inside the fort were 60 to 70 defenders, all of whom turned their attention to the drain opening. Instead of staying cool and disciplined, the Cacos panicked. They could have remained in place and picked off each Marine as they exited the drain. However, the Cacos chose to discard their loaded rifles and picked up swords and clubs, even bricks and rocks. These primitive weapons would soon prove to be no match for Marine bullets and bayonets.

Atop the north wall was a Caco all decked out in a top hat and a black coat

with a gold watch chain. This was their leader, Josephette, a self-proclaimed general, who was cheering his men on to victory. Again, Iams slowly drew a bead on the Caco leader and killed him with a single shot. At once a huge defender rushed Butler, who took a shot at him with his pistol but missed. Just as the burley Caco was about to bring a heavy club down on Butler’s head, a shot from Gross’ rifle rang out and finished off the attacker.

As this gallant trio continued to struggle against the rushing Cacos, the remainder of the storming party emerged from the drain and engaged the defenders. For the next 15 minutes, furious hand-to-hand combat took place. Marine discipline and their bayonets proved to be far superior to machetes, clubs, and rocks as the hard charging

Marines proceeded to capture the last stronghold of the Caco rebels.

The Marine casualties were slight with only a few suffering minor wounds. The most seriously injured was a young private, who was struck in the face with a rock and ended up losing two teeth! After the burial detail had lain to rest 72 dead Cacos, Capt Campbell was assigned the task of blowing up the old fort with 40 kegs of dynamite just so the Marines wouldn’t have to recapture Fort Riviere.

For their gallantry, Butler, Iams, and Gross were honored exactly as that “rare breed” of Marines should have been—by each being presented the Congressional Medal of Honor.



“Old Gimlet Eye”

In September of 1912, Maj Smedley D. Butler was given the task of opening the railroad southward from Managua to Granada along Lake Nicaragua. At that time a rebellion, headed by Gen Luis Mena, was going on against the Nicaraguan Government headed by President Diaz. After Butler’s Marines had cleared most of the assigned railroad system, he decided to camp at the San Bias railroad station to rest up and begin the reconstruction of a long section of torn-up rails.

Two previous battles had already taken place, so Butler sent a warning to Gen Mena that if there was no interference from the rebels, there would be no fighting. However, Mena replied that he would send a delegation to deal with Butler’s “threat.”

In order to deceive Mena’s delegation, Butler disguised his two small artillery pieces by sticking branches in their barrels and covering them with a tarpulin, which made them appear to be 14-inch guns. Butler also had his 400 men surround him in a large semi-circle, making it impossible for the soon-to-arrive delegation to see over the heads of his Marines or to get any kind of accurate numerical count of Marines.

In the center of his men, Butler was seated on a wooden camp chair with stilt-like legs about two feet long that his men had built for him. Butler’s appearance was unusual as he had contracted malaria, which gave him a high fever, flushed checks, plus cavernous and blood-shot eyes. Butler, due to his illness, had also neglected to shave for several days.

From some distance away, Mena’s delegation was blindfolded and led to Butler’s wooden “throne.” The rebel officers seemed a bit in awe of the surroundings, as they approached Butler, who was barely visible because the sun was shining from over his shoulder. Butler glared down fiercely out of his bleary and deeply sunken eyes of steel and demanded that by midnight Mena agree in writing to removing all rebels from Granada and allowing the Marines to enter without conflict.

Sure enough, only minutes before midnight, Mena’s delegation returned with the written agreement.

Ever since the time that Maj Butler sat upon his wooden “throne” and glared down at Mena’s delegation with his piercing, blood-shot eyes, his Marines called him “Old Gimlet Eye,” a nickname that stayed with him for the remainder of his 33 years of military service.



A World War I Memoir

Recounting the war

by Ivan E. Kennedy



Left photo: Pvt and Effie Kennedy (front); Ballard Bryant (left) and Clara Erwin (right) in May 1918. Right photo: Pvt and Effie Kennedy, 3 May 1918. (Photos by author.)

I enlisted in the U.S. Marine Corps at Cincinnati, OH, on 27 February 1918, and had basic training at Parris Island. After completing about 8 weeks of training at Parris Island, we spent a few days at Marine Corps Base Quantico before leaving from New York for France. The trip over was without incident, except that I was very seasick most of the time.

We landed at Brest, France, on 8 June 1918, and were there a few days quartered in old stone barracks used by Napoleon's Army. From Brest, we went to Chattillon, France. Here we got our gas masks and helmets. We loaded into railroad box cars and were taken to the frontlines, or just back of the front, in Belleau Wood, near Chateau Thierry. The last few miles were made in trucks and by foot.

We unloaded from the trucks late in the afternoon in dense thickets just back of the position we were to occupy in a wooded ravine. The woods were under heavy shell fire by the Germans, so we waited until sometime in the night to move into the ravine. Some of our men never made it at all but were killed before we even got to the position we were to occupy.

It was there that the German Army reached the nearest point to Paris and was stopped by the American Marines on 6 June 1918. The woods were full of dead bodies from the battle, even parts

of bodies were lodged in trees and hanging from limbs by clothing. During lulls in the artillery fire we buried all of the bodies near us. We dug a trench alongside the bodies and pushed them in with poles. Usually the toes of their boots were left sticking out of the ground. While here, we got food and water once a day, and that was carried in to us at about 0300 or just before daybreak.

Our next major engagement was near Soissons on 19 July 1918. We had been in a town on the Marne River called Nanteuil Sur Marne. We got new outfits here and baths in the river. A railroad bridge across the river and highway was being shelled by German artillery at regular intervals. I believe it was about noon on 19 July that we moved out of Nanteuil Sur Marne for the Soissons line. As we approached the railroad

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bridge, which also crossed the highway, I knew another shell was due to hit near the bridge. The truck I was in had just passed under the bridge when a German shell struck the bridge or the approach of it. Our truck was showered with shell fragments, rocks, and dirt, but no real damage was done. Some men were killed in the trucks immediately behind us and others were wounded. We were all night and most of the next day in the trucks before unloading near a ration dump. We broke open cases of canned rations, sacks of sugar, bread, and anything else we could find. This was the last food we had until after the Soissons battle was over and we had moved back from the frontlines. During the night after the Soissons battle (19 July), one of our boys went out foraging for food on the bodies of dead Germans. He found some canned meat, similar to our small cans of potted meat. I tried to eat some of it, but it would not stay down.

On our way up to the front, we met several bunches of German prisoners on their way back. There were also a lot of our own wounded men trying to get back. Some of the less seriously wounded were helping others who were not able to make it alone. All along the road were a lot of our men dead and dying.

We saw the French artillery in action and the French cavalry moving up. At the time, I could not see how men on horseback could be effective against machineguns and artillery. I still believe it was suicidal. We saw the cavalry ride off toward the German lines but never saw any of them again. I doubt if any of them survived the attack.

We formed into lines or waves, with 100 yards between lines and 5 yards between men in the lines. There were four lines or waves of infantry with a line of tanks in front of our lines. I was in the third line or wave and near the left of the American unit. On the left of us was a unit of French Colonial Infantry. I believe they were Moroccans. They were tall, well-formed Negroes and seemed to me to be very calm and unconcerned about the whole business. It was not that way with us. I am sure we were all excited and scared. I know I was. My clothing was saturated with

perspiration; even my shoes were full of perspiration.

Our lines extended across a valley that was a mile or more wide with low ridges on each side and with gentle slopes from the valley to the tops of ridges. Our position was a little below the top of the ridge on the left side of the valley. I could not see very far to my left, but I could see for a mile or more across the valley and the top of the ridge to the right. It was quite an impressive sight to see thousands of polished bayonets gleaming in the bright July sunlight.

A few enemy shells began falling among us as we formed our lines and a few men from our company were killed before we started to move toward the German positions. I remember that a lieutenant of our company was killed

Our captain (Clifton B. Cates) was struck in the back by a spent bullet.

instantly by a shell about 40 or 50 feet from my position. Our captain (Clifton B. Cates) was struck in the back by a spent bullet. The bullet was hot and caused him to do some wiggling around before he reached back and pulled it from his clothing. His remark was, "Boys, I got the first bullet."

Now the tanks in front of us started moving toward the German lines, and we followed them. At first, not many shells fell on our side of the valley. Most of them seemed to be falling down in the valley to our right. We could see men's bodies being blown high into the air. Some were hurled along on the ground like a bundle of rags. Some were just knocked down from the force of the explosion and got up again uninjured.

For a while we kept perfect formations. As gaps were torn in the lines, men on either side of the gaps moved to the right or left to fill the gaps again. Of course this thinned the lines but did not affect our formation. Our perfect formation was broken up by a barbed wire entanglement in front of the German trenches. They had left passage-

ways through the barbed wire about 20 feet wide. We just simply broke formation and poured through the gaps in a mob. I could never understand why the Germans did not concentrate their machinegun and artillery fire on these gaps or passageways and wipe us out completely. After I got through the wire, I saw that machinegun bullets were kicking up dirt directly ahead of me about 20 feet away. I simply moved over to the right, out of the line of fire, and kept going.

Soon after getting through the barbed wire, we came up to the Germans in trenches. A lot of them surrendered. Some of them ran into a deep, wooded hollow or ravine a few hundred yards behind their trenches. By this time I was up in the front of our outfit. By getting up there I had gotten out of the artillery fire that was tearing us apart farther back. When we saw that some of the Germans were getting away, about 15 or 20 of us took after them hoping, I suppose, to capture them. The ravine bisected the valley and broke away from near level ground to a very steep wooded slope. We did not realize at the time that the Germans had a second line, or reserve, along the edge of the ravine. They did not fire on us coming in, probably because we were too near their own men. Anyway, the men we were trying to capture disappeared into the woods. We went over the edge of the ravine and into foxholes the Germans had dug into the hillside. The Germans immediately turned machineguns on our position, and then we realized that we were in serious trouble.

Near us was an old brick building with no roof, doors, or windows in it. We ran into this old building, and they turned their machineguns on it. We were in a desperate situation and knew that before very much longer we would be captured or killed. We huddled in the corners of the building for a few minutes keeping out of their line of fire coming in. About 100 yards back toward our men was a line of slit trenches, just deep enough to allow a body to be below ground level by lying flat down. We decided to make a dash for these trenches. Most of us made it, but a few did not. One boy, Solomon



Isaacs, was killed at the ravine. I was talking to him, urging him to get into a foxhole, when he was struck in the head by a bullet. Another boy was hit soon after leaving the old building. We were pinned down in the shallow trenches by machineguns until after nightfall.

Sometime in the night we were relieved by some other outfit and moved back to where our rolling kitchens were. We got a good meal there, the first food we had had since we had broken into the ration dump 3 days before. The woods here were literally shot to pieces from the barrage 2 days before. I came near to being killed by a falling tree while asleep. Some boys were killed by falling trees and falling limbs. Casualties for our regiment in this engagement were 63 percent. Only 55 men of our company were there at roll call. This meant that casualties for our company were greater than for the regiment average.

From there we went to a quiet section of the front and lived in a good-sized town. The town was Pont-a-Mousson. We were there about 10 days and got some much needed rest and sleep. We were about a mile from the German line, which was on high ground. They amused themselves by sniping at us with rifles as we went to and from mess. We paid little attention to their sniping because they were too far away to be accurate.

Our next major battle was the salient at St. Mihiel. The German Army had pushed this salient into the French lines in September 1914 and had occupied and fortified it for 4 years, threatening the cities of Verdun and Paris. This was an all-American effort under the command of GEN John J. "Black Jack" Pershing. There were several French divisions used by GEN Pershing, as well as much of the artillery and air support.

We practiced for this battle for several days. We marched back and forth through woods and thickets, in the rain, for 3 or 4 days. This was the kind of terrain we were to encounter when attacking the German positions, and we needed to learn how to keep our formation without getting lost or separated in the woods. Finally, we were ready.

We moved into position the night of 11 September 1918. The rain was

pouring down, and the night was black as pitch. The congestion of men and equipment moving up was terrific. There were long delays in moving at all, and during these delays we either sat down or lay down in the road. Water from the downpour of rain was running down the road in rivulets and would even damn up against bodies if we were lying down.

At about 0100 our artillery opened up. This fire was so great that the whole countryside was lighted up. It was the greatest artillery barrage I had ever seen before this. It must have had a very demoralizing effect on the German Army. We reached our jump off positions at dawn the next morning. It was a line of trenches along the top of a ridge, and there was about a foot of water in them from the rain the past few days. We saw the first line of our men form about 1,000 yards ahead of us. As they started moving we climbed out of the trenches and followed.

At the foot of the hill was a small village. By the time we got there a dressing station had been set up and wounded men were being carried in, most of them by German prisoners. My memory of what happened after this is somewhat hazy. I do not remember if we relieved the front wave or if we merged with them. We spent that night in a deep cut through the top of a hill. The sides of the cut were very steep. Having an automatic caused me to have to stand watch all night. I dug a place out of the steep bank to stand on near the top of the cut and stood there in cold drizzling rain all night expecting a counterattack. The attack did not come, but it was a miserable night. The next day we reached the town of Thiaucourt. It was there that the Germans lost a great number of men, supplies, and guns. They even had trains standing on railroad sidings loaded with equipment. We dug in a hill above the town and watched it burn that night, having been set afire from artillery shells. From here until the end of this battle, we kept running into enemy positions.

The next morning we left Thiaucourt and at one place ran into enemy positions near a railroad. I believe it was there that our company commander

was killed. He was Capt Minnis. Capt Cates had been promoted to major or colonel. We had almost reached the railroad under heavy machinegun and rifle fire when Capt Minnis was struck in the chest by a bullet from a rifle or a machinegun. He fell forward and died within a very few minutes. I was within 6 feet of him when he was hit. I can't remember much more about what happened there. The enemy in front of us may have surrendered, or we may have passed them. Anyway, we crossed a deep wooded hollow ending up on top of a hill on the other side. In front of us was open, level country with the enemy in a fortified stronghold about 500 yards away. As soon as we were in sight of them, they opened up on us with trench mortars and machineguns. We did not advance on this stronghold but moved to the right or left just under the hilltop, trying to keep away from the worst of the shell fire. We were relieved and moved at once to the Meuse Argonne front.

Sometime between St. Mihiel and the final phase of the Meuse Argonne we were sent to the Champaign front. After reaching the front, it was decided that we were unfit to go into the battle, and we were taken out for a few days of rest. As for myself, my shoes had worn out. Another pair had been found for me somewhere around the rolling kitchen. They were too large for me, and when we reached the Champaign, I was a cripple. The next morning when we started back, I was unable to walk. My feet were a raw, bloody mess. I was put on an ammunition cart or a wagon and came out with the company riding. After coming out of the Champaign sector we were in or near the frontlines on the Meuse Argonne front until the war ended on 11 November.

I can remember a few instances when we had real trouble with the enemy. At one time we were to start a major attack at daybreak. In front of us, at the foot of the hill we were on, was a system of trenches and dugouts held by Germans with machineguns. A small detail of my company was selected to take this section of trenches on the night before the main attack. We went out of our trenches at dusk, running and yelling,

toward the German trenches. Before reaching the German trenches we ran into terrific machinegun fire. I ran into some barbed wire entanglement that crossed a trench where I was. Instead of trying to go through the barbed wire, I decided to get in the trench and go under the wire. I had made one step over the sloping side of the trench when a machinegun bullet hit the top of my helmet. I fell forward into the trench and was stunned for a time. I don't know for how long. When I came around again, blood was running down my neck. I had a severe headache. My bayonet was sticking in the bottom of the trench with the rifle standing in the air. A machinegun was still firing bursts of bullets overhead through the barbed wire, and sparks were flying out of the wire. All of the men to the left of me were killed. There were three or four of them.

I soon realized that I was not seriously hurt. I kept still where I was lying until I felt a little better, and then I followed the trench on down to where the other men were. I never did know what took place in the German trenches. When I got there, no Germans were in sight. A French observer who had come along with us was firing his rifle, now and then, into some dugouts. I found out that all of the boys to the left of my position in the line were killed. Another bullet had gone through my clothing but had not touched me.

We started the main attack the next morning in heavy fog. We started up a slope toward a wooded ridge. It was open pasture land on the lower slope. There was a French unit on our left. A short distance up the slope we saw a group of German soldiers walking around in the open. They were not in front of us but were over to the left in front of the French who were not keeping up even with us. One of our boys walked over to a fence and laid his rifle on a fence post to get a steadier aim at the Germans. Since they were not firing on us, I believe they were simply waiting to surrender, and they persuaded the boy not to fire on them but to leave them for the French to take care of.

Our artillery was now putting a barrage into the wooded slope ahead and



On the way to France, November 1917. (Photo from Merrill L. Bartlett and Jack Sweetman, *The U.S. Marine Corps: An Illustrated History*, U.S. Naval Institute Press, Annapolis, MD, 2001, p. 135.)

onto the top of the ridge. As we neared the woods, two German soldiers, possibly sentries or lookouts, came out of hiding and started for the top of the ridge. It seemed to me that it would be easy enough to take them prisoners, so one other boy and I took out after them. One of them went down, either from rifle fire or artillery shell fragment. We caught up with the other one who was squatted down at the entrance to a dugout made into the hillside. I was feeling pretty good at being able to make a capture when more Germans began pouring out of the dugout. I was very surprised and very scared. I backed away about 50 feet and held my rifle on the dugout entrance until they were all out and lined up in a column of fours. There were about 20 of them in all. I feel sure they were driven into the dugout by our artillery barrage and that if we had not gotten there before the barrage lifted, we would have had to face their machinegun fire. The prisoners were sent to the rear with a few guards. One of them was my buddy, Philip Redd.

I believe it was soon after we captured the Germans that we ran into serious trouble. At first we made some progress across fairly open country. There were dense groves of pine trees scattered over this area. We came to some trenches leading up a hill that

was covered with pines on top. We had almost reached the end of one of the trenches when we were fired on by a machinegun and rifles. A few of us were hit but not very many. We could see the Germans, with just their heads and shoulders showing above the trench. Most of us went down on our stomachs and started firing at them. This fight lasted only a few minutes when their machineguns stopped firing. A few minutes later we rushed into the trench. What Germans were left had escaped through the trench to the top of the hill. We did not capture a single man or get the machinegun. However, we did find nine of the Germans dead. They had all been shot through the head. There were no wounded among them.

At this time we didn't know what was on top of the hill, but we found out when we got there that it was an enemy stronghold. There was an elaborate system of trenches and dugouts, occupied by 400 of the enemy with dozens of machineguns and mortars. After taking the trench at the foot of the hill, we formed our line again and started up. Our line now extended across the trench with myself and three or four other men on the left side of it. We were instructed to stay on the left side and not to cross the trench. For a way the



trench went straight up the hill then turned to the left around the side of the hill. We followed the trench through the pine woods to where the woods ended. As we stepped out of the woods into an open space, we saw a lot of Germans running for their trenches. They had seen us at about the time we had seen them. We ran into the trenches we had been following just in time to avoid a storm of machinegun bullets. All we could do now was stay in the trench back to where we had become separated from our company and follow them up to the top of the hill. They had been stopped by machinegun and trench mortars. Directly in front and to the right of the German position was open country. Evidently the outfit to the right of our company had attacked across open space and had been cut down in great numbers. There were American dead everywhere, as well as a lot of German.

It was here that I got myself into a very bad situation again. With me was a big Swede from Chicago who was up front for the first time, having come over with a late replacement battalion. Since we were still separated from our company, we were acting on our own better judgment. Our attack had been stopped, and there was nothing we could do at this time. The thing we should have done was find some kind of shelter and stay there. Since Anderson had never been in combat before, he wanted to get up to where we could see what was going on in the German trenches. We managed to get into a deep cut across the top of the hill, about 100 yards from the German position. It was not necessary for us to be there, and it was a foolhardy thing to do.

There were about 15 of us in the cut, and we were soon spotted by the Germans. They pinned us down with machinegun fire and began lobbing trench mortar shells into us. The machineguns could not hit us, but the shell fragments could. A lieutenant near me was wounded. Another boy tried making a run to get out and was killed crossing the road. I knew we could not last long where we were and told Anderson to be ready to make a run across the road for the pine woods beyond. As soon

as there was a little lull in the shelling, I gave the word to go. We got across the road when a flock of shells came in. There were several men behind the bank of dirt and Anderson dived in among them. I kept going and found a utilities building with a concrete basement under it. This was a reasonably safe place. I had been in the basement a short time when stretcher bearers started coming in with wounded men. Anderson was the first to come in with both his legs broken. Three of the others were killed by a mortar shell. I never saw Anderson again but corresponded with him for a long time after the war.

We were held up in front of this stronghold until the next day. The 79th Company of Marines was brought up and went over on the Germans' position at dawn. Not a shot was fired by either side. Then the Germans surrendered. There were more than 400 of them.

One incident should be mentioned that happened before our company reached the German position at the top of the hill. It is of a personal encounter between our Capt Cates and an officer of the German Army. The German officer leaped out of a trench and leveled his lager pistol at Capt Cates. His pistol jammed, and he failed to kill Capt Cates. Capt Cates killed the German before he could free the jammed gun. A sergeant of our company then killed the German officer's orderly with a rifle.

After capturing the German stronghold on top of the hill, we moved ahead and soon ran into another stronghold as formidable as the one we had just taken. And our company made the attack and got close to the German position before we were stopped. There were just too many machineguns, and besides that we had reached the limit of our endurance. We backed out of the pine woods and into trenches. The Germans' long-range artillery now started bombarding us, while at the same time our own artillery was falling short of the German position and coming down on us. It was a time of almost complete despair for me, and I believe for nearly all of us. We were near collapse from exhaustion, having gone without rest, sleep, food, or water for more than 2 days. Fortunately we

were relieved that night by some other outfit. I believe they were French.

I do not remember much that happened after this until we started the final drive of the war through the Argonne forest. The weather was bad. It rained nearly all the time, and when there was no rain, there was frost at night. We were wet and miserable most of the time. On our way to the front we passed through the town of Suippes. We met most of the population coming out of the town. The rain was pouring down, and the people were wet and plastered with mud. Some of our service organizations had set up shop by the road and were passing out cookies, hot coffee, and hot chocolate to them.

My job during the last few days of the war was directing traffic at a crossroad. It was under shell fire by the German artillery. While on duty there an American woman drove a car right into the intersection. I suppose she wanted a closeup look at what war was like. She saw it, for shells were falling all around.

At one time I had stopped traffic to allow a column of German prisoners to pass through. As they passed, a German shell struck squarely in the column about 100 feet from my situation. Bodies of men were scattered all over the place, including one of the guards. His legs were both cut off above the knees.

On 9 November 1918, 2 days before the armistice was signed, I came down with the flu and was in a hospital for a week or so. On Christmas Day, I rejoined my company at Rheinbrohl on the Rhine River. In the late spring of 1919, and due to the influence of Congressman C. Bascom Slemph, I was sent home. We left Marseilles, France, on an Italian ship and arrived in New York sometime in July. A few days later, I was home.



The Marines Have Landed, at Nantucket, and the Situation is Well in Hand ...

Fleet Exercises in 1901

by Mr. John S. Naylor

In July and August of 1901, the residents of Nantucket may have been alarmed to see scores of Marines swarming the sand dunes of the eastern reaches of the island and warships at anchor in the sound. As part of the North Atlantic Squadron's summer exercises, a detachment of Marines landed and set up a defense of an advanced base where the Navy would be able to refuel, rearm, resupply, and treat their wounded.

Mostly overlooked in the narrative of the evolution of the Marine Corps mission, the Nantucket advanced base exercises demonstrated an early and earnest effort by the Marines to contribute to the ability of the Navy to conduct fleet operations against a hostile navy in foreign waters.

The Spanish-American War of 1898 had been a proof-of-concept template for 20th century U.S. Navy doctrine and the culmination of two decades of evolution. Following war plans developed at the Naval War College, the Navy successfully located, closed with, and destroyed the Spanish Navy at Manila Bay and Santiago de Cuba.¹ These engagements demonstrated that the efforts of the Navy in the 1880s and 1890s, devoted to training, technology, and professionalism, contributed to the defense of national interests.

Following the rapid demobilization following the Civil War, and the

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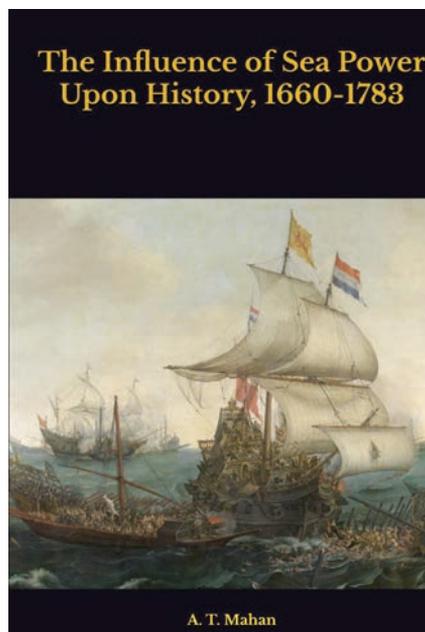
embarrassment of the *Virginius* Affair in 1873, the Navy embarked on a long and deliberate effort to improve the organization and training of its of-

ficer corps.² The Office of Naval Intelligence, United States Naval Institute, *Proceedings Magazine*, and the Naval War College are concrete examples of the Navy boosting the professionalism and competence of an officer corps in transition.

Also concerned with the decline of the Navy, Congress, and presidential administrations from both parties slowly put the Navy on a path to compete with continental fleets and to develop tactics utilizing ships fighting in squadrons.³ New appropriations allowed the Navy to upgrade from sail and wooden hulls to steam and armored hulls; the decrepit, coastal gunboat leftovers from the Civil War were no competition for continental navies.

These movements coincided with new economic and strategic thought exemplified in the writings of Alfred Thayer Mahan and Frederick Jackson Turner; naval leaders recognized the exceptionalism exemplified by the United States, and amplified the requirement for fleets that could influence foreign policy in distant regions *over the seas*.

The culture of the quarterdeck, prevalent among the officers of the sail Navy,



Alfred Thayer Mahan recognized the requirement for fleets that could influence foreign policy. Independently published (3 November 2024) ISBN 979-8344556260, 533 pp.



was replaced by professional mechanists (interested in technology and engineering) and strategists.⁴ The Navy shifted its mission from solo ships of the line conducting Naval diplomacy to squadrons and fleets able to fight larger engagements in formations. This shift would be essential should the United States wish to compete with modern continental navies. Lagging the theoretical and professional developments, but still salient, the Navy embarked on engineering and scientific development of weapons, armor, propulsion, and naval architecture to place its sailors and officers on equal footing with continental navies.

Despite these notable improvements, the war with Spain demonstrated that a capable Navy required a permanent level of leadership between the Secretary of the Navy, the regional fleet commands, and the commissars directing their bureau fiefdoms. Secretary John Long convened a Navy War Board during the emergency to cover for this shortcoming; following the war, based on this board's success, he convened a *General Board* "to ensure efficient preparation of the fleet in case of war and for the naval defense of the coast."⁵ The General Board would have a major role in developing future Marine Corps roles.

While the Navy capably handled the Armada at every turn, the war with Spain also exposed Navy shortcomings in the realm of naval logistics and the sustainment of the fleet in foreign waters. In conducting operations on the other side of the planet, the fleet needed safe harbors to refuel, resupply, and repair the increasingly technical ships of the line.⁶

Secretary Long's General Board was led by the hero of Manila Bay, ADM George Dewey. It was composed of senior Navy officers, all reformers labeled by some as Mahanists, and the Commandant of the Marine Corps, BGen Charles Heywood. The board's means of steering the course of the Navy was through studies and preparing reports for presentation to the Secretary. In their first years, the reports pertained to establishing overseas bases, new coaling stations for the fleet, and use of Marines in an advanced base mission.⁷

Before the war, the Marine Corps had not been challenged to look at how they supported Navy strategic doctrine; tradition placed the Marines aboard ship for security, manning secondary weapons, and assisting in gunboat diplomacy by providing muscle to protect national interests in foreign lands. No role was posited internally in supporting the advancement of naval strategy. As a result, the Marine Corps remained doctrinally unsophisticated, despite its nearly exclusive relationship with the Navy.

The War of 1898 forced the Navy to hold the Marine Corps to account for supporting naval operations beyond providing security aboard ships and navy yards. To conduct operations in

to assemble two battalions of Marines for service over the seas. Stripping the Marine barracks of the Navy Yards on the east coast yielded Heywood only one battalion, composed of five infantry companies and one artillery company. In June of 1898, LtCol Robert Huntington took the 1st Battalion of Marines to secure the windward point above the harbor at Guantanamo Bay. This action allowed the ships of Sampson's and Schley's squadrons to refuel within a day's cruise of Santiago de Cuba, instead of having to sail two days for Key West, in turn hemming the Spanish fleet in.

Without the secure harbor, the Navy would have had to continue with the tenuous act of stationary coaling of

The Marines would need additional resources to support the Navy in this new advanced base mission.

hostile waters, the Navy would have to establish the ability to build bases where the fleet could refuel, repair, and replenish in peace. In securing and protecting these harbors, the Marine Corps found itself a key to naval operations in enemy waters.

Following the end of hostilities, and the tours of approbation for the Naval heroes, the Department of the Navy settled into building the infrastructure for a truly global fleet. At the top of this agenda was securing coaling points at various strategic locations and colliers to transfer coal. Of particular interest is the aim to turn recent foreign acquisitions, in Hawaii, Samoa, Guam, Puerto Rico, and the Philippines, as well as in the Caribbean at the desert archipelago of Dry Tortugas. These are spots where the Navy would establish permanent defenses, in most cases manned by new Marine battalions and companies, but the question was what type of formation would be available for expeditionary efforts?⁸

The Marines had roughly established a model at Guantanamo. With the start of the war with Spain, the Secretary of the Navy, John D. Long, ordered then Commandant Col Charles Heywood

cruisers with the risk of a surprise attack from either land or sea or leave gaps where the Spanish fleet might escape to open water. The Marines came only equipped with small arms and standard hand tools for trenching, relying on standard flag signaling to communicate with ships offshore but making the most of their organic artillery and machinegun support. Naval gunfire provided much-needed support to the Marines on Guantanamo's arid slopes but showed a need for better coordination. The Marines would need additional resources to support the Navy in this new advanced base mission.

Since the 1880s, the Marine Corps sent officers to the Army's Artillery School and the Navy's Torpedo School to expand their knowledge beyond basic drill, marksmanship, and the military courtesies common to performing security functions aboard ships and in Navy Yards.⁹ Attendance at these schools was largely up to whether the yards could spare one or two lieutenants or captains for several months; perennially, the Commandant pleaded that he was short of officers and men required to efficiently staff all posts of the Corps. The Marine Corps also conducted an

annual School of Application at the D.C. barracks, training junior officers and non-commissioned officers in the technical aspects of position and rank. To provide an effective defense of the fleet in remote foreign harbors, the Marine Corps would require technical abilities outside of the standard infantry drill.¹⁰

In May of 1901, the Navy and Marine Corps convened a special training course at the Torpedo School at Newport. Marines took a course of instruction in matters not covered in their normal duties aboard ship or in barracks. This instruction would be required to take part in engaging enemy navy forces, using mines, obstacles, surveillance, and direct-fire weapons. While these weapons were all emplaced defensively, projecting the Marines forward with them would be both strategic and operationally offensive in nature. Once training was completed, the Marines would form a cadre of a larger unit taking part in the North Atlantic Squadron's summer exercises—as designed by the Naval War College.¹¹

Maj Charles A. Doyen took command of the detachment from Maj H.C. Haines when the latter's duties on the staff of the Naval War College at Newport prevented him from dedicating all his time to training Marines in the science and employment of mines, torpedoes, telegraphy, spotlights, and defenses. Reporting to Doyen were four officers, twenty sergeants, and twenty privates. As was standard for the Marine Corps of the era, the unit was ad hoc, with Marines being assigned from Portsmouth, Newport, New York, DC, and Annapolis.

Training included the employment of shore-based, defensive torpedoes, and mines—explosive devices tethered underwater to create barriers for opposing fleets attempting to enter a protected harbor. These mines could be contact triggered or remotely by electrical circuits maintained by Marines ashore. To identify enemy ships, the Marines fielded large naval searchlights, in use for decades aboard ships. To coordinate with higher command, the Marines would employ land phones, connected to a network through wires

laid above ground, and signal lights to communicate with the fleet. Marines were required to deploy trenches for further communications and protection from raiding enemy warships. Most importantly to the defense of the fleet, Marines would position naval guns ashore; flat-trajectory naval rifles, identical to those affixed to the deck of Navy warships. These would be manhandled ashore by Marines and emplaced atop large timber platforms to pick off enemy ships channelized by searchlights and naval mines.

Perhaps one of the most interesting anti-ship weapons employed by the Marines was the shore-launched torpedo—a bank of tubes would be set up on a platform on shore, with a trench dug out to deeper water off the beach. Compressed air would launch an anti-ship torpedo from the tube; it would splash in the water-filled trench and burn its way out to the target ship offshore.¹²

The concept of the defense of advanced bases was not limited to the use of mines, torpedoes, naval rifles, and obstacles; these were a large part of the fixed unit. The defenses of the advanced base would also require a mobile unit, an ocean-going fire brigade capable of landing either in defense of the base or at a point to defeat or cut off enemy forces facing the fleet.¹³

On 5 July 1901, the USS *Kearsarge*, USS *Alabama*, and USS *Massachusetts* set sail from Newport, RI, for the North Atlantic Squadron's summer exercises, without Maj Charles Doyen.¹⁴ On 8 July, the ships anchored off the north coast of Nantucket to land Marines who would establish a naval base where the fleet could rearm, refuel, and repair itself.¹⁵

The force that landed at Nantucket was not on the scale of that at Guantanamo. Heavy on firepower, the unit was two-thirds smaller than Huntington's Battalion. The *Kearsarge* contributed a 5-inch 40 caliber deck gun, and the *Alabama* contributed a 6-inch 40 caliber Mark 4-gun, and six naval mines. The *Massachusetts* contributed two torpedo tubes, two 3-lb guns and two 6-lb guns, and four naval mines. The 45 Marines who had the Torpedo School training

were augmented by 150 Marines from the ships' detachments of the North Atlantic Squadron. Despite an unsurpassed growth of the Marine Corps, fielding no less than six battalions of Marines at Olongapo in the Philippines, the Marine Corps remained reluctant to garrison Marines in ready companies or battalions for immediate deployment from stateside shipyards.

Within sight of the residents of Nantucket, the fleet commenced "firing" on the beach below Great Point.¹⁶ With the beaches prepped by naval gun fire, the order to land the landing force was given, and khaki-clad Marines were shuttled ashore. As no dedicated landing craft had been developed by the Navy yet, whaleboats carrying Marines were towed by steam launches to the beach. Aboard the ship, deck guns were dismantled and loaded in additional whaleboats. The guns were tugged ashore, where they were lifted from the boats with the use of blocks, tackle, and shears emplaced on the shoreline. Marines already ashore dug emplacements for the two larger guns, while the three-pounders and two-pounders were brought ashore. Once the emplacements were dug, with connected bunkers and magazines, the arduous process of moving the tubes and mounts commenced.

Two methods of moving the guns across the soft sand were attempted; the Marines from the *Kearsarge* attempted using a gun carriage running over planking and got enmired. The Marines from *Alabama* used a sledge with rollers with greater success. In the meantime, conical khaki wall tents were pitched in neat rows in the dunes, and the Marines assumed a standard camp routine—pickets at either end of the camp, a watch on the guns, with meals and formations announced by bugle.

With new obligations in the Philippines, Guam, Puerto Rico, Las Tortugas, and other warm weather climes, the Corps developed better equipment, weapons, and uniforms for use in the field, aboard ship, and in garrison.¹⁷ Their uniforms reflected the experience of recent large-scale deployments in Asia; in the fighting Boxers and Filipino rebels, cotton khaki was found to be cooler, dry quicker, and blended



in with foliage better than wool or the white linen fatigue uniforms occasionally issued. The quartermaster issued a felt campaign cover, a predecessor of today's drill instructor cover, and webbing was issued in tans and browns. Marines followed the lead of the Army in adopting the Krag-Jorgenson in .30–40 Corps-wide as fighting in the Philippines intensified.¹⁸

Several days after establishing camp, the Marines engaged in a practical application of deploying a live naval mine in the waters of Nantucket Sound. After assembly and arming the naval contact mine on the beach, it was towed into deeper water by Marines manning a whaleboat. Unfortunately for the Marines, the wind picked up, and they lost control of the mine, and it sank. The Marines rowed out to the USS *Alabama* to borrow a grappling rig, with which they attempted to find the mine in 40 feet of water. A day later, the Marines did finally capture said mine, reducing the hazard to boaters and merchant shipping in the area.

On 17 July, the Marine dismounted the guns, hauled them back to shore, broke camp, and reembarked on the ships of the fleet. Afterward, they returned to Plymouth Grove, for ten days in camp to recoup from their week on Nantucket. Plymouth Grove had just recently been purchased by the Navy to serve as a coaling station for Navy ships sailing in and out of Newport.¹⁹

Rejoined by Maj Doyen, they reembarked on the warships for a second evolution on Nantucket. As chronicled in an article in the Nantucket Historical Society's magazine, they set up camp ashore again, with new exercises to prove the concept of using Marines to protect a harbor set up for naval operations.²⁰ Reporting from *The Inquirer and Mirror* covered the Marines' second occupation of the beach at Nantucket. On 11 August, the Marines returned to Nantucket, landed in the afternoon, and set up their weapons in the dark. Once in place, they awaited an assault on the camp defending the anchorage.

The second landing repeated the display of Marines deploying anti-ship weapons—guns, mines, and torpe-

does—but these actions would turn out to be only half of the eventual Advanced Base Force doctrine. The second half would be in providing amphibious infantry capable of repelling enemy infantry. During their second sojourn on the sands of Nantucket, Doyen's Marines exercised the mobile defense,—landing Marines from battleships in the middle of the night to provide support for the fixed defense where it was needed most.

When the Marines ashore came under fire from “enemy” ships, a mobile landing force, composed of the Marines from the shipboard detachments of *Kearsarge*, *Massachusetts*, and *Alabama* landed in the night, reinforcing the unit ashore to amass a total of 500 Marines under arms. The assembled units created a defense in depth, using obstacles and units in remote locations tied in by telephone lines and observation. The fleet then departed the vicinity, leaving the Marines with orders to hold the harbor at any cost.

After a day of preparation, the Marines were guessing where any attack on the northeast corner of Nantucket might originate from. When “enemy” sailors in whaleboats began their landing in the dark, star shells illuminated the scene, and the defending Marines opened fire. After an intense mock firefight, the pace of fire dropped off, and the Marines awaited further action. By the time the sun rose and fog lifted, it was clear the Marines had held the base.

On August 19, Doyen's Marines packed up for the second time, returning to the ships of the fleet. A week later they disembarked in Brooklyn, putting the equipment and materials used in the extended training period in storage, and returned to the barracks from whence they came.

In this stand-down is the kernel of the conflict that the formation of the Advanced Base Force would cause over the next decade; Navy reformers such as William F. Fullam would complain that the Marine Corps was shirking its duty to support the fleet with an Advanced Base Force. While the Navy and Marines would schedule annual Advanced Base Force exercises, diplomatic emergencies, such as the accession of the Panama Canal Zone, and fighting

in the jungles of the Philippines and Caribbean states took precedence—training plans all too often lose out to operational tempo.

In 1902, the Navy took control of Culebra, Puerto Rico, for the first of many Advanced Base Force/fleet exercises. Marines in the Caribbean took part in operations in Panama, supporting President Roosevelt's strategic naval aims of controlling what would eventually be the Panama Canal. Marines at Olongapo took part in an arduous exercise moving 6-inch guns ashore at Grande Island, providing a defense of Subic Bay.

Yet, the Marine Corps failed to mobilize a permanent force in garrison to provide for an Advanced Base Force year-round. Periodically, Marines were gathered, an exercise took place, then the equipment was put back in storage, and the unit stood down, with Marines returning to home units. Despite the largest growth the Marine Corps had ever experienced—from 2,676 in 1896 to 7,013 in 1902—the Marine Corps found it difficult to support every activity the Navy subscribed to. Operations we classify as expeditionary dominated time and effort in command and at the unit level.

In light of complaints, the Marine Corps opened the Advanced Base School in New London, CT, in 1910, which provided a cadre of Marines capable of leading exercises at Culebra in 1914 and other places finally demonstrating the Marines' commitment to the Advanced Base Force. However, events in Europe, and in Mexico in 1914, overcame the commitment to the strategic naval mission. By 1917, when the Marines entered the European war as a near co-equal of the Army in ground combat, John Lejeune made note of continued dedication to the mission.

There was no available naval mission, therefore, for an advanced base or expeditionary force. At that time, our officers and men were clamoring for service. Their adventurous spirit would brook no delay. Their thoughts were constantly turned toward France.²¹

The exercises at Nantucket in the summer of 1901 built upon the experience at

Guantanamo in 1898 and fully cast the Marines' lot in support of offensive maneuvers of the fleet. Without advanced bases, the fleet would not be able to fight continental navies, or Asiatic navies, in far-flung theaters. On 3 March 1921, Commandant of the Marine Corps John Lejeune would finally declare the establishment of the Advanced Base Force, allowing ensuing generations of Marines to continue innovating and establishing, in iterations, East and West Coast expeditionary forces, then the FMF, and the Defense Battalions responsible for defeating the Japanese across the width of the Pacific Ocean and prosecuting much of the Cold War.

Notes

1. Edward S. Miller, *War Plan Orange—The U.S. Strategy to Defeat Japan 1897–1945* (Annapolis: Naval Institute Press, 1991).

2. Arthur Scott Mobley, *Progressives in Navy Blue—Maritime Strategy, American Empire, and the Transformation of U.S. Naval Identity 1873–1898* (Annapolis: Naval Institute Press, 2018). The Spanish took into custody the crew of the *Virginus*, a U.S. merchant ship, accusing them of being filibusters supplying rebel forces in Cuba. The crew was sentenced to death, and several of them were executed before British diplomatic efforts brought the emergency to an end. The U.S. Navy was unable to send a squadron to Cuba to protect the American sailors.

3. Ibid.

4. Ibid.

5. Richard Wainwright, "The General Board," *Proceedings* 48, No. 2 (1922).

6. The best evidence of this was found in how a lack of coaling stations in friendly Caribbean states forced Cervera's fleet into port at Santiago de Cuba. His ships therefore lacked the range to do much more than cruise Cuban waters, but the U.S. managed to keep them bottled up until the Armada made one suicidal dash for open water.

7. John T. Kuehn, *America's First General Staff: A Short History of the Rise and Fall of the General Board of the Navy 1900–1950* (Annapolis, Naval Institute Press, 2017). Appendix. Studies of the General Board from 1901 that explicitly addressed Marines and or the Advanced Base Force, "Guns for the Defense of Asiatic Ad-

vanced Bases-18FEB01," "Use of torpedoes for defense of advanced bases-18FEB01," "Maneuvers of the North Atlantic Fleet-11MAR01," "Furnishing steam to run air compressors for torpedo batteries ashore-24APR01," "Organization of 4 Marine Companies for expeditionary field service-1NOV01," and "Preparedness of Marine Corps for war-1NOV01."

8. Patrick H. Roth, "Sailors as Infantry in the US Navy," *Naval History and Heritage Command*, October 2005, [https://www.history.navy.mil/research/library/online-reading-room/title-list-alphabetically/s/sailors-as-infantry-us-navy.html#:~:text=The%20use%20of%20sailors%20as%20infantry%20\(and%20as%20artillerymen%20ashore,involving%20both%20marines%20and%20sailors.](https://www.history.navy.mil/research/library/online-reading-room/title-list-alphabetically/s/sailors-as-infantry-us-navy.html#:~:text=The%20use%20of%20sailors%20as%20infantry%20(and%20as%20artillerymen%20ashore,involving%20both%20marines%20and%20sailors.) The Marines role in the landing plans of the Navy was not 100% assured. The Navy's Bluejackets oftentimes outnumbered Marines in landing parties, and if a ship had no Marine detachment, the officers and sailors of the ship were trained in rudimentary rifle drill and small-unit tactics. The Navy would maintain this doctrine through the 1960s, despite decades of the FMF's existence.

9. Jack Shulimson, *The Marine Corps Search for a Mission 1880–1898* (Lawrence: University Press of Kansas, 1993).

10. And this is a pertinent point today. With the advent of *Force Design 2030* in recent years, the Marine Corps has leaped from fielding amphibious capable maneuver warfare units to those capable of expeditionary advanced base operations; these new units have shed much of their bulk, losing organic tank units, and military police companies, as well as some size in fighter and rotary wing squadrons, and in infantry units. The new units will be capable of performing missions more akin to the concept presented immediately following the end of the war with Spain.

11. Charles Heywood, *Report of the Commandant of the United States Marine Corps*, (Washington, DC: Headquarters Marine Corps, 1901).

12. The employment of these weapons systems was as novel to Marines at the turn of the 19th century as is the employment of modern weapons to present-day EABO mission Marines. The Marines protecting the South China Sea today from the threat of the People's Republic of China will employ modern weapons to conduct sea denial, support sea control, or enable fleet sustainment. Satellite communications step in for land lines and phones, modern radars, and radio emissions sensors replace searchlights, and anti-shiping missiles replace shore-emplaced naval rifles—what is old is new again.

13. *Report of the Commandant of the United States Marine Corps*.

14. Maj Doyen had been put under arrest on July 4 for an "alcoholic debauché." Janice Brown, "New Hampshire WWI Military: Brigadier General Charles Doyen of Concord," *New Hampshire History Blog*, July 12, 2018, <https://www.cowhampshireblog.com/2018/07/12/new-hampshire-wwi-military-brigadier-general-charles-doyen-of-concord>; and Staff, "Marine Corps Muster Rolls, July 1901," Ancestry, n.d., Ancestry.com. Doyen was reduced two positions in line and publicly reprimanded by the Secretary of the Navy.

15. Staff, "Engaged in Mimic War," *Boston Sunday Globe*, July 14, 1901.

16. Propellant charges, no projectiles. Lots of bang and smoke, no damage to the island.

17. At Guantanamo, the uniform had been blue wool service uniforms with short-billed dark blue barracks caps. The Marine Quartermaster had contracted for tan linen tropical uniforms at the beginning of the war, but they weren't delivered until after the battle for Guantanamo was over. Additionally, the Marines had adopted a broad-brimmed olive felt field cover, but it was delivered at the same time as the linen uniforms.

18. In 1897, the Marines had adopted a modern, 6mm rifle, the Lee Navy, firing a bullet in a flatter trajectory than the long-serving Trapdoor Springfield. The Lee was quirky, with a straight pull bolt, and non-captured parts that easily escaped during take-down in field conditions.

19. Plymouth Grove later became the Motor Torpedo Boat Training Center, where John F. Kennedy learned to skipper PT Boats.

20. Edouard A. Stackpole I, "When the U.S. Navy 'Captured' Great Point in 1901," *Historic Nantucket* 29, No. 1 (1981).

21. Historical Branch, *A History of Marine Corps Roles and Missions 1775–1962*, (Washington, DC: G-3 Division, Headquarters Marine Corps, 1962); and John Lejeune, *The Reminiscences of a Marine* (Pittsburg: Dorrance and Company, 1930).





At the end of this year, we will sundown and begin the transition of the Marine Corps oldest active squadron, VMA-231. The squadron's origins begin in Miami, Florida as the squadron stood up as the 1st Division, Squadron 1 in February 1919. Flying the Vought VE-7F, the squadron concentrated on developing dive-bombing tactics that proved successful in the Battle of Ocotal, Nicaragua in 1927. The innovative tactic was first used when the squadron supported the Marine garrison and executed the first recorded dive-bombing attack against an organized enemy, dispersing the insurgents, and saving the garrison. The squadron's insignia, Ace of Spades, is the first official unit insignia to appear in Marine Corps Aviation and represents Marine Aviation's long history of support to the Marine Air-Ground Task Force and tactical innovation.

Over this past year, as your Deputy Commandant for Aviation, I have met hard working and talented Aviation Marines, Sailors, and families. Each time I was humbled by their mission focus and dedication. In some cases, young Marines were finding new and innovative ways to increase the lethality and sustainability of our new and aging aviation equipment. The Staff Non-Commissioned Officers and Senior Enlisted Leaders were working to retain our very best while maintaining the highest standards because great Marines with high standards are critical for aviation safety and mission accomplishment. Recently, I engaged our sitting and future Aviation Commanding Officers and was not surprised by their deep understanding of the operational challenges we face. Together, there is no doubt that Marine Aviation is postured and ready to respond to crisis at a moment's notice.

Also critical to maintaining our combat readiness and modernization efforts are our industry partners. The relationship with industry could not be better. We both realize that we cannot succeed without transparency and a clear understanding of each other's challenges and the desired endstate. I continue to see their investment in our success through new and exciting technology advances in unmanned systems, autonomy, and artificial intelligence. Each plays a critical role in our future vision for Marine Aviation: Project EAGLE. I will continue to engage and listen as we stay the course to invest in the modernization of our fleet.

As we celebrate our 250-year anniversary and reflect on what our Corps and Marine Aviation has accomplished, we must remember that our success is based on learning hard lessons and maintaining the highest of standards. Marine Aviation will never forget those lessons and will adhere to those standards. We will remain forward focused on delivering the most lethal aviation capabilities to the Marine Air-Ground Task Force, Naval Force, and Joint Force across all warfighting functions and domains. I will ensure Marine Aviation is ready, resilient, and lethal.

Semper Fidelis.

A handwritten signature in black ink, appearing to read 'Bradford J. Gering'.

Bradford J. Gering
Lieutenant General, U.S. Marine Corps
Deputy Commandant for Aviation

2025 Aviation Plan Executive Summary

Balancing crisis response and modernization

by Staff, DC Aviation

The Deputy Commandant for Aviation's (DC A) 2025 Aviation Plan (AVPLAN) was signed and released this past January. The AVPLAN intends to communicate to the FMFs, our industry partners, and Congress, the DC A's priorities and direction over the next five years, guided by the 39th Commandant's Planning Guidance and his priorities. Notably, the Commandant's priority of "Balancing Crisis Response and Modernization" lies at the forefront of this AVPLAN and has guided Marine Aviation's strategy to maintain a ready and lethal force.

Project EAGLE outlines DC A's strategy to modernize Marine Aviation across multiple future year defense programs. The Project EAGLE initiative focuses on expanding interoperability with the Joint Force and allies, evolving the Marine Air Command and Control Systems, and incorporating new functional concepts such as Distributed Aviation Operations and Decision-Centric Aviation Operations. We will transform Marine Aviation to meet future operational needs by focusing on unmanned platforms, logistics, digital interoperability, and manned-unmanned teaming, ensuring a competitive advantage in future conflicts and supporting both the naval and Joint Forces across all domains.

To accomplish this, Marine Aviation must be ready. Therefore, operational readiness is the DC A's number one priority. The challenge is to maintain a high level of readiness and remain lethal to respond to crises while also modernizing aviation capabilities. As we maintain this balance between crisis

response and modernization, the DC A will ensure Marine Aviation remains lethal, naval at its core, and ready to respond to crises with the warfighting edge necessary to support our Marines, sailors, and the Joint Force.

Marine Aviation will also pursue a demand-based sustainment strategy, improving fleet readiness through better collaboration and efficient resource delivery. Efforts are being made to reduce variability in aircraft readiness through optimized maintenance, tooling, and logistics. Sustainment solutions will focus on three lines of effort: improving

focused on managing aircrew and maintainer inventories by building properly-sized populations in grade, qualifications, and experience levels. To realize these goals, Marine Aviation will first reestablish a manpower management branch within Marine Aviation.

Marine Aviation Capabilities and Commodities

Marine Aviation aims to maintain a powerful and responsive air combat element for the MAGTF. This includes transitioning to an all-5th generation tactical air (TACAIR) fleet and mod-

Marine Aviation remains lethal, naval at its core, and ready to respond to crises with the warfighting edge necessary to support our Marines, sailors, and the Joint Force.

fleet readiness, enhancing sustainment for distributed aviation operations, and reducing equipment variability. This includes modernizing aviation supply packages, enhancing logistics information systems, and developing a replacement for aging aviation logistics vessels. This comprehensive approach ensures Marine Aviation can effectively support the MAGTF throughout the full range of military operations.

Qualified Marines also remain the key to our ability to meet operational requirements. While each type, model, and series of aircraft is in a different phase of lifecycle and inventory management, Marine Aviation will remain

ernizing the air combat element to be ready for combat today and tomorrow. The DC A's intent is to maintain the current F-35 and CH-53K transition plans while also ensuring each community employs the most ready, safe, and lethal aircraft.

First, the F-35 B/C provides advanced sensors, air-to-air missiles, and air-to-surface strike weapons, which are crucial for the MAGTF and Joint Force mission globally. By 2025, the Marine Corps will have received 183 F-35B and 52 F-35C aircraft. The F-35 program aims to support 12 F-35B squadrons and 8 F-35C squadrons, with a total of 420 F-35 aircraft. Fleet squadrons

will be increased to 12 primary aircraft authorization by fiscal year (FY) 2030. The F-35B/C modernization includes Technical Refresh-3 upgrades, APG-85 radar upgrades, advanced countermeasures, and electronic warfare improvements. The program is focused on Block 4 capabilities, weapons integration, and site activations.

The F/A-18 Hornet provides vital maritime strike and air interdiction capabilities, with ongoing modernization ensuring its effectiveness in the Marine Corps' *TACAIR Transition Plan* and global operations. The Marine Corps operates 161 F/A-18 aircraft, transitioning squadrons annually until FY29, with aircrew training now conducted by the Fleet Replacement Detachment at VMFA-323. The Hornet's increased lethality with the AN/APG-79(v)4 radar and AESA technology, alongside upgrades in electronic warfare, extended-range weapons, and communications. Funding priorities focus on integrating advanced weapons, improving beyond-line-of-sight capabilities, enhancing electronic warfare systems, and supporting precision approach capabilities.

The AV-8B Harrier provides critical Vertical/Short Take-Off and Landing capabilities for the MAGTF, offering precision strike, escort, and rapid deployment for MEUs with advanced targeting and missile systems. The Marine Corps operates 39 AV-8B aircraft across two VMAs, with plans for VMA-231 and VMA-223 to transition to F-35B. The AV-8B will continue supporting training and combat operations for forward air controllers and joint tactical air controllers, providing flexible deterrence and combat capabilities to combatant commanders. Funding will focus on T402 engine readiness, full LINK-16 integration, fleet replacement squadron support, and weapons upgrades.

The KC-130J is a vital enabler for MAGTF success, providing global mobility, logistical support, and aerial refueling across multiple regions with increased capacity in the Indo-Pacific. Four Marine aerial refueler transport squadrons operate 75 KC-130J aircraft with the full transition expected

by 2027, which includes a program of record of 95 aircraft. The aerial refueler transport team is working to integrate more effectively with the MAGTF and joint forces by enhancing capabilities like realtime data transmission and adjusting training devices to support expanded training needs. Funding will focus on hardware and software upgrades, integrating MAGTF Agile Network Gateway Link, procuring infrared countermeasure kits, and expanding backup aircraft inventory to maintain operational capacity.

The MV-22 Osprey provides critical medium-lift assault support with unmatched speed, range, and payload, ensuring rapid response for global crisis and humanitarian missions. The Marine Corps has a program of record for 360 MV-22Bs, organized across 16 active squadrons, 2 reserve squadrons, and several test and executive transport detachments, with VMM-264 reactivating in FY26. Ongoing efforts focus on improving configuration management, increasing fleet sustainability, modernizing flight control systems for degraded visual environments, and enhancing

The MV-22 Osprey provides critical medium-lift assault support with unmatched speed, range, and payload, ensuring rapid response for global crisis and humanitarian missions.

interoperability with the MAGTF Agile Network. Funding focuses on safety instrumentation for predictive maintenance, technology replacements to mitigate obsolescence, improved nacelle reliability, and new flight control systems to increase aircraft capability and safety.

The CH-53K King Stallion offers three times the range and payload capacity of the CH-53E Super Stallion. It can transport heavy equipment, troops, and supplies over long distances, ensuring forces remain agile and supported. Operating from both land and sea bases, including austere sites and amphibious shipping, it provides essential flexibil-

ity to the MAGTF. The Marine Corps plans to procure 200 CH-53Ks, equipping six active squadrons, one reserve squadron, and various test and fleet replacement detachments, with the full transition expected to be completed by FY32. Key efforts for the CH-53K include focusing on aircraft inventory, sustainment, and capability, with the first MEU detachment expected to deploy by FY27. Funding priorities for the CH-53E include sustainment, safety, and interoperability upgrades, while the CH-53K focuses on supply chain capacity, testing, sustainment, and warfighting capability expansion.

The H-1s are essential to the MAGTF, providing multi-role attack and utility capabilities that enhance lethal and non-lethal options, bridging gaps in low-altitude attack and strike operations. The H-1 Program consists of 349 aircraft, with a total active inventory of 301 aircraft across five squadrons and a planned increase to 314 by FY31. The H-1 modernization plan focuses on improving digital interoperability, survivability, lethality, and electrical power capacity, ensuring the fleet re-

mains versatile and capable of future conflicts. The program's key funding priorities include digital interoperability, power upgrades, survivability, sensor optimization, and aircrew systems enhancements.

The Marine Unmanned Expeditionary Medium Altitude Long Endurance unmanned aerial systems provide critical capabilities such as airborne early warning, maritime domain awareness, and electronic warfare support. The Marine Corps currently operates 10 MQ-9A Block 5-20 aircraft and plans to field a total of 20 Block 5-25 aircraft with ongoing efforts to establish additional unmanned aircraft squadrons.

The MQ-9A program focuses on sustaining operations through contract logistics support and the activation of Unmanned Aerial System Maintenance Squadron 1 (UASMS-1) by FY26 to manage maintenance and sustainment for MQ-9A Reapers. Key funding priorities include Marine Unmanned Expeditionary Medium Altitude Long Endurance unmanned

management of UC-12W, UC-35D, and C-40A aircraft. The top priority is the recapitalization of non-deployable UC-12F/M and UC-35D aircraft, with plans to procure additional UC-12W aircraft to meet the program of record. The funding priorities include procuring nine UC-12W aircraft and modernizing UC-12W with digital interoperability capabilities.

The evolving electromagnetic environment necessitates advanced electromagnetic spectrum operations capabilities to ensure the MAGTF maintains superiority ...

aerial systems procurement, capability spirals, UASMS-1 establishment, and improvements in lethality, survivability, and expeditionary deployability.

The F-5 N/F provides essential adversary training for TACAIR, assault support, groundbased air defenses, and Marine air control squadrons, enhancing combat readiness for Marine aviation and ground units. The Marine Corps currently operates F-5s assigned to Marine Fighter/Attack Training Squadron 401 at Marine Corps Air Station Yuma and Marine Fighter/Attack Training Squadron 402 at Marine Corps Air Station Beaufort, with plans to acquire eleven more aircraft over the next four years to meet growing adversary training requirements. The F-5 fleet is undergoing upgrades, including glass cockpits and Red Net integration, while exploring new solutions like LVC capability and commercial air services to address adversary training gaps.

Marine Corps Operations Support Airwing provides critical air transport for high-priority passengers and cargo, ensuring timely logistical support for forward-deployed MAGTFs. The Marine Corps Reserve Operations Support Airwing squadrons, including Marine Transport Squadron 1, Marine Transport Squadron Belle Chasse, and Marine Transport Squadron Andrews, support active-duty Operations Support Airwing operations and lead the

The HMX-1's mission includes worldwide transportation for the President and key officials, supporting high-level travel and operational test evaluations for presidential lift aircraft. The HMX-1 began transitioning to the VH-92A in 2022, with the Marine Corps declaring its initial operational capability in December 2021 and having since integrated the aircraft into operational missions. With a total of 23 aircraft in the program of record, the VH-92A is set to fully replace the VH-3D and the VH-60N, with ongoing improvements in performance for high/hot environments and expanded communication capabilities.

Marine Aviation is advancing new weapon systems to address evolving threats, integrating capabilities that enhance fighter and attack aircraft for global operations. The focus is on munitions with greater range, speed, and lethality to dominate both air and surface domains. Recent efforts have concentrated on integrating net-enabled weapons into the F-35B/C and improving long-range maritime strike capabilities. Key developments include the Advanced Anti-Radiation Guided Missile-Extended Range entry into low-rate production, safe separation testing for the GBU-53 SDB II, and the addition of the Long-Range and Maritime Strike to the F-35B/C roadmap.

The AGM-158C Long-Range and Maritime Strike is a long-range, precision-guided anti-ship missile designed for semi-autonomous engagement of maritime targets. Its integration with the F-35B/C enhances Marine Aviation's strategic maritime capabilities.

The Joint Air-to-Ground Missile program is undergoing operational testing on the AH-1Z. Its dual-mode seeker and multi-purpose warhead provide enhanced strike precision while its countermeasure resistance and fire-and-forget capability improve survivability in diverse conditions.

Advanced Precision Kill Weapon System II, integrated across platforms carrying 2.75" rockets, offers significant improvements over unguided rockets, particularly in precision targeting. The Single Software Variant, fielded in FY22, provides increased range and accuracy, enabling common use across fixed and rotary-wing platforms.

The AIM-9X Block II Sidewinder introduces lock-on-after-launch with data-link for 360-degree engagements, and its Block II+ variant will support F-35B/C in FY19. The AIM-120 Advanced Medium-Range Air-to-Air Missile, with its ability to engage multiple targets simultaneously, is further enhanced by the AIM-120D variant, featuring GPS, improved data link, software, range, and speed.

The evolving electromagnetic environment necessitates advanced electromagnetic spectrum operations capabilities to ensure the MAGTF maintains superiority and can effectively deny the enemy's electromagnetic spectrum use while protecting its own. Marine Aviation is integrating the electronic warfare family of systems with a focus on platforms like the UH-1Y, MV-22, and KC-130 while developing capabilities for unmanned systems through collaboration with the Marine Corps Spectrum Integration Lab.

The goal of MAGTF Digital Interoperability/MAGTF Agile Network Gateway Link (DI/MANGL) is to deliver timely, efficient, and secure information across diverse systems to enhance situational awareness, accelerate the kill chain, and improve survivability. The DI/MANGL program is

modernizing to align with Combined Joint All-Domain Command and Control standards, advanced tactical data links, and zero-trust architecture, with funding efforts planned for FY26. The DI/MANGL integrates sensors, processors, interfaces, and radios to improve interoperability and situational awareness across the MAGTF, joint, and coalition forces while ongoing efforts expand tactical relevance and mobility.

The goal of aircraft survivability equipment (ASE) is to equip all aircraft with advanced systems that enhance survivability and situational awareness to detect, identify, and defeat anti-aircraft threats while integrating into the MAGTF C2 ecosystem. Current ASE systems include various missile warning systems, radar warning receivers, and

ties. The CAC2S processes and integrates data from sensors and aircraft to support Marine, Naval, and joint aviation operations, while the CAC2S Small Form Factor variant and the Theater Battle Management Core System provide scalable, modern capabilities for distributed command and control.

The Marine Corps is expanding its groundbased air defense capabilities through systems like MADIS, Light-MADIS, and the Medium Range Intercept Capability to defend against a range of aerial threats, supported by the growth of the low altitude air defense community and future participation in the Army's interceptor development efforts.

Aviation ground support ensures Marine Aviation's expeditionary capability, providing essential services like

The 4th MAW works closely with active components, strengthening aviation readiness through ongoing support and collaboration with 1st, 2nd, and 3rd MAW units. By transitioning to advanced platforms like the F-35C, KC-130J and tiltrotor aircraft, and integrating rotary, unmanned, and expeditionary aviation enablers, the wing ensures a unified and adaptable force structure ready for global missions.

Expeditionary & Maritime Aviation-Advanced Development Team (XMA-ADT)

The XMA-ADT, established in August 2023, accelerates the acquisition of technologies for Force Design by coordinating with stakeholders and employing operational prototypes to address critical capability gaps in Marine Aviation. In 2024, XMA-ADT focused on enhancing capabilities for Marine Aviation, including MUX TACAIR, Airborne Logistics Connector, Precision Attack Strike Missile, and H-1 Next, with key milestones such as UAS Manned-Unmanned Teaming and successful flight demonstrations for each project. In 2025, XMA-ADT will refine capabilities for MUX TACAIR, continue Airborne Logistics Connector demonstrations with plans for Weapons and Tactics Instructor Course 1-26, and further develop the Long-Range Attack Missile toward achieving a maximum range live-fire shot by the end of the year.

In summary, Marine Aviation continues to be forward deployed and operate from expeditionary sites, joint locations, Navy ships, and strategic main operating bases. As we actively campaign, our focus on balancing today's readiness with tomorrow's modernization is critical as we continue to compete, assure our allies and partners, and deter our adversaries. This balance cannot be achieved without direct investment in our Marines, sailors, and aircrew. Their training must be relevant, realistic, and accomplished in the best aircraft and equipment available. Marine Aviation stands ready to fight and win today and into the future.



... Marine Aviation continues to be forward deployed and operate from expeditionary sites, joint locations, Navy ships, and strategic main operating bases.

countermeasure systems, all aimed at improving threat detection, situational awareness, and survivability across multiple aircraft platforms. Future efforts will focus on integrating multi-spectral sensors and evolving.

The ASE systems, such as the Next Generation Pointer/Tracker, meet emerging threats and enable interoperability with future platforms. Continued science and technology investments will drive the development of ASE capabilities, ensuring seamless integration into digitally connected networks like the MANGL.

Marine Aviation Enablers

The Marine Air Command and Control System is undergoing significant modernization with new equipment like TPS-80 Ground/Air Task-Oriented Radar, Common Aviation Command and Control System (CAC2S), and Marine Air Defense Integrated System to enhance air battle management, integrated air and missile defense, and multi-domain C2 capabili-

ties. The AC2GS funding priorities focus on improving air traffic control and aircraft launch and recovery capabilities, including precision landing systems, inter-facility communications, and airfield lighting. Additionally, funding is directed toward sustaining and enhancing green-dollar air C2, air defense programs, and aircraft rescue and firefighting equipment to ensure readiness and interoperability across joint and naval operations.

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4th Marine Aircraft Wing

The 4th MAW plays a vital role in enhancing the MAGTF's global readiness and flexibility by providing a reserve aviation force capable of responding to emerging threats. This force ensures that the Marine Corps maintains operational depth, which is critical for addressing the evolving demands of modern warfare.



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Risk and Training for Peer Conflict

The same deliberate approach to managing the Red and Blue Threats

by Col Joshua “Juggler” Smith

Marine Aviation operates in a challenging and dynamic environment where risk is ever-present, both in training and combat. Safety in this environment is not a paramount goal or end unto itself but rather a natural by-product of professional mission execution. *Our objective as a fighting force is clear: accomplish the mission while minimizing resource expenditure.* Marine Aviation achieves this by diligently assessing and managing the risks inherent to aviation operations.

As the Marine Corps’ aviation center of excellence, Marine Aviation Weapons and Tactics Squadron One (MAWTS-1) exists to provide the most realistic, advanced tactical training to Marine, joint, and Coalition forces. Our goal is to ensure these forces succeed in competition and if necessary, decisively defeat our Nation’s adversaries during conflict. Marine Aviation Weapons and Tactics Squadron One fulfills that mandate by conducting the twice-annual Weapons and Tactics Instructor (WTI) course and nine fleet support periods throughout the year. These events provide ready-room instruction, certify unit instructors, and involve tactical, scenario-based instruction and evaluations. These events replicate combat situations that air and ground crews would likely face against a peer adversary.

To train like we fight against a peer adversary, Marine Aviation must clearly and deliberately discern between the Blue and Red Threats. To be sure, we must study, understand, and honor the increased Red Threat that we might face in peer conflict (i.e., those warfight-

>Col Smith currently serves as the Commanding Officer of Marine Aviation Weapons and Tactics Squadron One (MAWTS-1). His previous assignment was as the Director of Operations (G-3) for Task Force 51/5th MEB.

ing means that our enemy may bring to bear against our forces). Training officers and commanders must then use this analysis to ensure that training plans and scenarios leverage tools such as simulators, simulated environments, and live-fly training events that emulate the actual lethal and non-lethal means such as fighters, air-to-air and surface-to-air missiles, air defense artillery, etc. that comprise the Red Threat of our enemy.

Even as our formations train to fight a more lethal adversary, leaders must remain mindful that warfighting is a human endeavor, and so long as there are humans at the controls of aircraft, manned or otherwise, there will be potential for the Blue Threat to hamper our operations. The Blue Threat is largely the threat presented by those things that we control, and it often manifests through poor decision making in the aircraft or at the console. Examples include deviations from standards, overcomplicated plans, and overestimating Blue Force capabilities (i.e., overconfidence or lack of self-awareness). It is worth noting two distinct deviations from standards: known deviations, which represent a lack of flight discipline (e.g., flat hat-ting, exceeding Naval Air Training and

Operating Procedures Standardization limitations, etc.), and unrecognized deviations, which likely represent a lack of awareness and therefore a lack of training.

Too often, Marine aircrews fall prey to the Blue Threat by making the wrong choice or, worse, failing to recognize it until it is too late. The results are often mishaps that are regrettable and sometimes tragic. Under the best of circumstances, they represent learning opportunities for those directly involved, as well as for those who take time to read the resultant mishap reports and listen to the ready room confessionals. Under the worst of circumstances, these events result in the loss of invaluable aircrews and difficult-to-replace airframes.

Operations against a peer threat may entice leaders to adopt inappropriate risk mindsets to compensate for an actual or perceived loss of tactical advantage so that they can train like we fight. Conflict with a peer adversary would certainly result in a more lethal battlefield and increased losses when compared to more recent operations. During the Long War, the MAGTF in general, and the aviation combat element in particular, enjoyed significant tactical and operational advantages. The simple fact is that all elements of the MAGTF and the U.S. military writ large have enjoyed air superiority and, in most cases, air supremacy for a generation. However, accepting increased risk across the training continuum due to decreased tactical advantage would be a grave mistake. To be sure, Marine Aviation must address the erosion of our tactical advantage, and through *Force Design* and initiatives like Project

Eagle, there are myriad lines of effort to do that. Accepting increased risk during training should not be regarded as a viable way to overcome this dilemma.

Marine Aviation Weapons and Tactics Squadron One goes to war twice annually and, in doing so, has adopted a very deliberate approach to contain the Blue Threat and bound high-risk training. While replicating the complex operating environment of peer conflict during the WTI course or during fleet support, MAWTS-1 is guided by several simple tenets:

- *Brilliance in the Basics.* Managing risk begins with *brilliance in the basics*. Even at the Marine Corps Aviation Center of Excellence, blocking and tackling are central to everything we do. There is no substitute for knowing your weapon system, the rules of engagement, and the training rules COLD.

- *Training Losses are Unacceptable.* The losses that may be acceptable in combat are not acceptable in training, and we are training. There are *no* mandatory missions during WTI or fleet support. Every asset lost—aircrew injured or killed, or airframe destroyed—represents combat potential that we will not bring to bear in the future. Do not do our adversaries' job for them.

- *Keep Training "In the Box."* Providing the most realistic and relevant tactical aviation training may require operating near the edge of aircraft operating envelopes or near the edge of a student pilot or crew chief's comfort level. Instructors should press toward but never beyond these boundaries.

- *Simple, Flexible Plans.* Understand the operational environment to the maximum extent possible and build simple, flexible plans to account for the dynamic nature of that environment.

- *Offset Risk by Applying Resources.* Resources include the ways with which we fight (i.e., our standards, policies, and tactics, techniques, and procedures). Resources also include the means with which we fight (i.e., personnel, equipment, and *time*). Of all resources, time is often our most precious. Time is the one resource

that, once lost, cannot be replaced. When time is compressed, it often contributes to perceived pressure and resultant errors.

- *Commanders Own Risk.* Commanders own resources and, therefore, own risk. It is incumbent for commanders to clearly articulate acceptable levels of risk (ALR) when providing planning guidance. The ALR is inherent to the commander's intent because it directly describes the desired friendly force disposition upon completion of an operation.

- *Seek Clarity, Communicate Shortfalls.* At the same time, it is incumbent on subordinate mission commanders and flight leads to understand the ALR before pushing from the tanker or initial point or crossing the line of departure. If uncertain of the commander's intent or ALR, seek clarification before execution. Mission planners should communicate resource shortfalls in terms of how

that resource will mitigate risk to the force or the mission.

As a force, Marine Aviation must deliberately manage risk when developing training approaches for peer conflict. This will require discipline on the part of leaders such that they do not permit a real or perceived loss of tactical advantage to entice them into assuming unnecessary Blue risk while training. While peer conflict might involve facing an adversary with capabilities approaching parity, we should also note that a peer adversary will likely also possess forces with significant capacity. Marine Aviation can little afford to lose invaluable aircrews and aircraft to the actual Blue threat while we train to defeat a potential Red Threat.





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Divide and Conquer

Why we need RADC, and who should own the mission

by LtCol Herbert J. Bowsher

The regional air defense commander (RADC) is a high-end warfighting capability that is essential for complex operations in a large joint operations area against a peer adversary. Future battles will be fought in increasingly dynamic and contested airspace. The Marine Corps should develop the RADC capability with urgency and develop a trained cadre within the reserves to own this mission.

Contested Airspace and the Changing Character of War

MCDP 1 reminds us that “if we are ignorant of the changing face of war, we will find ourselves unequal to its challenges.”¹ Gen Berger outlined the threat in his 2020 article “The Case for Change.”² More recently, we are witnessing the proliferation of advanced technologies like drones, smart sensors, and autonomous weapons systems. The impact on U.S. air power is profound. No longer can the U.S. military assume air supremacy. Airspace will be contested. The question facing U.S. military aviation professionals is the degree to which units are prepared to command and control contested airspace filled with large numbers of advanced enemy aircraft, drones of various sizes, and cruise missiles. *The Economist* recently included the following quote: “In my three and a half decades in uniform, I do not think I’ve seen a more challenging strategic environment,” said Sir Richard Knighton, the head of the Royal Air Force. “We largely enjoyed air supremacy ... That is not going to be the case in the future.”³ One critical capability needed to fight in this context is RADC. A joint capability, RADC enables the U.S. military to fight and win in an increasingly congested battlespace filled with sensors,

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Regional air defense requires specialized capabilities and coordination across the Joint Force, allies and partners. Marines employ a SIMRAD Halo-24 Radar during FORMIDABLE SHIELD in Norway training integrated air and missile defense against subsonic, supersonic, and ballistic targets, incorporating multiple allied ships, aircraft, and ground forces. (Photo by LCpl Emma Gray.)

drones, combat collaborative platforms, cruise missiles, hypersonics, long-range ballistic missiles, and manned aircraft. The RADC does this by imposing an organized, methodical, and lethal construct onto the chaos of the increasingly complex modern battlefield.

Joint doctrine describes the Navy, Air Force, and Marine Corps—as be-

ing capable to be assigned the RADC mission Services with the necessary command and control (C2) and organizational capabilities. Although RADC is a doctrinal capability, it has not been a focus of the Services. Warfighting at the higher end of the spectrum of conflict was a low priority during the wars in Iraq and Afghanistan. After two decades of counterinsurgency, this is changing.

Divide and Conquer: How RADC Would Work

Joint doctrine describes how a theater may be divided up into regions and sectors to protect the force and gain air superiority. Multiple O-5 or O-6 sector air defense commanders (SADC) would report to 1- or 2-star RADCs, who, in turn, report to the area air defense commander (AADC). The AADC, who could also be the Joint Force air component commander, is typically a more senior general officer. The RADC is responsible for air and missile defenses in the assigned region and exercises authorities as delegated by the AADC.⁴ In wartime, there may be numerous RADCs and SADCs—consider the vast expanse of the Indo-Pacific region.⁵

Integrated Air and Missile Defense

The Services, including the Marine Corps, have ongoing efforts to adapt, fight, and win in the reality of contested and congested airspace under the integrated air and missile defense concept (IAMD).⁶ The U.S. military defines IAMD as “the integration of

capabilities and overlapping operations to defend the homeland and United States national interests, protect the Joint Force, and enable freedom of action by negating an enemy's ability to create adverse effects from their air and missile capabilities.”⁷ Essentially, what this means is the Services intend to team up to protect the force and impose our will on a highly capable enemy. Integration is about teamwork, and one capability that is critical to making this teamwork happen is RADC.

Why Do We Need RADC?

In his 2024 planning guidance, the Commandant states that “command and control will play an outsize role”⁸ in future large-scale combat operations. He writes that the MAGTF must be “capable of seamlessly aggregating and disseminating high-fidelity targeting information, coordinating multi-domain effects in support of maneuver ... to enable joint and coalition C2 and

kill webs.” In the context of contested airspace, this is the capability that the Marine air C2 system provides.

Marine Corps Capabilities

The *39th Commandant's Planning Guidance* goes on to state that “in combat, we will fight as a Joint and Combined force under the command of a

These include AN/TPS-80 G/ATOR expeditionary radar, specialized communications capabilities, professional air C2 operators and maintainers, and long-standing, well-organized, battle-tested expeditionary C2 formations. No other Service in the U.S. military has this established package of lethal capabilities. In addition to these capa-

Integration is about teamwork, and one capability that is critical to making this teamwork happen is RADC.

joint force commander.” The Marine Corps air C2 system is uniquely positioned to contribute to IAMD and perform the RADC mission in support of the Joint Force commander. The Marine Corps' sensors and systems are without equal in the other Services.

bilities, RADC can be one of the key propositions the Marine Corps can offer to the Joint Force commander.

Who Should Own This Mission?

The RADC is a niche capability that could be activated in time of war onto

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an established foundation of tactical level C2 nodes. The RADC requires a substantial commitment of personnel, training, and equipment. For these reasons, RADC is a natural fit for the reserve component.

The active component must train to a wide range of missions across the spectrum of conflict but with limited resources. Reserve forces help the active component manage risk by specializing in missions that allow the active forces to focus their limited resources on those missions that Service leadership deems most critical to maintain combat readiness day to day. Under a trained cadre model, the Marine Corps can add specialized missions by activating the reserve to augment and reinforce the existing system maintained by the active forces. This eliminates the risk of needlessly burdening the active component with missions that are best suited to the reserve.

Leveraging the Reserve Component

The active component aviation C2 units are heavily engaged with the Service-wide force modernization and campaign of learning. These units are implementing major, historic changes intended to increase lethality, including combining legacy air support and air defense specialties into one MOS, fielding the new Multifunction Air Operations Center, expanding groundbased air defense capabilities, and training to proficiency in the SADC mission. There is limited capacity to pursue RADC training at the level necessary to achieve proficiency with the current active force structure.

Enter the reserve component.

Two formations that currently exist in the reserves could be trained to do this mission: MARLE (Marine liaison element), formerly the Aviation Command and Control Team, or AC2T, and Marine Tactical Air Command Squadron 48 (MTACS-48). The Marine Corps recently deactivated MTACS units across the FMF and now MTACS exists only in the reserve component. In 2021, the Marine Corps deactivated all active component MTACS units but retained the reserve MTACS. Because active component control groups retain

a tactical air command center capability at the company level, adding the RADC mission to MTACS-48 should not impact the Corps' ability to generate a tactical air command center when required. The MTACS is the unit best suited with personnel and materiel to manage RADC. The RADC mission complements the MTACS mission as the senior agency in the Marine air C2 system. In turn, MARLE offers a pool of senior officers to augment the MTACS capabilities. The MARLE is staffed by experienced O-5 and O-6 field grade officers whose specialty is augmenting joint air C2 nodes with MAGTF expertise during exercises and wartime. Marine liaison element officers routinely train with Air Force combined air operations centers worldwide. The MARLE and MTACS-48 offer available resources that can form the basis for a new trained cadre dedicated to the RADC mission.

In addition, although the senior RADC duty officer does not necessarily need to be a general officer, having the capability to provide a RADC general officer in wartime would increase the authority and credibility of this billet within the wartime AADC in which this officer would operate. If the AADC is a senior general officer, the RADC probably needs to be not lower than a one-star general officer. Again, this is where the reserve component can augment and reinforce. Adding a general officer billet or two to the active component is unrealistic in the current policy and fiscal environment. The Marine Corps could add one or more one-star Reserve billets specifically designated as the RADC that could be filled as needed in wartime. This could be a tactical air support pilot or an air C2 officer, or both. A process already exists to add reserve force structure to active tables of organization: the Individual Mobilization Augmentee program. In wartime, the active unit fills the billet with a reserve officer ordered to active duty.

Conclusion

The RADC is a joint capability that the Marine Corps should urgently pursue because of the changing character

of war, the well-documented pacing threat, and perhaps most importantly, to remain relevant as an IAMD player in the Service's priority theater. As an addition to the existing Marine air C2 system, RADC can be a comparative advantage the Marine Corps offers to the Joint Force commander. The RADC builds on the MAGTF concept of combined arms maneuver in multiple domains, a teamwork mentality that is more than the sum of its parts. This is what Marines do best: integrated combined arms in all domains networked with other Services, allies, and partners, which creates a rapidly deteriorating situation with which the enemy cannot cope.⁹ By leveraging existing niche expertise in the reserves, the Marine Corps can create a dedicated trained cadre that can execute wartime RADC.

Notes

1. Headquarters Marine Corps, *MCDP 1, Warfighting*, (Washington, DC: 1997).
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3. Staff, "Is Western Air Supremacy Ending?" *The Economist*, December 21, 2024, <https://www.economist.com/international/2024/12/19/is-the-age-of-american-air-superiority-coming-to-an-end>.
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5. Office of the Joint Chiefs of Staff, *Joint Pub 3-01, Countering Air and Missile Threats* with change 1, (Washington, DC: March 2024).
6. See, for example, the Pacific IAMD Center at Pacific Air Forces.
7. *DOD Dictionary of Military and Associated Terms*.
8. Gen Eric M. Smith, *39th Commandant's Planning Guidance*, (Washington, DC: August 2024).
9. *MCDP 1, Warfighting*.



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PBN-1 NOMAD FROM THE PHILADELPHIA NAVY YARD

Written and Illustrated by **DIANE S. SEGAL**

Dedicated in loving memory to my mother,

DOROTHY M. SEGAL,

for her service to the Navy Department, Bureau of Aeronautics,
Naval Air Experimental Engineering Command, in Philadelphia, Pennsylvania,
as a civilian during World War II. Her work involved assisting in the
preparation of confidential reports on radar, loran and sonar.

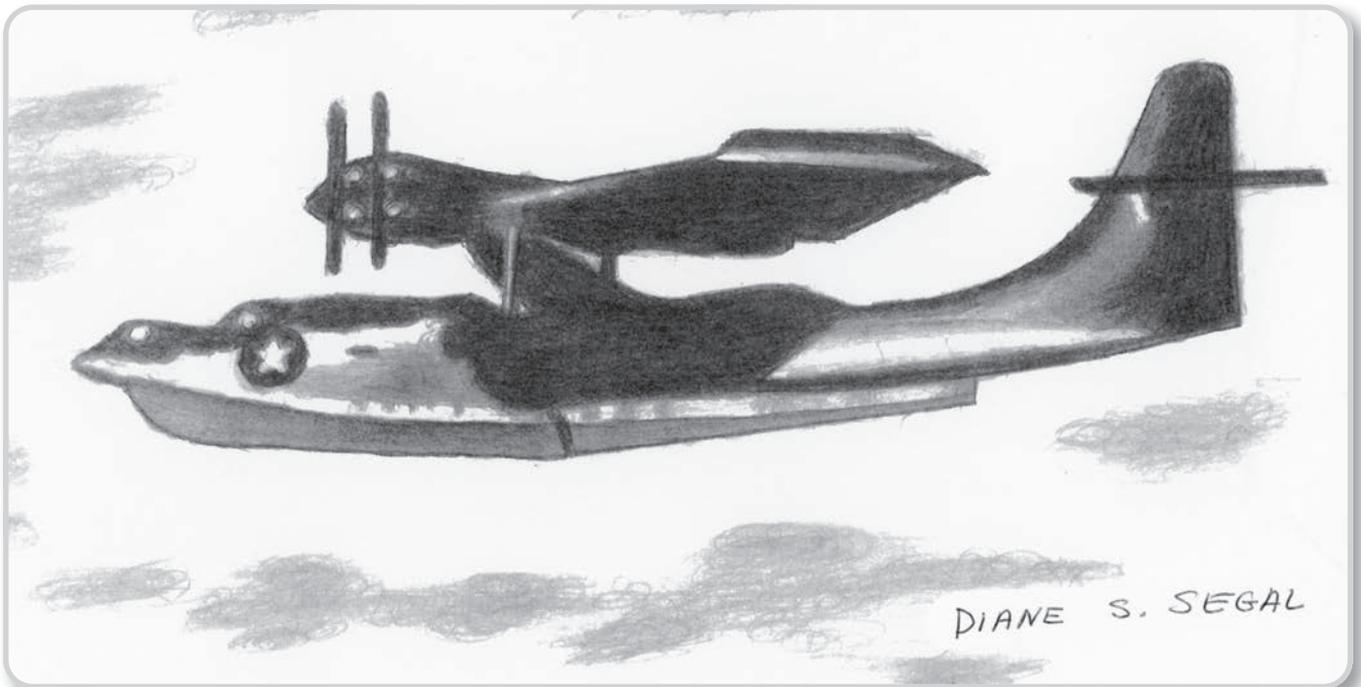
The Naval Aircraft Factory (NAF)
at the Philadelphia Navy Yard
was the most interesting aeronautical plant
because it could self-sustain
It manufactured on the spot nearly everything
that went into a Navy plane

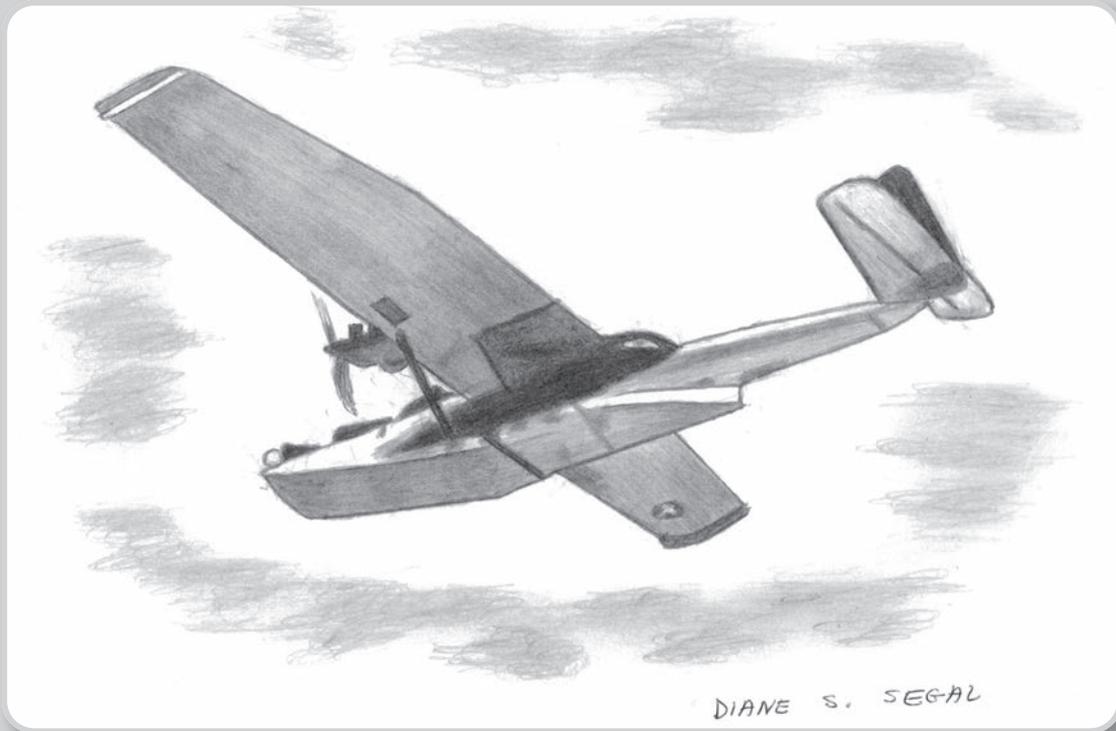
NAF activity was equally divided
between production and development
The PBN contract, one of the biggest production jobs,
to the NAF was sent

While Consolidated Aircraft worked to produce
the PBY-5 Catalina which was for long-range patrol
The NAF worked on an improved version
to further its role

The PBY-5s underwent a modification
The NAF version, PBN-1, and named "Nomad",
a naval patrol bomber (flying boat), was its designation

Wing tip floats were redesigned for lift to be improved
More fuel tanks to the wing center section were moved





To carry 38,000 pounds gross weight there was strengthening of the wings
Installation of a new electrical system was another of the things

To the vertical fin were added two feet in height
A .50-caliber machine gun in a hydraulically powered turret replacing the .30-caliber gun in the bow was just right

The power plant was a Pratt & Whitney R-1830-92 Twin Wasp and the engines were two
The length was 64'8", the wingspan was 104' and nine made up the crew

Some improvements for the PBN-1 Nomad made their stay

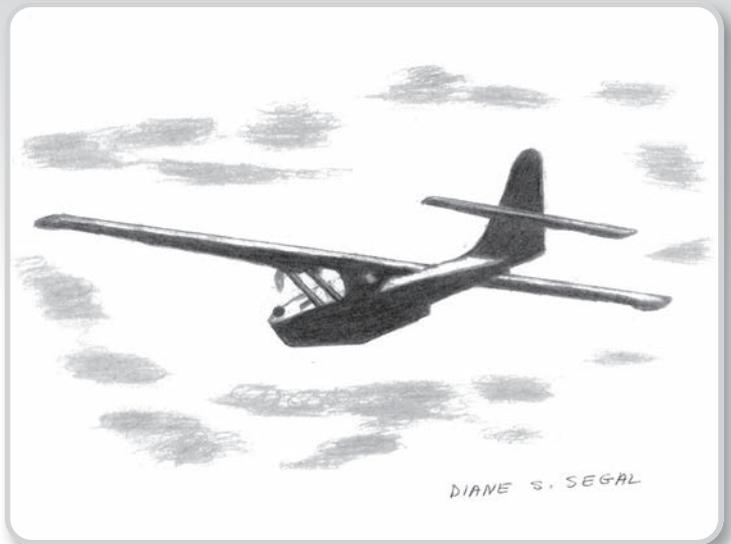
On the final Consolidated version of the Catalina, the PBV-6A

Work on the PBN-1 Nomad began at the NAF in July 1941

It was in February 1943 that the first aircraft was done

The last of the 156 Nomads produced did arrive
Delivery was in March of 1945

138 or 139 of the aircraft to the Soviet Union they went
Under the Lend-Lease Act were they sent



To lend or lease war supplies to any nation was provided by the 1941 Lend-Lease Act
Any nation "vital to the defense of the United States" was the important fact

The top-secret mission, Project Zebra, of the Lend-Lease program was a part
In Elizabeth City, North Carolina, it had its start

There the U.S. Navy trained over 300 Russian aviators who flew
Using the PBN-1 Nomad for use against German and Japanese submarines during World War II.

The Man in the Box

Addressing the human dimension of distributed aviation operations

by LtCol Michael J. Harper

Manfred von Richthofen, the World War I ace known as the Red Baron, is attributed with writing the now-famous aviation axiom, “The quality of the box matters little. Success depends upon the man who sits in it.”¹ Obviously, one should not take this statement literally, but the principle underlying it speaks to a subtle heuristic that is prevalent within our armed forces today: the U.S. military has a tendency to use technological advancements, such as smart weapons and stealth aircraft, to address emerging operational challenges. The development of the Distributed Aviation Operations (DAO) concept—which is Marine Aviation’s newest effort to support other emerging operating concepts such as expeditionary advanced base operations (EABO), stand-in forces, and distributed maritime operations—is a welcome and necessary approach to address our rapidly dwindling comparative advantage in the technological space. However, as Marine Aviation continues its rapid transformation through *Force Design* and implementation of the DAO concept, we must pay particular attention to the training and education of individual Marines. Specifically, we must educate aviation planners on the operational art behind these concepts; learn and, in some cases, relearn several core skills relating to signature management and communication in degraded environments; and truly foster a culture of initiative and effective risk management at every level. Without these investments, DAO will be ineffective at best or disastrous at worst.

The Operational Art of DAO

To successfully operationalize DAO, aviation planners at all levels and across all functional areas must have an in-

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Distributed aviation operations will test the critical thinking, technical skill, and decision making of individual Marines across the aviation community like never before.
(Photo by Capt Staci Morris.)

tuitive grasp of the operational art that underpins EABO, stand-in forces, and DAO. Operational art is, at its core, the conceptual analysis of strengths, weaknesses, and aims of combatants. It is the truest *why* that drives the *how* in the employment of combat capabilities. In the case of these new concepts, the point is to impose cost and risk impositions on the adversary by placing carefully tailored forces within the weapons engagement zone. The key,

however, is careful tailoring; in many cases, these forces must avoid targeting by remaining below the enemy’s targeting threshold or sufficiently complicating the attack through dispersion and other techniques. The usefulness and effectiveness of these forward positions lie not just in their effectiveness to sense, shoot, or otherwise threaten the enemy in meaningful ways but also in their relatively low targeting value to the enemy compared to a friendly, acceptable level of risk. Generally, aviation assets do not fit neatly into this mold. Deploying aviation assets to austere sites for more than a very short duration typically requires a relatively sizeable logistical footprint and, in most cases, traditional aviation detachments consist of at least dozens of personnel and tens of thousands of pounds of support equipment, tools, and parts that are difficult to displace or hide.

Attempting to distribute aviation capabilities in a way that is counter to the operational art behind the concepts that DAO is designed to support will likely yield negative results. Instead of creating a cost and risk imposition on the enemy, we would be doing so on ourselves. Though simple, this truth may be difficult to accept because it may, in many cases, prohibit the employment of aviation assets in locations and scenarios where they seem necessary for mission accomplishment. Aviation planners eager to support the Joint Force must approach these operational challenges soberly, recognizing that

their good intentions may result in the wasteful loss of some of our most valuable resources. A solid understanding of EABO operational art at the tactical level will help combat the bias to do things how they have always been done. Additionally, operational planners must scrutinize tasks to aviation units that have the “feel” of EABO. Leaders must be able to recognize unrealistic aviation employment scenarios and be willing to speak up to avoid negative training that reinforces bad habits.

Signature Management and Communications in a Degraded Environment

Gone are the days when aircrew, controllers, and supported commanders could expect a relative degree of sanctuary away from the forward line of troops, as well as ubiquitous, secure communications across the battlefield, either due to geography or the enemy. The prevalence of long-range precision fires, sensors, and electromagnetic and cyber warfare have fundamentally changed how aviation forces can base, displace, and communicate. The pilot in the cockpit, the bulk fueler at the forward arming and refueling point, and the intermediate-level mechanic at the forward-based air site must all understand the threat and know ways to counter it through signature management. At this point, however, personnel across the Marine Aircraft Wings are given widely varying degrees of signature management training relating to their occupational field, and exposure to a denied, disrupted, intermittent, and limited (DDIL) communication environment is generally limited to advanced tactical training venues such as the Weapons and Tactics Instructor Course and Service-Level Training Exercise.

The Marine Aviation community must review its training curricula and training venues for all military occupational specialties (MOS) that might find themselves within an enemy weapons engagement zone (a group that is rapidly expanding due to DAO) regarding practical signature management tactics, techniques, and procedures (TTP). One possible intermediate solution to address shortfalls would be for aircrew and



Training and education are essential for DAO. (Photo by Senior Airman Brooke Wise.)

aviation personnel expected to operate at forward sites to receive cross-training from ground reconnaissance subject-matter experts on such TTPs. Not only will specific skills such as the use of camouflage, light discipline, and concealment yield benefits, but it will also

ties to train to traditional, lower threat TTPs and, at times, decreased efficiency as measured by traditional metrics like sortie generation and training and readiness event completion. Individual Marines need higher quality reps and sets facing these skill-based challenges,

The prevalence of long-range precision fires, sensors, and electromagnetic and cyber warfare ... changed how aviation forces can base, displace, and communicate.

foster a stronger combat-hunter mindset among the ranks. Unit deployments for training should incorporate such training as well. Additionally, training across the force must emphasize and expand upon the use of core skills necessary in a DDIL communication environment, such as the use of communication windows, communication discipline, rapid and frequent rolling to alternate nets, and manual enciphering of messages over the radio. Finally, exercise planners and training officers should continue to adjust air combat element training to include a higher threat and requirement for increased distribution of the force, even if that leads to fewer opportuni-

ties to train to traditional, lower threat TTPs and, at times, decreased efficiency as measured by traditional metrics like sortie generation and training and readiness event completion. Individual Marines need higher quality reps and sets facing these skill-based challenges,

Risk and Initiative in Training and Combat

Few Marines on active duty today have truly faced the extremely high-intensity, large-scale combat operations that would arise during conventional conflict against a peer adversary. Partly as a result, despite being several years into the implementation of these *Force Design* initiatives, the Service is still wrestling to adapt its culture to meet



A UH-1Y Venom and AH-1Z Viper attached to the 15th MEU arrive at a forward arming and refueling point at Yecheon Air Base, South Korea during Exercise SSANG YONG 24. (Photo by Cpl Amelia Kang.)

the requirements of these emerging operating concepts, namely the ability to quantify acceptable risk, accept the unavailability of a pervasive and clear common operating picture, and reward initiative-based behavior among subordinates. More than ever, Marines must have a firm grasp of their commander's intent to include the acceptable level of

an impact on operational risk during DAO.

Conversely, regarding risk to mission, no Marine likes to lose, but we should be careful to avoid the feeling of losing in training at the expense of learning. Instructors within the aviation community have little difficulty in debriefing students on their mistakes.

... regarding risk to mission, no Marine likes to lose, but we should be careful to avoid the feeling of losing in training at the expense of learning.

risk to their forces without reliable communication back to the command post once the shooting starts. Leaders must be able to teach, trust, and communicate that trust to their subordinates to make certain risk decisions at their level. Marines no doubt cherish these ideas in principle as they are imbued in us early in our career, but in practice, they are much harder to live out in the aviation community, where tens of millions of dollars and many lives are at stake every single day. The temptation to eliminate risk to the force at the tactical level during training through centralized decision making will almost certainly have

However, the larger the training event, the larger the debrief size, and the more senior the training audience becomes, the more difficult it becomes to check the ego and be completely objective toward individual or even unit effectiveness, especially in front of superiors. Commanders, exercise designers, and evaluators must seek to craft training venues that accurately assess, allow for, and acknowledge mission failure with the ultimate aim of improving tactical readiness and proficiency. Especially as the Marine Corps wrestles with implementing DAO at scale, we must be more afraid of the power of self-deception

than the feeling of inadequacy, and as a result, be ruthless in our honesty while debriefing ourselves.

Conclusion

The rapid advances in capabilities and concepts across Marine Aviation to meet the demands of the emerging operational environment are no doubt critical, but they alone will be insufficient without a holistic approach that includes transforming the Marines themselves: specifically, how they approach the problem of distributing, how they fight in the air and on the ground, and how they make decisions. At the end of the day, combat is a human affair, and therefore we must endeavor to deliberately integrate a series of human-centered lines of effort in parallel with our technology-centered solutions. These changes will be difficult to implement, but they are within our grasp as long as we maintain a tenacity to win at all costs and a willingness to accept fresh and creative perspectives, two qualities that have enabled the Marine Corps to meet the nation's needs since its inception. The quality of the box, as well as the ways with which we employ it, does matter, but let us ensure we are investing in the individual who sits in it.

Notes

1. Michael Spencer, "The Downfall of the Red Baron: Lessons Learned from the First World War 'Ace of Aces,'" *From Balloons to Drones*, July 18, 2018, <https://balloonstodrones.com/2018/07/18/the-downfall-of-the-red-baron-lessons-learned-from-the-first-world-war-ace-of-aces/#:~:text=The%20quality%20of%20the%20box,182>.





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Featuring the Paintings of Col Charles Waterhouse, USMC (Ret) from left to right: Gooches Marines; Das Teufelhunden; Arthur Jackson, Peleliu; African American Marine in Vietnam.

Courtesy of the Colonel Charles H. Waterhouse Estate, Art Collection of the National Museum of the Marine Corps. Design by Tess Hatton.



Embedding METOC in the MAG

An optimized approach to dedicated ACE support
by Maj Will Hawkins, Maj John Bathon & MGySgt Eric Villanueva

USS Bonhomme Richard, 31st MEU, 23 May 2015, East China Sea

Sgt Martinez walked down the passageway, making his way toward the aviation combat element (ACE) ready room. In his hand, the meteorological and oceanographic (METOC) forecaster carried a Horizontal Weather Depiction—a critical tool for graphically assessing the operational impact of the weather. Dissatisfied with the limited, generic forecast normally provided, the lead planner called for an in-person, mission-focused update on Okinawa’s conditions. The Mei-Yu front—an annual weather phenomenon that brings persistent heavy rain, low ceilings, and reduced visibility over the East China Sea and Okinawa in late spring—had settled in and days of unrelenting rain had made operations increasingly complex.

Sgt Martinez entered the ready room and stood at the back, listening as Okinawa’s Terminal Aerodrome Forecast—an alphanumeric, 24-hour aviation forecast—was read over the speakerphone. Without pause, the forecaster on the other end of the line recited the Terminal Aerodrome Forecast, line by line:

“Zero-six to zero-eight, B-K-N zero-two-zero, O-V-C zero-three-zero. Zero-eight to one-zero, S-C-T zero-three-zero.”

The numbers and acronyms filled the space, and while they were technically accurate, they lacked context for the mission. The aviators in the ready room exchanged glances; there was no interpretation, no connection to their mission.

The lead planner turned to Sgt Martinez, “See what I mean?”

Sgt Martinez simply nodded, “Sir, I got you.”

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>>Maj Bathon is the Meteorological and Oceanographic Requirements Manager, assigned to the Oceanographer of the Navy, OPNAV N2N6E.

>>>MGySgt Villanueva is the Meteorological and Oceanographic Occupational Field Specialist assigned to the Information Intelligence Division, Deputy Commandant for Information, Headquarters Marine Corps.



Cpl Christian Wise (left) and Cpl John Taffner (right) before their upcoming deployment with VMM-363 to support combined air operations for Marine Rotational Force-Darwin. Cpl Wise is a meteorological and oceanographic forecaster and will be attached to the squadron S-2, providing environmental impact analysis in direct support. Cpl Taffner is a crew chief for the squadron. (Photo by Cpl Omar Thorne, VMM-363.)

Stepping forward, he presented the Horizontal Weather Depiction and began his briefing, "Sir, here is the current satellite imagery showing the position of the Mei-Yu front. You can see its west-to-east orientation, and it's expected to linger for the next several days. Your upper-level winds at flight level, and 5,000 feet above and below show a steady westerly flow at 40 knots with no indications of turbulence. For takeoff, you'll have ceilings at 2,000 feet with a 3,000-foot thickness. You'll be clear above 5,000 feet, and there are no additional overlying layers to worry about."

The difference in information and context was immediately evident. Instead of deciphering raw numbers, the pilots now had clear and actionable information; weather translated into operational impact. This was why forecasters needed to be in the ready room. A forecast is not just about data; a forecast is more important about understanding the weather, how it impacts the mission, and allowing the operator to adapt as required. Had Sgt Martinez been assigned directly to that ready room, he could have ensured the aviators had timely and constant access to the exact information required.

A Brief History Lesson

The Marine Corps has a long and storied history of leveraging weather to inform tactical decisions and ensure the safety of its personnel. The history of METOC in the Marine Corps is a story of continuous evolution and improvement, driven by advances in technology and the changing needs of the Corps. From the early days of shipboard observations to the current era of advanced computer modeling and satellite imagery, Marine Corps METOC has played a critical role in supporting the Corps' expeditionary operations. While the weather plays an always present and vitally important role throughout the Marine Corps, it has been especially emphasized within Marine Corps Aviation.

In the 1980s, METOC support expanded beyond the Marine Air Base Squadron to include expeditionary support within the Marine Wing Support Squadron (MWSS). Previously,

METOC detachments were embedded within the Marine Air Base Squadron, providing general aviation weather support to air bases and air stations. Recognizing the vital role METOC plays in all operations, especially expeditionary aviation, the Marine Corps extended its capabilities to the MWSS, ensuring enhanced support for the full spectrum of MAGTF operations. By relocating METOC detachments to the MWSS, the Marine Corps improved its ability to provide timely and accurate weather forecasting and observation capabilities for tactical operations while also enhancing METOC integration with other expeditionary combat elements.

In the late 1990s, the Marine Corps recognized the growing need to inte-

enable in supporting multidomain operations.

In a pivotal decision that shaped the future of Marine Corps METOC support, LtGen George J. Trautman III, then-Deputy Commandant for Aviation, directed the realignment of METOC from the MWSS to the Marine Air Control Group (MACG) within the Marine Air Control Squadrons in 2010. This move aimed to enhance the flexibility and responsiveness of METOC support within the ACE while streamlining access to equipment maintenance. Additionally, it reinforced the need for METOC capabilities to be more closely integrated with other combat support elements, such as command, control, and communications.

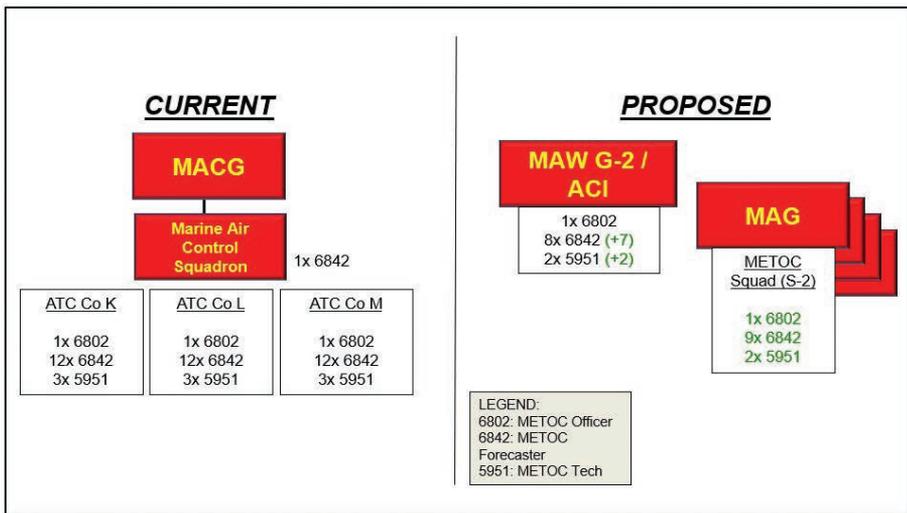
The Marine Corps has a long and storied history of leveraging weather to inform tactical decisions and ensure the safety of its personnel.

grate METOC capabilities with intelligence disciplines to provide more comprehensive support for operational planning and decision making beyond the ACE. Initially, METOC support teams were established within the MWSS to directly support intelligence formations. However, as the value of environmental data in intelligence operations became increasingly evident, the Marine Corps formalized METOC's role within the intelligence battalions, fully shifting that responsibility from the MWSS.

This transition marked a critical evolution in METOC's mission, expanding its role from providing general aviation weather support to developing intelligence-driven fused products. By combining atmospheric, oceanographic, and geospatial data with traditional intelligence sources, METOC personnel contributed to a complete common operational picture, enhancing threat assessments, targeting analysis, and battlespace awareness. This shift not only improved the accuracy and relevance of intelligence products but also reinforced METOC's role as a key

The current METOC organization within the MACG is based on the concept of a linear, air-land battle concept. However, the *38th Commandant's Planning Guidance* had articulated the core problem with that concept by stating, "The current force is not organized, trained, or equipped to support the naval force—operating in contested maritime spaces, facilitating sea control, or executing distributed maritime operations."¹ To provide the MAGTF, naval, and Joint Forces with accurate, effective, and efficient METOC support in this environment, the current employment construct must be realigned to meet modern and future operating concepts.

Today's METOC support to the ACE is sub-optimized for current and future warfighting tasks, operating five echelons removed from the aircrews it supports, creating a critical gap in timely, direct support. Additionally, METOC remains underutilized in aviation intelligence operations, where environmental data must be integrated with other intelligence disciplines to produce fused products



Excerpt from the 2025 Marine Aviation Plan indicating the current and proposed alignment of METOC in the ACE. (Figure provided by author.)

that extend beyond traditional weather forecasting. These intelligence-driven products are essential for operational planning, threat analysis, and decision making across the battlespace. Numerous examples of these deficiencies have been submitted to the Marine Corps Center for Lessons Learned, often coming directly from the aviators who lacked the direct METOC support they needed.

A Change in Focus for the Future

Coming full circle in the wave of change with *Force Design 2030*, the Deputy Commandant for Aviation has established the Multifunction Air Operations Center (MAOC) Transition Task Force Charter to carry out the Commandant’s directed action to “institutionalize MAOC.”² As part of the overall effort to institutionalize MAOC, there is an embedded initiative that will reorganize the MACG for the future fight. Within this initiative, the Marine Corps METOC community proposed realigning its ACE capability from the MACG to the Marine Aircraft Group (MAG) and Marine Aircraft Wing (MAW) headquarters to optimize and streamline support to the primary customer, the Marine aircrew. This proposal was briefed to the Marine Air Command and Control Executive Steering Committee in January of 2024 and received favorable support. Since then, the Aviation

METOC Realignment initiative has been favorably endorsed by the MAW commanding generals and both the Deputy Commandant for Information and the Deputy Commandant for Aviation.

JP 3-59, Meteorological and Oceanographic Operations, emphasizes that “METOC assessments and predictions support the commander’s understanding of the operating environment. Meteorological and oceanographic information and assessments are integrated into the Joint Intelligence Preparation of the Operational Environment, informing the J-2 and the commander how METOC affects employment capabilities.”³ Similarly, *MCRP 2-10B.6, MAGTF Meteorological and Oceanographic Operations*, reinforces the role of *METOC information* in feeding intelligence and guiding decision makers throughout planning and execution.⁴ Within *MCWP 2-10, Intelligence Operations*, METOC is listed as one of the four elements of geospatial intelligence, highlighting the capability as “collectors of METOC information” with the characterization of future and current conditions aimed to “mitigate adverse conditions/exploit conditions of opportunity.”⁵ Recognizing this critical role, the Marine Corps officially transitioned sponsorship of the METOC community from the Deputy Commandant for Aviation to the Deputy Commandant for Information in 2022. The shift fur-

ther aligned METOC with the intelligence community, ensuring its information and assessments directly support the planning and decision-making processes. It is within the scope of the shift in sponsorship that METOC’s future alignment was determined to best fit with other intelligence disciplines supporting the ACE.

Realigning METOC support from the MACG to the MAG S-2 and bolstering the current footprint in the MAW G-2 provide several key benefits to supporting the ACE in FMF operations. At its basic level, having Marine forecasters assigned directly to the MAGs will improve familiarity with the primary customer while also enhancing training and support as the Marines become intimately familiar with the type, model, and series of aircraft being supported. Furthermore, each MAG will also gain a METOC officer and senior staff non-commissioned officer, both of which will bring subject-matter expertise to planning and directing support to the aviators. These subject-matter experts will refine decision making by providing weather-informed risk assessments and mission-tailored environmental information. By establishing an organic METOC capability within each MAG, commanders will gain greater agility in supporting the flying squadrons based on varying missions and locations while ensuring tailored METOC support accounts for mission-specific, geographic, and operational variables.

Dispersed METOC personnel and equipment now resident within the MAG S-2 will further intelligence integration and allow the MAG commander to deploy customizable, scalable teams to support operations. Both opportunities highlight key directives of Marine Corps Intelligence, Surveillance, and Reconnaissance Enterprise efforts toward operationalization.⁶ Within the MAW G-2, the current two-Marine team of a METOC officer and chief will expand to include additional forecasters working directly within air combat intelligence. This addition will allow the MAW assistant chief of staff (AC/S) G-2 to also provide support teams to ACE equities outside of direct MAG support. Those equities include

but are not limited to aviation ground support, the Tactical Air Command Center, and the Marine Air Command and Control System.

Direct weather support enables aviators to make informed decisions about flight planning and execution while increasing the ease of access to information critical to the safety of flight. By providing detailed information about weather conditions, including wind, precipitation, visibility, turbulence, and icing, aviators can plan their missions to avoid adverse weather conditions or use them to their advantage. Direct weather support also facilitates the timely and relevant inclusion of Tactical Decision Aids into mission planning. These tools are tailorable to each type, model, and series and describe in detail how the environment impacts communications, onboard sensors, and various weapon platforms.

As the Marine Corps continues to plan toward operating in an increasingly complex and rapidly evolving

environment, the importance of accurate and timely METOC information and its impacts on operations will only become more critical. So too will the Corps' ability to have METOC information provided directly to units at the forward edge, supporting on-site and in realtime. Providing METOC information as an embedded capability allows commanders to make informed decisions, plan and execute operations with precision, and stay one step ahead of the enemy. Realigning METOC support within the ACE aligns with current and future guidance, ensuring that aviation operations receive mission-tailored environmental information where and when it is most needed. This realignment is a crucial step toward optimizing METOC integration while strengthening the Marine Corps' ability to adapt and dominate in future conflicts.

Notes

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Aviation Digital Interoperability

Advancing the entire MAGTF

by LtCol Scott Humr, LtCol Charlie Bahk, Maj Nicholas Halsmer & Capt Zach Curran

In today's fast-paced technology development cycles, the Services can procure a host of different capabilities more efficiently. While the speed of technology development has allowed the Services to experiment and move out quickly on procurement and experimentation, fast-paced technology adoption often leads to ineffective integration. However, through its digital interoperability (DI) initiatives and forthcoming digital operations (DO) concept, the Marine Corps is developing requirements for such technologies that are *born interoperable* and generating uniformed Marines who can integrate and enhance these capabilities through software development, data analytics, and knowledge engineering. Programs such as the Marine Air Ground Tablets (MAGTAB) and MAGTF Agile Network Gateway Link (MANGL) are forming the foundation for the integration of a variety of tasks and systems that allow the MAGTF to seamlessly integrate everything from aviation command and control (C2) to utilizing intelligent robotics and autonomous systems (IRAS).

The forthcoming DO concept will take Marine Corps DI efforts and enhance the development and integration of applications that ensure ease and reliability of sharing data and information between sensors and shooters. However, much work is still underway and requires an enterprise approach to achieving DI across the Service. To further advance the lethality of the MAGTF, we provide an overview of DI, efforts currently underway, and the importance of DO to DI. Last, we finish

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by outlining challenges that must be overcome and a way ahead for future DI across the MAGTF.

Centrality of DI

The centrality of sharing information across the 21st-century battlefield cannot be understated. Programs such as Combined Joint All-Domain Command and Control, which forms the backbone of modern kill webs, and sharing information with fellow pilots in the ready room, require seamless connectivity between a host of different devices to operate effectively. A key tenet of DI is to foster a “digital culture.”¹ Such a digital culture, however, will only be created through commanders driving their units to work with DI technologies daily and firsthand. Organizational cultures, in general, are developed through shared experience

that fosters a common understanding and behavioral norms.² Therefore, Marine Corps units that embrace DI as a core tenet of their operations can help set the conditions for evolving their organizations toward greater efficiency and lethality.

The recently released *2025 Marine Corps Aviation Plan* states: “The goal of MAGTF DI is to provide the required information to the right participants at the right time to overcome an adversary while improving efficiency and effectiveness of our operations in conflict and competition.”³ Moreover, DI is a key enabler of C2. Digital interoperability provides the connective tissue to C2 which allows “commanders to make the most of what they have—people, information, materiel, and, most importantly, time.”⁴ For these reasons, DI is a linchpin for advancing how the

MAGTF must operate to succeed on today's battlefield. A short background and overview of a few programs and concepts can help elucidate how DI is improving MAGTF operations.

Enhancing Digital Interoperability for Tactical Advantage

In the Spring of 2023, the Capabilities Development Directorate, Combat Development and Integration was tasked with identifying a common user device that would meet the current requirements of each warfighting tenet while also aligning with emerging technologies and threat mitigations. A series of cross-functional working groups and operational planning teams decided that the best course of action entailed the consolidation of various non-interoperable tactical mobile user devices under a single program: MANGL. Thus, MANGL brought together various technologies and capabilities to enhance the Marine Corps' fighting capabilities and overall DI effectiveness. Furthermore, the fiscal years 25–29 Marine Corps Enterprise mobile computing strategy identifies the following problem statement:

The Marine Corps has a limited capability to share situational awareness, disseminate a common operational picture, common tactical picture, and common intelligence picture, and collaborate across the enterprise within a common Mobile Computing Endpoint ecosystem.

The MANGL and MAGTAB have the potential to become the means to solve this problem.⁵

In January 2025, the Deputy Commandant, Combat Development and Integration signed a policy letter declaring the MAGTAB as the Marine Corps' administrative and tactical solution for mobile computing devices under the MANGL Program of Record. The MANGL is now a critical component of the Marine Corps' integrated network approach, enabling the creation of digital combined-arms effects by connecting existing and emerging command, control, communications, computers, cyber, and intelligence, surveillance, reconnaissance, and targeting capabilities. This program provides a suite of tailor-

able capabilities that facilitate information sharing across various waveforms, networks, and sensors, supporting the creation of a robust and interconnected network. The primary components of MANGL include a transport layer capability, a network gateway, secure wireless connectivity, and a mobile computing device (MCD), which work together to enable seamless communication support data flows while providing a secure operating environment for tactical applications. The *Enterprise Mobile Computing Strategy* goes on to cast a broad yet achievable vision:

While the proliferation of Mobile Computing Endpoints (MCEs) in support of mission threads offers significant benefits, it becomes essential that the solutions and their supporting ecosystems are aligned to maximize the opportunities afforded by this technology. Marines, sailors, and supporting civilians alike must have access to a cohesive ecosystem of mobile computing capabilities and applications aligned with both business and warfighting functions, enabling seamless access to optimized data regardless of location or time.⁶

By establishing linkages between tactical communications and distributed sensors, MANGL enhances collaboration and shared situational awareness and supports the Marine Corps' contributions to Combined Joint All-Domain Command and Control attributes, including enhanced decision speed, resiliency, and agile command and control.

Digital Interoperability in Aircraft Maintenance.

The Marine Corps' aircraft maintenance practices stand to benefit greatly from DI modernization efforts. Despite efforts to enhance data analysis over the past five years, the Navy and Marine Corps Aviation Enterprise still lags behind the commercial aviation industry in harnessing the power of digital avionics technology through DI. The rapid growth of technologies and advancements in instrumentation have generated a tremendous amount of raw data, but the Marine Corps has struggled to keep pace with its civilian

counterparts in effectively utilizing this data. This has resulted in a shortage of trained personnel who can interpret and translate data into actionable insights, such as predictive maintenance, digital twins, and automated work orders, thus hindering the Marine Corps' ability to adapt to technological advancements in maintenance. To fix this, the Marine Corps has developed the Smart Enhancement of Maintenance Processes for Expeditionary Readiness (SEMPER) Project.

The SEMPER project aims to transform Marine aviation maintenance operations by developing a digitally interconnected environment that leverages machine learning, data analytics, and collaborative tools. The project seeks to enhance operational efficiency, situational awareness, and networked communications by streamlining maintenance processes through user-friendly interfaces, to improve aircraft readiness and reduce downtime. To achieve this, SEMPER will implement key objectives such as standardization, interoperability, data-driven maintenance, and operational flexibility, utilizing a 5G or cellular mesh network infrastructure, mobile maintenance devices, and a scalable information technology architecture. The ultimate goal is to increase aircraft readiness, reduce downtime, and improve maintenance efficiency, with key performance indicators including aircraft readiness rate, reduction in downtime, and improvement in maintenance data tracking. By providing a scalable and sustainable solution, SEMPER will enable maintenance personnel to access and share critical data quickly and efficiently, making informed decisions and optimizing resources to support Marine Aviation functions.

DI in Support of UxS Common Control

Unmanned systems (UxS) have been a key part of Marine Corps operations for many years. Moreover, strategic guidance identifies that "the Marine Corps requires unmanned air, surface, and ground systems to fully exploit our inherent expeditionary nature and capabilities."⁷ However, there has not been an identified mechanism

incentivizing industry to pursue UxS common control (UCC) for capabilities across warfighting functions that is DI from the start. For instance, UxS operating in a variety of different domains (e.g., air, ground, maritime surface) and sizes can complicate the ability to standardize and control specifications, resulting in a different controller for every type, model, and series of UxS. To complicate matters, UxS is expected to scale for the Marine Corps in the near future, and the need for UCC which is interoperable is now a must. In fact, the Department of the Navy's *Unmanned Campaign Framework* identified the need for such common control and interoperability back in March 2021.⁸ The benefits of a DI-enabled UCC cannot be understated. A UCC can simplify and increase the speed of UxS control for operators by generating efficiencies in training while reducing equipment redundancy and cognitive

in developing overall concepts of employment to fully integrate IRAS capabilities into our formations. Unmanned systems common control, supported by DI, will seek to integrate all future IRAS technologies into the larger ecosystem of other intelligent technologies. By ensuring IRAS technologies meet the Marine Corps' DI requirements, we create the ability to seamlessly connect these systems to ensure proper C2 is exercised while helping reduce the cognitive load on the individual Marine. Therefore, DI is crucial for ensuring our IRAS systems operate harmoniously across the MAGTF.

Mutual Support of DI and DO

Digital interoperability, as a concept, is part of a larger ecosystem of technologies, processes, and people. Hardware and software are concomitant enablers of the entire technology stack that makes DI possible. Today, DI

inforce the Department of Defense's Data Strategy, where data is VAULTIS: Visible, accessible, understandable, linked, trustworthy, interoperable, and secure.¹¹ Hence, DI and DO are inseparable concepts that support the larger efforts for improving the Marine Corps' digital transformation across all elements of the MAGTF.

Way Ahead

Success on the modern battlefield is privileging those units that emphasize the importance of data and information. Units that take a data and information-centric approach understand that these key resources must be managed in a way that is on par with ammunition and subsistence.¹² As a result, these units will position themselves as critical nodes within Joint Force killwebs.¹³ However, a great deal of effort still lies ahead for the entire MAGTF to benefit from DI efforts adopted more broadly.

First, all programs that have any data and information exchange requirements must make digital interoperability a cornerstone of their programs. Making DI an afterthought or one of the first things that is cut when budgets are tight will likely require more money for integration in the long term. Similarly, bolting on DI after the fact can come with a host of challenges and technical debt that will, in the long run, make efforts unsustainable or dysfunctional in a way that sets a program back. Yet, ensuring all tactical and enterprise programs are *born DI* will help promote development and can stay ahead with DI efforts across all programs. Coordination with the Marine Corps Cyber Operations Group for integration and appropriate level of management of mobile devices at the tactical edge is a critical component to achieving this. Digital interoperability provides the foundation for the scalability of applications and promotes the shareability of data across a variety of digital ecosystems.¹⁴ Ensuring DI is a central feature benefits from network effects such as for each additional DI node that is added, the benefits increase nonlinearly, thus becoming more than the sum of its individual parts.

Second, DI must continue to expand outside of the aviation community.

Success on the modern battlefield is privileging those units that emphasize the importance of data and information.

burden on operators. Consequently, DI plays a significant role in ensuring Marines can operate various UxS through a common MCD and communications through MANGL nodes.

DI Is Central to IRAS

The proliferation of IRAS systems throughout the current and projected battlefields of the future is anticipated to increase.⁹ In fact, it is becoming untenable to procure IRAS if there is not a common DI foundation upon which control of these systems is built. For instance, Navy leadership commenting on the current Replicator initiative disdained the thought of "every fleet commander buying their own software and robots" without thinking how they were going to "connect the dots," thus calling for all the Services to sync up on solutions.¹⁰ For these reasons, DI and our requirement for a UCC will position the Marine Corps to lead the way

is providing the fertile ground for Marines to develop innovative software applications at the point of need for their commanders. A forthcoming DO concept is projected to empower units with Marines armed with the digital tools and skills they need to enhance their unit's capabilities while maintaining a competitive edge on the battlefield. In fact, DO takes a broader view focused on the digital transformation of the Marine Corps, which is a comprehensive and continuous digital transformation across all operations. Digital interoperability and DO are, therefore, highly complementary efforts that go hand-in-hand for improving warfighter outcomes and more fine-grained control by commanders. At scale, DI and DO will provide commanders with the ability to fully take advantage of their data with the ability to share it vertically and laterally. Additionally, DI and DO are reciprocally beneficial efforts that re-

While DI technologies such as MAGTAB and MANGL were conceived in the ACE, they are MAGTF element agnostic. Just as aviation maintenance is positioned to benefit from SEMPER, elements of the MAGTF, such as the ground and logistics combat elements, both have similar maintenance processes that could equally profit from the same program and approach. Combined with some of the DO efforts currently being pursued by the Marine Corps Software Factory, capturing data digitally through DI devices will position the enterprise to use advanced data and analytics techniques, such as machine learning, for predictive maintenance.¹⁵ Moreover, such an integrated DI approach will help Marines fight at *machine speed*.¹⁶ However, if paper-based processes are continuously privileged, the Marine Corps will find itself out-cycled by adversaries who can maintain higher readiness levels. Additionally, DI technologies such as MCD, if issued at

entry-level training, could become part of a larger effort to digitally deliver educational content to Marines throughout their career, therefore inculcating the use of such devices in a way that allows them to be productive anywhere and become more comfortable creating, briefing, and sharing content from their devices. Such MCDs could unleash greater productivity across the enterprise and further advance through DI.

Third, the proliferation of both manned and UxS throughout the modern battlespace demands DI as a core capability across all platforms. Battlefields in Ukraine, Israel, and across the Red Sea are demonstrating how the proliferation of assets across all domains is making identification and deconfliction particularly challenging. However, continued investment in the modernization of “MAGTF DI, to bring together sensors and tactical data through a robust transport layer to the appropriate enclave, at the right clas-

sification in the appropriate domain”¹⁷ must continue. Such investments with appropriate research, development, and experimentation are needed to advance DI efforts that will bring in Tactical Targeting Network Technology, Link-16, and other military communication waveforms.¹⁸ Such investments are critical for the entire MAGTF and present additional opportunities to advance DI across currently disadvantaged MAGTF systems.

Ultimately, a key future objective of MANGL is to streamline device operation and provide access within multiple security enclaves from a single MCD. Referring back to the *Enterprise Mobile Computing Strategy*, “The ultimate goal would be to achieve a “single pane of glass” user interface capable (when necessary) of displaying information from multiple classifications, thereby eliminating the need for additional hardware. This approach will empower organizations to develop applications and utilize

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peripherals for common, consumable endpoints instead of relying on dedicated hardware.” Technological solutions need to be pursued that position every Marine Corps community to field these types of devices with tailored mission applications if we are serious about providing real utility, situational awareness, and decision-making capability in the physical hands of Marine leaders.¹⁹

Conclusion

The future of warfare is increasingly centered on software, which is becoming the critical enabler in helping the United States out cycle its adversaries.²⁰ Marine Corps Aviation is helping set the conditions to allow the MAGTF to take advantage of these changes in warfare through its DI efforts. Indeed, the Marine Corps is moving out with a full 30-inch step with DI and DO to best position the Marine Corps for operations in any climb and place. Both DI and DO will play an outsized role in

Technological solutions need to be ... about providing real utility, situational awareness, and decision-making capability in the physical hands of Marine leaders.

ensuring our Marines remain the most lethal. To wit, the *39th Commandant’s Planning Guidance* stated, “My observations over the last year reinforce my belief that *command and control, as well as our ability to share data*, will play an outsized role in future conflict, especially in realizing distributed concepts such as the Stand-in Forces and Expeditionary Advanced Base Operations (EABO) [emphasis added].”²¹ We could not agree more with the Commandant: DI and DO will form the foundation for ensuring our Marines can C2, operate UxS, IRAS, and share data as they do their part as the “JTAC of the Joint Force.”²² For these reasons, the Marine Corps stands ready to achieve the Nation’s objectives: “to deter conflict, and when deterrence fails, to defeat our Nation’s enemies in battle.”²³

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Optimizing the Air Fight Today

Maximizing lethality and survivability

by Maj Matthew D. Hamtak

“Those who are able to adapt and change in accord with the enemy and achieve victory are called divine.”

—Sun Tzu,
The Art of War

Imagine multiple generations of friendly aircraft and collaborative combat aircraft (CCA) launching from distributed locations against an invading, multi-axis air and sea force. The adversary, embracing a high-risk strategy, has equipped its force with bleeding-edge, unproven weapons systems. When Marines respond, what tactics should be their focus? Should their tactics be updated on the fly? Can we rely on a select few to develop, wargame, and disseminate updated or refined tactics without incurring the risk of defeat? Is there a way to quickly optimize our actions at the tactical or operational levels to maximize our lethality and survivability? Given the potential for a peer adversary to disrupt the Marine Corps’ technological advantages across all domains, we must pursue optimization across the total force to effectively close the loop between tactics and operational art. Optimization should be demonstrated in the air domain today. While modernization initiatives such as Project EAGLE are what the Marine Corps needs, these large initiatives tend to be cumbersome

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Japan Air Self-Defense Force, Royal Australian Air Force, and U.S. 4th and 5th generation aircraft fly in formation over the Pacific Ocean during Exercise CAPE NORTH 25, February 2025 to streamline combined tactics and, if needed, win in an armed conflict. (Photo by Cpl Chloe Johnson.)

and slow to implement due to their size, scope, and long-range targets, but optimization tooling is an incremental step toward embracing a data-centric culture for the future today.

From the first aerial dogfights with pistols in World War I’s Battle of Cer to today’s beyond-visual-range air-to-air missiles, the character of air combat is constantly evolving based on tech-

nology and the information at hand. Due to the proliferation of weapons technology and the rapid progress of adversary technology, air-to-air (A/A) tactics need to evolve faster than those developments. While artificial intelligence (AI) continues to develop, optimization techniques can assist in the development of A/A tactics today. While aviation tactics development and

standardization rely on Marine Aviation Weapons and Tactics Squadron One (MAWTS-1), it is limited in manpower, time, and historical bias. This limits their ability to quickly evolve and optimize tactics to their full potential and disseminate them across the fleet. While traditional, heuristic tactics may achieve a level of lethality and survivability, those tactics may not be an optimized solution. Optimization does not equate to improvement; optimization is a mathematical method that solves complicated, multi-variable, quantitative problems. Optimization requires identifying mathematical relationships and setting objectives. Optimization can be expanded and distributed to other facets of maneuver warfare. In doing so, Marine tactics can evolve faster than those of our adversary.

Accelerating Air Domain Decision-Making and Tactics

The Marine Corps prides itself on brilliance in the basics. The Marine Corps studies, rehearses, and debriefs tactics to make them second nature. Executing tactics like second nature quickens decision making, our observe-orient-decide-action loop, by allowing higher levels of observation and orientation to be applied to the evolving situation, and thus, one adapts faster and makes better decisions and actions. As our observe-orient-decide-action loop quickens faster than the adversary, it leaves our adversary frustrated, neutralized, and defeated.

Now, consider beyond visual range A/A combat through the simple analogy of battle waged with bows and arrows. While the bow and arrow have existed for millennia, the development of the longbow enabled killing at range using accurate missile systems that pierced armor at hundreds of meters. The longbow was a force multiplier. For example, in 1415, at the Battle of Agincourt, the English were able to defeat a numerically superior French force through the wide use of longbowmen. However, it took time to train longbowmen to become quick, accurate, and coordinate fires. The longbow was eventually supplanted by the invention of firearms. Firearms provided the ability

to amass accurate fires with less training. The ease of use allowed units to train together in quick, coordinated fires. Training together improved coordination and made units more adaptable and agile on the battlefield.

Currently, the U.S. military is in constant competition for longer ranges, more accurate, and smarter air-to-air missiles (better arrows). Concurrently with that competition is an AI competition, autonomously operated unmanned aerial systems, the next offset (firearms to the longbow). For instance, in April 2024, the Air Force contracted with General Atomics and Anduril for

tions to develop tactics due to limited time and manpower.

Following tactics validation and verification (V&V) in simulators, the updated tactics are disseminated to the fleet, and the fleet practices and trains to these new standards. This cycle can take months for the fleet writ large to become proficient at the new tactics: analogous to training a longbowman on a new missile or tactic. Integrating computerized optimization techniques into tactics development, V&V, and training, we can automate, tighten, and *optimize* decision making, tactics generation, and processes at the schoolhouse

The Marine Corps studies, rehearses, and debriefs tactics to make them second nature.

their CCA with initial operational capability before 2030. Meanwhile, the Marine Corps is testing and evaluating Kratos' XQ-58 Valkyrie for the CCA mission. Defense Advanced Research Projects Agency has the Air Combat Evolution program, which seeks to automate aircraft using AI in air combat maneuvering (dogfighting) to increase trust in autonomy and scale to more complex tactical air applications. However, these projects are still on the horizon and are not in use. Air-to-air missiles commanded by manned aircraft have yet to be supplanted by autonomy, but how can manned aircraft become more adaptable, agile, and resilient to air threats?

Air-to-air tactics are based on friendly and adversary aircraft and missile capabilities. Any changes or updates to capabilities require weapons schools and their contractors to lock themselves away, dedicating valuable time and manpower to understanding the new capability, manually developing new or improved tactics, and flying in simulators to validate their tactics. Manual development relies on instructor education, experience, creativity, and proficiency in operating weapons simulation software. Weapons schools can only explore, test, and evaluate a limited number of situations and itera-

or at the fleet level prior to a mission. Optimizing tactics greatly accelerated the decision-making cycle, especially when compared to traditional manual problem-solving methods.

Optimization Explained

Optimization is not the same as making better or improving; while optimization can improve systems, it does so in a mathematical, analytical process. Design and industrial engineering use optimization across aircraft, automobile, rocket, and shipbuilding design and manufacturing to make the most effective products and processes based on the tradeoff space. There exist several types of optimization methods, but in general, optimization is a prescriptive tool that arrives at solutions based on known, quantifiable relationships within a system. Optimization finds optimal solutions by adjusting the system variables. In engineering design, these optimized solutions can maximize or minimize the system size, weight, power, or cost. Within a multi-dimensional problem space, variables can be adjusted linearly, non-linearly, or randomly to find a valid solution or solutions depending on the objectives. Through automated iterations, variables change and interact against one another, and the solutions are scored and ranked.

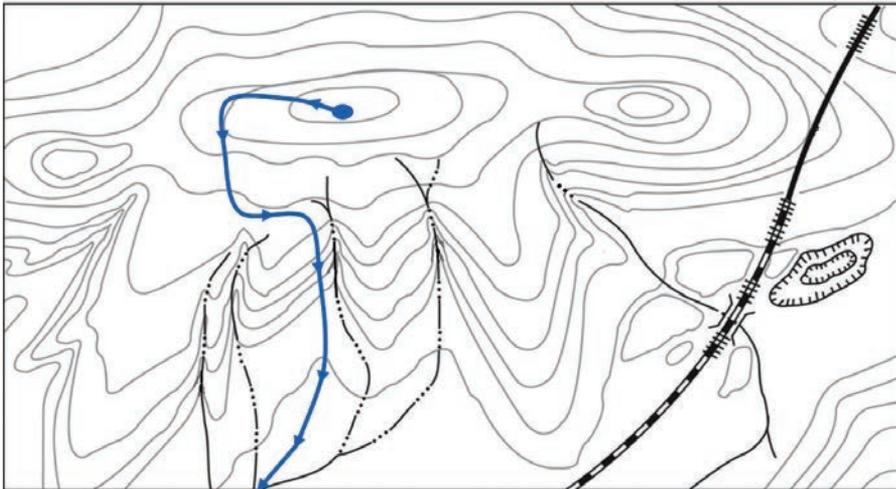


Figure 1. Terrain presents a three-dimensional problem. November 2013. Arrow path overlay by author. (Source: Headquarters, Department of the Army. TC 3-25.36 [FM 3-25.26].)

Optimization can be done today with only a few hundred to a couple thousand lines of code, about as many lines as are in this magazine.

Through this process, optimization explores the problem space. Solution fidelity can vary based on the computing power assigned to the problem. However, even rudimentary optimization can explore areas once dismissed or never thought of and find tactical creativity and tactical predictability. Exploration can find new, ingenious solutions or validate previous claims. Through thousands to hundreds of thousands of iterations, optimization explores tactics faster than manual tactics generation. There can be a variety of outcomes optimized and compared against one another to inform decision makers, but only through optimization can that quickly and numerically be performed. As an example, Figure 1 depicts a terrain map as a three-dimensional problem with hills, ridges, and roadways that seeks to optimize a gradual, traversable path from the highest to the lowest point while minimizing observation from the roadway.

While optimization can be characterized as narrow AI, it is not machine learning, reinforcement learning, or general AI because relationships are

already defined. Air-to-air combat is constrained by aircraft and missile physics and dynamics, making it ideal for optimization. While optimization solution exactness depends on increasing computational power, generally, optimization formulation is simpler and requires much less computing power to

explore a problem space and arrive at a solution. Optimization can be done today with only a few hundred to a couple thousand lines of code, about as many lines as are in this magazine.

Optimized Example Solution

A common example of optimization is particle swarm optimization (PSO). Particle swarm optimization applies the concepts of a swarm, like swarms in nature, to solve a problem. Each particle varies its variables to arrive at a solution, and then, this solution is compared to other particle solutions. The particles work together to coalesce toward the best answer. As the particles transverse the problem space, they discover new areas or dimensions. Optimizing A/A tactics would seek to maximize combat power and increase lethality and survivability while reducing the time cost. The A/A fight has several quantifiable variables, such as positioning, aircraft performance, fuel state, weapons loadout, etc., that change throughout a fight. An example of an A/A engagement could be against a scripted opponent, which would then generate hundreds of iterations and generations of flight paths and missile employment based on the specific aircraft capabilities, with each generation improving in weapons employment and survivability. The optimized solution could be tested, refined, and studied by adjusting the

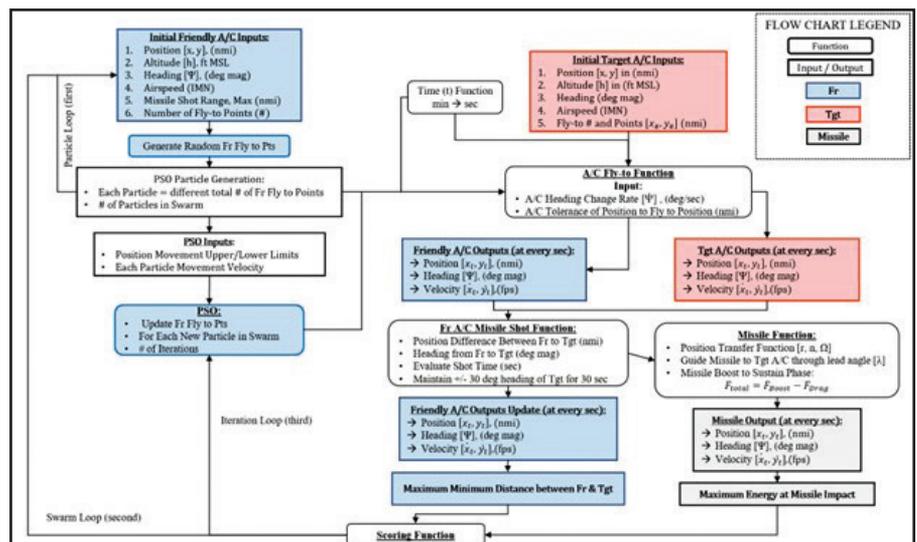


Figure 2. Normalized objective function and PSO flow chart. (Source: Hamtak, Beyond Visual Range Air-to-Air Missile Employment Optimization: Problem Formulation, Particle Swarm Optimization, and Growth, unpublished aerospace engineering graduate project from North Carolina State University, December 2022.)

scripted adversary through game theory and adversary sampling to improve and learn traits within the optimization. A simple example of a two-dimensional PSO engagement flow chart is presented in Figure 1.

Application of Optimization

An optimized solution validates previous manually created weapons school solutions and provides higher levels of confidence in tactics. It can also provide a variety of new tactics. Even if the optimized solution does not match or align with the weapons school or commander's intent, optimization provides insight into unexplored problem areas. With a valid optimization software model, the program could be distributed pushed down and out from the weapons school to fleet squadrons to tailor and adapt squadron tactics based on the current in-flight situation or phase. Higher fidelity optimization modeling could also be performed at command-and-control nodes with broadcast updates in realtime to players. Adapting tactics makes forces tactically agile, more effective, and less predictable by quickening our decision-making process against an adversary. Optimized tactics development could be phased into localized training to improve the mental agility and adaptability of aircrews.

While calculating and cueing aircrew to use the optimized tactics airborne would be difficult. There are difficulties and airworthiness issues regarding updating the human-vehicle interface to display realtime updates, but the Marine Air-Ground Tablet (MAGTAB) provides an in-cockpit compute and display capability to the aircrew and could have the future capability to integrate with the aircraft. Through a well-established and optimized prescriptive system, one can make a reactive, situationally rules-based system that requires less computational power. The MAGTAB can find the optimized solution based on all players' realtime loadout, fuel, and assessed tactic, and then, the MAGTAB can assist in providing and displaying tactic assistance gouge.

The optimized mission execution analysis could be brought back post-

flight into debriefings to improve not only the algorithm but also the aircrew's learning. Overall, optimizing tactics to current situations engrains quantifiable agility in our systems. These individual optimization models are scalable and could be expanded and layered into larger groups of aircraft and multi-domain force packages.

Application Hazards

As the optimization model exists in a simulated environment, "All models are wrong, but some are useful" (George E.P. Box), and there should be caution jumping headlong into relying solely on simulations. One could and should argue for continued adherence to standardization and authority to deviate from validated and approved tactics. Marines should continue to study,

variables in an A/A fight to explore the battlespace and arrive at not just an effective solution but an optimized solution. These methods can be explored and quickly incorporated into tactics development today. Optimization can not only be applied to tactics development and V&V, but it can help train, prepare, execute, and debrief a fight especially as the fight develops and one deviates from standard tactics.

Now imagine a friendly aircraft launch to defend against the hordes. They get realtime updates to their tactics and timelines based on the events of the day. Maybe some of these tactics they have not seen before, nor has the adversary, adding an element of unpredictability and surprise, but aircrew, through practicing optimizing tactics, trust the optimization models. The

This model and method of thinking cannot just reside in the air domain, but it should be expanded, disseminated, and integrated into all domains ...

practice, and rehearse basic tactics to maintain the most proficient *man-in-the-box*. But standard tactics can be predictable. Basic tactics provide a baseline from which these advanced, optimized tactics can be woven together and adapted into common practices. Advanced, optimized tactics could augment basic tactics. Optimizing a fight based on the current situation and intelligence statistically puts the *man-in-the-box* in the best possible situation giving a higher probability of lethality and survivability; thus making it a *man-plus-in-the-box*.

Conclusion

Optimization is a building approach to a future of incorporating more computer systems and autonomy into our decision-making process and trusting autonomous systems. Optimization provides a quick method to accelerate and V&V our decision-making processes, and these methods are easily available today. Through optimization, one can identify and adjust relationships and

combined force quickly and effectively repels the invading force. The speed at which deters future adversary actions. This model and method of thinking cannot just reside in the air domain, but it should be expanded, disseminated, and integrated into all domains as we await more robust general AI. Optimization is not simply a matter of systems refinement in one domain, it is a form of operational art that can enable us to meet and defeat an adversary's attempt to take bold, disruptive, and potentially war-winning risks.



Aviation Command and Control and Ground Support is Critical to Distributed Aviation Operations

Enhancing distributed aviation operations: Integrating aviation ground support into the Marine Tactical Air Command Center

by Maj George L. Mardre

During Weapons and Tactics Instructor Course (WTI) 1-25, the aviation combat element (ACE) commander faced a critical decision after an enemy strike at a forward arming and refueling point (FARP): where to reroute aircraft while ensuring operational FARPs could absorb diverted aircraft without losing combat tempo to guarantee ground forces remained protected. Without integrating aviation ground support (AGS) in the Marine Tactical Air Command Center (TACC), decision makers would have faced realtime challenges, leading to aircraft routing delays and potentially jeopardizing mission success. This scenario underscores a growing challenge in modern Marine Aviation—sustaining and coordinating distributed aviation operations in a contested battlespace.

Since the former Commandant, Gen David H. Berger, introduced *Force Design* in March 2020, the Marine Corps has grappled with concepts such as expeditionary advanced base operations, littoral operations in contested environments, and, more recently, distributed aviation operations.¹ The Marine

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Corps' shift to the Pacific Theater has accentuated the ACE's critical role as the MAGTF's most flexible and responsive force in crisis response and potential conflicts with the pacing threat of the People's Republic of China (PRC).² As *Force Design* concepts mature, the 39th Commandant, Gen Eric M. Smith, emphasized in his *Initial Planning Guidance* in August 2024 that bottom-up refinement across the force is critical.³ The ACE commander must overcome significant challenges in distributed aviation operations. Aviation ground support and aviation command and control (AC2) as aviation command and control and ground support (AC2GS) is essential to sustaining MAGTF and Joint Force operations.

The *2025 Aviation Plan* states that the "Marine Air Control Group (MACG) and Marine Wing Support

Squadron (MWSS) provide an AC2GS system unique in the joint force that optimizes the control of aircraft and missiles, facilitates aviation operations from austere sites, and enhances lethality."⁴ Marine Aviation leaders must refine AC2GS operations to counter the pacing threat by enhancing AC2GS relationships and refinement of an AGS common tactical picture (CTP). More importantly, integrating AC2GS will help commanders and their staff manage risk, develop operational courses of action, and support the MAGTF's scheme of maneuver. To enhance operational tempo, risk management, and aviation sustainment in distributed aviation operations, the Marine Corps must institutionalize an AGS cell within the Marine TACC as a crucial step to AC2GS integration. This study examines doctrinal gaps, insights from



A bulldozer clears brush during a field exercise at Jungle Warfare Training Center, Okinawa, Japan. (Photo by LCpl Justin Marty.)

WTI 1-25 experimentation, and the evolving AC2GS framework to demonstrate the necessity of AGS integration in the Marine TACC and updated aviation doctrine to ensure success in future conflicts.

A Historical Look at AGS Integration

Given AGS's importance in distributed aviation operations and the challenges facing Marine Aviation, analyzing AGS doctrine and the current state of AC2GS experimentation is essential. The *MCWP 3-20, Aviation Operations*, and *MCRP 3-20F.2, Marine TACC Handbook*, both lack clear guidance on AGS integration into the Marine TACC. The Marine TACC is the "operational wing command post from which the ACE commander and his staff plan, supervise, coordinate, and execute MAGTF air operations ... it integrates the six functions of Marine aviation with the MAGTF command element."⁵ These publications cover logistics planning and aviation support but neglect to define a distinct AC2GS framework. Without formal AC2GS integration, AGS operations remain disorganized, jeopardizing sortie generation, FARP delays, and slowing response times in combat. The Marine TACC lacks an AGS cell, and the *Handbook* does not mention AGS. The closest mention within the *Handbook*

is in reference to logistics planners as functional planners in future plans and logistics watch officers in current operations. The lack of AC2GS integration creates challenges in operational tempo, risk management, and aviation sustainment for an ACE commander during distributed operations, necessitating an updated doctrinal approach.⁶

Marine Aviation Weapons and Tactics Squadron One (MAWTS-1) excels in tactics development, bottom-up refinement, and force empowerment for contemporary and future engagements. Each year, MAWTS-1 runs two seven-week WTI courses incorporating advanced aviation tactical training across the six functions of Marine Aviation to develop weapons and tactics instructors for the FMF. The WTI serves as a key venue for tactical development and experimentation, leveraging high sortie volume and red cell integration to simulate future conflicts. As LtCol Brendan B. McBreen noted in his article, "Fundamental Change is Free," "much of the current debate on military transformation focuses on things, and not enough of the debate emphasizes ideas."⁷ Marine Aviation Weapons and Tactics Squadron One seeks to continue identifying and supporting disruptive technology to gain a competitive advantage in the future fight as well as ideas that help influence tactics, techniques,

and procedures development to determine how the ACE can best fight now and in the future. The *MCWP 5-10, Marine Corps Planning Process*, says it well: "The better the commander understands the situation and problem set, the more self-evident the solution."⁸ The ACE requires the modernization of the Marine Air Command and Control System (MACCS) to succeed in the future fight. The MACCS must give commanders a complete view of the battlespace, including ground sites and AGS capabilities. As the senior MACCS agency, the Marine TACC is where an ACE commander and staff will "plan, supervise, coordinate, and execute MAGTF air operations."⁹ Marine Aviation must revisit the Marine TACC's makeup to better enable combat operations against the pacing threat in distributed operations.

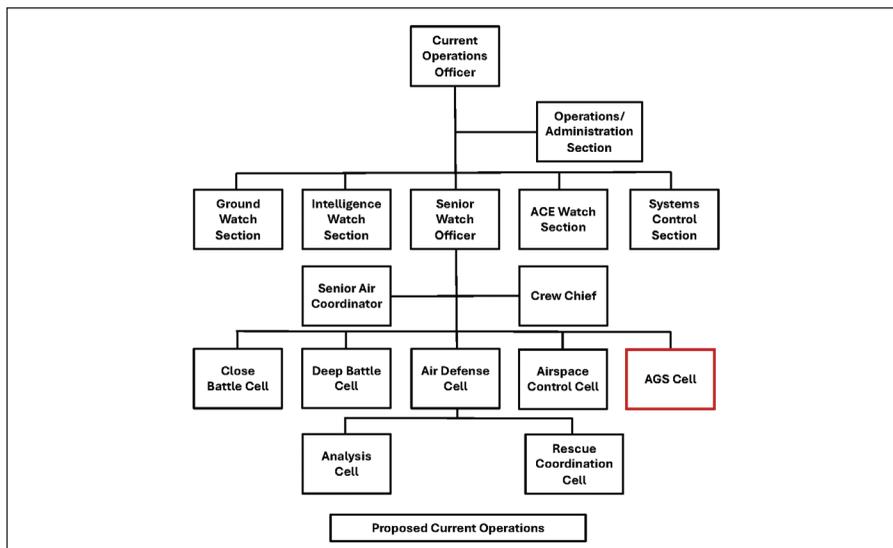
During WTI 1-25, the MAWTS-1 AGS Department experimented with AC2GS, including the integration of an AGS cell within the Marine TACC to track a full CTP for AGS. The WTI courses have historically not used logistics watch officers in the Marine TACC. What WTI 1-25 experimentation demonstrated is that an AGS cell in the Marine TACC plays a crucial role in providing commanders with a complete sight picture in distributed aviation operations, ensuring effectiveness in areas such as the United States Indo-Pacific Command area of responsibility. An AGS cell in the Marine TACC enhances the ACE commander's awareness and links forward AGS sites with AC2. The AGS cell strengthens AC2GS cooperation, maximizing combat power for the ACE commander. In the current operations concept of organization for the Marine TACC, the inner ring consists of "cells that are task-organized to fully implement the six functions of Marine Aviation through direct connectivity to higher, adjacent, and subordinate commanders or agencies."¹⁰ As AGS moves toward becoming the seventh function of Marine Aviation, integrating it into the Marine TACC and codifying AC2GS will improve a commander's ability to observe, orient, decide, and act in distributed operations.¹¹ Building on past doctrinal developments and

recognizing gaps in today’s aviation doctrine, we will examine recent experimentation during WTI 1-25. Real-world exercises provide a closer look at how the AGS community is testing AGS integration into the Marine TACC to meet modern operational demands for distributed aviation operations.

Current Experimentation with AGS Integration into the Marine TACC

In the early phases of WTI 1-25, the AGS and Command, Control, and Communication teams identified areas to enhance Marine TACC operations regarding AC2GS integration, which affects the ACE’s scheme of maneuver (SOM). Aviation ground support subject-matter gaps in the Marine TACC hinder communication between forward sites, the Marine TACC, and the MWSS. Changing the Marine TACC structure will allow the ACE commander to leverage tactical-level capabilities more effectively in aviation operations. The high tempo of WTI evolutions with a persistent adversary simulation highlight the requirement for AGS integration into Marine TACC operations, which units may not note or experience during less integrated home-station training and experimentation.

The team recognized areas to further enable operations, which, while not all-encompassing to AGS operations, included the operational status of AGS sites, the status and suitability of landing zones, flight line aid station support, and aircraft rescue and firefighting support to Tactical Recovery of Aircraft and Personnel (TRAP).¹² The *2025 Marine Corps Aviation Plan* explicitly states, “AGS is the critical enabler that makes Marine Aviation truly expeditionary.”¹³ Other capabilities that the aviation plan highlights are the ability of an MWSS to conduct “landing zone surveys and construction, contingency airfield support, airfield assessment and repair, aircraft salvage and recovery, and FARP operations that directly support the employment of all functions of Marine Aviation.”¹⁴ Each of these capabilities of the MWSS will be critical to sortie generation in distributed aviation operations. Understanding when, where, and how to employ AGS directly



The recommended makeup of the Marine TACC. (Image provided by author.)

impacts the six functions of Marine Aviation, the MAGTF, and the Joint Force.

Throughout WTI 1-25, planners and participants analyzed information shortfalls and took action to enhance the AC2GS picture within the Marine TACC for Assault Support Training (AST) 1-4 and the final exercise (FINEX). The AGS cell integrated all AGS information requirements into the information flow of the Marine TACC, resulting in the realtime status of data at FARPs and expeditionary advanced bases, enabling key decision makers and enablers across the battlespace while reducing risk by safeguarding resources and providing inventory management expertise. The AGS cell utilized secure tactical chats to monitor nets such as air control, air support, the personnel recovery coordination cell, air defense, meteorological and oceanographic services, and ACE intelligence, leading to greater fidelity of information flow to forward sites and a larger AGS team understanding of the AC2 CTP. Through monitoring the nets, the AGS cell could pull information related to the AGS TCP to better inform other members of the Marine TACC, subordinate MWSSs, and leadership to influence decisions.

With a focus on digital interoperability in aviation operations and an understanding that redundancy in communication is key, the AGS cell also

remoted into the robust single-channel radio capability that exists in the Marine TACC and created a dedicated AGS channel facilitating tactical communications. The AGS cell integrated with the Marine TACC’s single-channel radio capability to communicate and monitor nets across the MACCS, directly influencing AGS operations.¹⁵ Furthermore, the AGS and Command, Control, and Communication departments utilized Marine Air-Ground Tablets for each forward site, which aided in the data transmission of important execution checklist items such as FARP initial and fully operationally capable criteria, realtime fuel point statuses, ordnance quantities, and aviation fuel levels. These can serve as a basis for routing or rerouting aircraft based on site status in the future. While requiring further experimentation and integration into exercises, the AGS cell enhanced flexibility, creativity, and a steady tempo for the air mission commander (AMC), and it served as a responsive asset for the MEU commander, leading to mission accomplishment and reduced risk as highlighted in WTI 1-25 major evolutions.

There are multiple examples of how the AGS cell assisted with an AGS CTP to help the force overcome friction throughout WTI 1-25 major evolutions. During AST-1, a TRAP mission unfolded. The AGS cell communicated with the supporting MWSS via the MWSS Aviation Ground Sup-

port Operations Center to source an aircraft rescue and firefighting team to cut into the downed aircraft for an expeditionary TRAP recovery. If required, the cell could then source an Aircraft Salvage and Recovery capability to recover the asset and provide information to the Marine TACC with a tactical picture of the objective.¹⁶ During AST-2, the aggressor aircraft struck two FARP locations, threatening the ACE SOM if exercise control had deac-

standby at the flight line for casualty pick up and triage. The complete communications loop allowed a rapid medical response to handle casualties during a critical time window.

During FINEX, the AGS cell provided expeditionary advanced base fidelity to the AMC and the MEU commander to source information for decisions on whether to continue the current SOM or execute branch plans based on unforeseen friction. One ex-

and further highlighted a requirement to experiment with AC2GS concepts in the FMF. The WTI 1-25 illustrates tangible progress in incorporating an AGS cell into the Marine TACC and emphasizes the need for a more deliberate step forward. The following section outlines concrete steps for institutionalizing AC2GS integration to improve operational effectiveness in future distributed aviation operations.

Steps to AC2GS Integration

Distributed aviation operations in the Pacific Theater will be inherently complex, requiring commanders to work through multiple layers of risk while operating “from austere, distributed locations, and across extended distances” for mission success.¹⁷ There are steps the aviation community can take to mitigate vulnerabilities for commanders. As an initial step toward AGS integration into the MACCS, an AGS cell in the Marine TACC allows the ACE commander to battle-track the full CTP for aviation operations. A rapid understanding of forward AGS sites and how they can impact operations better equips the commander to make strategically informed decisions. An AGS cell in the Marine TACC also allows the rapid sourcing of AGS support through MWSSs to support contingencies including AGS activities such as airfield damage repair, base recovery after attack (BRAAT), ACSR, AGS reconnaissance, forward aviation combat engineering, and airfield operations. For example, in a conflict in the Indo-Pacific, the MAGTF is conducting distributed operations across multiple islands. A key expeditionary advanced base airfield that supports F-35Bs is soon to receive a long-range strike from an adversary. Upon incoming strike notification through integrated AC2GS, the AGS cell would then be able to coordinate directly with the supporting MWSS to prepare for a BRAAT scenario, closing the loop on data transmissions, speeding up pre-attack preparations, and reducing response times to assess airfield damage and conduct repairs to resume sortie generation.¹⁸

Depending on the operation’s scale, the MACG or MAW G-4 AGS depart-

... the AGS cell in the Marine TACC provided solutions that enabled the AMC to route aircraft to alternative AGS forward sites ...

tivated the sites. However, by actively tracking AGS inventory across multiple locations, the AGS cell in the Marine TACC provided solutions that enabled the AMC to route aircraft to alternative AGS forward sites, preventing the early culmination of friendly forces in the evolution. On three occasions, exercise control called cherry picker casualties, which the AGS cell communicated to the flight line aid station to be on

ample occurred during the initial insert of FARPs when one key FARP failed to achieve operational readiness at the pre-established time. The AMC rerouted aircraft to operational FARPs to continue with the SOM. Throughout the evolution, the AGS cell communicated FARP statuses to ensure aircraft did not route to non-operational locations, preserving tempo. Overall, the AGS cell enhanced an AGS CTP for commanders



Navy Seabees with Naval Mobile Construction Battalion 5 and Marines with MWSS-373 train on airfield damage repair during Operation TURNING POINT at Vandenberg Space Force Base. Airfield damage repair will be critical to sortie generation during distributed aviation operations. (Photo by Petty Officer 3rd Class William Ramirez.)



MWSS-473 conducts an aircraft salvage and recovery during a training scenario at Marine Corps Base Camp Pendleton, CA. (Photo by Sgt Matthew Teutsch.)

ments will provide an AGS cell to coordinate with MWSS units across the battlespace. The AGS cell will reside inside the Marine TACC current operations section to allow a complete CTP of AGS activities for current operations and flexibility to leverage capabilities when required by the ACE commander. The cell will include shifts of two Marines with connectivity to supporting MWSS units. As fleet experimentation with AC2GS continues and the AGS community explores further integration into the MACCS, AGS leadership must refine the AGS cell's composition to support AC2GS during distributed aviation operations best. Though creating an AGS cell in the TACC outlines a promising road map to better AC2GS integration, significant hurdles remain. It is critical to examine the core challenges that hinder AC2GS implementation and explore how the aviation community can overcome them.

AC2GS Challenges

Aviation ground support personnel and MACG must overcome information stovepipes because of separate reporting structures and limited digital interoperability that restrict data sharing. Aviation leaders must embed AGS personnel within the Marine TACC to mitigate this and ensure re-

altime coordination with other AC2 entities. The AGS cell must prioritize vital information over peripheral data in the ACE commander's CTP. Current AC2 systems do not fully integrate AGS sustainment data, making real-time tracking of airfield conditions, fuel levels, and ordnance resupply difficult. The ACE identification of AGS CTP requirements for the commander involves experimentation on data-sharing between MWSS, MACG, and the Marine TACC. The cell must be able to operate in a communication-degraded environment, as distributed aviation operations in the Indo-Pacific will be subject to contested electromagnetic spectrum conditions. The cell having redundant communications with forward AGS sites will be crucial for maintaining awareness.

Aviation ground support personnel and MACG integration in the Marine TACC is not the only challenge the FMF faces in AC2GS concepts. Aviation ground support personnel, who usually work outside the Marine TACC, often lack familiarity with the MACCS, making AC2GS integration challenging. One solution is to embed WTI AGS students and graduates within the Marine TACC as part of dedicated AGS cells to increase knowledge and understanding across the FMF as

well as stress AC2GS concepts. A well-integrated and trained AGS cell must provide actionable data to the ACE commander, ensuring aviation sustainment is not an afterthought but a fully integrated function within Marine Aviation operations. Addressing these obstacles requires more than technical solutions; it calls for a conceptual shift recognizing AGS as an integral function of Marine Aviation. The following section explores how formally designating AGS as the seventh function of Marine Aviation strengthens the AC2GS relationship for future distributed aviation operations against a peer adversary.

A Connection Between AGS Integration in the Marine TACC and the Seventh Function of Marine Aviation

Marine Aviation has traditionally consisted of six functions: assault support, air reconnaissance, control of aircraft and missiles, antiair warfare, offensive air support, and electronic warfare.¹⁹ However, AGS is essential to all six functions of Marine Aviation, the MAGTF, and joint force, ensuring aviation sustainment, mobility, and survivability in contested environments. The Marine Corps' need for integrated AC2GS is no new challenge. During the Battle of Guadalcanal in World War II, AGS Marines played a crucial role in continuously repairing Henderson Field under fire, conducting aircraft refueling operations, and recovering aircraft to maintain the competitive advantage.²⁰ Just as AGS was critical at Henderson Field in 1942, AGS remains equally vital in modern distributed aviation operations across the Indo-Pacific.

Weapons and Tactics Instructor Course 1-25 demonstrated the impact of AGS integration into the MACCS via the Marine TACC on aviation functions and the MAGTF. Without formally recognizing AGS as a distinct function, aviation operations will continue to lack a dedicated framework for integrating ground support, resulting in sustainment and AC2GS gaps. By defining AGS as the seventh function, Marine Aviation ensures a comprehensive approach to expeditionary operations. As the sustainment backbone of aviation operations, AGS di-

rectly supports executing all six traditional functions, enabling offensive air support, mobility through expeditionary airfield development and repair, aircraft survivability, and optimizing the control of aircraft and missiles through AC2GS integration in dynamic combat environments. Defining AGS as the seventh function directly ties back into the makeup of the Marine TACC

sustainment of the ACE. Although many advocate for recognizing AGS as a distinct function and AC2GS integration, some contend that the existing Marine TACC structure is sufficient for future operations. The following section examines this perspective and weighs its implications for the future of AC2GS.

tion in the *TACC Handbook* identifies many tasks that an AGS cell would track, such as the status of combat engineering functions support of the ACE.²¹ As force design publications label AGS as necessary for success in future operations and critical enough to the MAGTF to become a function of aviation, a cell in the Marine TACC is more centered on the complexities of the future battlefield. Furthermore, AGS encompasses six distinct activities, including forward aviation combat engineering, airfield damage repair, BRAAT, airfield operations, ACSR, and FARP, including complexities that require a robust team to analyze and plan to enable sound and rapid decisions by a commander.

Rather than induce additional command friction, creating an AGS cell would reduce the friction of working through separate entities or networks to gather data on AGS activities across the distributed battlefield. A logistics watch

As the sustainment backbone of aviation operations, AGS directly supports executing all six traditional functions ...

as the ACE commander's command post to leverage the functions of Marine Aviation. As such, the AGS CTP is critical for the full sight picture during distributed aviation operations to balance risk, operational tempo, and

An Argument for No Change to the Marine TACC Structure

A logistics watch officer in the Marine TACC, as an extension of the ACE G-4, may be sufficient for current operations. The logistics billet descrip-

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officer, who may lack WTI training and expertise in AGS operations, cannot replace an AGS cell staffed with WTI graduates. These specialists bring both AGS expertise and a broader understanding of Marine Aviation, ensuring seamless integration into the Marine TACC. Overall, the future operating environment is too dynamic for a single logistics watch officer and requires connectivity to other AGS subject-matter experts that the ACE commander can leverage in a communications-degraded environment. While there are valid considerations for maintaining the status quo, the evolving threat environment demands a more robust and integrated approach to AGS integration with AC2. The final section examines how the Marine Corps can chart a definitive path forward, ensuring AC2GS readiness for future distributed aviation operations.

A Way Forward for AC2GS in Distributed Aviation Operations

To fully realize the operational benefits of an AGS cell within the Marine TACC, the Marine Corps must move beyond experimentation and formally institutionalize AC2GS doctrine. An ACE commander’s understanding of the AGS CTP will enhance tempo and reduce risk due to an understanding of operational statuses and capabilities at forward AGS sites. Moreover, a complete understanding of aviation sustainment at forward sites through an AGS CTP will enable courses of action and branch plans to maximize sortie generation in a conflict against the pacing threat. Integration of AGS into the Marine TACC is just a starting point for leveraging AC2GS to enhance combat operations.

Future research into AGS interoperability with joint and allied forces, including integration into emerging digital C2 networks, will pay dividends in future distributed aviation operations. Further research must assess AGS integration into emerging multi-domain command-and-control frameworks such as Joint All-Domain Command and Control to ensure interoperability with joint and coalition aviation forces.²² Such impacts may

include enhanced airfield operations and resiliency, networked FARPs across the Joint Force, and the integration of autonomous systems for logistics and security at aviation forward operating bases to maintain a competitive advantage.

The Marine Corps Department of Aviation must take the lead in updating the *MCWP 3-20* to codify AGS as the seventh function of Marine Aviation. Simultaneously, the FMF must intensify experimentation with AC2GS, guaranteeing fluid operational

These refinements must drive doctrinal updates

...

integration of AGS and AC2 within the Marine TACC and MACCS. These refinements must drive doctrinal updates in the *TACC Handbook*, cementing AC2GS as a foundational pillar of aviation operations and defining how AGS integrated with AC2 enables distributed aviation operations. Failure to act now risks leaving the Marine Corps unprepared for distributed aviation operations in a contested Indo-Pacific, endangering operational tempo, AGS sustainment, and mission success against China—the pacing threat we cannot afford to ignore.

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A Unique Heritage, A Loyal Bond, Continued Excellence

Concerning the Marine Corps Aviation Association

by Mrs. Kristina Bitancurt

The Marine Corps Aviation Association (MCAA) recognizes professional excellence in Marine aviation through education, activities, media, events, and its renowned awards program. The MCAA has the largest aviation-based award program in the country, recognizing Marine units annually. Headquartered in Quantico, VA, MCAA continues its founders' mission of linking the past, present, and future of Marine Aviation.

>Mrs. Bitancurt is the Editor of the Yellow Sheet and the Marine Corps Aviation Association Journal.

History of Service

The origins of the MCAA began with veterans from the First Marine Aviation Force, who served in aviation in World War I (prior to 11 November 1918) and later formed the First Marine Veterans Force Association (FMAFVA).

The FMAFVA membership was limited to aviation veterans of World War I.

As the years passed and the number of World War I aviation Marine veterans continued to decrease, FMAFVA leadership became concerned that no one would be left to protect the legacy, lineage, or future of Marine aviation. As a result, in 1972, along with the sanction of the Commandant of the Marine Corps, the FMAFVA voted to charter MCAA and open its membership to *all Marines, their families, and anyone* with a vested interest in supporting the mission of Marine Aviation.

Our Role

- Bring together Marines and civilians who support the mission of Marine aviation and its duty to protect our Nation.
- Connect our membership to an increasing community of like-minded professionals, supporters, and subject-matter experts.
- Recognize that we are better as a whole by welcoming all ranks and all Marine air MOSs.
- Educate the public on the Marine air and its unique skillset within today's MAGTF.

Events

Each May, the MCAA Symposium gathers Marine Aviation professionals from across the country to celebrate our history, while hosting the Deputy Commandant for Aviation's annual Marine Aviation Readiness and



15th MEU hits the beach for TIGER TRIUMPH 24. Marines assigned to Charlie Company, Battalion Landing Team 1/5, 15th MEU, exit a CH-53E Super Stallion attached to Marine Medium Tiltrotor Squadron 165 (Reinforced), 15th MEU, for an amphibious landing during Exercise TIGER TRIUMPH at Kakinada Beach, India, March 2024. TIGER TRIUMPH enables U.S. and Indian Armed Forces to improve interoperability and bilateral, joint, and Service readiness in the Indian Ocean region and beyond to better achieve mutual regional security objectives. (Photo by Cpl Aidan Hekker.)



Marines fly day and night in Guam. Marines with Marine Fighter Attack Squadron (VMFA) 232 salute a departing F/A-18D at Andersen Air Force Base, Guam, Feb 2024. Nicknamed the “Red Devils,” VMFA-232 traveled from Marine Corps Air Station Iwakuni, Japan to Guam as a part of their Aviation Training Relocation Program deployment to train multilaterally with allies and partners and enhance the squadron’s combat readiness. (Photo by Sgt Jose Angeles.)

Operations Summit. During the Symposium and the Marine Aviation Readiness and Operations Summit, the Marine Corps prioritize their aviation requirements while others gather to not only relive the past but become informed on current and future Marine Corps aviation plans. Senior Marine Corps leadership also assists in present-

ing the 30 coveted awards for excellence in performance within Marine Aviation. The Symposium and banquet are a highlight for all who touch Marine Aviation. Throughout the rest of the year, MCAA hosts various events, dinners, and golf tournaments. In our efforts to give back to the community, MCAA funds historic projects, aircraft



Marine Corps F/A-18 Hornets assigned to Marine Fighter Attack Squadron 323, Marine Aircraft Group 11, 3rd Marine Aircraft Wing, fly in formation during a trans-Pacific flight en route to MARINE AVIATION SUPPORT ACTIVITY 23, at sea, July 2023. MARINE AVIATION SUPPORT ACTIVITY is a bilateral exercise between the Armed Forces of the Philippines and the Marine Corps, aimed at enhancing interoperability and coordination focused on aviation-related capabilities. (U.S. Marine Corps photo.)

restoration, and scholarships, along with donations to organizations that support Marines and their families in time of need, through our charitable foundation: The Marine Corps Aviation Community Services. Please continue to visit our website for upcoming events and news.

Awards

We are honored to help recognize the achievements of Marines. The 30 Marine Aviation awards span the spectrum of Marine Aviation and recognize Marines of all ranks who are nominated by their superiors and vetted through Headquarters Marine Corps. The awards are named after icons in Marine Aviation, such as Alfred A. Cunningham, the first Marine Corps aviator, and many other heroes.

Squadrons

The MCAA regional squadrons span across the United States, Okinawa, and Japan. These local organizations bond the MCAA community throughout Marine Aviation’s global footprint. Squadrons focus on their local regions, raising money for scholarships, charitable giving, and social events in support of its members.

Publications

The MCAA publishes two magazines in both hard copy and on social media: The *Yellow Sheet* and the annual *MCAA Journal*. The *Yellow Sheet* is produced three times a year. It keeps our readers current on current events in Marine aviation while educating them on its legacy of success.

The *MCAA Journal* is our premiere publication that highlights our 30 award recipients and provides an end-of-the-year summary from all four Marine aircraft wings.

Membership

MCAA offers several membership options. Be part of an active, dynamic group of active duty and former Marine aviators and MCAA supporters!

Enjoy networking opportunities, professional publications, awards, and more! For more info, please visit our website: flymcaa.org



The Maintenance Officer

Keys to success

by LtCol Timothy O. Warren Jr.

Being a flying squadron's maintenance officer (MO) is one of the most challenging billets that an aviator or designated aircraft MO (75xx and 6002 military occupational specialties) can achieve within their career fields. In many cases, the MO has as good a chance of being relieved as they do succeeding. The reasons for failure or success are not always in the MO's full control, which just adds to the stress of the position. The author has personally seen MOs relieved due to outside factors aligning the wrong way and MOs who have ridden waves of external success to green pastures, but some things can be done to ensure challenges are faced and benefits are exploited. Most of these steps are aligned with traditional Marine Corps leadership fundamentals, but all are directly tied to leading a squadron's maintenance department. Key among the steps is knowing the data, managing the priorities, and being present.

The Data

A large part of being a successful MO is knowing what data indicates challenges and what matrixes are showing success. An MO who consistently analyzes relevant data not only can evaluate their maintenance department but can be highly successful when planning future squadron operations. The most obvious data point to show success is the percentage of aircraft that are mission capable (readiness rate), but even this most basic of data points needs to have certain questions answered. Questions such as: what is the readiness rate over various timelines (day, week, month, etc); what is the disparity between the daily Aviation Maintenance Supply Readiness Report and the constantly running information system (Naval Aviation Logistics Command

>LtCol Warren enlisted in the Marine Corps in 2003 and commissioned in 2008. He is an Aviation Logistician who served as Maintenance Officer at Marine Fighter Attack Training Squadron 101 in Miramar, CA, and in numerous other aviation logistics and training billets. He is now the Expeditionary Strike Group Readiness Officer at Naval Air Force Atlantic. He has supported logistics and aviation maintenance efforts in Operations IRAQI FREEDOM, Enduring FREEDOM, and INHERENT RESOLVE.

Management Information System or Autonomic Logistics Information System); and how does the squadron's sortie completion compare to its readiness rates? Having updated answers to these questions will give an MO the most current understanding of how the maintenance department is performing, but there is so much more information that is available to guide understanding.

An understanding of how each individual aircraft is performing provides valuable data for future planning purposes. Knowing the maintenance man-hour per flight hour (MMH-per-FH) rate for each aircraft enables maintenance department leaders to surmise which aircraft will likely devour maintenance resources while others are likely to stock a flight schedule with reliable fliers. Additionally, this data may help squadrons choose the most reliable to deploy with and which to keep home. The partner data point the MMH-per-FH is the top degrader components for the squadron. Analyzing these two data points together paints a picture for an MO as to what is consuming precious MMH and provides for a more thorough risk assessment when planning for future operations.

A key component to analyzing MMH is actually understanding your manpower. The MO needs to ensure (through their subordinate leader) that qualifications are being developed, that qualifications are on the correct work

schedule, and that there are enough qualified Marines available to make readiness standards. The Advanced Skills Management system creates a swath of reports on qualification-related data that are pulled by most leaders within a maintenance department (quality assurance representatives, maintenance chiefs, division chiefs, etc). Additionally, the Maintenance Capacity Model is a fantastic tool that uses a squadron's unique maintenance data to show how many flight hours each individual shop can produce, which work center is the bottleneck for more flight hour production, and how many flight hours the maintenance department can produce without harming readiness. The combination of Advanced Skills Management reports with regularly updated Maintenance Capacity Model reports will allow an MO to glimpse the ever-changing qualification pool within the department to better set training priorities and create the correct work schedule to achieve squadron goals.

Managing Priorities

One of the greatest challenges for the MO is to determine what should be a priority and ensure priorities are properly assigned. The commanding officer will give overall guidance and may dictate some priorities. However, much of the squadron's weekly and monthly priorities are determined by the MO and operations officer closely

coordinating the quantity and type of sorties that the squadron needs to generate along with the amount of maintenance time needed to achieve the sortie goal. Some days the priority needs to be heavy flight operations while other days need uninterrupted maintenance, including having readily available aircrew for ground turns and function check flights.

Within the maintenance department, the MO needs to set specific priorities as well. Sometimes it may just be enforcing the flight operations over the maintenance time priorities mentioned above. At other times, the MO (with advisement from the maintenance leadership team) may develop split priorities to get certain mandatory maintenance evolutions completed while keeping aircraft in the sky. One of the biggest priority challenges for any MO is prioritizing the Marines' liberty time versus the critical hours that are needed to complete maintenance. Almost every squadron will work twelve-on-twelve-off shifts and work weekends at some point, but the MO needs to ensure that the Marines understand the priorities during these periods so that the needed maintenance is accomplished and not a minute is wasted. Extra touch time is sometimes needed to accomplish the mission, but the maintenance department cannot be pushed to its culminating point.

Finally, the MO should ensure that maintenance priorities are effectively being communicated on a day-to-day basis. This is not to say that MO needs to come up with the priorities—that is what their team is for. However, the priorities from maintenance control should not be indefinite. A good rule of thumb is three priorities per work center is enough to start with, and more can be given out throughout the day. If everything on a shop's workload is a priority, then nothing is the priority. Also, there are times when the squadron needs to focus on house cleaning (equipment maintenance, field day, foreign object removal, etc), training, or safety. In these instances, the MO needs to ensure that the leadership team knows what the proper focus is and why. Enforcing these priorities can

often be accomplished by the MO getting out of the office, ready room, and cockpit and into the workspaces.

Getting Out

The MO needs to be out about to learn their team and understand how the department is working. They should be around the squadron spaces, not necessarily in everything or hanging out all day, but in enough where the Marines feel comfortable with them being around. Establishing a report helps the team develop the confidence to effectively

A proactive and engaged MO sets the standard ...

tively communicate challenges and to continue working when the MO is on deck. Micromanagement is wholly not needed, but presence and supervision are absolutely critical.

Part of being present is being on the flight line as the squadron's MO and not just as an aircrew. Launching and recovering aircraft is the one aspect of a squadron when the entire team comes together to conduct the controlled chaos symphony that is flight operations. Being out there as an observer encourages the rest of the team to be on the flight line more often (as they should), allows for the MO to correct any aircrew missteps where a young Marine may be less willing to, and be able to provide the commanding officer with firsthand accounts as to the effectiveness of the squadron.

Finally, the assistant MO must be present during technical training evolutions (to include safety drills and practical applications). Technical training is hard written into most squadron's battle rhythms but is often neglected due to the tempo in most maintenance departments. This tech training is critical because it enables the Marines to learn about the entire aircraft they are responsible for, not just the components they touch during routine maintenance actions. Thorough technical training

will allow a Marine to gain experience on most of their aircraft and with most of the safety procedures by the time they are up for their collateral duty inspector qualification, which will make them a much more knowledgeable leader in the maintenance department. The MO being present during weekly technical training will ensure that maintenance pauses for effective training, that the training is thorough, and will allow the MO to personally learn the finer points of what their department does when they are maintaining the aircraft.

Summary

A flying squadron's MO is demanding and vital to the overall success of the unit. Challenges in this billet are inherent and often influenced by factors beyond one's control. However, the effective utilization of data, priority management, and a strong presence within the maintenance department can significantly enhance success. By leveraging analytical tools to understand aircraft performance and manpower capabilities, MOs can make informed decisions that drive readiness and operational tempo. Successful prioritization in alignment with department goals, while ensuring clear communication and fostering a supportive environment, allows for a cohesive team dynamic that thrives under pressure. A proactive and engaged MO sets the standard for their department and cultivates a culture of continuous improvement, empowering Marines to excel in their roles and contribute to operational success.

>Note to the reader: This article is written from the author's experiences in several rotary- and fixed-wing maintenance departments covering a large swath of billets. Not every maintenance professional will agree with the finer points of this article, but the larger brush strokes will be recognized by anyone with enough time in an organizational-level squadron's maintenance department. At the end of the day, the MO has a large selection of paints and brushes to use, but it is up to them (with advisement from their team) to paint the picture that the squadron needs to succeed.



Operation FREQUENT WIND

South Vietnamese refugee evacuation operations:
How it looked in Provisional Marine Aircraft Group 39 (ProvMAG 39)

by LtCol James W. Washington, USMC(Ret)

Reported to MAG 36, 1st MAW, headquartered at Marine Corps Air Station (MCAS) (H) Futenma, Okinawa, Japan, in April 1974 as a staff sergeant and became the MAG-36 embarkation chief. Our staff conducted deliberate planning for several Southeast Asia contingencies including TALON VISE, the original name of the evacuation plan for Saigon, Republic of South Vietnam (RVN). As the group embark chief, my responsibilities were to ensure that the group headquarters and its subordinate squadrons were embark ready or properly prepared to deploy on a moment's notice in response to any contingency and deploy effectively and efficiently. Once deployed, my job was to keep up with these assets and ascertain that they redeployed to MCAS (H) Futenma. MAG-36 subordinate units stationed at MCAS (H) Futenma were:

- Headquarters and Maintenance Squadron 36 (H&MS 36)
- Marine Air Base Squadron 36 (MABS 36)
- Marine Attack Helicopter Squadron 369 (HMA-369: AH-1J Cobra)
- Marine Light Helicopter Squadron 367 (HML 367: UH-1E Huey)
- Marine Medium Helicopter Squadron 164 (HMM-164: CH-46 Sea Knight)
- HMM-165: CH-46
- Marine Heavy Helicopter Squadron 462 (HMH-462: CH-53D Sea Stallion)
- Marine Aerial Refueler Transport Squadron 152 (VMGR-152: KC-130 Hercules)

>LtCol Washington's last two active duty assignments were as the Strategic Mobility Officer for II MEF (1991–94) and III MEF (1994–97). He retired from the Marine Corps in June 1997 and as a government contractor in June 2024. This article was originally published in May 2015 and is republished here in recognition of the 50th anniversary of the end of the Vietnam War.



CDR, 7th Fleet, VADM George Steele (far left wearing the blue cap with three stars) after just arriving on the USS Blue Ridge and walking with the CDR, Amphibious Task Force 76, RADM Whitmire (center) and the CG, 9th MAB, BGen Carey. (Photo by author.)

- Marine Observation Squadron 6 (VMO 6: OV-10 Bronco)
- Marine Air Traffic Control Unit 66 (MATCU 66)

TALON VISE would be compromised and the code name changed to FREQUENT WIND. Operation FREQUENT WIND, the final noncombatant evacuation operation (NEO) of American civilians and “at risk” South Vietnamese associated with the regime

in Saigon, RVN, was executed on 29–30 April 1975. “Operation Frequent Wind,’ so named because of the blowing effect caused by the helicopter’s rotor blades.”¹ Major U.S. maritime forces participating in FREQUENT WIND were the U.S. 7th Fleet; Amphibious Group One, which also served as Amphibious Task Force 76 (ATF 76) 7th Fleet; and the Landing Force (LF) 7th Fleet, 9th Marine Amphibious Bri-

gade (9th MAB). The Commander, 7th Fleet was VADM George P. Steele. The Commander, ATF 76 (CATF 76) was RADM Donald B. Whitmire. The CG, 9th MAB was BGen Richard E. Carey. CATF 76 ships assembled off the coast near Vung Tau consisted of:

- USS *Anchorage* (LSD 36)
- USS *Blue Ridge* (LCC 19)
- USS *Denver* (LPD 9)
- USS *Dubuque* (LPD 8)
- USS *Duluth* (LPD 6)
- USS *Durham* (LKA 114)
- USS *Frederick* (LST 1184)
- USS *Mobile* (LKA 115)
- USS *Okinawa* (LPH 3)
- USS *Peoria* (LST 1183)
- USS *Thomaston* (LSD 28)
- USS *Vancouver* (LPD 2)

Military Sealift Command (MSC) ships and the following aircraft carriers and additional amphibious ships, which would also carry LF aviation assets or provide berthing for Vietnamese refugees during the evacuation, assisted the ATF:

- USS *Barbour County* (LST 1195)
- USS *Hancock* (CVA 19)
- USS *Midway* (CVA 41)
- USS *Mount Vernon* (LSD 39)
- USS *Tuscaloosa* (LST 1187)

The *Midway* had U.S. Air Force (USAF) CH-53 and HH-53 Super Jolly Green Giant helicopters embarked aboard it. Additional U.S. Navy ships including 7th Fleet's flagship the USS *Oklahoma City* (CLG 5), other surface combatants, and aircraft carriers were also part of the 7th Fleet and provided support during Operation FREQUENT WIND. VADM Steele transferred his flag from the *Oklahoma City* to the *Blue Ridge* during the actual evacuation. Military Sealift Command ships would be reinforced with Marine detachments to assist in maintaining good order and discipline and would conduct the bulk of the rescue operations at sea.

MAG-36's deliberate planning efforts for Southeast Asia contingency operations transitioned to crisis action planning in January 1975, as HMH-462, on a 24-hour alert status, became a composite squadron with attached AH-1 Cobras, UH-1 Hueys, and CH-46s and deployed with the 31st Marine



CO, ProvMAG 39, Col McLennon walking on the *Blue Ridge*. (Photo by author.)

Amphibious Unit (MAU) aboard amphibious ready group (ARG) shipping in anticipation of a refugee evacuation operation. The 9th MAB was activated about a month prior to FREQUENT WIND and initially consisted of the 33d and 35th MAUs. The 31st MAU became part of 9th MAB after Operation *Eagle Pull*, the NEO of Phnom Penh, Cambodia, was executed on 12 April 1975. The 9th MAB now consisted of the 31st, 33d, and 35th MAUs; however, shortly thereafter, it was reorganized doctrinally and consisted of:

- 9th MAB Headquarters
- Regimental Landing Team 4 (RLT 4)
- ProvMAG 39
- Brigade Logistics Support Group 4 (BLSG 4)
- Amphibious Evacuation Security Force

The Commanding Officer (CO), RLT-4, was Col Alfred M. Gray, Jr., who would later become the 29th Commandant of the Marine Corps.

The CO, BLSG-4, was Col Hans G. Edebohls, and the Commander, Amphibious Evacuation Security Force, was Maj D.A. Quinlan. The CO, MAG-36, Col Frank G. "Black Mac" McLennon, became the CO, ProvMAG-39. ProvMAG-39's skeleton staff consisted of a principal staff officer and an SNCO from each MAG-36 staff section. The S-4 (logistics officer), and my boss, was Maj Rudolph Max Nebel. By the time Operation FREQUENT WIND was executed, MAG-36 would deploy all of its operational helicopters as part of ProvMAG-39 aboard 7th Fleet ships. VMGR-152, with its KC-130s, would support the 9th MAB by transporting additional forces from Okinawa to intermediate staging bases closer to the amphibious objective area (AOA). HMH-463 would also be part of ProvMAG-39 for Operation FREQUENT WIND and had embarked its CH-53Ds aboard the USS *Hancock* in Hawaii in March. The embarked squadron and ship were ordered to the Western Pacific

to join 7th Fleet forces being assembled for Southeast Asia contingency operations.

About two weeks before execution, and after all of the group's available helicopters had deployed, a few remaining MAG-36 staff members and I flew aboard a VMGR-152 KC-130 from MCAS (H) Futenma to Naval Air Station (NAS) Cubi Point, Philippines; we embarked at Naval Station Subic Bay aboard the USS *Mars* (AFS 1) for a couple of days' transit to replenish the 7th Fleet ships underway in the AOA, and later flew aboard a helicopter to the *Blue Ridge*, where I joined the ProvMAG-39 staff as the embarkation officer and S-4 chief.

- Option 4: Evacuation by helicopters to U.S. Navy ships in the South China Sea.

Throughout this timeframe and before the execute order was published, 9th MAB forces embarked aboard CATF 76 ships were placed on a high alert status anywhere from 24 hours to 1 hour as 9th MAB was tasked to insert ground forces in various locations in Vietnam. Many ProvMAG-39 Marines, including me, got only a couple of hours of sleep each 24-hour period in the *Blue Ridge's* supporting arms coordination center (SACC) as we did not want to leave our posts in order to maintain situational awareness regarding the operational environment in the AOA

COM) Command Center in Honolulu, HI, was that this staging effort would require a couple of hours to complete. Also, the first helicopters that repositioned these Marines had used lots of fuel by the time cross decking was finished. Finally on the afternoon of 29 April, ProvMAG-39 helicopters went from "feet wet" over the South China Sea to "feet dry" as they flew overland in RVN. The execution phase of Operation FREQUENT WIND had begun!

During the next several hours on the afternoon of 29 April until the morning of 30 April, approximately 68 ProvMAG-39 helicopters would fly 9th MAB Marines in and out of Saigon and evacuate over 7,000 U.S. citizens and foreign nationals from that city. Ten USAF and some Air America helicopters would also assist in the evacuation. Several other events were occurring at the same time that we heard via the *Blue Ridge's* "1MC" (1 Main Circuit, or the shipboard public address circuit). Some of them were Air America helicopters, an airline covertly owned by the U.S. Government that supported the Central Intelligence Agency in RVN, also evacuating U.S. civilians and South Vietnamese. There were reports from some pilots that they were receiving small arms fire from disgruntled Vietnamese troops while flying over the RVN, and that the flight formations of ProvMAG-39 helicopters transporting Vietnamese refugees to ships were interrupted by Vietnamese Air Force (VNAF) helicopters escaping the country. There was utter chaos at sea as many of these helicopters were attempting to land aboard CATF ships to unload passengers. There was insufficient room aboard shipping to spot and stow these helicopters. Accordingly, many helicopters were ditched at sea as brave VNAF pilots would either hover close to the sea and jump out of their helicopters or land them in the water and bail out before the rotor blades touched the water and the aircraft rolled over on its side. I went up on the *Blue Ridge* flight deck and took pictures of the ship's crewmembers pushing a VNAF UH-1 Huey overboard. I also took a picture of an Associated Press film crew taking pic-

Mobility officers specially trained in the techniques of planning and supervising loading for an amphibious operation are assigned to LF organizations, major amphibious ships, and naval staffs within the AFs. In the LF, these mobility officers are referred to as embarkation officers.²

The Marine Corps has since redesignated embarkation officers and enlisted personnel as mobility officers and enlisted personnel. The CATF 76, 9th MAB, RLT-4, and ProvMAG-39 staffs were now all embarked aboard the *Blue Ridge*. ProvMAG-39 had aviation assets spread loaded aboard ships throughout the ATF. This would be my third involvement in the Vietnam War having spent two tours in country March 1967 to April 1968 and March 1970 to March 1971.

During the last few days of planning for Operation FREQUENT WIND, several options were refined including:

- Option 1: Evacuation by commercial airlift from Tan Son Nhut Air Base (AB) and other RVN airports in the vicinity as required.
- Option 2: Evacuation by Military Airlift Command (MAC) aircraft from Tan Son Nhut AB and other RVN airports in the vicinity as required.
- Option 3: Evacuation by sealift from Saigon seaports.

and be able to respond immediately to any tasking received from higher headquarters. The situation on the ground in RVN deteriorated quickly as several North Vietnamese Army (NVA) divisions were now poised to overrun Saigon. Option 2 was attempted briefly but was terminated early on the morning of 29 April, when a USAF C-130 at Tan Son Nhut AB was destroyed by an NVA 122mm rocket. Elsewhere, two Marines were killed by a rocket at the Defense Attach Office (DAO) compound and were the last American ground casualties in Vietnam.

Eventually, Option 4 was chosen and expected to be similar to Operation *Eagle Pull* but on a much larger scale. When the execute order was received on Tuesday, 29 April, ProvMAG-39 began cross decking RLT-4 forces to various ships in preparation to launch the different helicopter waves carrying Marines into RVN. Not fully understood by the joint planners in Washington, DC, and at the U.S. Pacific Command (USPA-



Grunts embarked aboard the *Blue Ridge* getting ready to fly in-country. (Photo by author.)

tures of the same thing. Unbeknownst to me at the time, they filmed me running around the flight deck taking this picture, which appeared in the *Stars and Stripes* newspaper, and I get to see the film clip periodically when I watch documentaries about the end of the Vietnam War.

During one attempted landing aboard the *Blue Ridge*, a VNAF helicopter's rotor blades collided with another aircraft on the aft portion of the ship causing a loud noise that sounded like an explosion below deck in the SACC and showered aft parts of the ship, some of its crew, and embarked troops with debris. For a brief moment

when this happened, I thought that the ship had been struck by some type of NVA munitions or patrol craft that was in the vicinity of the AOA until the ship's CO, CAPT William D. Hart, restored calm by addressing the crew and embarked force via the ship's 1MC. He said, "You're doing a marvelous job. I'm proud of you all. Just remember, be careful—watch yourselves and stay cool."³ I learned to fully understand and appreciate during this operation why the military uses "minimize considered" during actual or simulated emergencies to decrease the amount of record and/or voice communications on military telecommunications



An RVN UH-1 helo being pushed overboard on the *Blue Ridge*. (Photo by author.)

circuits as it took additional time to receive classified messages with an immediate or priority precedence and unclassified messages with any precedence. We were still receiving classified messages with a routine precedence and unclassified messages several days after this contingency operation ended.

Another VNAF helicopter that landed aboard the *Blue Ridge* had to be cross decked to the *Midway*. Maj Nebel had been a flight instructor at NAS Pensacola, FL, and knew how to fly all types of aircraft. He flew as the copilot with the VNAF pilot and asked me to accompany him just in case something went wrong. We flew to the *Midway*, dropped off the helicopter and pilot, and were flown back to the *Blue Ridge* later that day. Another more significant event that occurred aboard the *Midway* that day was that a VNAF Cessna O-1 Bird Dog including the pilot and his family made an emergency landing on the ship without the benefit of a tailhook.

While the helicopter evacuation was in progress, it was becoming obvious that the number of anticipated VN evacuees exceeded planning estimates. In the SACC discussions, it arose that the U.S. Ambassador to Vietnam, Graham Martin, was attempting to get large numbers of Vietnamese evacuated from the U.S. Embassy, would not get aboard a helicopter and was going to keep the evacuation going as long as possible. As stated earlier, some ProvMAG-39 flight crews flew around the clock 29–30 April, amassing anywhere from 12 to 17 flight hours per crewmember as concern arose about poor visibility at night and the pilots becoming fatigued. There were no replacement helicopter crews for them. An HMM-164 CH-46 search and rescue helicopter crashed into the sea after flying a night mission during FREQUENT WIND. The pilot, Capt William C. Nystul and copilot 1stLt Michael J. Shea, were lost at sea; however, the two crewmembers escaped and were recovered. The cause of the crash was unknown at the time. An AH-1J Cobra from HMA-369 would also crash at sea after it ran out of fuel, but the two crewmembers were rescued. ProvMAG-39 staff members and I worked



A picture of an RVN UH-1 helo sinking after being pushed overboard from the Blue Ridge. (Photo by author.)

around the clock during the execution phase of the helicopter evacuation in the *Blue Ridge*'s SACC alongside 9th MAB and RLT-4 representatives.

Ambassador Martin embarked aboard an HMM-165 CH-46 flown by Capt Gerald L. "Gerry" Berry and was flown to the *Blue Ridge* on the morning

of 30 April. Shortly thereafter, ProvMAG-39 helicopters carried the last Marines from the DAO compound and off the Embassy roof in Saigon, terminating Operation FREQUENT WIND, the largest helicopterborne evacuation in history at that time. This officially ended U.S. involvement in Vietnam. The 7th Fleet and MSC ships continued rescuing Vietnamese refugees aboard small, overloaded sealift vessels in the South China Sea for a few more days.

Within days after Operation FREQUENT WIND, ProvMAG-39 aviation assets would either set sail aboard or offload from CATF 76 shipping and stage at NAS Cubi Point for opportune sealift back to MAG-36 on Okinawa, Japan. I would remain in the Philippines for a while as my embarkation responsibilities shifted to coordinating the redeployment of MAG-36 personnel, supplies, and equipment back to MCAS (H) Futenma.

However, one more contingency would arise in Southeast Asia: the SS *Mayaguez* incident in Cambodia 12–15 May 1975. An ARG with a Marine headquarters element, GCE, combat service support element, and MAG-36 aviation assets would deploy for Cambodia in response to this emergency, but unfortunately would not arrive in time. The 2d Battalion, 9th Marines on alert in Okinawa would fly via MAC C-141 Starlifters to Thailand, marry up with USAF HH-53 aircraft and respond to this contingency.

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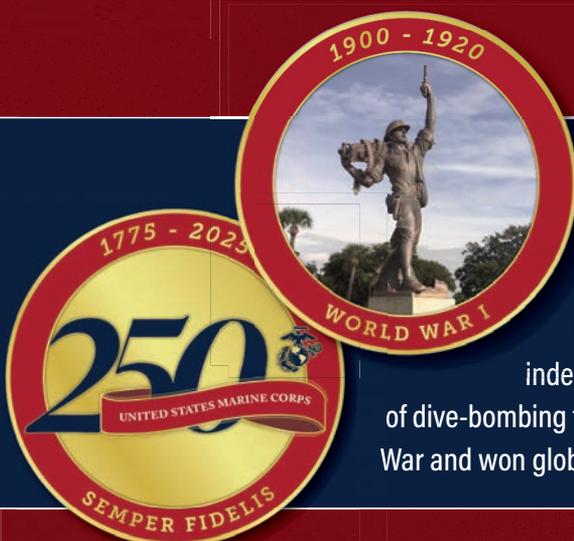
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The Evolution to Information Knowledge Management (IKM)

Empowering the force in the modern era

by Dr. Colin Crosby

Amid rapidly advancing technology and the increasing need for information superiority and rapid decision making, the Marine Corps is embracing innovations such as artificial intelligence (AI) acceleration programs to sustain a competitive edge and boost operational effectiveness. By adopting *Force Design*, the *DOD Strategy for Data and AI*, and the *DON Information Superiority Strategy 2.0*, the Marine Corps recognizes that integrating AI is vital to shaping its future and maintaining readiness in the Information Era.

The 38th Commandant's Planning Guidance emphasizes the need for a force that is “trained and equipped as a naval expeditionary force-in-readiness.”¹ To realize this vision, the Marine Corps is harnessing the power of AI, advanced data cataloguing, data management, and metadata tagging techniques. These tools are not just theoretical concepts but crucial resources that support warfighters in making rapid, informed decisions on the battlefield.

A historical example that highlights the transformative impact of knowledge management (KM) is Battle of Midway during World War II. U.S. Navy cryptographers had broken the Japanese Navy’s secret code, allowing them to intercept and decipher Japanese communications.² This critical intelligence enabled the U.S. Navy to strategically position their forces and launch a surprise attack, leading to a decisive victory. The effective use of

>Dr. Crosby, an accomplished leader currently serving as the Marine Corps Service Data Officer and Deputy DON Chief Data Officer. In these key positions, he leads the strategic development and implementation of integrated solutions and governance frameworks for enterprise data management, content management, knowledge management, and artificial intelligence.



Figure 1. USS Yorktown during Battle of Midway, hit by three Japanese bombs, 4 May 1942. (Photo by 2nd Class Williams G. Roy.)

KM and intelligence gathering during the Battle of Midway showcases how these capabilities can shape the outcome of conflicts and provide a strategic advantage.

By integrating IKM and leveraging AI, the Marine Corps is poised to enhance its decision-making capabilities and maintain a competitive edge in modern warfare. As Gen Eric M.

Smith, the 39th Commandant of the Marine Corps, stated in his testimony to the Senate Appropriations Committee, “The mastery of this evolution in warfare is what allows us to punch above our weight class. It is what will keep the Marine Corps—a relatively small service—respected by our friends and feared by our enemies across the globe.”³

The History and Evolution of KM

The axiom, *knowledge is power*, can be traced to the Old Testament—Proverbs 24:5 (*Amplified Bible, Classic Edition*). “A wise man is strong and is better than a strong man, and a man of knowledge increase and strengthens his power.” Many authorities attribute it to British philosopher Frances Bacon (for knowledge itself is power) or author William Shakespeare (Henry VI), but the well-known adage (knowledge is power) originated with one of this country’s Founding Fathers, Dr. Benjamin Rush, in 1806. Today, this maxim has morphed into an area of special interest known as KM and has become an established discipline since 1991. This field of study as defined by the industry as “the process of creating, sharing, using and managing the knowledge and information of an organization. It is a multi-disciplinary approach to achieving communal objectives by optimizing its use of knowledge.”⁴

Knowledge management is defined as a discipline that integrates people and processes through the information life-cycle to create shared understanding, increased organizational performance, and improved decision making through assessment and defined requirements. It is focused on managing what the commander needs to know, facilitating knowledge and information flows within and across organizations, and ensuring the information products are appropriately sequenced and available to build shared situational awareness and a common understanding of the commander’s intent.⁵ Information management is defined as the function of managing an organization’s information resources for the handling of data and information acquired by one or many different systems, individuals, and organizations in a way that optimizes access by all who have a share in that data or a right to that information.⁶

The concept of KM first became relevant during the 60’ and 70’s, around the time of the emergence of the personal computer system. Computers, as we are accustomed to today, with built-in microprocessors, random access memory (RAM), windows, menus, and icons as an interface to the operating

system, was first demonstrated in 1968. According to Lambe, it was not until the 1970s that the relationship between data management to KM first began to be explored.⁷ Knowledge management is about getting the right knowledge to the right people at the right time. However, Hajric stated that the true nature of KM is to understand where knowledge exists and in what forms, then creating processes that span organizational functions and ensures that initiatives are accepted and supported by organizational members.⁸



Figure 2. Portrait of William Shakespeare in 1610. (Photo from National Portrait Gallery.)

When it comes to supporting and showcasing commitment to IKM within organizations, many leaders face the challenge of deciding whether to fully invest resources and actively engage in the process or simply follow the status quo. Organizations are getting smart to IKM and the value implementing a robust IKM program has to an organization. Informed leaders and “smart” corporations are learning to embrace and recognize KM as a business function to drive efficiency and product. For organizations on the fence, it becomes a case of “whether tis nobler in the mind to suffer” or “to take arms against a sea of trouble” as their decision to employ a true KM program to manage organizational information that is created, captured, stored, and shared daily. No need to ask “whether tis noble” or not, because there is no nobility in suffering as your organization gets left behind. We live to win, and success is the mea-

sure that drives how we choose to win.

The Department of the Navy (DON) considers KM to be the “integration of people and processes, enabled by technology” with KM efforts grouped into overlapping categories: command support and commander support. The DON defines command support as connecting people with the right contacts and information to enhance job performance, leveraging the DON’s vast expertise and knowledge to avoid redundant efforts. Meanwhile, commander support takes a strategic angle, focusing on unified intent and processes for effective and informed decision making.⁹ In all KM applications, the key element is the sharing and management of information which should be a basic objective for military organizations to achieve.

Artificial intelligence has the potential to change how we manage, access, and utilize knowledge within the Marine Corps.¹⁰ As experts define it, “Artificial intelligence is a field of computer science that utilizes a set of technologies to create systems of intelligence that can perceive, reason, and assist humans.”¹¹ This technology is not just a tool; it is a force multiplier that aligns perfectly with our doctrinal mission areas of process analysis and improvement, shared situational awareness, and collaboration.

The three faces of IKM using enterprise AI are process automation, assistive AI, and automation discovery.¹² These capabilities directly support the Marine Corps’ warfighting philosophy as outlined in *MCDP 1*, our foundational doctrinal publication. *MCDP 1* emphasizes the importance of rapid decision making, adaptability, and leveraging information to gain a competitive advantage—all areas where IKM can provide significant enhancements.¹³ Furthermore, the integration of IKM aligns closely with *MCTP 3-30B, Information Management*. This tactical publication provides guidance on the effective management of information to support decision making and command and control. Information knowledge management enhances the principles and practices outlined in *MCTP 3-30B* by introducing advanced AI-driven

capabilities to our Information as a War-fighting processes.¹⁴

Information and knowledge management and AI represents a paradigm shift in how we approach information and knowledge within our organization. It goes beyond traditional KM by incorporating AI-driven insights, predictive analytics, and machine learning to enhance our decision-making processes. This evolution is crucial as we face increasingly complex operational environments where the speed and quality of information processing can mean the difference between mission success and failure.

Key aspects of IKM include:

1. *Advanced Data Analytics:* Analyzing vast amounts of data from diverse sources, providing actionable insights to decision-makers at all levels.
2. *Predictive Modeling:* Employing machine-learning algorithms to forecast potential scenarios and outcomes, enabling proactive planning and resource allocation.
3. *Natural Language Processing:* Enhancing our ability to process and understand unstructured data from reports, communications, and open-source intelligence.
4. *Knowledge Discovery:* Automatically identifying patterns and relationships within our data that might not be apparent through traditional analysis methods.
5. *Adaptive Learning Systems:* Continuously improving our knowledge base and decision-support tools based on new data and feedback from users.

How AI Challenges and Empowers KM

Integrating IKM into operations is poised to address several critical challenges within the modern Marine Corps:

1. *Information Overload:* With the exponential growth of data, Marines often struggle to find relevant information quickly. Information and knowledge management will use AI to assess, filter, categorize, and prioritize information, ensuring that decision makers can access the most critical data when needed.¹⁵
2. *Decision Making in Complex Environments:* The modern battlefield is

increasingly complex and data rich. Intelligent IKM will provide advanced analytics and predictive modeling to support commanders in making informed decisions under pressure.¹⁶

3. *Knowledge Retention and Transfer:* As experienced Marines retire or rotate; valuable institutional knowledge can be lost. Information and knowledge management will capture, codify, and make accessible the tacit

AI represents a paradigm shift in how we approach information ...

knowledge of our personnel, ensuring continuity and efficiency.¹⁷

4. *Interoperability and Data Sharing:* In joint and coalition operations, sharing information securely and efficiently is crucial. Information and knowledge management will facilitate seamless data exchange between systems and partners, enhancing overall mission effectiveness.¹⁸

5. *Rapid Adaptation to Emerging Threats:* The threat landscape constantly evolves. Information and knowledge management will enable faster identification of new threats and more agile responses by continuously

analyzing vast amounts of data from multiple sources.¹⁹

6. *Training and Skill Development:* Keeping Marines up to date with the latest knowledge and skills is an ongoing challenge. Information and knowledge management will personalize training recommendations and provide on-demand learning resources tailored to individual needs and mission requirements.²⁰

7. *Supply Chain Optimization:* Logistical challenges can significantly impact mission success. Information and knowledge management will enhance supply chain visibility, predict potential disruptions, and suggest alternative solutions to ensure uninterrupted support to forward-deployed units.²¹

Aligning with Strategic Imperatives

Force Design calls for a more distributed, networked, and digitally enabled force.²² Information and knowledge management is essential in realizing this vision, providing Marines with the tools to make faster, more informed decisions in complex operational environments.

The DOD strategy for data, analytics, and AI emphasizes “transforming the Department into a data-centric organization.”²³ By embracing IKM and AI, we are not just adopting new technologies; we are fundamentally changing how we operate, making data a strategic asset in our decision-

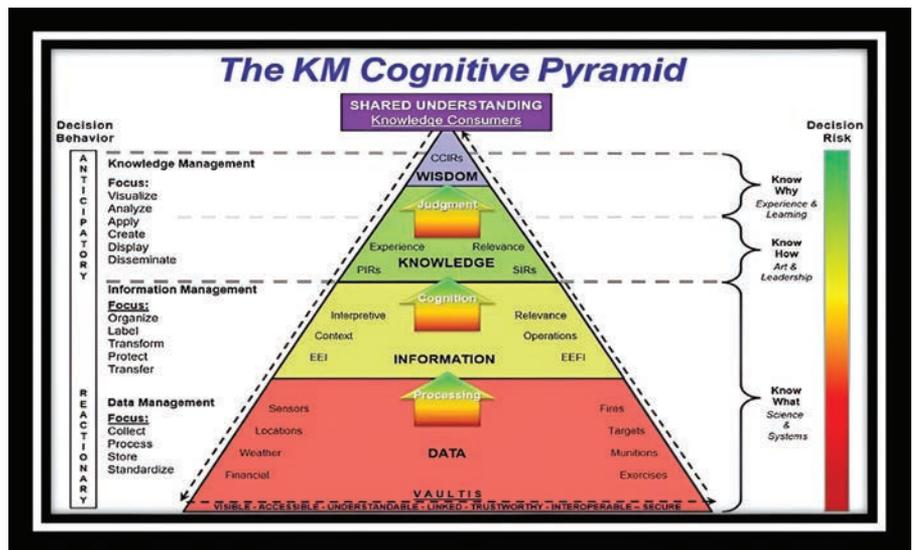


Figure 3. DIKW adaption within the DOD. (Image provided by author.)

making processes. This aligns with the guidance provided in *MCDP 1*, which states, “The ability to make effective decisions faster than the enemy is a crucial advantage in war.”²⁴ Information and knowledge management provides us with the tools to achieve and maintain this advantage in the Information Age.

Similarly, the *DON Information Superiority Strategy 2.0* highlights the need for “seamless access to trusted and secure data.”²⁵ Intelligent IKM supports this goal by ensuring that our knowledge management infrastructure is robust, secure, and capable of delivering actionable insights to commanders at all levels.

The *Marine Corps Information Environment Enterprise (MCIEE) Blueprint* further underscores the importance of a modernized information environment.²⁶ IKM aligns perfectly with this vision, providing the technological backbone for enhanced situational awareness and decision superiority.

Echoing the sentiments expressed in LtCol Fred Hopewell’s (Ret) “Trident Juncture” article, we must recognize that “the future battlefield will be dominated by those who can harness

AI technology is an essential asset for the Marine Corps ...

the power of information and make decisions faster than their adversaries.”²⁷ Information and knowledge management is instrumental to achieving this dominance.

The Road Ahead

To fully realize the potential of IKM, we must:

1. Prioritize education and training to ensure all Marines understand how

AI works and its applications in their roles.²⁸

2. Assess our current content maturity and identify areas for improvement.²⁹

3. Select narrow use cases to build a foundation for success, focusing on high-impact areas like logistics and intelligence.³⁰

4. Identify sponsors, champions, and experts to drive pilot projects and measure progress.³¹

5. Prepare our schoolhouses to develop functional area content skills, capabilities, and evolving workflows.³²

6. Ensure that Marines understand what IKM is and are aligned appropriately within their commands via the MOS professional series.

As we move forward, it is crucial to recognize that, despite its complexity, AI technology is an essential asset for the Marine Corps in navigating the demands of strategic global competition. To fully leverage its potential, we must prioritize targeted investments



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that address the force’s specific needs while implementing comprehensive safeguards to mitigate AI-related risks. We must invest strategically, focusing on the force’s needs while effectively mitigating AI’s inherent risks.

Conclusion

Embracing IKM within the Marine Corps is a profound transformation that will enhance our ability to fight and win in the Information Age. By adopting this evolution, we ensure that our Corps remains the world’s premier expeditionary force-in-readiness, capable of meeting any challenge in an increasingly complex global environment.

As we continue to innovate and adapt, let us recall the words of our 38th Commandant, Gen David H. Berger: “The Marine Corps must be able to fight and win in an information-contested environment.”³³ As technology evolves, so must we. Information and knowledge management is our pathway to achieving this vital capability, ensuring that every Marine is empowered with the knowledge and tools needed to succeed in today’s and tomorrow’s battles.

Gen Eric M. Smith, the 39th Commandant of the Marine Corps, underscores this commitment: “The character of war may change, but its essence never will—it is the violent struggle between two irreconcilable wills. That struggle is where Marines thrive. We ask for nothing more than the chance to be First to Fight.”³⁴ This enduring ethos drives the Corps’ dedication to innovation and readiness in the face of evolving challenges.

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Force Design: Making the First Thing First—Logically

Design precedes development as the architect precedes the engineer

by LtCol Noel Williams, USMC(Ret)

Force design is a critically important process for any military to ensure it is ready and able to preserve deterrence and meet the test of the next conflict should it occur. The Joint Staff defines force design as “a process of innovation through concept development, experimentation, prototyping, research, analysis, wargaming, and other applications of technology and methods to envision a future joint force.”¹ Importantly, this definition describes force design as a continuing process of innovation; it is an infinite game.²

Currently, there is a great deal of attention on force design and modernization across the DOD given the rise of multiple peer adversaries.³ It has been especially prominent in the Marine Corps since 2019 when the 38th Commandant made it a centerpiece of his commandancy in his *Commandant’s Planning Guidance*. Given this Marine Corps focus on Force Design, and the author’s familiarity with these efforts, this article will use the Marine Corps as an exemplar to discuss force design processes and recommend force design best practices applicable to all components of the Joint Force. Thus, the subject addressed herein is the process of Force Design, rather than any specific instantiation of force design. The central idea is that Force Design is the *logical* first step of a larger force modernization process whose functions (force design, force development, force employment) must be performed con-

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currently and not sequentially as the current joint doctrine implies.⁴

Joint Force Development and Design and Historical Analogs

The *CJCS Instruction 3030.01A, Implementing Joint Force Development and Design*, outlines the processes and responsibilities for Joint Force Development and Design (JFDD) and describes three lines of effort: Build the force, educate the force, and train the force.

The Joint Operating Environment (JOE) document describes future challenges, providing a shared appreciation of the threat across the department. Developing this shared vision is foundational to all subsequent steps to build, educate, and train the force. For this reason, JFDD would be better described as threat-based and concept-informed vice the *CJCSI 3030.01A* formulation describing the JOE as setting the conditions “for effective concept-driven, threat-informed capability development for DoD.”⁵ Calling out distinctions between concept-informed/concept-driven and threat-based/threat-informed may seem overly pedantic, but the distinctions have significance beyond semantic nitpicks as will be

discussed later. This is especially so in the case of the Marine Corps, whose force development process describes a “concept-based” approach that places even more emphasis on concepts than the *CJCSI*-prescribed “concept-driven” joint process.⁶

Whether the JFDD process is threat-based and concept-informed vice concepts-driven/-based and threat-informed is, in important ways, analogous to the early 2000s shift away from threat-based planning when Secretary of Defense Rumsfeld replaced this Cold War-era process with Capabilities-Based Planning (CBP).⁷ While it is true that JFDD-related concepts are developed using specific scenarios against specific adversaries, the subsequent reduction of these concepts to lists of concept-required capabilities as the next step in the JFDD process encourages these disaggregated data to be viewed and resourced as individual capabilities rather than a system of systems that has many interdependencies. The Joint Force is a system of systems, not a simple aggregation of collected parts, and thus requires a holistic system view when defining force designs and associated capability resourcing. A line-item view created by reductive textual analysis of concepts of varying quality and relevance yields lists of capabilities and gaps functionally equivalent to the now-discredited CBP.

An insightful 2015 article in *U.S. Naval Institute News* provided a retrospective assessment of the shift to CBP fifteen years after its inception.

The author explains the importance of the shift to CBP by contrasting it to the Army's 1981 threat-based AirLand Battle doctrinal reset that was developed to counter the Soviet Union. The author explains how in CBP, the by-then moribund USSR was replaced by a generic near-peer threat that "has no connections to any geography, culture, alliance structure, or fighting methodology. That adversary has no objectives, no systemic vulnerabilities, and no preferred way of fighting. Instead, the enemy is a collection of weapons systems that we will fight with (presumably) a more advanced set of similar systems, in a symmetrical widget-on-widget battlefield on a flat, featureless Earth."⁸ The article then describes how problematic such an approach is because it divorces force modernization from all the particulars necessary to develop the ways and means of a coherent system to defeat an adversary.

Geography always matters, as does weather, allies and partners, access, specific technical parameters of competing weapons systems, force posture, mobility, sustainment, and network resilience. The impact of the loss of these critical design considerations in the force development process was then amplified by two decades of focus on countering terrorism. This shift caused the department to lose focus on emerging peer threat ecosystems, even while entities such as the Office of the Secretary of Defense and the Office of Net Assessment were warning about the challenges of a revanchist China.⁹

Additionally, CBP encouraged military planning to shift focus inward vice on the enemy, thus allowing institutional preferences to prevail over war-winning imperatives. In theory, CBP could result in a Joint Force that is so dominant that it overmatches any adversary with its superior technology and operational acumen, but in practice, this is not the case. Throughout this era, science and technology investments provided a patina of innovation, and while it did yield improvements in force protection against improvised explosive devices, the real focus of the Office of the Secretary of Defense and the Services, and more importantly, the real

money, was on developing the next better version of existing marque capabilities such as 5th-generation tactical aircraft vice uncrewed systems (drones, collaborative combat aircraft); better-towed tube artillery vice a healthy mix of self-propelled tube artillery, rocket artillery, and loitering munitions; geostationary military satellites vice large constellations of low earth orbit microsats, and large surface combatants vice a hybrid fleet incorporating uncrewed surface and subsurface vessels.

The most important contribution of the *2018 National Defense Strategy* was the unequivocal shift back to threat-based planning. Subsequent joint doctrine such as *CJCSI 3100.01 Series, Joint Strategic Planning System*, *CJCSI 5123.01 Series, Charter of the Joint Requirements Oversight Council and Implementation of the Joint Capabilities Integration and Development System*, *Manual for the Operation of the Joint Capabilities Integration and Development System*, and the previously quoted *CJCS 3030.01A* all made improvements to how the Department approaches planning, requirements development, and solutions development. But, as with any complex process highly dependent for success on external factors, adjustments, and improvements must be continuous given the changing nature of threats, technologies, budgets, and strategies.

From Time-Sequenced to Logically Sequential, Temporally Concurrent

CJCSI 303.01A describes three timeframes from the present: Force Employment (0–3 years), Force Development (2–7 years), and Force Design (5–15 years). While it is obvious that any process takes time, and therefore emerging capabilities will manifest further in the future than employing today's forces, the three epochs described in the *CJCSI* are unhelpful and potentially detrimental.

First, the Russo-Ukraine war has demonstrated that such a time-specific process cannot work. Forces must be designed and redesigned in important ways in the near future, and the inability of a force to do so means defeat.

Second, at the most fundamental level, this sequenced construct fails.

Logically, Force Design comes first (architectural design), then the force is developed to fit the design (like a house is built to an architect's blueprint), and then it is employed (like a house is lived in). The underlying logic of the Joint Staff's tripartite timeframes is that the acquisition process takes time and therefore Force Design manifests in the most distant epoch. But if we care about what we need to do to win tomorrow, we must focus on Force Design first just as someone building a house hires the architect before hiring the home builder.

The forces being employed today were subject to force design in the past, but in most cases, the too-distant past, and this is why there is so much consensus in the Office of the Secretary of Defense and Congress on the need for acquisition reform.¹⁰ It is also inordinately focused on traditional long-term program acquisition when, increasingly, opportunities exist for software upgrades to existing systems and the purchase of more advanced non-developmental capabilities (e.g. FPV drones) is possible.

It is critical that designers, developers, and operators maintain a continuous dialog to ensure healthy feedback loops for rapid adjustment to processes and plans. The current time-dependent characterization serves as an implicit segmentation that discourages interactions among designers, developers, and operators and thus compromises essential feedback. Too often, combatant commanders (CCDR) and operating force emergent requirements are diminished by force designers and developers because these components are "just focused on today." In the past, there was some justification for this argument, given the glacial evolutionary trajectory taken by all Services, but it is simply not true today. The CCDRs and forward-postured operating forces are increasingly conversant in both current and future adversary capabilities. In the past, when adversaries were decades behind us in fielding capabilities, a CCDR asking for contemporary countering capabilities was to ask for incremental changes; this is not the current circumstance. Now, when forward-postured

forces ask for capabilities to counter existing and near-term adversary capabilities, they are asking for capabilities that are often far in advance of currently planned capabilities in the acquisition pipeline. This makes all the difference and is a key reason why the joint doctrine on timing and sequencing needs to be re-examined.

Concept-Driven or Concept-Informed

In describing the execution and implementation of JFDD, *CJCSI 3003.01A* states, “Concept-driven, threat-informed, capability development begins with a vision of the future operating environment that guides the DOD through a campaign of learning to identify the capabilities required to achieve the objectives established in national strategic guidance.”¹¹

Concepts are extremely important elements of Force Design, but they are not the first thing, nor are they the most important. Vision comes first, and since force development processes and the systems they produce are sensitive to initial inputs, flaws in vision can have cascading negative effects on final outcomes. It is important to get the first thing, the main thing, right first. As Einstein said, “If I had an hour to solve a problem and my life depended on the solution, I would spend the first 55 minutes determining the proper question to ask, for once I know the proper question, I could solve the problem in less than five minutes.”

Force Design is more deductive than inductive (as a recursive intellectual exercise, it will inevitably have elements of both). Experience and professional judgment allow us to have a vision and then a hypothesis. This tentative vision, which describes the desired attributes of the future force (objective force) needed to solve a specific military problem, is the vital spark of creation: the first thing.

Concepts are useful because they pull together desired attributes into a coherent whole that describes important elements of the larger warfighting system and aids the progression from an impressionistic vision to the refined blueprint.

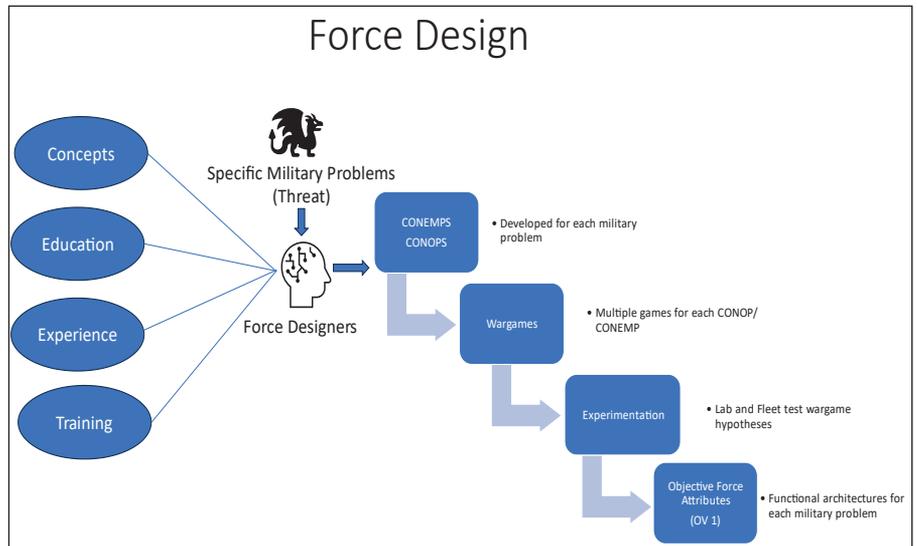


Figure 1. (Figure provided by author.)

Current concepts are of varying quality and utility. They are certainly useful but also quite imperfect. Given this reality, basing Force Design on these concepts cannot help but lead to a flawed force design if we use textual analysis of these concepts to determine requirements per the Joint Capabilities Integration and Development Systems. Deconstructing concepts to transliterate them from conceptual think pieces to mechanistic lists, and then by rote, converting these lists to gaps and then requirements, is bound to lead to confusion amongst force developers and solution developers as the logical warp and woof of force design are shorn from the process, just as CBP did in the early 2000s. Additionally, flawed concepts do not get better through abstraction.

Of course, lists can be quite useful, but we do not need a concept to generate a list. It would be surprising if the authors of concepts did not start with a list in their minds first and there is nothing wrong with this. Concepts are useful for their consilience of information into a narrative that can deliver shared wisdom while also stimulating further creative thought.

The problem with lists is what bureaucracy do with them. They are often an excuse to reduce a complex cognitive task into manageable parts, which can be useful, but this is not a way to build a fit-for-purpose warfighting system—it is simply a way to

understand an already formed system. An architect does not take a pile of materials and build a house from what is in the pile. An architect uses education, experience, and knowledge of materials to build a plan. Mechanical engineers add greater detail to the blueprint to describe its internal systems and piece parts. If force designers are the architects, then force developers are the mechanical engineers, and both should be informed by concepts, not an abstracted list of those concepts’ key points.

Figure 1 offers a notional process flow for Force Design while emphasizing the centrality of the force designer and his cognitive processes.

In sum, Force Design should be concept-informed and not concept-driven. Force designers produce conceptual frameworks for force developers to define system particulars—not simple lists.

The most valuable conceptual work is derived by focusing a concept on a very specific scenario believed to be likely. This requires concept developers to understand more than good storytelling and understand applied warfighting. If we were to develop a range of concepts/ concepts of operation for all supported combatant commands across the spectrum of competition and conflict, we would possess a robust playbook for likely challenges at the level of detail necessary to describe and build a system. Critically, this approach would require articulation of not just mate-

rial requirements but also non-material requirements such as training, organization, facilities, logistics, tactics, techniques, and procedures, etc.

A concept supports thought and creativity and loses its purpose when subjected to Derridean deconstruction. Force designers are *architects*, while force developers are *mechanical engineers*, and both use concepts to maintain the purpose of and vision for the objective force.

Those involved in Force Design should be informed by the complete range of concepts relevant to their military problem and focus on using this knowledge to develop the concept of operations in narrative form and graphically in an operational view.¹² This ensures a systems view that maintains priority for a functional warfighting system versus the current process's proclivity for devolution into a "one-to-N" list of preferred capabilities with no guarantee they will cohere into a functional warfighting capability that can be fielded. Such lists are also susceptible to manipulation at various levels of the chain of command by those advocating for their special interests whether part of the system architecture or not.

Case in Point: Marine Corps Force Design

A system comprises three fundamental elements: a purpose or function, system elements, and interconnections. In current process parlance, this is analogous to mission, capabilities, and interdependencies. This means *Force Design* is about system development—a combat system.

While biological evolution demonstrates that chance combinations of chemicals and energy can lead to complex lifeforms, we should not expect a warfighting system to emerge from the muck and mire of lists, technology, and capabilities, given that acquisition processes are, thankfully, somewhat shorter than biological evolutionary time horizons.

To achieve speed of relevance, we must rapidly create a system, test it, modify it, and test it again. Fortunately, military professionals have the benefit of specialized knowledge, which, when

combined with past and ongoing Force Design efforts, enables them to jump ahead evolutionarily to an imperfect but fully formed vision for a future warfighting system through deductive reasoning. Conversely, over relevant time horizons, gaps and capability lists will not coalesce into an objective force (system of systems) inductively—an overarching vision is required because we are looking for something new, unencumbered by traditional approaches and existing capabilities. A creative step of system definition, through Force Design, is required to guide force development.

Because the Marine Corps has evolved incrementally since World War II, there has been little attention paid to Force Design as the focus of the combat development process of this era was on buying a newer version of existing platforms. Force structure changes during this period were the subject of a parade of force structure working groups, force organizational review groups, and integrated process teams, with many of their recommendations not being implemented due either to lack of resources or to subsequent redirection from leadership.

This historical experience demanded little in the way of force design and mostly required finding ways to improve existing capabilities, such as a better truck, HMMWV, AAV, etc. For decades, the Marine Corps Combat Development and Integration Command (CD&I) focused predominately on the ground combat tactical vehicle strategy because that is where Service-defining capabilities were thought to lie, and except for aircraft, it was where the most expensive platforms resided.

Unfortunately, this was to the exclusion of upgrading our artillery systems to move beyond towed artillery to self-propelled. There was also inadequate investment allocated to Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance, and installations. There was substantial discussion about this, but funding was subordinate to the vehicle strategy. These decisions placed the Marine Corps in a situation where organic sensing and fires were inadequate

for peer conflict. The 37th Commandant, Gen Neller, recognized the problem in his 2017 Posture Testimony, which stated unambiguously that "the Marine Corps is not organized, trained, equipped, or postured to meet the demands of the rapidly evolving future operating environment."¹³

Force design must be a core competency for any organization charged with force modernization and development, or we will find ourselves in a circumstance, yet again, where Gen Neller's testimony will ring true. Currently, the Marine Corps' combat development organization (CD&I) lacks dedicated force designers and instead relies upon ad hoc process teams, study groups, and organizational reviews to produce the vision and the attributes for an objective force. This lack of dedicated force designers all but guarantees that the nuances of the proposed design developed by an ephemeral ad hoc group will be inadequately translated and implemented by force developers, having been lost in the translation from vision to concept to list.

Recommendations

Amend Joint and Service Process Documents

Both the order and the temporal descriptions in the *CJCSI* should be reconsidered to reflect the logical progression of force development: Force Design, Force Development, and Force Employment. In addition to changing the order of activities, the arbitrary timeframes should be eliminated as they are not accurate and simply reinforce the flawed conception that Force Design only manifests in the distant future. As discussed, this is no longer the case in an environment where software-defined capabilities and commercial, non-developmental solutions are an ever-increasing portion of the warfighting system.

Joint doctrine should make explicit that force design is threat-based and concept-informed vice concept-driven and threat-informed, and reemphasize the centrality of the JOE and related threat assessments. Threat documents should be unambiguously defined as the starting point for Force Design.

Force designs must be consistent with the Analytic Working Group principles and standards wherein they must be detailed enough to be tested through wargames and experimentation. Thus, force designs can be thought of as testable hypotheses. Importantly, the joint doctrine is explicit that wargaming, experimentation, and analysis are crucial to shaping Force Design. These activities do not validate a design; rather, they contribute to an iterative process of improvement. For the Joint Force, the Joint Warfighting Concept guides organization, training, and equipping, and Service designs should clearly reflect how they fit within the Joint Warfighting-informed Joint Force.¹⁴

Best Practices

Concept required capabilities derived from concepts are insufficient for force development purposes. As *CJCSI 3030.01A* states, “CONEMPs are the most specific of all military concepts and contain a level of detail sufficient to inform the establishment of programmatic requirements.”¹⁵ Thus, even with the existing joint doctrine, Force Design derived from operating and functional concept required capabilities is inadequate. If lists are made to aid in understanding and communicating, they must be placed in context and not allowed to become the main thing.

The Army has a force management occupational specialty (FA 50) that encompasses force development, force integration, and force generation. Officers are selected for FA 50 around their eighth year of service to attend a fourteen-week qualification course, and are expected to pursue subsequent education throughout their career.¹⁶ The Army also has a Futures Command headed by a four-star general in Austin, TX. The Marine Corps has made no investments in focusing and professionalizing its future force to the extent the Army has, and the results speak for themselves. The Army is implementing the fundamental aspects of Marine Corps *Force Design* (formerly *Force Design 2030*) at speed and scale and, one might argue, beating the Marine Corps at its own game.¹⁷ Of course, from a non-parochial perspective, the Army’s

successes should be celebrated as they are making the Army more capable and relevant for the future fight. Go Army! All Services should learn from the Army and consider professionalizing the force design and force development workforce.

Force Design Professionals

Force Design is not a product, it is a process—a creative process, and it is the first step in force development once threats and challenges have been identified. At the outset of the Marine Corps’ *Force Design 2030*, this first step was performed by an ad hoc group because there was nobody dedicated to force design. Given this lack of force design professionals, when the Provident Stare (the name given to the initial *Force Design 2030* planning group) organization was handed off to the Deputy Commandant CD&I, CD&I had to proceed over subsequent years with a continuing string of ad hoc integrated product team efforts focused on pieces of the overarching design developed during Provident Stare. This structurally exposes the process to discontinuities and confusion given the lack of continuity in those doing the design and development. If Force Design is a continuous process and not a one-off effort, then Services should all have dedicated force designers educated, trained, and experienced in the art and science of designing a force. Gen Berger and other senior leaders recognized that existing capa-

bility portfolio management processes were suboptimal for a design effort requiring discontinuous change given they are the product of the historical, incremental approach to force development.

Given Force Design’s centrality to force development, and the inherent need for continuous adjustment, force design should be an organic core competency.

In the Marine Corps, this could be accomplished by converting existing capability portfolio managers (CPMs) (active-duty colonels) to force designers. Force Design focus areas might include sense/influence, communicate, command, move, shoot, protect/defend, sustain, and support, each overseen by a force design colonel (Figure 2). As an option, these elements could be grouped into design groups should a different rank/command structure be desired. These design groups would be configured as follows:

- *Knowledge (K-DG)*: Sense/Influence; Communicate; Command.
- *Fight (F-DG)*: Move; Shoot; Protect/Defend.
- *Enable (E-DG)*: Sustain; Support.

Alternatively, rather than form separate design groups, the aforementioned groupings could simply be viewed as “caucuses” amongst the force designers, which in practical terms could be used to plan travel and briefings when all force designers cannot attend or should other reasons so

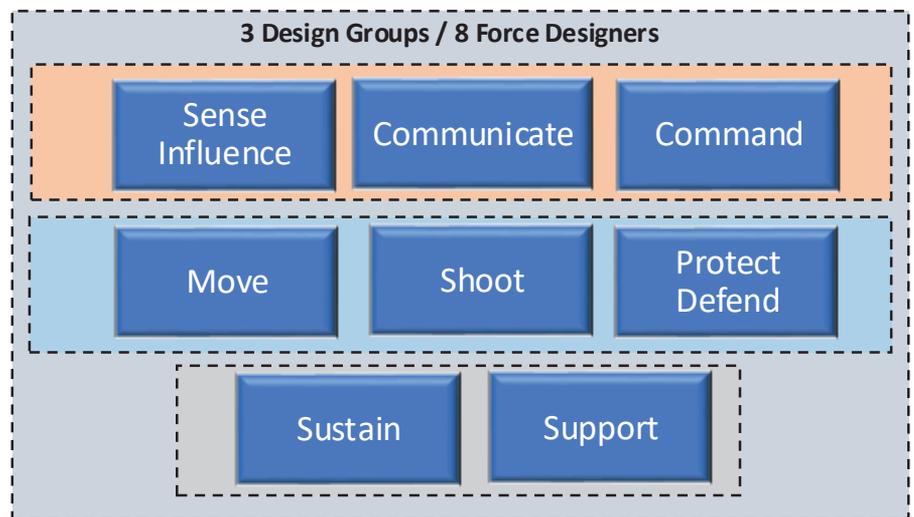


Figure 2. (Figure provided by author.)

dictate. Such an informal grouping could enhance synergy between force designers that have especially strong interdependencies.

All relevant domains would be addressed in each of the design groups with the biggest difference being that Aviation would be fully integrated, versus the special relationship that now exists between CD&I and Deputy Commandant for Aviation (DCA) where the Aviation CPM is effectively a liaison for DCA vice an integral part of the requirements process. Currently, DCA determines requirements and provides solutions to the Aviation CPM. If deemed necessary, an aviation-focused design group could be added, but other CPMs would still approach their design activities in all domains, including air. The multidomain battlefield requires force design that is conceived in all domains.

For the Marine Corps, the criticality of naval integration suggests that adding a Navy captain as a ninth force designer would be beneficial. This individual would provide connectivity to OPNAV staff and Numbered Fleet Headquarters. Given the current direction of the Army, an Army force designer would also be a logical addition, and a SOCOM force designer would be helpful as well.

Force designers would work together daily as an integrated team like the civilian concept of *scrum* where a multidisciplinary team works together to produce a new product. Battle rhythm and daily routine would be very similar to the Marine Corps' School of Advanced Warfighting with research, seminars, and supporting analysis culminating in the development of a blueprint for the Objective Force, a narrative description of the doctrine, organization, training, materiel, leadership and education, personnel, and facilities attributes of the envisioned force. A supporting brief would be available to general officers and others to ensure consistent messaging on the desired Marine Corps of the future.

On a yearly cycle, all operating and functional concepts would be briefed by the owner or author of each respective concept. This would reinforce concepts

as a major component of *Force Design's* intellectual foundation. Guest speakers from National Defense University, Marine Corps University, and local think tanks would be regular calendar events.

Travel to exercises, experiments, wargames, other Service Futures Commands and force design entities, and industry partners would occur monthly. Force designers need to be imbued with a sense of the possible through extensive outreach to operating forces, other Services, industry, and academia. The Marine Corps Warfighting Lab would provide regular updates on insights drawn from their wargaming and experimentation activities.

Force Developer Professionals

Force development follows force design and is guided by a *Force Design* blueprint. Marine Corps Deputy CPMs could be redesignated as force developers. The current senior/subordinate relationship between CPMs and deputy CPMs could continue with the

sion caused by the clear separation of responsibilities. This increased specialization also allows more time for each to perform their respective tasks.

Notionally, force developer portfolios would map directly to the eight force designer portfolios and would address the following:

- *Sense & Influence*: Intel, C-Intel, Cyber, all domain sensors, space, information.
- *Communicate*: Space, terrestrial, military/commercial C4.
- *Command*: Command Relations, Authorities, Commandency, Joint/Combined integration.
- *Move*: Ground, air, and sea mobility.
- *Shoot*: Air, ground, lethal, non-lethal, kinetic/non-kinetic, cyber.
- *Protect/Defend*: Air, ground, cyber.
- *Sustain*: Organic and theater logistics.
- *Support*: Ground, Air, Sea installations, war reserves, supply, maintenance.

For the Marine Corps, the criticality of naval integration suggests that adding a Navy captain as a ninth force designer would be beneficial.

new force designer/force developer construct since close coordination will be required to translate the force attributes described in the *Force Design* blueprint into formal requirements or problem statements (for problem-based acquisition). Force developers would run the Capabilities-Based Assessment process.

Force developers would focus exclusively on requirements and problem statement development. Solutions would best be accomplished by solution developers under a single roof to benefit from multi-disciplinary expertise and enhanced situational awareness given the proximity and integrated processes within a separate solutions directorate. Force developers would work in close coordination with solution developers to continually refine requirements while force development and solution development benefit from creative ten-

Solutions Development Professionals

For the Marine Corps, solution development is done within multiple organizations including the Combat Development Directorate, the Warfighting Laboratory, Systems Command, and Training and Education Command, among others. Solution refinement would be an iterative process involving structured interactions between requirements and solution developers. Over time, a separate solution-focused directorate, headed by a senior executive or brigadier general, would develop a cadre of solutions professionals who understand Joint Force, industry, and technology opportunities and will be equipped to steer solutions through the optimal acquisition pathway.

Conclusion

As stated above, Force Design is first

and foremost an act of creation. It involves the assimilation of historical and personal experience, missions, threats, technologies, concepts, concepts of operation, strategic guidance, Joint Force concepts and capabilities, and especially CCDR (customer) demand. The cognitive assimilation of multi-variate and complex knowledge to derive a coherent system capable of performing desired functions is where systems thinking and force design thinking coalesce into a vision of an objective force.

As a continuous process, Force Design requires dedicated force designers to adapt designs in response to changing threats and opportunities. Each Service has an advanced career-level school for operational planning like the Marine Corps' School of Advanced Warfighting. A force design division within CD&Is Combat Development Directorate would provide an analogous environment to develop Service-level strategic planners and prepare colonels for increased responsibilities as general officers serving as deputy commandants and in commands such as the Marine Corps Warfighting Lab and Marine Corps Systems Command and various joint assignments. The traditional ad hoc approach to the assignment of senior leaders worked in an era of incremental change, but the increasing complexity of the modern battlefield and the associated technical aspects of capabilities development require a more professionalized approach to senior leader talent management.

While not the focus of this article, force development processes beyond the CBA process should be explored to streamline and speed up the development of requirements and the crosswalk of requirements to a dedicated Solutions Directorate that maintains an initial bias toward joint solutions.

While the foregoing recommendations, in their specifics, are focused on the Marine Corps, the fundamentals of force design and force development are applicable across the department:

- Force development should be threat-based. The JOE and related threat assessments are the foundation upon which force development is conducted.

- Force development should be concept-informed. Concepts are important narratives that describe pieces of the overarching warfighting system, but they are, by design, tentative and not comprehensive.
- Force design, force development, and force employment are concurrent, not sequential, processes.
- Force design is a creative mental process accomplished heuristically—it is not a dissection of capabilities de-

Force Design is the locus of innovation ...

scribed in incomplete and evolving concepts. Concepts are just one input among many.

- Joint Capabilities Integration Development System needs to be benchmarked against a conflict like the Russo-Ukrainian War and its ability to deliver a hellscape-like set of capabilities as defined by COMINDOPACOM, ADM Paparo. If it cannot deliver against these tests at the speed of relevance, it should be replaced.

Force Design is the locus of innovation and the architect of force development; we must evolve our processes and organization and professionalize the force design workforce to do it well.

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Wings Over Water: The Seaglider Revolution in Maritime Mobility

Dual-use dominance across multiple missions

by Col Ben Mathews, USMC(Ret)

Logistical support to a distributed naval force is difficult and becomes significantly more so in contested environments. Moving and sustaining the distributed force in the littorals requires survivable, affordable, and complementary capabilities across the spectrum of surface, subsurface, and airborne craft. Emerging technologies like the wing-in-ground-effect craft addressed in the following article offer great promise as part of the solution set to close the critical capability gaps facing the naval services today and in the future. Wing in ground effect and other technologies, integrated as part of an overarching naval strategy, can provide affordable and survivable distribution capabilities that complement current and future platform mixes. In my opinion, the wing-in-ground-effect craft technology has the potential to be a game changer for the Marine Corps as a near future capability—we need more thinking and solutions like this.

LtGen E.D. Banta, USMC(Ret)

The maritime security and defense landscape has transformed dramatically in recent years, necessitating a reevaluation of traditional naval strategies. Historically, naval dominance hinged on large, costly capital ships engineered for high-intensity warfare. Yet the emergence of asymmetric threats, novel attack vectors, and persistent gray-zone conflicts have revealed the limitations of these platforms.¹ This shift presents

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an opportunity to invest in maritime innovation, prioritizing platforms that are risk-tolerant and capable of being mass-produced to outnumber adversaries while simultaneously slashing lifecycle costs. Imagine a fleet that's fast, affordable, and highly clandestine—seagliders can provide that supplementary support to the Joint Force. Dual-use technologies—those serving both military and civilian purposes—lie at the heart of this pivot, promising cost savings and bolstering resilience across manufacturing, distribution, logistics, and parts supply chains.²

The era of naval supremacy defined solely by massive, single-point-of-failure

vessels is over. Since the last major naval clash in the Pacific during World War II, maritime warfare has evolved toward decentralized and asymmetric forms.³ This tectonic shift demands a rethinking of naval platforms, favoring those that can be sacrificed without catastrophic loss, deployed en masse, and sustained economically. In the Pax Americana period, consumer technologies thrived, emphasizing quality, usability, and affordability. As the 21st century unfolds, however, rising tensions with peer adversaries compel Western militaries to innovate with an eye on costs.⁴ Dual-use technologies, initially honed for commercial markets,

The opinions expressed herein are those of the authors and do not necessarily reflect the attitude of the DOD, Department of the Navy, or Headquarters Marine Corps.



Viceroy prototype during initial sea trials. (Photo by REGENT Craft.)



Viceroy seaglider rendering. (Photo by REGENT Craft.)

now offer defense applications, leveraging economies of scale to reduce military costs.⁵

REGENT Craft exemplifies this innovative shift with its development of seaglid­ers—dual-use vessels poised to meet the strategic needs of the U.S. Navy, Marine Corps, Army, Coast Guard, Special Operations Command, and joint forces. Designed for resilience, capability, and cost-efficiency, seaglid­ers operate in three modes: as surface boats on their hulls, on hydrofoils for speed,

and airborne via wing-in-ground-effect flight.⁶ This versatility exploits low-altitude aerodynamics, enhancing speed, range, and stealth by always operating within ground effect, defined as within one wingspan of the surface. Primarily built for commercial coastal transport, seaglid­ers integrate legacy wing-in-ground-effect principles with modern hydrofoils, automated vehicle control systems, and electric propulsion, enabling operations from exist­ing harbors while connecting economic

hubs.⁷ REGENT offers two models: the Viceroy, carrying twelve passengers and two crew with a 200-mile range and 180 mph speed, and the forthcoming Monarch, a 100-passenger or 22,000-pound payload craft with a 100-foot wingspan and 350–500 mile range slated for service by 2030.⁸ Advances in battery technology promise to extend these ranges even further.⁹

In defense contexts, seaglid­ers shine in littoral zones, where low detectability is paramount. Unlike traditional ships, seaglid­ers lack significant infrared signatures due to electric propulsion, which also minimizes maintenance and life-cycle costs.¹⁰ Operating within ground effect, they evade sonar and radar, while carbon-fiber construction further reduces visibility.¹¹ This stealth, paired with reduced fuel and upkeep demands, enhances operational resilience and cuts expenses—a boon mirrored in the civilian sector, where over 600 orders signal commercial viability.¹² For the



SURVEILLANCE AS A SHIELD

Threats are evolving and operators need to stay a step ahead. EO/IR surveillance creates a shield of awareness for force protection when speed, accuracy and flexibility are crucial.

FLIR.COM/MCG25

DOD, this dual-use nature translates to market-driven pricing for maintenance, training, and operations, shifting naval strategy from reliance on a few high-value assets to a distributed, affordable, and rapidly deployable fleet.¹³

The Marine Corps, reverting to its maritime roots, finds seaglid­ers ideally suited to its ethos. Organic seaglid­ers within Marine Logistics Groups will enable swift, flexible combat operations, aligning with expeditionary advanced base operations doctrines.¹⁴ The Corps’ Capability Based Assessment identifies gaps—such as efficient distribution in contested environments—that seaglid­ers address by delivering automated, manned logistics to small units across the MAGTF. The 2023 Marine Operat­ing Concept emphasizes enabling small units, redesigning logistics for distrib­uted forces, and integrating manned-unmanned systems—goals seaglid­ers advance through speed, flexibility, and reduced risk.¹⁵ In hybrid logistics and littoral operations, seaglid­ers bridge new tech with existing systems, sup­porting sea control and sustainment in complex terrain.¹⁶

Operationally and strategically, seaglid­ers represent more than innova­tion—they are an imperative. They tackle modern maritime challenges, of­fering the Navy, Marine Corps, Army, Coast Guard, Special Operations Com­mand, and joint forces a blend of capa­bility, affordability, adaptability, and sustainability. As REGENT refines this technology, seaglid­ers promise to redef­ine naval warfare, heralding an era of distributed, resilient operations.¹⁷ Their adoption could overwhelm adversaries through sheer numbers and versatility, all while serving civilian needs, thereby ensuring a robust maritime future.

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Rendering of three Viceroy seaglid­ers over open ocean. (Photo by REGENT Craft.)



Monarch seaglid­er rendering. (Photo by REGENT Craft.)

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2025 Gen Robert E. Hogaboom Leadership Writing Contest: First Place

Approachability

Overlooked but not unseen

by LtCol Merritt Mitchell

Approachability is a bridge that connects you to your Marines. You are either paving the way, building barriers, or cutting off access. In the Marine Corps, trust and communication are paramount in candid conversations that can save lives and resources, making the difference between mission success or failure. The Marine Corps is a maneuver warfare organization that relies on trust built up and down the chain of command.¹ Commanders owe their Marines clear intent and the resources to accomplish the mission. Followers owe their leaders accurate feedback, clarifying questions, and the trust to operate within the confines of the arena.

However, a culture of silence stifles creativity and hinders mission readiness. When senior leaders lack approachability, they struggle to gain a clear insight into what occurs at the lowest levels of their organizations. As leaders ascend through the ranks, their responsibilities expand, and their influence increases, yet their familiarity with the junior leaders and their troops decreases. An unintended consequence inflicted by overly busy schedules and competing priorities is a mounting difficulty for junior Marines to relate to their senior leaders. There is a direct correlation between increased rank and perceived harshness and limited interactions between senior and junior leaders often lead to the misperception that senior leaders are unrelatable and unapproachable.² As leaders, assessing one's level of approachability helps bridge the gap between senior leaders and junior Marines, leading to increased trust and effectiveness in the Marine Corps.

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1

(LEFT) WWII NAZI LEADER OF GERMANY ADOLF HITLER, SOME POINT TO HIS UNAPPROACHABILITY HINDERING HIS MILITARY GENERALS AS A MAJOR FACTOR IN HIS DEFEAT.



2

(RIGHT) GENERAL AND EMPEROR NAPOLEON BONAPARTE, WHILE A MILITARY GENIUS BY MANY MEASURES, HIS EGO GOT IN THE WAY OF LISTENING TO HIS GENERALS DURING HIS INVASION OF RUSSIA AND DEFEAT THROUGH A PROTRACTED WINTER WAR.

Figure 1. Being unapproachable guarantees defeat. (Figure provided by author.)

The Challenge of Relatability

The *mask of command*, like body armor on a deployment, does not have to be worn at all times and in all situations.³ At its core, the perception of approachability is amplified by military traditions of customs and courtesies and by increasingly busy schedules that leave minimal time for senior leaders to troop the lines. Senior leaders' intent on maintaining their *war face*—a stoic and authoritative demeanor—may unintentionally reinforce the divide between leader and led.⁴ While maintaining this demeanor has a time and place, such as

formal ceremonies or leading troops in combat operations, it can be counterproductive in day-to-day interactions. Knowing when, where, and with what level of formality shows a mature leader willing to adapt to their position and circumstances. Striking a balance when visiting Marines sends one of two messages: either you are never there and do not care, or you are there too much and do not trust them to operate without strict supervision.

Marines build trust through the process of “Forming, Storming, Norming, and Performing,” especially while

operating at the company level or below.⁵ Unfortunately, due to competing commitments, senior leaders do not have the freedom or time to be as involved with junior leaders during the trust-building process. Oftentimes, the context of decisions is lost while troops on the ground focus on the down and in of the tactical level, while senior leaders focus on the up and out at the operational and strategic levels. However, there must be a common ground in which information is shared from the bottom up and the top down to create a shared consciousness and culture. All levels of leadership should have ownership in this process; however, it is up to senior leaders to build a climate of approachability and trust that drives this process. It is the responsibility of leaders to link the purpose of tactical actions with strategic context while fostering unit morale and working to achieve common goals.

The Power of Approachability

Being an approachable leader is not a sign of weakness; it is a powerful tool that enables senior leaders to gain the trust of their subordinates and access to the unvarnished truth. Approachable leaders foster an environment where junior Marines feel valued and empowered to speak openly, which helps to identify and address problems before they escalate. There are several ways a senior leader can display approachability and build two-way communication. Senior leaders can increase their approachability by being conscious of their demeanor and communication style, prioritizing face-to-face interactions, attending training, visiting deployed forces, and holding regularly scheduled town halls.

Leadership Tools for Approachability

Effective communication promotes a sense of purpose, trust, and collaboration that is essential for senior leaders when engaging with junior leaders. Senior leaders must ensure their messages resonate and inspire action by self-reflecting on, “Who is my audience? What’s the best method to reach them? How long do I have? What methods are available to me?”⁶ For junior Ma-

rines, effective communication must be clear, concise, and relatable to compete with their limited attention span, which is often divided among various work responsibilities and entertainment distractions. Communication must be tailored to reach your intended audiences while fostering trust and rapport. Additionally, feedback from trusted advisors and previous “gray beards” provides leaders with both wisdom and wasta.

The Commandant of the Marine Corps demonstrates effective communi-

smile, engage in casual conversations, and show genuine interest in their Marines’ lives create a sense of camaraderie. A leader who smiles more appears relatable and less intimidating. This does not mean that leaders should forgo professionalism or adopt a perpetual grin, but rather, they should be mindful of how their expressions and body language impact their Marines’ perspectives. A sideways glance of displeasure during a brief can leave some Marines questioning their abilities and willingness to speak their minds.

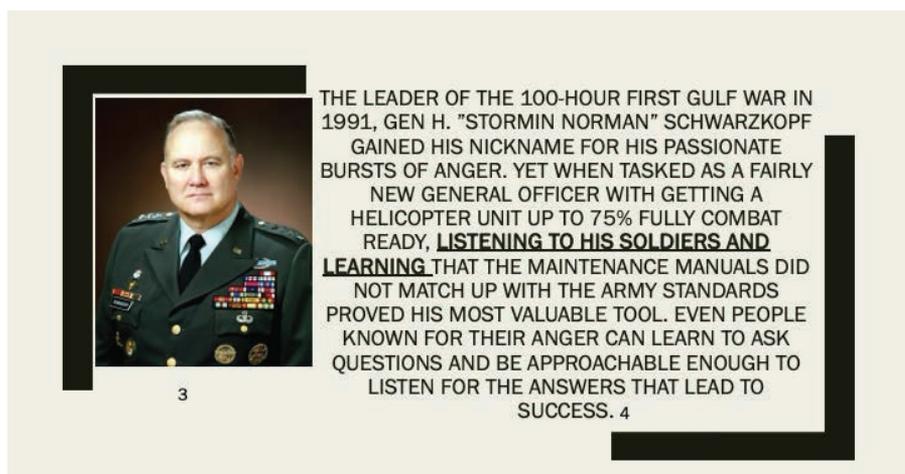


Figure 2. Ask questions, listen, and succeed. (Figure provided by author.)

tion by using social media platforms to communicate short, impactful video clips that deliver key messages such as reminders to complete the annual Combat Fitness Test.⁷ These videos, tailored to the Marine ethos, use straightforward language and relatable scenarios to connect with Marines at all levels, fostering trust, unity, and approachability. By leveraging modern technology and brevity, leaders ensure that critical guidance and values are shared effectively, empowering junior Marines to act decisively and confidently.

Demeanor plays a crucial role in shaping how others perceive us and directly influences our ability to build relationships. While it may seem minor, demeanor has significant leadership implications. A large portion of communication is non-verbal, meaning even small adjustments in bearing can greatly enhance approachability and effectiveness in leadership.⁸ Leaders who

In-person communication should be prioritized to ensure non-verbal body language is used to convey your meaning, especially when controversial or complex ideas need communicating. Senior leaders can cultivate approachability by prioritizing face-to-face interactions. Whenever possible, communication should be delivered in the most personable way possible, especially if it is sensitive or personal, such as the loss of a loved one or corrective action. Communication priority should start with face-to-face, followed by video, then voice calls, and lastly, written messages.⁹

Visible presence could include visiting the companies, walking the lines, eating meals with your Marines, casual meetings, planned mentorship sessions, and unit social events. During these interactions, leaders should practice active listening, demonstrate empathy, and refrain from passing immediate

judgment. Senior leaders should leverage informal settings to foster candid conversations. These small actions signal that the senior leader is not just an authority figure but also a mentor and an ally.¹⁰ When Marines see their leaders as approachable, they are more likely to share their honest perspectives.

To learn what is happening on the ground requires being on the ground. By visiting in person, listening, and then sharing context for Marines wondering about policy or strategic changes that impact them, an approachable connection is much more likely. Often, a unit's dynamics might go unnoticed without taking the time to visit the troops. Battlefield circulations can seem like an excuse to get out of the office or rack up frequent flyer miles, but the message it sends to the troops and the insights gained by observing and listening to Marines cannot be replicated by storyboards or situation reports. Battlefield circulations can provide an opportunity for a senior leader to be approachable, and they must be willing and able to provide context to things their Marines care about. All decisions are made in context. If someone does not understand the decision, they likely do not understand the context. Leaders who share context find their formations less resistant to change, and therefore, approachability is invaluable during times of innovation and change.

Senior leaders' participation in mess nights, warrior nights, and the Marine Corps Ball might seem like trivial matters, but they provide Marines of all ranks and specialties an opportunity to commune and share in a setting that fosters relationship-building and transparent communication. By breaking down the barriers of rank and formality in these settings, leaders create an environment where ground truth can flourish as everyone takes part as a family of warriors. As trust increases, the speed of actions and decisions will also increase, creating a tempo Marines strive for in maneuver warfare.¹¹

The last method is the inclusion of town hall meetings. A good method to assess the trust built between senior and junior leaders is the presence of challenging questions and two-way dialogue

in public forums. If senior leaders are practicing the aforementioned approachability skills, town halls should provide insightful feedback. While approachability fosters open communication and trust, it also necessitates guiding interactions to remain productive and respectful, especially in public forums where poorly framed questions can undermine credibility, distract from the discussions, and hinder unit morale. By setting the tone for what constitutes thoughtful inquiry, leaders can encourage dialogue while maintaining professionalism.

Dumb Questions Exist, a Litmus Test: Arrogance, Ignorance, or Agenda

While senior leaders should take the mantle when developing approachability, junior leaders also hold responsibility for their demeanor and actions. For example, a senior leader should encourage open and candid dialogue, but that does not mean all questions are appropriate. Most Marines have heard questions that were not well thought out, in which the audience rolls their eyes and the chain of command grumbles under their breath. There is a three-part self-diagnosis everyone should ask before asking a question in a public forum:

One: Am I demonstrating arrogance? Everyone has met over-eager people who know the answer to the question but wish to grandstand while citing their litany of achievements and knowl-

Two: Does this question show ignorance? Ignorance is measured within the context of the experience, rank, and length of service of the person asking the question. A junior Marine with limited experience has more room to ask foundational questions as opposed to someone who clearly should know the answer to what they are asking yet is demonstrating holes in their professional education out of laziness, immaturity, or low IQ.

Three: Does this question display an agenda? For example, when the Marine Corps controversially decided to divest of tanks, many tankers stood up in public settings with questions to senior leaders designed to point out their agenda to retrieve the steel beasts from the scrap heap of history.¹²

Junior Leader Responsibility—Moral Courage

Approachability for senior leaders has utility, however, that does not negate junior leaders from displaying moral courage in the case of unapproachable leaders. George C. Marshall offers a case study on courage in the face of unapproachability. As a junior officer, George C. Marshall demonstrated significant moral courage in the face of adversity. Marshall served on the staff of a historically unapproachable leader, GEN John "Blackjack" Pershing. Equivalent to a six-star general, Pershing was known for his blistering tirades and blunt demeanor.¹³



Figure 3. Facing senior leaders with courage. (Figure provided by author.)

However, long before Marshall became the Chief of Staff of the Army, the Secretary of Defense, and the Secretary of State responsible for the Marshall Plan to rebuild Europe after World War II. He first stood up to his unapproachable leader with honesty and humility while deployed to France in World War I.¹⁴ Although initially taken aback, Pershing respected Marshall as a man he could trust to give the painful truth instead of the pleasing lie.

Conclusion

Approachability is a cornerstone of effective leadership, yet it is often overlooked as leaders climb the ranks. By smiling, engaging with Marines on a personal level, and fostering open communication, senior leaders can bridge the gap that separates them from their subordinates. This connection not only builds trust and morale but also provides access to the ground truth needed to make informed decisions.

In a profession where lives depend on effective leadership, the importance of approachability cannot be overstated. Senior leaders must embrace this trait, recognizing that genuine connection with their Marines is the foundation of mission success.

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The Other Golden Rule

Why being the leader you want won't make you the leader they need

by Maj Dilan M. Swift, USMCR

I first recognized I had lost control of one of my platoons somewhere in the Celebes Sea. After six months in command, everything seemed to fall apart. The Marines were not responding to direction, and the cracks in discipline were showing. I thought being a great leader meant inspiring my Marines how I wanted to be led. I was wrong. After three painful months, my relationship with the battalion commander tanked. With no missions and fractious Marines, I was at a loss. My first sergeant and I got to work. As a command team, we had a duty to turn the company around. Yet, as I reflected, I realized my leadership approach was deeply flawed. The problem was not effort or intent—it was perspective and approach. The Golden Rule, while a strong ethical foundation, failed because it assumes all subordinates respond to leadership the same way. Instead, great leadership requires adaptability—recognizing strengths, weaknesses, motivations, and limitations, and tailoring leadership styles accordingly. Leaders must go beyond how they *want* to lead and instead learn how their Marines *need* to be led.

The Golden Rule is Not Enough

It may seem obvious that the Golden Rule should guide a leader in all interactions. It is universal wisdom captured in every faith tradition. It is both logical and aspirational. It challenges leaders to be conscientious in their actions lest they lead hypocritically. No leader intrinsically wants to treat his or her Marines in a way they would not. The problem with the Golden Rule is that it

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“In everything do to others as you would have them do to you, for this is the Law and the Prophets”¹

—Matthew 7:12

is only half of the leadership equation. While it provides ethical guidance, it does not offer a framework for identifying and leading different types of subordinates. For that, leaders must look to practical talent management models.

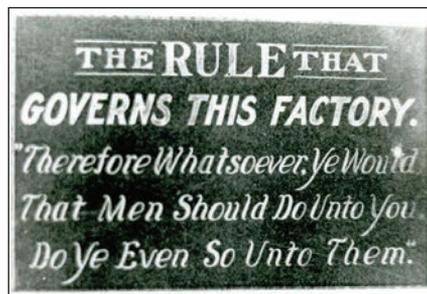
One such model comes from German Gen Kurt Freiherr von Hammerstein-Equord, who classified officers

based on their intelligence and work ethic—an approach that reveals why a singular leadership style is ineffective.² As the former Commander-in-Chief of the German Army in 1933, he witnessed World War I tactical successes and failures and took an informed approach to rebuilding the officer corps in the interwar period. An expert in talent management, he created a simple classification for officers that resonates to this day: “I divide my officers into four classes as follows: the clever, the industrious, the lazy, and the stupid. Each officer always possesses two of these qualities.”³

These qualities intersect in a simple chart that helps define four categories: the industrious-clever, industrious-stupid, clever-lazy, and the stupid-lazy. This categorization, in turn, informed officer assignments:

Those who are clever and industrious I appoint to the General Staff. Use can, under certain circumstances, be made of those who are stupid and lazy. The man who is clever and lazy qualifies for the highest leadership posts. He has the requisite nerves and mental clarity for difficult decisions. But whoever is stupid and industrious must be got rid of, for he is too dangerous.⁴

Hammerstein-Equord's model categorized officers, helping him better understand and optimize diverse personalities and competencies. However,



“Golden Rule Sign.” American Magazine, April 1913. (Photo from Wikimedia Commons, Digital Public Library of America, contributed by Toledo-Lucas County Public Library.)

Officers	Industrious	Lazy
Clever	Appoint to the General Staff	Appoint to Highest Leadership Posts
Stupid	Dangerous	Use Under Certain Circumstances

Clever-Industrious scale. (Figure provided by author.)

classification is not enough; leaders must also determine how to develop and manage subordinates effectively.

The Skill-Will Matrix

Another model, the Skill-Will Matrix, offers a structured way to adapt leadership styles based on competence (skill) and motivation (will). Much like Hammerstein-Equord sought to define a simple model to activate German officer potential, contemporary leaders can use the Skill-Will Matrix to assess subordinates. While less well known in military circles, this matrix is routinely used by management consultants, coaches, and human resource professionals to provide leaders a framework and lens to view teammates to better inform leadership and management decisions.⁵

This model categorizes individuals into quadrants defined by skill (Y-axis) and will (X-axis). This defines individuals as high skill and will, high skill and low will, low skill and high will, and low skill and will. Conceptualizing

In combat, where failure has immediate consequences, the need for adaptive leadership becomes even clearer.

this is the first step in implementing the Golden Rule of Leadership; it allows a leader to conceptualize tailored approaches to each group of Marines.

Understanding leadership theory is one thing—applying it in high-stakes

environments is another. In combat, where failure has immediate consequences, the need for adaptive leadership becomes even clearer. Tailoring leadership to the individual is not just beneficial—it is essential for mission success.

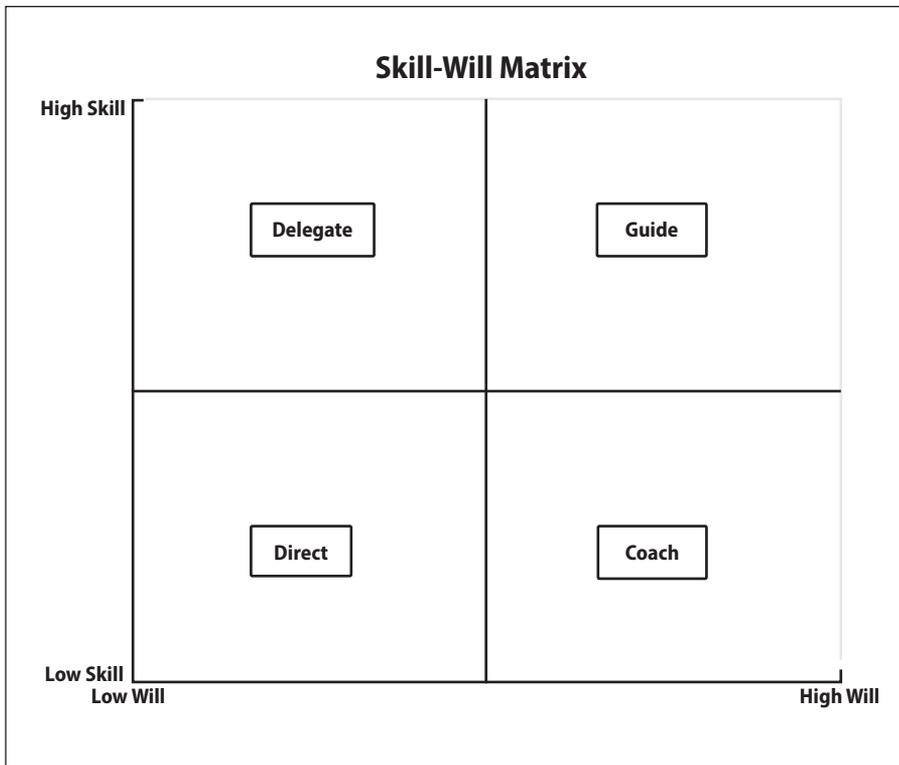
The Golden Rule of Leadership in Action

In his work, *Battle Leadership*, Capt Adolph Von Schell addresses the tailoring of leadership styles to each individual; “Soldiers are not machines but human beings who must be (known)

and led in war. Each one of them reacts differently, therefore each must be handled differently.”⁶

Von Schell attempted to distill and communicate the combat lessons of the Great War to a U.S. Army Command and Staff course in 1933. He focused on the psychological aspect of leadership in combat and believed that leaders are responsible for deeply understanding their subordinates. Because “a soldier from the city of New York has an entirely different viewpoint than the soldier who lived as a farmer in the Middle West ... (each) will react differently and will require a different method of handling.”⁷ Leaders must embrace the central responsibility of knowing their Marines and employ them according to their capabilities to maximize their potential.⁸

To illustrate his point, Von Schell explained a brigade-level offensive operation against the Russians he observed in 1917. He recalled a brigade commander’s musings to a young captain: “Each of our three regimental commanders must be handled differently. Colonel ‘A’ does not want an order. He wants to do everything himself, and he always does well. Colonel ‘B’ executes every order but has no initiative. Colonel ‘C’ opposes everything he is told to do and wants



Skill-Will matrix. (Figure provided by author.)

to do the contrary.”⁹ The subsequent orders to the colonels are a masterclass in leading subordinates as they need to be led. Col A was given minimal attack guidance, Col B was given an extremely detailed operations order, and in a superb move of reverse psychology, the brigade commander lamented the futility of such an operation, to which Col C responded with an aggressive attack. This tailored leadership reinforced Von Schell’s ultimate lesson: great leaders do not impose a single method—they assess each subordinate and apply “the correct psychological solution” to drive performance.¹⁰

Practicing the Other Golden Rule

Great leaders do not lead in a vacuum. They emerge from the accumulation of upbringing, experience, education, and training but are not always equipped or comfortable with the diverse leadership toolkit needed to optimize every person in their command. Three steps can help

leaders understand and apply this Other Golden Rule.

Know Yourself: The Foundation of Adaptive Leadership

Before leaders can effectively lead their Marines, they must first develop self-awareness. Leaders must understand their strengths, biases, and tendencies. In fact, it is a prerequisite to effectively influencing others. Tools such as the Myers-Briggs Type Indicator, the Big Five Personality Traits, 360-degree feedback, and self-reflection exercises provide valuable insights. The best leaders understand their natural leadership style—whether authoritative, consensus-building, or coaching—and recognize when those instincts serve them well and adjust them when necessary. A leader who prefers autonomy may need to exert more control when guiding junior, inexperienced Marines. Likewise, a detail-oriented leader may need to loosen the reins when manag-

ing high-skill, high-will Marines who thrive on independence. By conducting this internal audit, leaders gain the wisdom necessary to pivot leadership approaches.

Know Your Marines: Building Empathy and Understanding

A leader must also develop deep empathy for their Marines. The Marine Corps’ leadership principle, “Know your Marines and look out for their welfare,” is more than a platitude—it is a foundation of unit cohesion and effectiveness. Knowing one’s Marines means going beyond understanding their rank, MOS, or physical capabilities—it requires recognizing their motivations, stressors, personal struggles, and professional aspirations.

How is this practiced? Intentional presence. Leaders who practice “leadership by walking around,” engage in candid conversations, and actively listen gain invaluable insight into the minds

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of their subordinates.¹¹ It means sharing hardships and taking the time to observe, listen, and learn about them as individuals. A Marine who struggles with motivation may not be lazy but rather frustrated by unclear career progression or a lack of confidence in their skills. A high-performing Marine may be on the verge of burnout but unwilling to express it. Without a deliberate effort to know their people, leaders risk applying inappropriate one-size-fits-all leadership solutions.

Adapt and Unlock Potential: Tailoring Leadership to Each Marine

Armed with self-awareness and a deep understanding of their Marines, leaders must now boldly tailor their leadership style within the constraints of their personality and values to match the needs of their subordinates. They must recognize that it is not the responsibility of the Marine to adapt to the leader—it is the more experienced leader’s duty to assess each Marine’s will and skill and adjust accordingly. Some examples:

- The High-Skill, High-Will Marine: This Marine is self-sufficient and motivated. They do not need micromanagement or excessive oversight; they need trust, autonomy, and opportunities for greater responsibility. Leaders should delegate challenging tasks to these Marines, push them into stretch roles, and give them leadership opportunities. Failure to do so results in frustration, stagnation, and attrition.
- The High-Skill, Low-Will Marine: This Marine is technically proficient but lacks motivation, buy-in, or initiative. They feel undervalued, disillusioned, or stagnant. Leaders can rekindle their engagement by showing them the impact of their work, publicly recognizing their expertise, and challenging them with leadership opportunities. A Marine who once coasted in the background may thrive when given a mentorship role or greater responsibilities.
- The Low-Skill, High-Will Marine: This Marine is eager but lacks the competence to operate independently. They require structured guidance, mentorship, and training. Leaders

must invest in their development, providing clear instructions, direct coaching, and step-by-step feedback. These Marines thrive under encouragement and deliberate training pipelines.

- The Low-Skill, Low-Will Marine: This Marine presents the biggest leadership challenge. They lack both competence and motivation, making them a potential liability. While some may require remediation, retraining, or reassessment of their fit within the unit, others may need a high degree of supervision and accountability to force compliance and adherence to standards. If improvement remains elusive, performance review boards, reassignment to non-critical roles, or administrative actions may be necessary.

A one-dimensional leader will struggle to engage each of these groups effectively. A leader who insists on treating all Marines equally instead of equitably will alienate strong performers, fail to develop potential leaders, and allow disengaged Marines to languish.

Conclusion: Leading with Intentionality

Six months earlier, I had stood before my Marines, believing that inspiring them as I wanted to be inspired was the key to effective leadership. I had followed the Golden Rule, assuming that leading as I wished to be led would motivate them. But when my company floundered—when my battalion commander lost confidence, when missions disappeared, and when my Marines refused to respond—I realized that leadership required more than personal preference. It required adaptability.

The turnaround began when I stopped assuming and started understanding. Some Marines required trust; others discipline. Some thrived under mentorship, others under challenge. The moment I let go of my comfortable leadership preferences and embraced different approaches, everything changed. Frustration gave way to trust. Stagnation turned into progress. Looking back, the failure I endured in those first six months was not a failure of effort or commitment—it was a failure of perspective. I learned that leadership

is fundamentally about unlocking the potential of those we lead. This requires knowing them deeply, adapting to their needs, and meeting them where they are. Especially when it is uncomfortable. This is the true Golden Rule of Leadership. It is not leading others as we wish to be led. It is leading our Marines as they need to be led.

Notes

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2. Staff, “Kurt Freiherr von Hammerstein-Equord,” *German Resistance Memorial Center*, n.d., https://www.gdw-berlin.de/en/recess/biographies/index_of_persons/biographie/view-bio/kurt-freiherr-von-hammerstein-equord/?no_cache=1.
3. Joel Smith, “4 Types of Officers; and How to Develop Yourself and Others,” *From the Green Notebook*, May 22, 2023, <https://fromthegreen-notebook.com/2023/05/22/4-types-of-officers-and-how-to-develop-yourself-and-others>.
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8. Marine Corps University, “Leadership Principles,” *Marine Corps University*, n.d., <https://www.usmcu.edu/Portals/218/Fidelity-%20Leadership%20Principles.pdf>.
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Bloom Where You're Watered

An ode to my leaders

by Maj Jeremy Goldstein

We waited anxiously. The major would arrive any minute, and he was unhappy with the performance of his staff—us. It was cold in Pohang, and we huddled in the combat operations center until he arrived. The exercise had not progressed smoothly, but as a junior officer, it was difficult to determine what the root causes were. I would find out shortly. He burst through the entrance, sending the tent flap fluttering.

“There is no sense of urgency on this staff. I am surrounded by experienced officers and senior staff non-commissioned officers, but there is no initiative. As a result, we are failing. *Failing*. We are not here to play games. We are here for a purpose. But if you want to play games, go ahead. I’m Milton Bradley!”

Following his passionate rebuke of the staff, he asked to see me outside. “Listen, Jeremy. When you are in a leadership role, one of your primary responsibilities is to continuously take the pulse of your organization. You have to keep your thumb on the pulse. When you determine that your team is losing its sense of purpose, pull them back in. Reorient them. It is difficult to keep tabs on that. It’s a subjective appraisal, a mood almost. But as you gain experience, you must develop that intuition.”

That impromptu mentoring session came to exemplify many of the leadership principles I later internalized. In that encounter, he demonstrated

>Maj Goldstein is an Operational Planner at 1st Marine Logistics Group.

several components of effective leadership: personalization, transparency, development, and empowerment. Each is a fundamental muscle of leadership anatomy.

With a boisterous personality, he could not help but *personalize* his approach. That reference to Milton Bradley during a tense reproach was characteristic. He would insert comedy, however subtle, when he could. By divulging his inner assessments of our team to me, he demonstrated *transparency* and the willingness to lean on that special trust and confidence our officers are expected to embody. In mentoring me, he was *developing* me as a junior officer. Just discussing this with me, a second lieutenant, was an *empowering* experience on its own. He implicitly conveyed that I was a valued member of the organization, someone worth mentoring. Beyond that, empowerment is the natural byproduct of doing the first few things. Once those are done well, though, a leader must find opportunities to insert themselves at the point of friction and continue to bolster their subordinates however they can. This process of personalization, transparency, development, and empowerment is an approach to leadership worth emulating given our service’s renewed focus on people.

Leadership has always been a hal- lowed subject in our Corps, but given the direction in *Talent Management 2030*, it has taken on greater urgency. We added an additional leadership trait (empathy, if you missed the memo) and are exploring creative options for retaining talent. The Marine Corps seeks a more mature, specialized force. It is making the shift from a recruitment model to a retention model, and that carries with it implications for how we treat individual leadership and professional development. This approach to leadership—one that promotes the development and empowerment of our juniors—is crucial to retention. If we want our Marines to bloom where they are planted, we cannot forget to water them.

Personalization

First, personalize. Develop your themes. I have labored under the unique philosophies of many: *Know your role, do your role. Know your stuff, give a damn, love your Marines. Don’t force it and don’t make it about you. Be the change you wish to see in the world.* That last one was Ghandi, but you get the point. Know yourself and seek self-improvement, and then imbue your leadership with your personality and your unique value proposition. Bring something authentic to the table. Even more importantly, know what you stand for. In times of crisis, when your integrity is on the line, there is no time to grope in the dark for your core values. Your moral flashlight should illuminate

the path. Those values—your code—should be imprinted on your mind and spirit. Let your values guide you. Ensure they are thoughtful and well-informed. Not all values are created equal, and no one appreciates the enthusiasm of a clueless idealist, but please, whatever you do, stand for something. If you do not stand for anything, sit down. Our Corps needs leaders of conviction.

Transparency

Be transparent. Open up the metaphorical kimono. When it comes to organizational transparency, bear it all—to a point, of course. Transparency can be anathema in a military bureaucracy. Perhaps due to a need to constantly classify information, transparency is not as encoded in our organizational DNA as it should be. It is natural to be hesitant about openness when we are legally bound to observe confidentiality for reasons of operational security. However, there is a distinction. Clas-

sification is vital; general secrecy is not. Be clear on what you can and cannot disclose and exercise judgment. The more information your subordinates have, the better their decision making will be. One of my company command-

Be transparent. Open up the metaphorical kimono.

ers would routinely invite her junior officers into her office to deliberate day-to-day leadership issues. We would be presented with the facts and asked how we would proceed. She was remarkably judicious and did not necessarily need our input, but she used those vignettes to sharpen our judgment and expose us to the nuances of command.

Development

Once you know how you will lead and have imparted the necessary information, develop those beneath you. The best metric to determine success in a development program is that your subordinates can eventually operate effectively without you. Make yourself replaceable. That goal fits uncomfortably in an organization that often prides itself on big egos and outsized personalities. Our culture celebrates a force of personality, and for good reason. We call him Chesty Puller, not Substitutable Puller (which would, undoubtedly, have made for a worse nickname). Regardless, that is truly the hallmark of strong leadership, wherein the most talented, in turn, cultivate more talent. Several of Gen Mattis's subordinates became prominent general officers themselves.

Develop talent both within and outside your organization. On one tour, I began to languish professionally. The



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work was intellectually dull and unfulfilling. Two senior officers recognized this and began to incorporate me into their planning. They conjured ever more creative reasons to pull me into their operational planning teams and involve me in their work. I knew I had very little I could tangibly offer them, but they invited me, nonetheless. That experience quite literally altered my professional trajectory.

Empowerment

Finally, we get to empowerment. Empowerment is institutionalized through the elevation of mission-type orders and the commander's intent. Give your Marines a mission and purpose and let them execute. Despite the premium we place on subordinate leadership, it is unacknowledged how challenging this is in practice. It is simple to rationalize micromanagement. At least in the short term, it may appear to be the more logical course of action. You *should* know how to do many things better than your average subordinate and, given infinite time, you probably could give a better brief, write a better paper, or develop a more thorough concept of the operations. *Be technically and tactically proficient.* The problem is that to be an effective organization, the command needs more than an oligopoly of competence. It needs the devolution of responsibility to the lowest reasonable level and the latitude to make mistakes.

I was once debating with a supervisor over the level of autonomy granted to our Marines. I was advocating for the need to grant greater decision space to the Marines to pursue limited initiatives they felt would advance our mission. I threw out a question I thought would be uncontroversial: "Should not every Marine have some decision space, no matter how small?" His answer was surprising but instructive. "No. It is our responsibility to generate all the projects they pursue. Our role as management is to decide what is in the best interests of the unit and guide the team accordingly." It was not an irrational position. He felt it was his responsibility that every second of the team's time was spent in ways he thought were valuable to his understood mission. In

a sense, he rationalized micromanagement. However, it is misguided. It is a form of hyper-rational selfishness and the worst manifestation of bureaucratic autocracy. Better to unfetter the free exchange of ideas and let flow the babbling brook of creativity. Regardless of your gifts and talents, no one has a monopoly on good ideas.

Where does the judicious leader draw the line? The key is differentiating the consequential from the inconsequential. In any supervisory position, there is a multitude of decisions that must

Give your Marines a mission and purpose and let them execute.

be made daily. Some are mundane and trivial, despite their occasional urgency. For those, whichever fork is taken, the outcome will matter little, especially in the long run. Some, however, will be truly meaningful. Those are the decisions that cannot be delegated. One boss had remarkable intuition for differentiating between the important and the unimportant. As opposed to corralling decision-making authority at the highest level of the hierarchy, she made a point of granting considerable autonomy to the lowest level. Where empowerment went, morale and buy-in followed.

Empowerment is about instilling ownership. It is about tying the individual to the soul of the collective. It is buy-in at the deepest level. May we all be sovereigns of our little fiefdoms—with authorities commensurate with our capabilities. But sovereigns we should be.

Beyond delegation, empowerment also comes from intervention. I was a staff officer working to secure a greater share of a particular piece of equipment for the unit. Despite preparing and collating all the data needed, I was unsure I could close the deal. Before I left to state our case, I discussed the plan with my supervisor. Midway through our conversation, he casually picked up the phone and called the individual I was

about to see. "Maj Goldstein has done his homework on this issue. While I understand this is a difficult resource allocation decision, we should reward diligence and preparedness, should we not?" The equipment was later transferred.

Do not underestimate the power of your position and rank. Use your powers for good and be sure to use them on behalf of those you supervise. Insert yourself at the point of friction. Intuit obstacles before they surface and clear them as best you can to set the conditions for success. Your Marines will move mountains for you. When they do, lead them through the valley on the other side. Be the wind at their back and the shield in their front.

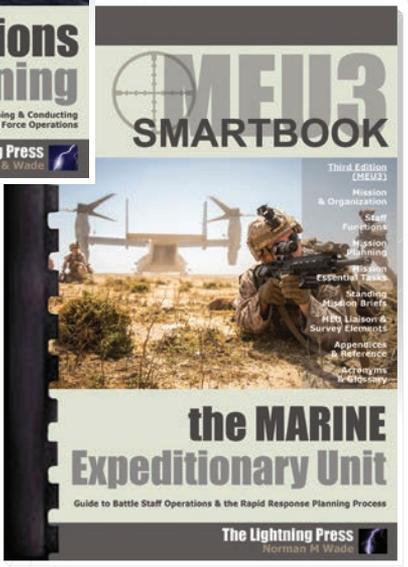
Conclusion

A friend and I were sitting around a fire, recounting our first year in the fleet. It had been several months since the major had pulled me aside in Korea. I had just finished working for the commander who fielded leadership dilemmas to her lieutenants. The fire between my friend and me drew a sharp contrast to that bitter cold in Pohang. Equally contrasting was the dissonance of our respective stories. His story was that of the neglected Marine in *Sustaining the Transformation*. It was not through malice that his experience had been unfulfilling, just the cruel reality of working for those who lacked the time, energy, or focus to make him feel valued. Sitting there, I tried to distill a lesson from all we had discussed and dug in vain for some profundity. What I blurted out was platitudinal, uninspiring. "It is amazing how varied your experience can be for the simple reason that someone took an interest in you." "Ya, obviously," he replied, unmoved. The fire continued to burn that night. His desire to serve did not. He resigned his commission within a few months; I am writing this over a decade later. I may have been onto something.



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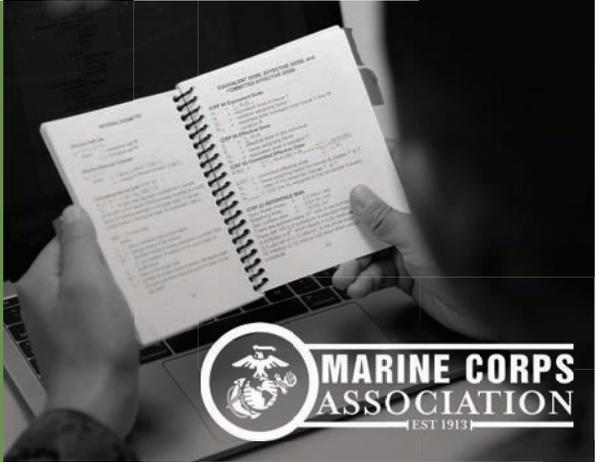
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Planning and Operations in a Major Campaign

Operation TYPHOON

by Mr. Joseph Miranda

One of the decisive battles of World War II occurred during the German advance on Moscow in late 1941 which the Wehrmacht codenamed Operation TYPHOON. *Operation Typhoon* is a wargame, originally published by Simulations Publications, Inc., back in 1978 and designed by Joseph Angiolillo and Joe Balkoski. *Typhoon* was republished by Decision Games in 2024 with development by Doug Johnson and Keith Powell.

The Campaign

The capture of Moscow was supposed to be the culmination of Operation BARBAROSSA, the German invasion of the Soviet Union that commenced on 22 June 1941. BARBAROSSA'S strategic objectives were initially Leningrad on the northern sector of the Eastern Front and the city of Rostov on the southern. Adolf Hitler did not initially see Moscow as a major objective since he was more interested in capturing the industrial areas of the Ukraine and beyond that, the oilfields of the Caucasus region.

Debates in the German high command led to a switching of objectives as the campaign proceeded over the summer and into early autumn. This led to the switching of German forces laterally across the front, especially the panzer divisions which were spearheading the offensive with consequent wear and tear on men, vehicles, and equipment. Finally, Hitler decided to go for Moscow and directed three panzer and one regular army to make a final attempt to capture the Soviet capital. The new offensive kicked off in the first week of October

>Mr. Miranda is a prolific board wargame designer and has previously been the editor of both *Strategy & Tactics* and *Modern War* magazines. His designs include a wide range of topics from the classical era to the near future and have covered combined arms, low-intensity conflict, and hybrid operations. He is a former Army Officer and has conducted numerous professional seminars on modeling and simulation. Mr. Miranda has also authored several *Strategy & Tactics Press* special interest publications to include an upcoming issue on the October War 1973.

and gained some initial successes but the autumn rains brought the offensive grinding to a halt. The dismal Soviet road system was turned into a sea of mud which slowed the movement of units and logistics to a crawl. Meanwhile, air support from the Luftwaffe proved to be a diminishing asset as operational rates fell and squadrons were flying at extreme ranges.

The attack toward Moscow resumed in mid-November as the ground froze over, facilitating ground movement while German logistics were pushed forward. Meantime, the Soviet Red Army was increasing in strength and conducting a series of delaying actions while its reserves were conducting some sharp counterattacks. By the end of November, German patrols reached the outskirts of the Soviet capital, but a big Red Army counteroffensive in December threw them back. Moscow was saved and TYPHOON came to an end.

Why did the Germans fail in that last campaign of 1941? Some of the answers can be found in *Operation Typhoon*.

Planning Assumptions

The game starts on 15 November 1941 and runs through 15 December.

This was the critical period of the German attack and subsequent Soviet counteroffensive. Both the German and Soviet players are put in the situation faced by their historical counterparts. The Red Army is a badly battered force but has the advantage of falling back on its own lines of communications. The Wehrmacht is a highly skilled and veteran force but is outrunning its own logistical system and is ill-prepared for a winter campaign.

Operation Typhoon is a big game. There are four large and four small map sections that assemble to form the entire Moscow front at a scale of 4.5 kilometers per hex (the hexagonal map overlay that regulates unit placement and movement), roughly the attack frontage for a division. Game units are mainly regiments for the Germans and divisions for the Soviets, plus some specialized Red Army tank, ski, and rifle brigades. This reflects the comparative situation for both sides' forces. The Wehrmacht is more flexible while the Red Army is throwing together units for a desperate defense. Bear in mind by this point in the campaign that most of the formations on both sides were understrength owing to the prior months' fighting as well as the chaos of the front.

The dilemma for the Germans is in concentrating on their axes of advance and then provide their forces with logistical support. The challenge for the Soviets is in reacting to German drives and then massing forces for a game-ending counterattack.

Asymmetrical Execution

Both sides in *Typhoon* have specific advantages. Much of the execution of player plans is in exploiting these advantages. The Germans have a tactically proficient force and can use the Luftwaffe to conduct aerial interdiction of Soviet railroad movement. Since the Soviet rail net is a major factor in the ability to shift Red Army units across the map, this can be a major game changer.

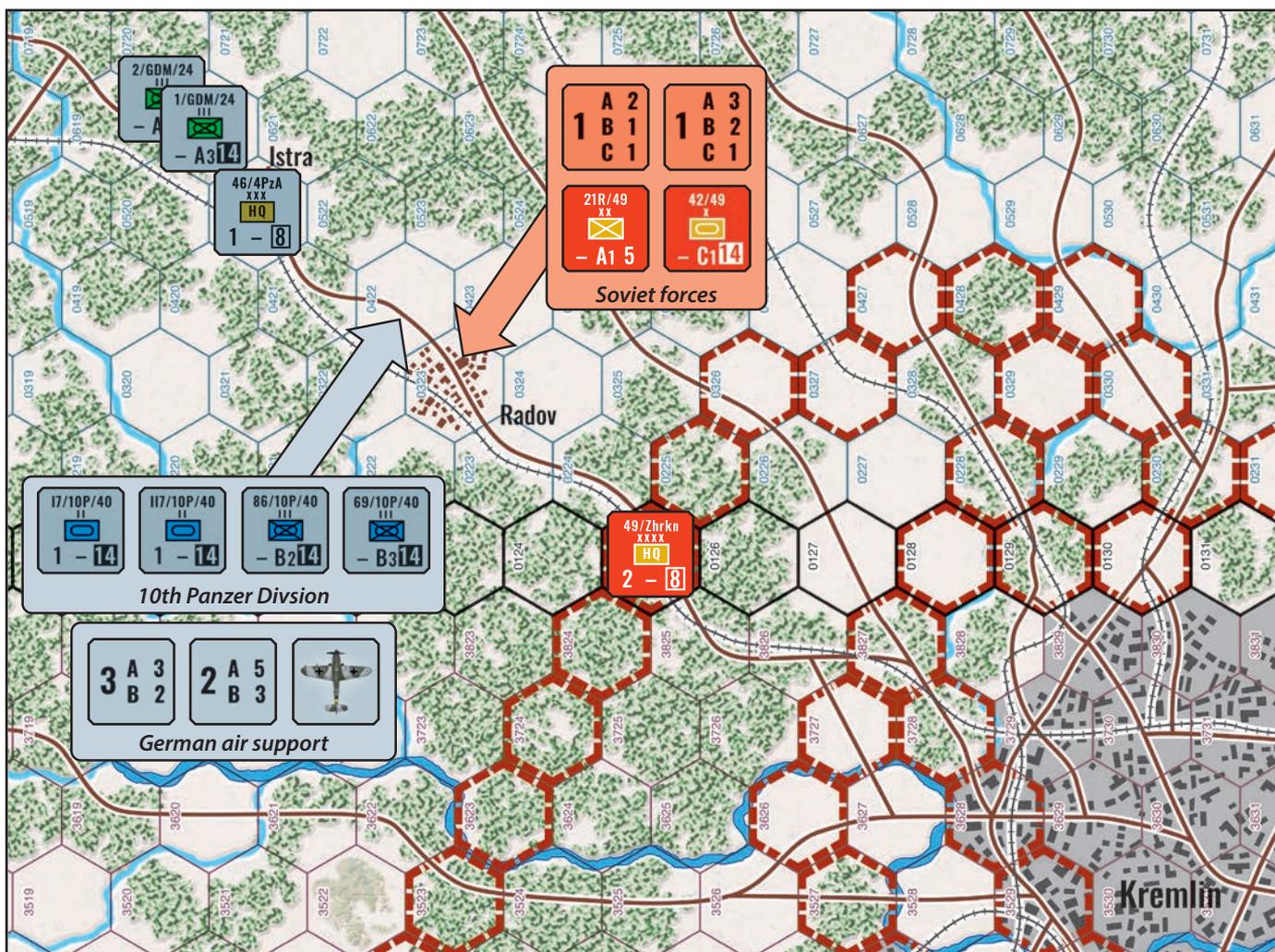
The Red Army is less affected by adverse weather, so on turns of snow Soviet units can operate relatively more efficiently than the Wehrmacht. However,

there are limits to the number of units the Soviet player can move depending upon the current Commitment level. Commitment is a function of the extent of the German advance and destruction of Red Army forces. The bigger the threat to Moscow, the more STAVKA (the Soviet high command) will release forces. This rule presents the German player with another challenge since the further toward Moscow the Wehrmacht advances, the more enemies will appear on the front line.

Both sides receive reinforcements in the course of the campaign. Because the Red Army receives more reinforcements, the more reinforcements it can conserve, the bigger the opportunity for a decisive endgame counteroffensive.

Logistics are a major factor and affect each player differently. The Germans can activate a limited number of headquarters units (HQ) by allocating Support Points. Supported HQ to enhance the establishment of lines of

10th Panzer Division on the road to Moscow. German 10th Panzer Division, to include two mechanized infantry regiments and two tank battalions (combat strength=1), attacks Soviet forces holding the town of Radov northwest of Moscow. Strength chits for 10th Panzer regiments provide combat values of 2 (for 69th Regiment's B3) and 3 (for 86th Regiment's B2). 10th Panzer is supported by 46th Panzer Corps of 4th Panzer Army. The Gross Deutschland elite motorized regiment is positioned to the northwest, ready to exploit any breakthrough. Soviet defenders at Radov include the 21st Infantry Division (combat strength=2) and 42nd Tank Brigade (combat strength=1). Support is from the 49th Army HQ on the fortification line to the east. Moscow is on the east side of the map. Starting combat ratio is 7:3 which is rounded down to 2:1. 10th Panzer Division will gain a combat bonus for divisional integrity, plus another bonus for air support, providing a final ratio of 4:1.



supply. Since not all HQ can be supported each turn, this means the German player must make critical decisions about lines of advance to support.

For the Soviets, supply is traced from units back to friendly HQs or cities within three hexes. Since the Red Army is falling back on its own communications, this facilitates the defense.

All units that lack a supply line are reduced in combat strength, and mechanized units are limited to half the movement.

A major factor in the game is fog of war. The commanders on both sides not only had limited information on enemy dispositions and intents but their evaluation of their own forces was often based on outdated information. This again was due to the attrition of the

campaign as well as breakdowns in communications.

The fog of war factor is modeled in the game by making the combat strength of most combat units variable. Each unit is rated for its Combat Class (the letter on the counter) and Morale Rating (the number on the counter). These provide a general idea of unit capabilities but exact strength is not determined until they engage in combat. At this point, players pick Strength Chits which provide units with their Combat Strength based on the Combat Class and Morale Rating. Since the Wehrmacht maintained a tactical edge at this point in the war, this system will generally result in German units having higher combat factors in combat, but not always.

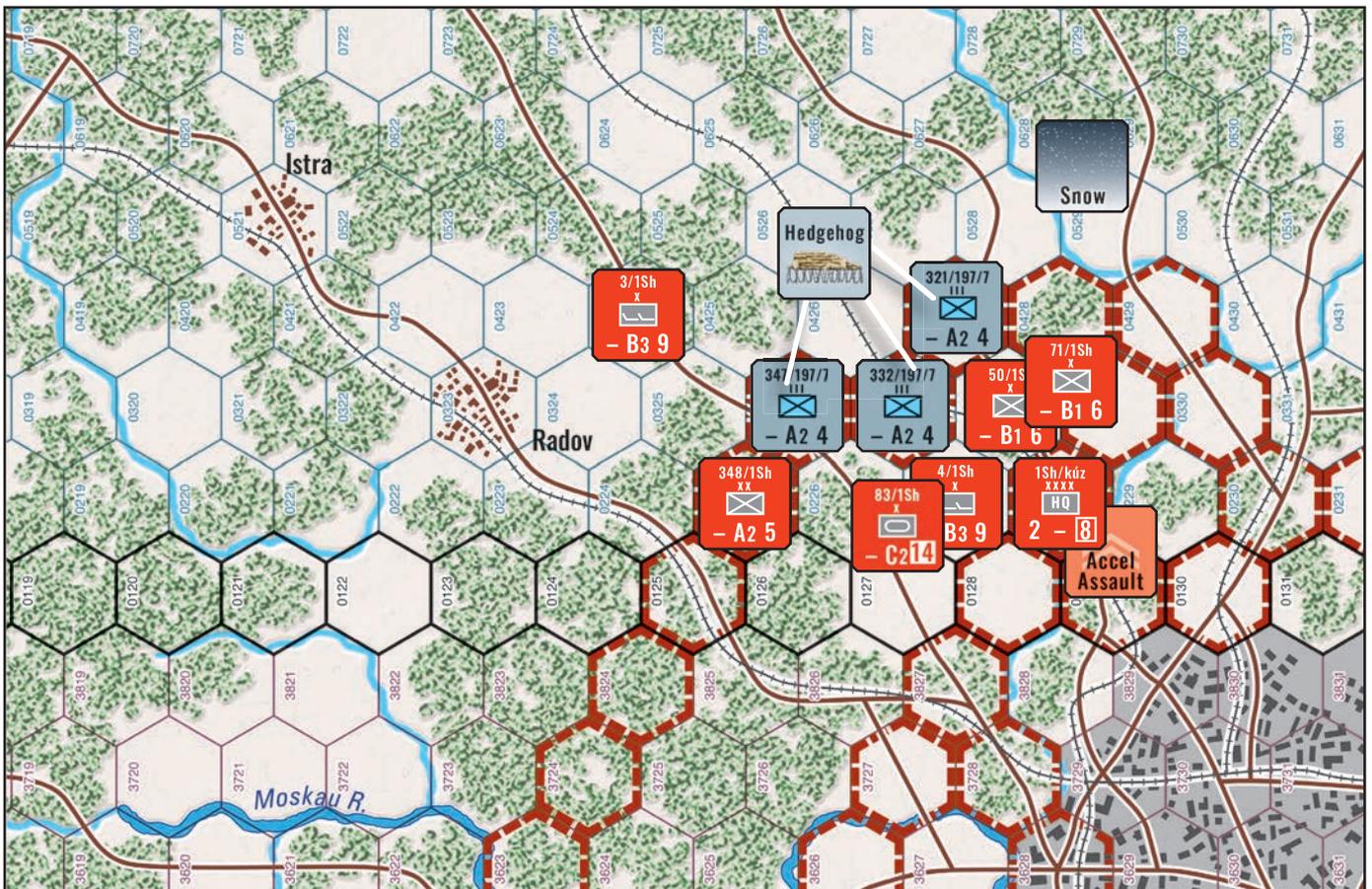
The Germans have an additional tactical edge as they get a combat bonus if all regiments of a division are fighting in the same battle. Both players can make Accelerated Assaults which provide another combat bonus, but each HQ can initiate only one per game. Players must determine the decisive moment to use this singular advantage.

Each game turn covers one day of operations. This makes for a fast pace of operations. The Germans must move their HQ to the right locations and provide them with support. The Soviets must deploy units to threatened sectors and concentrate for a major counter-attack. It sounds cliché, but “no plan survives contact with the enemy” is in play here.

Players have to think in both operational terms while exploiting tactical execution to win the battle for Moscow.



1st Shock Army counterattacks. Soviet 1st Shock Army launches a counterattack against a German infantry division that had seized the fortification line northwest of Moscow. Germans are building hedgehogs, all-around defenses to guard against attacks from the rear. The main attack force includes the 4th Ski and 83rd Tank Brigades with the 50th and 71st Rifle Brigades to their right. 348th Rifle Division and 3rd Ski Brigade are moving around the German west flank. 1st Shock Army launches an Accelerated Assault. This is a snow turn, so the ski brigades provide a combat bonus for the attack.

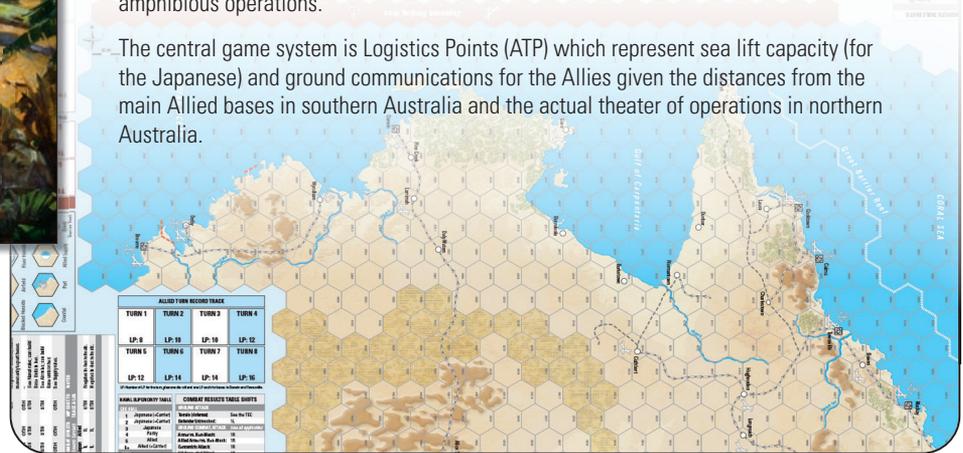




Invasion Australia 1942 is an operational level two player wargame covering a hypothetical Japanese invasion of Australia in 1942. There was a debate between the Imperial Japanese Navy (IJN) and Imperial Japanese Army (IJA) over the course of the war. The IJN wanted to invade Australia, although the IJA opposed such an invasion on the grounds of lack of troops and shipping. In the end, the Japanese decided to launch an invasion of the Solomons with the possibility of moving against New Caledonia. The game assumes that the Japanese won the Battle of the Coral Sea (in May 1942) and captured Port Moresby in New Guinea, turning it into a base to cover the actual invasion of Australia which commenced in July of that year.

There are two sides: Japanese and the Allies. The game system is based on a simplified version of **Desert One War** and **Saddam Moves South**, which models ground, air, and amphibious operations.

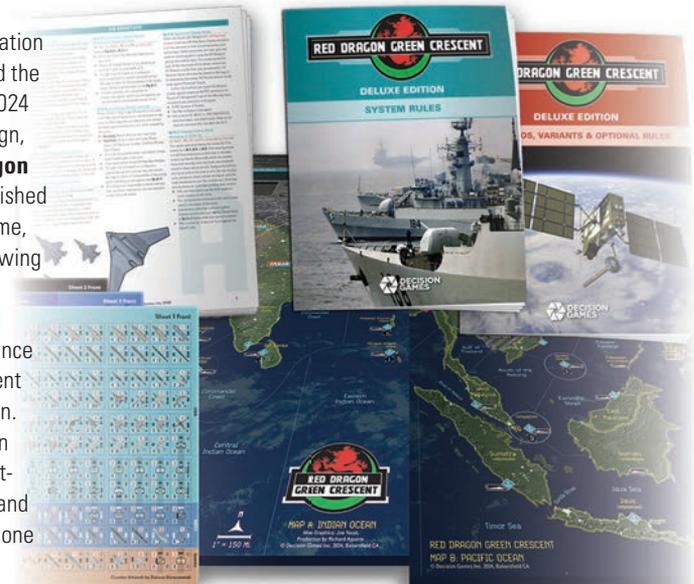
The central game system is Logistics Points (ATP) which represent sea lift capacity (for the Japanese) and ground communications for the Allies given the distances from the main Allied bases in southern Australia and the actual theater of operations in northern Australia.



Special discounts for Gazette readers at decisiongames.com/mcaf

Red Dragon Green Crescent Deluxe Edition is a strategic-level simulation of hypothetical future conflicts in and around East Asia, the Indian Ocean, and the Middle East. The time frame is the not-too-distant future, roughly between 2024 and 2035. The game system is based on the proven CSR Award Winning design, **Red Dragon Rising** (from *Strategy & Tactics* #250) and its sequel, **Red Dragon Green Crescent** (from *Modern War* #1), as well as variants which were published along the way. Red Dragon Green Crescent Deluxe Edition is a two-player game, adaptable to multi-player and solitaire play, with three primary scenarios allowing for play on either map or a combined game across both.

This deluxe edition accounts for developments in the strategic situation since the original games were published. The People's Republic of China has in recent years established bases (or at least basing rights) throughout the Indian Ocean. Russia is engaged in a war in Ukraine. The 2021 Taliban victory in Afghanistan shifted the perception of the power of the United States and its Coalition partners. All around, the powers are bringing online advanced weapons systems and new tactics. This is modeled with two general time frames for the scenarios, one set in the 2020s and the other in the 2030s.





2030 Maturing the ALIMS Community

by GySgt Becka E. Lofland

>GySgt Lofland is currently serving as the Formal School Advisor for the Aviation Logistics Tactical Information Systems Formal Learning Center.

In March of 2020, the Commandant of the Marine Corps released *Force Design 2030*, directing the force to shift focus from counterinsurgency to great power/peer-level competition. This adjustment necessitates a great deal of change in strategy for training Marines and modernizing resources. Subsequent *Force Design*, *Talent Management*, and *Training and Education* updates have offered guidelines to accomplish this maturing of the Marine Corps. With the trajectory of technology and the Service's focus on modernizing our data environment and information technology systems, the Aviation Logistics Information Management Systems (ALIMS) community must expand its portfolio, training, and vision for the future. The ALIMS Marines must create their strategy and rise to meet the global challenges now to best support Marine Aviation tomorrow.

In 2000, the Marine Corps established the 6694 MOS to fulfill the newly recognized need for dedicated IT professionals to administer aviation maintenance and supply programs. In the decades since, these specialists have proved critical in supporting Marine Aviation operations all over the world. Currently, ALIMS supports numerous programs of record (PORs) and non-POR systems delivering maintenance, supply, mission planning, diagnostic, and technical publication services across the flight line. In addition to deployment, system administration, and troubleshooting responsibilities related to the POR servers themselves, ALIMS specialists provide embedded IT support directly from within the flying and aviation logistics squadrons. As the Marine Corps embraces more technological advances such as 3D printing and unmanned aircraft, 6694s will bridge the gap. The ALIMS Marines must be better equipped through training and education going forward to best serve as the key enabler within Marine Aviation to help us fly, fight, and win as part of a Joint Force.

Technology is constantly evolving and Marines are challenged to not only keep up with the actual changes, but also the policies governing the usage and training for these new versions. Program offices, vendors, and government entities push for constant upgrades to facilitate reduced physical footprints, increased security, faster services, and better system reliability. Virtualization revolutionized the standard for many POR systems by allowing multiple servers to operate on the same piece of equipment. With virtualization now the norm, the Marine Corps is rightfully looking toward containerization and cloud services to improve the efficiency and speed of integrated aviation system software required to

support our future warfighters. These POR systems are now so ingrained in aviation operations that system availability is not simply a matter of convenience. The servers directly affect not only maintenance, supply, and operations but also the safety of flight. Without these critical systems tracking hours, maintenance, and diagnostics, the safe operation of aircraft cannot be guaranteed. The IT systems required for daily operations are growing exponentially, and POR servers are growing more intricate and complex. The skill set required to administer and deploy these systems is extensive and varied. ALIMS Marines need to be smarter and more adaptable than ever before to keep up with demands.

The ALIMS Marines have historically been trained in one extensive entry-level school. The course focused on the Naval Tactical Command Support System (NTCSS) family of systems, which support all rotary and fixed-wing platforms other than F-35, and IT fundamentals, with zero follow-on training for the remainder of a Marine's career. In February 2024, Training and Education Command approved the 6694's first advance course which was piloted in 2022 with eight ALIMS chiefs currently serving in the FMF. This ALIMS Advanced Operations Course will provide a vital link to train and equip senior ALIMS and better prepare these leaders to provide for the welfare and professional development of ALIMS Marines across the flight line. However, that still leaves two large training gaps for 6694s.

Though the Joint Program Office provides approved training, the first gap is the lack of a Training and Education Command-owned program of instruction on the Automatic Logistics Information System, which is the system used by every Joint Strike Fighter (JSF) squadron in the Marine Corps, representing an increasing percentage of necessary support. Currently, ALIMS Marines do not receive any formal primary MOS training on how to best support the supply and maintenance systems of the DOD's most expensive weapon system to date. The current stopgap in the training pipeline is to send entry-level Marines directly to JSF squadrons to learn via on-the-job training, which occurs approximately ten to twelve months after they complete boot camp and entry-level ALIMS curriculum.



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The Okinawa battle site tour was an enriching and educational experience for the platoon. We walked the same ground that Marines and soldiers fought on in 1945, including Hacksaw ridge and a preserved Japanese command post. No matter how much any of us had read about the Battle of Okinawa in the past, seeing the terrain up close provided a level of PME that can't be realized in any other way.

I greatly appreciate the MCA and their donors for enabling us to have this once in a lifetime experience at zero cost to the Marines participating. It was a unique opportunity to connect with our heritage as Marines, and a day that none of us will forget.

*1stLt Patrick Whelan, Platoon Commander
Rotational Detachment Okinawa OIC
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The second gap extends to all other aviation platforms that use the NTCSS model. Today, the entry-level primary MOS training is the sole training course afforded to this highly technical MOS. Top advocates in the Aviation IT field are concerned that this limitation pressures the ALIMS program to teach 6694 ALIMS Marines everything they need to know at entry-level training, which makes the course one of the longest and most extensive enlisted entry-level training pipelines in the entire Marine Corps. Continuing education opportunities throughout Marines' careers, particularly for non-commissioned officers and especially within IT fields, is critical to the success of the institution.

The rise of JSF has seen a huge shift for the ALIMS community and even caused somewhat of an identity crisis. The divide is evident and leads to manpower management problems dealing with JSF versus NTCSS-trained personnel. The answer is to refocus the scope and mission of this MOS and align the training accordingly. Today, the ALIMS community supports a myriad of systems, and it cannot afford to maintain the status quo and risk continuing to focus on most NTCSS-supported platforms when JSF is now the dominant fixed-wing platform on the flight line. Though PORs are hugely important to this MOS, they are not the only issues of importance. The 6694s are IT Marines who specialize in those PORs while also providing several tiers of IT support

wherever they are stationed. The training pipeline needs to be re-evaluated. The goal for 6694s must be to achieve proficiency during entry-level curriculum obtaining the basic knowledge of IT fundamentals, basic troubleshooting, and general maintenance and administration of *all* supported systems to include the Autonomic Logistics Information System that supports the JSF. The community would also benefit from advanced training beyond entry-level training that provides opportunities for these IT professionals to conduct deeper dives into supported systems, receive information on more advanced IT concepts, and expose them to updated ALIMS procedures and best practices. Finally, all SNCOs within the community should attend the newly approved ALIMS Advanced Operations Course. This holistic approach to modernizing the training pipeline will address the needs at every level and ultimately will provide more experienced and better-prepared technicians to support the Joint Force.

The key to implementation is to leverage formal training and education opportunities at every step of a Marine's career. The Marine Corps must meet the challenge of supporting the IT systems of our ever-evolving platforms with the right technology and training to maintain our readiness and meet the demands of our Commandant.



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The Ethics of Special Ops

reviewed by Dr. John Buford, LtCol, USMC(Ret)

Laws of war, codes of conduct, oaths of office, and rules of engagement inform but do not settle ethical issues in combat. Ethical decisions are made and executed by Marines in the field under complex, chaotic conditions with little time to refer to and reflect upon the abundant legal and normative restraints designed to influence their actions. Marines must have a good dose of moral clarity before going into combat.

The Ethics of Special Operations provides an ethics-focused treatment of special operations but the discerning reader will recognize the book's value for both those within and outside of the special operations community. The analysis is universally applicable and has a niche in a Marine's professional military education to help leaders at all levels—commanders, staff officers, trainers, and operators—navigate the tension between means and ends in the unsettled moral landscape between war and not war.

The authors successfully address a gap in the military ethics literature. The book progresses logically, from describing theory—boldly addressing warfare's legal and moral underpinnings commonly considered ethically settled—to providing practical examples and analysis.

First, the authors Dr. Dean-Peter Baker, Dr. Roger Herbert, CAPT USN(Ret), and David Whetham, briefly but thoroughly describe war's moral framework (*ius ad bellum*—when war is morally permissible) and outline in broad terms the rules of war that govern its conduct (*ius in bello*—how war is to be fought.)

Next, they address the theoretical and doctrinal characteristics of

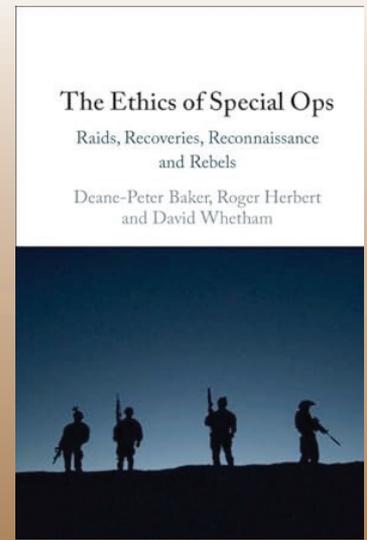
>Dr. Buford served as an Infantry Officer in 1st, 2nd, and 3rd MarDiv, on the 11th and 22nd MEUs, and was an instructor at Officer Candidate School, The Basic School, and Amphibious Warfare School. He is an author, retired college professor of leadership and ethics, and now serves as a leadership coach and consultant.

special operations that distinguish them from conventional military operations and clearly answer the book's central question of whether there is something ethically special about special operation forces. Specifically, *whether the moral and legal constraints levied upon conventional forces apply equally to their special operations counterparts.* They do this by highlighting the qualities inherent in the conduct of special operations that cause persis-

... the discerning reader will recognize the book's value for both those within and outside of the special operations community.

tent tension between the moral theory and the application of that theory in war and operations conducted outside of declared hostilities.

Four themes, organized in chapters, provide the analytical foundation, each reflecting the primary mission sets that fall within the sphere of special operations forces: raids, reconnaissance, recoveries, and irregular warfare. These tasks are not unfamiliar to Marines, as MAGTFs often



THE ETHICS OF SPECIAL OPS: Raids, Recoveries, Reconnaissance and Rebels. By Deane-Peter Baker, Roger G. Herbert Jr. and David Whetham. Cambridge: Cambridge University Press, 2024. ISBN 978-1009292054, 217 pp.

conduct or support these missions or are supported by special operations forces conducting these missions.

Moral dichotomies analyzed in the book include operational neces-

sity versus discriminate use of force; capture versus kill; targeting killings versus assassinations; hostage rescue versus negotiation; concealment, disguise, and deception versus perfidy; employing U.S. forces outside of an ongoing conflict versus violating the political sovereignty and territorial integrity of a state; and war aims and adherence to the laws of armed conflict of U.S. forces versus those of their proxies or allies. Although

navigating these waters largely belongs in the realm of statesmen and legal experts, sorting them out in the moment most often falls in the lap of soldiers engaged on the battlefield. The questions raised in the book are perplexing. For example, does the operational requirement for speed, the necessity to maintain covertness, or the prospect of big payoffs justify detaining, harming, or killing non-combatants whose presence may pose a risk to mission success? To what extent are soldiers morally accountable for the ethical conduct of the foreign combatants they train or advise?

The final chapter addresses post-traumatic stress and moral injury (injury to the moral conscience) of special operations forces. Although the book is generally descriptive and analytical rather than conclusive, this chapter presents a strong argument for proactive and vigorous actions to preempt post-traumatic stress and moral injury—what the authors call “ethical armoring.”

The Ethics of Special Operations is written in an academic style but is largely devoid of academic jargon. Its highly structured descriptions and analysis are replete with historical vi-

gnettes and concrete examples from current events, making the text relatable and easy to follow. Underpinned by the authors’ academic and operational credibility, the book helps connect moral theory and ethical practice in a way that is both practical and useful.



Quote to Ponder:

“I want the Office of Strategic Services to recruit young men of disciplined daring who are calculatingly reckless.”
 —Major General William J. “Wild Bill” Donovan, founder of the OSS, the precursor of the CIA and Special Operations Command



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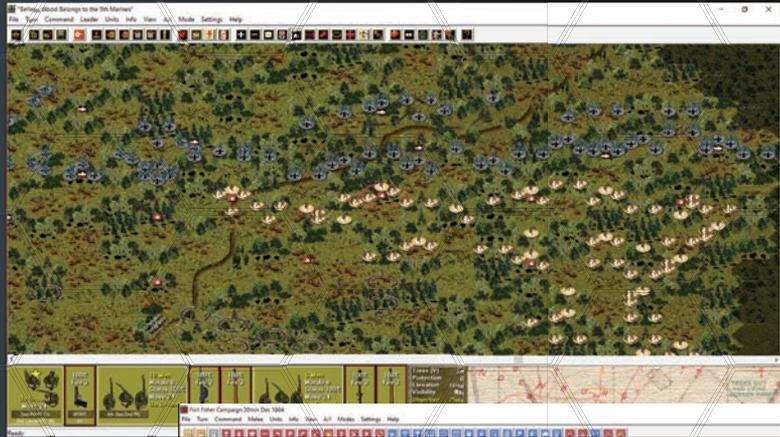
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Campaign Waterloo

reviewed by Mr. William J. Treuting

The Battle of Waterloo ranks high on the list of military engagements that have captured the historical imagination—with everyone from professional historians to amateur wargamers debating on what caused Napoleon’s defeat and creating hypotheses on how he could have been successful. Wargame Design Studio’s *Campaign Waterloo* takes wargamers back to one of the most memorialized campaigns in history to refight the battles and skirmishes of Napoleon’s final campaign. Students of military history will appreciate the wide array of historical battles to understand the limitations and constraints of the era—which is highly recommended for those who are beginning their study on the Waterloo Campaign. However, other wargamers will appreciate the breadth of alternate-history scenarios that better balance the opposing forces and allow for greater control. *Campaign Waterloo* offers a grand variety of scenario sizes and lengths that allow players to make decisions on the strategic, operational, and tactical levels of war.

The largest and most daunting scenario available in this game series is the Waterloo Campaign, June 1815. As stated in the scenario description:

Already outnumbered, Napoleon has decided not to wait. He has formed the Armée du Nord and has decided to strike before he is overwhelmed. Napoleon has determined that his one best choice is to strike Blucher and Wellington in Belgium. His hope is to destroy these two armies and take Prussia and Britain out of the war. In doing so he believes that capturing Brussels will bring the Belgians back into the French fold. If successful he expects that the remaining two powers, Russia and Austria will no longer have the stomach for war. It is June 15 and Napoleon’s gamble is set to begin.

>Mr. Treuting is an avid wargamer, Historian, and Associate Editor for the Marine Corps Gazette.

Lasting 388 turns, this scenario takes place on a massive map that includes the region between Charleroi and Waterloo. The French begin south of the Sambre River and arrive on the map from a concentrated point, whereas the British and Prussian forces are spread across the map with reinforcements arriving from various roads to the north and west. The armies are at their historical strength, with the Prussians and British outnumbering the French; however, in terms of quality, the British and French armies are on par with each other, while the Prussian troops are of poorer quality. Neither opponent has a clear path toward victory: the French must successfully perform a contested river crossing upon entering the map and attempt to defeat the British and Prussians before their armies can concentrate, whereas the Prussian and British must correctly determine the French axis

of advance and stall them as much as possible before reuniting their forces to destroy Napoleon’s army. The size of this scenario is great for those wishing to test their teamwork skills for a multiplayer match, with teammates splitting up the various commands and having to coordinate movements together.

For more manageable gameplay on moderate-sized maps, two scenarios offer great experiences for wargamers with added degrees of uncertainty: Waterloo “Grouchy Marches to the Sounds of the Guns” and the Battle of Quatres Bras “Will d’Erlon Arrive? - Alt.”

Based upon the Battle of Waterloo, “Grouchy Marches to the Sounds of the Guns” is a hypothetical scenario that offers great gameplay with variable reinforcements for each opponent. The map is large and features the French and Allied armies as they were arrayed on the morning of 18 June 1815, with 67,704 Frenchmen poised to assault 65,959 men holding their position along a ridge before Mont St Jean. The alternate-history basis for this scenario is that “Marshal Grouchy heeded the advice of his subordinates



The Battle of Waterloo. (Photo by Wargame Design Studio.)

and had begun marching to Napoleon's assistance when the first cannon fire at Waterloo was heard. The degree to which Blucher and Grouchy will be able to intervene is uncertain." This added unpredictability to the famous Battle of Waterloo allows neither player to rest on the laurels that substantial reinforcements will arrive at the end of the battle to tip the scales in their favor; additionally, each player must be careful to avoid expending their manpower to such an extent that they risk having to use a depleted force in the face of the arrival of fresh troops. The variable arrival of additional troops means that wargamers can play this scenario multiple times and experience a variety of gameplay experiences.

"Will d'Erlon Arrive? - Alt" is based on the historical Battle of Quatres Bras, which occurred two days before the Battle of Waterloo. In this scenario, French troops under Marshal Michel Ney must wrest the crossroads of Quatres Bras from the Allied force commanded by the Duke of Wellington. This scenario takes place on a map large enough to conduct a battle with several army corps and lasts 36 turns. The crossroads of Les Quatres Bras lies roughly in the center, with two major roads intersecting at that point; however, several smaller road networks revolve around the town. The opposing sides begin the game with 22,869 French soldiers compared to 18,862 Allied soldiers; however, despite their initial advantage in manpower, French reinforcements from the First Corps under Comte' d'Erlon have only a 25 percent chance of arrival compared to the Allies who have a 100 percent chance of receiving reinforcements. The French will have to leverage their offensive without a guarantee of support, whereas the Allies must conduct careful reconnaissance to ensure whether or not the enemy assault will be supported with a significant number of reinforcements. The unpredictability of the timing and number of French reinforcements enhances the fog of war and allows this scenario to be replayed with different variations of Comte' d'Erlon's

arrival: sometimes he may show up in full force, partial force, or not at all. No two battles will be alike.

"The Battle of Placenoit" is a shorter scenario lasting just eighteen turns and features the French holding off the Prussian army as it arrives to reinforce Wellington. The battlefield is smaller and forces a direct confrontation between the two opponents. The French number 11,698 men strong and are rated as being above average to highly experienced troops; additionally, they receive three brigades of reinforcements. The Prussians number

ments later in the battle. The French have higher quality troops mixed between A-C, whereas the Allied forces have more variation between A-D; however, to offset the qualitative and quantitative advantage of the French, the Allies are sheltered behind the high walls and hedges of the Chateau d' Hougomont. The map is tiny, with the Allies occupying the chateau and the heights beyond, with the French forced to march across open ground. There is a victory hex within the chateau, which ensures that location will become a focal point for each

Campaign Waterloo is one of the most coveted Wargame Design Studio titles ... this scenario is a must-have for any military history enthusiast.

15,797 men and are rated average to below-average, and they receive 8 brigades of reinforcements plus additional artillery batteries. The French forces begin the game in line and ready to fight as the Prussians are beginning to deploy on the field. The battlefield is narrow with an impassable stream running northeast along the upper third of the map and dense woods covering the same direction along the bottom third. The terrain thus forces a direct confrontation in the middle third. The French will have to decide if they would rather hold their position and conduct a fighting retreat or attempt to attack the Prussian player before he can organize. Meanwhile, the Prussians must be careful to maintain formations and deliver a tremendous blow that unbalances the French forces. For those interested in a quick tactical challenge, this scenario is excellent.

"Hougoumont" is a brief, head-to-head scenario lasting only ten turns and takes place around the Chateau d' Hougomont on the right flank of the Allied line during the Battle of Waterloo. In this scenario, 12,172 Frenchmen face off against 6,549 Allied troops who will later receive two additional battalions as reinforce-

opponent. Given the short duration of the scenario, each player will have to quickly decide his plans with an acute consideration for contingencies should these plans go awry. The French will likely have to find some way to isolate the chateau's garrison and prevent the Allies from reinforcing the stronghold; alternately, the Allies must be careful how they choose to expend their limited manpower. This brief battle is great for wargamers looking for a quick, bloody fight.

Campaign Waterloo is one of the most coveted Wargame Design Studio titles, and it has certainly earned its place through the broad selection of scenarios that cover anything from entire campaigns to small set pieces of larger battles. Seeing that Waterloo is one of the battles most rigorously re-fought and debated amongst armchair generals, this scenario is a must-have for any military history enthusiast.



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Our basic policy is to fulfill the stated purpose of the *Marine Corps Gazette* by providing a forum for open discussion and a free exchange of ideas relating to the U.S. Marine Corps and military and national defense issues, particularly as they affect the Corps. Material submitted for publication is accepted or rejected based on the assessment of the Editor-in-Chief. The *Gazette* provides a platform for fact-based discussion and welcomes both content written by Marines as part of their official duties and content written independently by Marines and the public. Professional ethics, copyright law and ease of reading demand that writers provide the sources of direct quotations and paraphrases. Assertions of fact that are not common knowledge and cannot be easily checked must be supported with a verifiable source.

The Board of Governors of the Marine Corps Association has given the authority to approve manuscripts for publication to the Editor-in-Chief. The Editorial Advisory Panel judges all *Gazette* writing contests. Editorial Advisory Panel members are listed on the *Gazette*'s masthead in each issue. The panel represents a cross section of Marines by occupational specialty, professional experience, age, rank, and gender. A simple majority rules in its decisions. Corrections and retractions can be published on the *Gazette* webpage within two working days and normally appear in the next available print edition of the magazine.

Writers' Guidelines

The *Gazette* welcomes material in the following categories:

- **Commentary on Published Material:** The best commentary can be made on the *Gazette*'s LinkedIn® page.
- **Letters to the Editor:** Limit to 300 words or less and DOUBLE SPACED. Email submissions to gazette@mca-marines.org. Letters are an excellent way to correct factual mistakes, reinforce ideas, outline opposing points of view, identify problems, and suggest factors or important considerations that have been overlooked in previous *Gazette* articles.
- **Feature Articles:** Normally 2,000 to 5,000 words, dealing with topics of major significance. Manuscripts should be DOUBLE SPACED. Ideas must be backed up by hard facts and evidence presented to support logical conclusions. In the case of articles that criticize, constructive suggestions are sought. Footnotes are required for direct quotations, and paraphrasing. Use the Chicago Manual of Style for all footnotes and citations. A list of all source materials used is required, to include bibliography, journal articles, and interviews.
- **Ideas & Issues:** Short articles, normally 750 to 1,500 words. This section can include the full gamut of professional topics so long as treatment of the subject is brief and concise. Again, DOUBLE SPACE all manuscripts.
- **Book Reviews:** Prefer 300 to 750 words and DOUBLE SPACED. Book reviews should answer the question: "This book is worth a Marine's time to read because ..." Please be sure to include the book's author, publisher (including city), year of publication, number of pages, and the cost of the book.

Timeline: We aim to respond to your submission within 45 days; please do not query until that time has passed. If your submission is accepted for publication, please keep in mind that we schedule our line-up four to six months in advance, that we align our subject matter to specific monthly themes, and that we have limited space available. However, we will do our best to publish your article as soon as possible, and the *Gazette* staff will contact you once your article is slated. If you prefer to have your article published online, please let us know upon its acceptance.

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Crafted with a deep sense of American pride on the very soil they have sworn to protect, the Spirit of the Corps Tribute Edition is a lasting tribute to those who have answered the call and made sacrifices in service. Featuring intricate engraving, symbolic artwork, and the unmistakable craftsmanship that defines a Henry, this rifle is a most fitting homage to those who have earned their place in history.

Whether displayed in a place of honor or passed down as a cherished heirloom to remind future generations of their family's legacy, this rifle is our way of saying thank you to the brave individuals who have shaped the history of America for 250 years and counting.



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