Les Opérations Multinationales et L'interopérabilité

다국적 운영 및 상호 운용성

INTEROPERABILITY: JOINT AND MULTINATIONAL OPERATIONS

Operazioni Multinazionali e Interoperabilità

Multinationale Einsätze und Interoperabilität

Multinationale Operaties en Interoperabiliteit

Las Operaciones Multinacionales y la Interoperabilidad

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פעולות לאומיות ויכולת פעולה הדדית

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ABOUT THE COVER

"Interoperability: Joint and Multinational Operations" written in multiple languages.

The Command Corner

I am absolutely honored and humbled to serve as the Army Aviation Branch Chief and Commanding General of the U.S. Army Aviation Center of Excellence. I look forward to serving with all the exceptional Soldiers and civilians from across the Aviation Enterprise. Thank you for your selfless service and dedication to our Army and Nation. You are the strength and future of the branch and the Army.

Today, Army Aviation is in high demand and globally committed in nearly 40 countries, and that number continues to rapidly grow. One thing is certain about the future operational environment; like today, we will continue to operate as part of a joint and multinational coalition from a diverse array of allies and partners. Look no further than operations in Afghanistan or Iraq to see examples of U.S. and coalition forces executing combat operations as part of the joint combined arms team united against a common adversary. Interoperability with the joint force and our coalition allies and partners is critical to peace and security across the globe and can only be achieved through training and leader development.

Training together is the most effective means of achieving interoperability in the human and procedural domains. It allows the organizations to build trust and learn each other's capabilities and standard operating procedures while building combat power. The more we train as a team, the better the joint and multinational force will execute the full breadth of missions ranging from disaster relief to combat operations. We must ensure the first time we assemble the team is not at the line of departure with a determined enemy on the objective.

Army Aviation is fully engaged executing joint and multinational training and exercises with our allies and partners across the globe to include Europe, the Pacific, the Middle East, and numerous other locations. These training opportunities and exercises form the foundation for improving interoperability and building readiness in the joint and coalition force. The combined readiness of the joint and multinational team is critical to winning in the current and future operational environments. We must maximize these opportunities by deliberately defining the training objectives and executing rigorous mission essential task list focused training to ensure efficient use of resources. Interoperability is critical to our collective success, and it is only achieved through realistic, repetitive, rigorous training, and leader development. We have work ahead of us in the technical domain, but collectively, we must continue to focus our efforts in the future.

Our adversaries have learned from our years of conflict and are investing and innovating to exploit our capability gaps. Interoperability of the force is critical to closing those gaps and defeating our adversaries. We must leverage our collective resources and individual strengths as a global community to ensure peace and stability in a complex world.

The Aviation Digest is Army Aviation's Professional publication dedicated to sharing ideas and generating discussion across the branch and the Army. We have tremendous talent in the branch, and I encourage each of you to participate. As you continue to train and build readiness in your organizations, I ask you to share your thoughts, challenges and successes so the Aviation Enterprise can continue to innovate and contribute to the joint combined arms force's ability to win as we forge a path to the future.

Above the Best!

MG Bill Gayler

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Author's Guidelines

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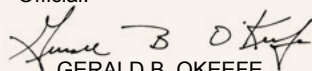
Letters to the Editor

I read with great interest a recent letter to the editor concerning, *"The Role of Tracked Company-Level Warrant Officers in Unit Training."* The author made several cogent points regarding the roles of aviation warrant officers as managers of highly complex systems and technical advisors to commanders. I noted a theme throughout the article where the author asserts that an aviation warrant officer operating within his tracked specialty limits his capability, and potentially constrains a unit's ability to accomplish its mission. To the contrary, I believe the expertise that warrant officers provide unit commanders contributes directly to unit readiness. The focus of this letter is on expertise, the warrant officer's hallmark, followed by a review of what expertise is, and what commanders expect from their aviation experts.

An aviation warrant officer right out of his track-producing school is typically a CW2 or junior CW3. As he transitions from his previous role in a unit as mission pilot-in-command (PC) to tracked warrant officer, he is now in a position to affect unit readiness directly. Regardless of track, the newly tracked warrant officer only has four to six years to master his role at the company level. Using the instructor pilot as an example, this requires becoming an expert at managing an aircrew training program which involves learning not only how to evaluate, but how to train and educate individuals. This later leads to crew training and is followed by unit training. How does one become a technical expert in communication, barriers to learning, and learning styles? How does one learn, as in the case of evaluating the potential of an aviator to become a PC, how to measure judgement, maturity, and decision-making? How does one advise a commander on accepting prudent risk? Does a CW3 understand the command philosophy and warfighting function elements of mission command so he can better support his commander? These are highly complex questions, which take years to master at each echelon of command. Gaining the trust of a commander requires warrant officers to make recommendations based on their own training, education, and experience, and this advice must always be accurate. Commanders turn to warrant officers for the expertise which informs their decision-making, and they continue to rely upon our expertise because our recommendations are timely and precise. Time is a constraint all commanders must manage. When commanders face complex, ill-defined problems that require timely decisions, the ability to turn to a warrant officer for courses of action that are accurate and quick in coming, along with the capability to execute complex tasks, demonstrates how the warrant officer fulfills his role as a highly specialized expert in the Army.

Expertise speaks to exemplary performance within a specific field. Experts are made, not born, and since the most-often quoted word used to describe the warrant officer is that of "expert," I recommend reading *The Cambridge Handbook of Expertise and Expert Performance*. Numerous studies reveal that repeated, deliberate practice, which accumulates over a career and even a lifetime, is what contributes to expertise. The road to expertise is hard and takes long periods of deliberate, methodological practice. If you do not find yourself outside of your intellectual comfort zone, then you are likely not developing expertise. To be an expert tracked warrant officer requires expertise in the requisite regulations, doctrine, lessons-learned, best practices, as well as the social, administrative, and tactical elements of the respective track. The Army expects warrant officer experts to not only engage in the goal-directed activities that increase levels of expertise, but also teach others how to achieve superior levels of performance.

Coaches and mentors are essential in the development of tracked aviators. Senior warrant officers must invest the considerable time necessary to ensure junior warrant officer performance consistently improves across all facets of his track. This includes hands-on experience, social relationships, concepts and theories, and expectations of the commander. The role of the tracked warrant officer at battalion is considerably different from those at company and brigade. Since aviation warrant officers are promoted every six years from CW2 to CW5, right about the time when they become bona fide experts at one level, they are promoted on our demonstrated potential for increased responsibility to the next level. At each echelon I have worked, I found myself building upon what I had learned, as well as discovering the requirement to develop a completely new set of skills and level of expertise.

Assignments outside the combat aviation brigade are desirable, as they develop cognitive skills and expose warrant officers to the broader Army. However, as the operating environment continues to increase in complexity, reliance on high technology systems retracts, and as our Nation's adversaries continue to adapt, the complex systems that warrant officers manage require deep experience doing that which warrant officers do. To do otherwise does not develop expertise, which is antithetical to the important role the warrant officer has in our Army. Warrant officers must strive for expert performance as officers, leaders, and within their tracks. Any efforts warrant officers take not specifically directed toward improving their tracked performance will not result in the improved skills necessary to develop expertise.

CW5 Rich Ayers is the Deputy Commandant, U.S. Army Warrant Officer Career College

BREAKING SQUELCH
with Multinational Aviation Units

BY CPT Ryan C. Boileau, Sr

As the premier multinational combat training center for the United States Army, the Joint Multinational Readiness Center (JMRC) is typically among the first to encounter problems in interoperability between U.S. and foreign forces. With a large influx of new North Atlantic Treaty Organization (NATO) partners and increasing European Union training countries, the JMRC Falcon team has experienced a significant increase in partnerships with foreign national aviation elements flying commercial off the shelf (COTS) helicopters that were not specifically designed to NATO or even military standards. During SABER JUNCTION 14, JMRC Falcons discovered the AS-523 Cougar, a Eurocopter COTS helicopter, could not talk to ground units over the Single Channel Ground to Air Radio System (SINCGARS) frequency modulation (FM) spectrum without placing the system in squelch off mode, which is contrary to NATO doctrine.

The JMRC Falcon Team functions as the observer, coach, and trainer (OCT) to all aviation rotational training units (RTU) operating in Hohenfels, Germany and consists of 30 OCTs and 10 teams. Each team has a role and responsibility in providing in-depth feedback to the RTU on their performance, measures of effectiveness, and areas to both sustain and improve. With the high rotational tempo, the Falcons interact with many foreign aviation nations, including Germany, the Ukraine, Bulgaria, the United Kingdom, and Slovenia. Although communications assets such as UHF and VHF capability are similar across these nations' aircraft,

the individual systems providing that capability vary widely. Typically, these are all designed to operate to a specific aviation or military standard to ensure interoperability in the multidimensional airspace in which they operate.

Over time, Falcon 14, the Multinational Team responsible for integrating multinational aviation assets into the RTU, has developed enduring relationships with leaders from several of the foreign aviation units which train at Hohenfels. This sustained interaction process has enabled visiting multinational teams to build upon previously established foundations and increase the level of training received by their team. Additionally, Falcon 14 personnel have raised the bar on expectations and deliverables for the multinational aviation crews as they become more familiar with the multinational crew's strengths and weaknesses.

During Rotation 14-08 (Operation SABER JUNCTION 14), the Falcon 14 team renewed their relationship with Bulgaria's 24th Air Base Krumovo personnel. The Bulgarian pilot-in-command returned to Hohenfels following a previous exercise with JMRC Falcons during a rotation in 2012. While executing a ground-air coordination scenario, members of Falcon 14 discovered the Bulgarian AS-532 Cougar would not break squelch when talking to ground forces over the SINCGARS FM radio. While the pilots in the Cougar heard the ground element, the ground force was unable to receive the Bulgarian transmissions.

In the hot wash immediately following the event, Cougar maintenance personnel evaluated their systems, and tested them with their own ground radios confirming that all systems worked properly. The Bulgarians, working with U.S. Forces on the ground, again attempted to transmit to U.S. ground unit SINCGARS. The same problem occurred - the Cougar could hear the U.S. transmission, but the U.S. ground unit could not hear the pilot's response. The same problem existed on both Bulgarian Cougar helicopters, drastically reducing the possibility of equipment failure being the root cause. Maintenance personnel conducted in-depth testing of their helicopter communications systems and arrived at the conclusion that all systems functioned as expected. A follow-on check confirmed that the Cougar's radios still could not be heard when transmitting to U.S. SINCGARS.

A NATO team of observer/controllers from Slovenia, present in Hohenfels to perform an initial observation process in support of NATO medical evacuation operations, also flew Cougar helicopters. The Falcon 14 team talked with the Slovenian pilots about the problem on the Bulgarian helicopters and then tested the Slovenian Cougar with the same result - transmissions to the helicopter could be heard by the aircrews but the U.S. unit could not hear the response. Further testing also showed that the Cougar FM transmissions could not be heard on numerous other radio platforms including the Airborne Radio Communication (ARC) 231 and Wolfsburg radios in the Falcon LUH-72 helicopters, the ARC-201 radio in the Hohenfels tower,

and the Portable Satellite Communication Terminal-5 radio in FM mode.

The concept of squelch for a radio has existed for nearly as long as radios have been around. First conceived in the 1940s by Motorola, squelch is a method of superimposing a secondary, known frequency wave on the FM channel. Prior to squelch implementation, radios always had a constant line of static or "white noise" playing over the speaker. This noise disappeared when the radio received

voice traffic from a distant end keying their microphone, and then returned when that transmission ended. Applying squelch, the radio operators would turn the speaker off until they heard that secondary tone. On receiving the tone, the radio speaker circuit opens, allowing the transmission to send, and then closes when that tone disappears. Each manufacturer uses a different tone for their individual radio systems, creating problems in cross compatibility. Within the U.S., military designers settled on a specific 150-hz tone, inaudible to the human ear, for their squelch standard. Agreed upon in the 1970s, this then became known as "NATO Squelch" as the design specification required it to be a part of all radios used by U.S. forces and their allies.

Identifying that the problem existed across multiple aircraft and radio systems from different countries, the Falcon 14 team elevated the problem to Falcon 30 (the S-6 OCT). Falcon 30 discovered the SINCGARS received the Cougar transmission when setting the radio to "Squelch Off" position.

Confirming the system worked in squelch off, the Falcon team knew the problem related to the Cougar not sending the 150-hz NATO squelch tone. For immediate mitigation, during the Air Planning Conference, the aviation planners told ground forces to turn their radios to the squelch off position when speaking with the Bulgarian Cougar pilots. This enabled the execution of missions, but bypassed the need to address the long-term interoperability of the Bulgarian Air Force with NATO partners.

Additional steps for short-term mitigation included: placing a U.S. Soldier in the Cougar with an AN/PRC-119 (SINCGARS manpack), who then relayed information to the ground forces; instructing the ground forces to use UHF or VHF-High configurations on a Harris PRC-152 handheld or Thales PRC-148 multi-band intra-team radio (MBITR), as those systems did not have the same issue; or preplanning, as part of the execution checks, various anti-collision light blink sequences for communication. Obviously, all of these interim solutions did nothing to address the underlying need of identifying and eliminating the reason the Cougar's radio did not break squelch with NATO radio systems.

The Bulgarian Cougar is equipped with the ARC-210 radio platform, designed by Rockwell Collins in 1990. The ARC-210 is fully compliant with all U.S. Military requirements, including the need for NATO Squelch in the FM frequency range.

This same radio is used in the Navy's F/A-18 Hornet, the CH-53 Super Stallion and Sea Stallions, and in several of the Army's unmanned aerial system platforms. In all these variations, the radio is able to communicate with ground forces in the squelch-on position.

At the conclusion of SABER JUNCTION 14, the Bulgarians returned the Cougars to their home country. The rotation schedule indicated their return in early October 2014 for rotation 15-01A, Operation COMBINED RESOLVE III (CbRIII). In the interim, both the Falcons and the Bulgarians initiated discussions with radio specialists to identify the root cause of the problem.

The Falcon 14 team contacted the United States Army Aviation Center of Excellence, Fort Rucker, Alabama, and found no known reports of problems with this radio system. Over a period of several weeks, Falcon 14 and a team of technicians from Rockwell Collins based in Cedar Rapids, Iowa and in Heidelberg, Germany examined the technical specifications of the AS-532 Cougar, including all ancillary systems connected to the ARC-210. Initial indications from Rockwell Collins pointed to several possible causes for the communication problem, including improper programming of the radio by the pilots, use of AM mode rather than FM for transmission, and signal attenuation.

Preliminary suggestions from Rockwell's literature suggested the problem to be one of four areas, all of which disable the NATO squelch tone via software - either the electronic counter countermeasures were on, the system was transmitting in black key, the selected radio was set to transmit/guard, or the automatic direction finder (ADF) was on. On 15 October 2014, the Cougar returned for CbRIII. That same day the Falcon 14 team and Falcon 30 met with the Bulgarians, and agreed to mutual support in the troubleshooting process.

Testing of the four most likely problems met with little progress, until the technicians turned the ADF off. With the ADF off, the Cougar crew's radio transmissions could be heard in air-to-air situations with the Wolfsburg and

ARC-231 radios in the Falcon LUH-72 Lakotas. It still did not break squelch on the tower's ARC-201, MBITRs, PRC-152 handheld radios, or the ground unit SINCGARS configurations. This suggested that, while part of the problem had been resolved, there still existed a flaw in the setup or design of the Cougar's communications system.

After additional discussion with Rockwell Collins, their technical personnel tested the ARC-210 in Rockwell's lab in Iowa, and confirmed the exact model in the Cougar generated the squelch tone. With that confirmation, Bulgarian technicians in Germany replaced the in-system ARC-210 with two separate spares but still encountered the same problem. Further discussion with Rockwell Collins suggested the only other factor stopping squelch would be a physical strapping on the J5 connector to the radio. This feature, designed by Rockwell to completely disable squelch tone, is typically only used when measuring FM deviation of the radio and should not be permanently on.

In November 2014, Falcon 30 and Bulgarian technicians removed the cannon plug from the J5 connector on the ARC 231 radio. The squelch tone disable strapping required pin 28 to connect to ground. On testing that pin with a multi-meter, the Bulgarian technician confirmed it was grounded. With this pin grounded, the ARC-210 was not generating NATO squelch.

The Bulgarian technician used a cannon plug pin extractor to remove the wire from pin 28 on the J5 input cable then secured and reconnected the cable to the J5 connection. On power up, radio checks with SINCGARS, MBITR, PRC-152, ARC-

201, VHF, and UHF systems functioned properly. The Bulgarian Cougar could now transmit to any NATO radio using NATO squelch. Additionally, the Bulgarian commander notified the Bulgarian Air Force of the fix and they are prepared to replicate the fix across their entire fleet of 16 AS-532 Cougar helicopters.

With the removal of Pin 28 from the J5 cabling in the Cougar, Bulgarian technicians have ensured their helicopter is able to communicate with NATO ground forces in the future. This will pay enormous dividends as this new NATO nation interacts more with its partner countries. Additionally, knowing the steps required to resolve the problem allows the JMRC Falcon team to teach, coach, and mentor other nations (such as Slovenia) which have the same airframe, and therefore the same problem. All parties involved can now truly Train to Win!

CPT Ryan C. Boileau, Sr is the S-6 OCT for JMRC Falcon Aviation Detachment. He has 23 years in service, and has deployed multiple times to Afghanistan, Bosnia, Iraq, and Kuwait. His previous assignments include 35th Signal Brigade (deployment to Afghanistan); 1st Brigade Combat Team, 3rd Infantry Division (2x deployments to Iraq); 11th Air Defense Artillery Brigade (deployment to Kuwait); and 24th Medical Detachment (deployment to Bosnia).

Acronym Reference

ADF - automatic direction finder	**MBITR** - Multi-Band Intra-Team Radio
ARC - airborne radio communication	**NATO** - North Atlantic Treaty Organization
COTS - commercial off the shelf	**OCT** - observer, coach, and trainer
FM - frequency modulation	**RTU** - rotational training units
JMRC - Joint Multinational Readiness Center	**SINCGARS** - Single Channel Ground to Air Radio System

Integrating Decisive Action into Multinational Operations at the Ground Level

By CPT Kyle M. Amonson

For a junior officer, U.S. Army Europe (USAREUR) provides a very unique set of challenges that include the rare opportunity to integrate doctrine at the company and platoon echelon with North Atlantic Treaty Organization (NATO) allies. This article chronicles the journey of a company and platoon through a year of operations while transitioning from counterinsurgency (COIN) operations to the unified land operations fight but also to conducting that symmetric battle shift with our NATO counterparts as a multinational combined arms team. During this transition, we have learned many valuable lessons that we now implement as tactics, techniques, and procedures (TTP).

In 2014, the 12th Combat Aviation Brigade's (CAB), 2-159th Attack Reconnaissance Battalion (ARB) deployed in support of Operation Enduring Freedom 14-15 and the 3-159th ARB deployed for a 9-month Kuwait rotation that eventually led them directly into the heart of Baghdad, serving as first the Army Aviation assets engaged in the fight against the Islamic State. As both ARBs re-deployed, two significantly unrelated events affected current operations and the immediate Army Aviation force structure - the Russian annexation of Crimea and aggression in Eastern Ukraine and the Army Restructuring Initiative (ARI). The 12th CAB was left with a CAB headquarters; the 1-214th General Support Aviation Battalion (GSAB); Task Force Viper consisting of the 1-3rd ARB, elements of the 412th Aviation Support Battalion, and a company of CH-47s; and an augmentation assault helicopter battalion.

During every operations order and air-mission brief, we evaluate the most dangerous course of action (MDCOA) and the most likely course of action (MLCOA). Even on crew briefs and risk assessments we determine the most high threat scenario. As Task Force Viper initiated the military decisionmaking process and troop leading procedures, we were doing the same MLCOA/MDCOA analysis at the battalion and company level and the answers were clear. While our MLCOA was the possibility of returning to a COIN environment, the MDCOA was just several countries to our east. It involved a linear battlefield, symmetric warfare, and a significant threat to air assets. To be successful, the mission would also require effective and efficient integration with U.S. and NATO ground forces, unlike what we had done in the past 15 years. As company level leadership about to step into platoon level split operations with our multinational partners, we had our work cut out for us.

Re-Learning the Playbook

Prior to returning from the Central Command Area of Operations (AO), I had never opened Army Doctrine Publication (ADP) 3-0, *Unified Land Operations*. My focus, and the focus of much of my platoon, had been publications pertaining to joint firepower application, aviation gunnery training, and cross training with joint terminal attack controllers (JTAC) to hone our skills as an attack platform. As we fell into the framework of the warfighting functions, we became an effective fires platform; however, the ground force commander (GFC), still tied to COIN operations, continued to think of us as an aerial artillery piece to hold in reserve for a quick reaction force (QRF) launch. We had to become more than that - a lot more, and fast.

First we had to understand that our prior knowledge of air-ground integration had to shift to what was newly defined in Field Manual (FM) 3-04, *Army Aviation* as air-ground operations. We had to learn, what was to us, an entirely new warfighting function. There were several main tenants on which we had to focus.

Effective air-ground operations require:

- Full integration of aviation maneuver and ground maneuver as a combined arms team
- Integrated or synchronized scheme of maneuver and fires
- Clearly defined triggers and conditions for employment
- Shared understanding of the commander's intent
- Clear command and support relationships
- Clearly defined roles and responsibilities that maximize the capabilities of each element of the combined arms team, while offsetting the others' limitations

Within 30 days following re-deployment, we conducted our first aerial gunnery and followed that with a decisive action training environment (DATE) rotation at the Joint Maneuver Readiness Center (JMRC). We recognized that, in order to operate effectively in a DATE, we needed to learn our role and become proficient in it *AND* we had to "sell" our new mission sets. We dove into the books and conducted weekly classes on ADP 3-0; FM 3-90.1, *Offensive and Defense Volume 1*; FM 3-90.2, *Reconnaissance, Security, and Tactical Enabling Tasks*

Volume 2; Army Training Publication 3-04.1, *Aviation Tactical Employment*; FM 3-98, *Reconnaissance and Security Operations*; and *Army Aviation*. We went into our training areas and focused on individual terrain flight skills and progressed into team terrain flight and team movement techniques at night. The days of wagon-wheels at 1000 feet were gone. We were now knee deep in the analysis of the wide array of surface-to-air (SA) threats our adversaries were fielding. As we conducted the analysis, we were gaining insight on critical survival information such as: how long does it take the threat to acquire us, what method do they use to track us, what is the range of the weapon, can the weapon system shoot on the move, how effective are our countermeasures, if the threat weapon is out of range of my weapons, am I able to get a bearing, triangulate, and call for fire. While this learning was taking place, we remounted the fire control radars and upgraded our aircraft with the newest aircraft survivability equipment.

As we approached our first DATE rotation, we felt confident in our role in the unified land operations (ULO) fight. The JMRC Aviation Observer/Controller Team prepared practical offensive and defensive exercises to challenge our air mission commander planning cells as a final preparation for one of the first multinational DATE rotations. As a company, we were ready to get our hands dirty by integrating with the ground force, conducting deliberate parallel planning, getting into the deep fight, providing reaction time and maneuver space, and showing the GFC how we operated as an aerial maneuver force.

After a week of successful situation training exercise lanes with U.S. and multinational maneuver companies, we set out to start the decisive action force-on-force exercise with 12 hours of deliberate planning for the initial counter-recon fight. As anyone who has been to a combat training center knows, as the force-on-force progresses, the stress level increases. As a direct correlation with the fog of war and stress level, the GFCs began to revert to what they knew best, namely the QRF "pick-up game." The aviation mission requests started arriving each night, interrupting whatever deliberate operation was about to take place. One night it was a troops-in-contact from an armor platoon while the entire armor brigade was in contact. Another was an aerial medical evacuation escort for wounded personnel well short of the forward line of own troops. There was also a multinational Soldier kidnapped in the vicinity of the brigade

tactical operations center where they wanted us to locate a vehicle without a description. Overall this constituted an ineffective and doctrinally incorrect use of aviation assets on a linear battlefield. The hastier the missions were, the less time we had to mission plan against known surface-to-air threats. We lost valuable assets over the course of the two weeks, directly related to hasty planning against a known threat. However, by the end of the rotation we were able to execute several deliberate attacks into the deep fight with effective results against the opposing force followed by immediate exploitation by the ground force.

We learned several valuable lessons. Not only did we need to know our job but we had to have the skills to educate the combatant commanders and their staff on our capabilities and correct doctrinal employment of aviation assets as well. The other important lesson we learned was that we not only needed to convey this to the GFCs, but also to the multitude of confused JTACs across the battlefield who were attempting to initiate controls while scratching their heads as to why the AH-64s were communicating directly with tank commanders and operating as a maneuver element.

"Selling" the Mission
As the 12th CAB completed reorganization under ARI, Task Force Viper's ARB hit the ground running. Operations with its 24 AH-64s and CH-47Fs were extended in support of Operation Atlantic resolve who were conducting operations from Italy to Denmark and from Spain to the Baltic

States. Companies split into platoons with distributed mission command dedicated to individual country missions. As described in Training Circular 3-04.11, *Commander's Aircrew Training Program for Individual, Crew, and Collective Training*[1], these situations create an environment where junior leaders are expected to take charge as primary leaders while the unit conducts split operations during green phases. This requires an in-depth understanding of the unit (company and battalion) mission essential task list and the commander's training objectives. Working directly with various embassies, NATO general officer level staff, customs officers, and international airspace officials was not something we imagined we would be doing as platoon leaders.

The challenge of honing team tactics and showing the U.S. and NATO GFCs and JTAC communities the benefits of our maneuver role in the decisive action fight was still our responsibility. We decided the best course of action at the company level would be to work with as many maneuver forces and JTACs in our immediate AO during our "white space" as possible. Not only did this approach help us develop, but it also helped our customers understand our mission. We conducted several company level operations in Germany with U.S. Army, U.S. Air Force, Bundeswehr, and JTAC units structured around the AGO principles. We would lead off with a ULO capabilities brief, followed with a deliberate parallel planning session, and then culminate the event with a practical exercise. We often felt like salesmen pitching our capabilities to a target market, and were often met with skepticism that the AH-64 could conduct independent missions based on our own deliberate planning and analysis. The units typically displayed an understanding during the capabilities briefing and parallel planning period but would struggle significantly during the practical exercise. We often got questions that in their nature really validated the purpose of the training we were doing. These questions ranged along the lines of:

"How are you going to pick targets if we don't direct you onto them?"

"Who is going to clear your fires and how will you know where to maneuver?"

"How will the infantry or armor units know how to help you direct fire? They don't know how to talk on the radio to an aircraft, much less coordinate attacks while in or out of contact or coordinate close air support (CAS)."

"So you are going to hover behind trees and only unmask to fire and then move, what happened to when you would just do circles in the sky?"

We received identical challenges from multinational and U.S. JTACs primarily because most of them had been U.S. trained with their minds set in the COIN fight. We explained to them, that under many circumstances, we would be communicating directly with the ground element. While we participated and engaged targets during multiple multinational operations, the JTACs were challenged seeing us operating in a DA fight without their involvement. I don't necessarily believe it was because it is tough to understand the tactics of the AH-64 as a maneuver platform vs. fires element. It was the realization that the JTAC community will not always

control Army Aviation assets on the ULO battlefield. There was a similar realization during a joint air attack team operation we conducted with F-16s in which deliberate planning eventually negated the need for the JTACs.

It was absolutely necessary that the maneuver force understood that integration in the DA fight is required for success. Army Aviation is far too valuable in providing reaction time, maneuver space, and massing fires at decisive points to be used only as QRF and launched when situations become stressful at the brigade command post. As we neared our next "green-phase," we continued to develop TTP including attack by fire and support by fire position selection to battle position operations. Our next role as the liaisons of attack aviation in the multinational DA fight was to help the maneuver company level leadership understand they could work directly with us and us with them, all the way down to their newest private.

Photo By CPT Jaymon Bell, 12th CAB BDE

From the completion of our last DATE rotation three months prior, our company had already completed a mission to Romania, two to Poland, one to the UK, mission planning to Hungary, and several internal operations inside Germany supporting various USAREUR units. We followed these exercises with two additional company

Photo By SGT Thomas Mort, 12th CAB BDE

operations, at Hohenfels and another in Oksboel, Denmark. At this point we had learned several valuable lessons, mainly:

It doesn't matter how well you know your mission; if the GFC doesn't understand how Army Aviation doctrinally supports the maneuver force and you aren't integrated into the plan, you will end up as a QRF.

We developed several in depth classes for the GFCs and their staff about attack aviation's role in the DA fight. We previously conducted DATE operations with one unit and by the end of the previous rotation thought that they had a firm understanding of our role. We made sure we were part of the planning and were involved in shaping the battlefield. As it was the same ground force and many of the same personnel at the company we were working with, we did not initiate a significant effort on the classes and explanation of the ULO fight as we would have normally done.

Regardless of our deliberate planning, once the force-on-force started we realized the flaw we had made…almost all of the brigade leadership and staff had changed since the last rotation and we were immediately pulled up as a brigade asset and put on the fires net to launch on QRF missions. Although we lost valuable training time, by the end of the rotation we were able to integrate with the ground unit and earned respect for our doctrinal mission.

We took a significantly different approach to a force-on-force and combined arms live fire exercise (CALFEX) with a Danish Armor unit that had never worked with U.S. Army Aviation. The only similar experience they had was working with British AH-64s directed by JTACs as CAS assets. Due to the JTAC control, no Danish ground force had any previous contact with aviation, even though the Danish have also been deployed for the past 15 years in Afghanistan.

As it was our inaugural training with the Danes, they received Task Force Viper's deluxe planning package for this event. We had the opportunity to sit down with their brigadier general, battalion commanders, and other senior officers to discuss our training objective for the operation and discuss the challenges during past exercises attempting to adhere to the doctrinal application of Army Aviation assets in ULO. Following the discussion, the Danish team, in impressive English, essentially said:

"So you had previously been used as a fires platform but you want to basically be an additional "aerial tank platoon," as a maneuver element on the battlefield?"

We accepted that as an indication that our briefing was a success.

The Danes requested that we conduct a DA capabilities brief to the entire brigade during the final planning conference. Unfortunately, much of the exercise was cancelled due to weather. We were, however, able to conduct a CALFEX in which we were paired directly with a Danish armor company commander to develop a mutually understood mission

and concept of the operations that engaged both the Aviation and Armor training objectives.

We were able to have robust air-mission-planning cells that are only able to be utilized when you have 100% integration of aviation and ground assets. We examined every mission aspect from real world, host nation contingencies. Being able to integrate with a ground unit to the point where you can engage an aviation company in doctrinally correct deliberate planning is a refreshing challenge.

Exercise execution went well due to the deliberate planning. It was a very valuable experience for the entire company and served as validation that we could fully integrate with a multinational maneuver force. An added benefit is the professional and personal relationships developed for future operations.

Lessons Learned

As we prepare for upcoming operations, we analyze previous mission after action reviews in order to obtain the greatest training value out of these upcoming exercises. One trend that we identified was that the toughest units to integrate with and conduct decisive action training with were U.S. ground forces. There were several contributing factors to this conclusion:

1. We assumed that because the combatant ground commanders were shifting to a ULO focus that they also knew how to utilize Aviation in DATE.

We found that to be incorrect. They are also retraining their entire force out of a COIN mindset. As aviators, it is our responsibility to be so effective at the DA fight that we exemplify the reasons why they need to utilize aviation more conservatively and deliberately. It is also our responsibility to train the ground force to understand our actions and need for integration. The implied task is putting your best foot forward when it comes to liaison officers, even if it means losing a competent aviator during an exercise. Sending top notch liaison officers that truly understand the mission and commander's intent pays back in dividends.

2. The Danish had no predisposition to Army Aviation, and that was a benefit.

The fact that the Danish were starting with a blank slate when it came to how we have been operating the past 15 years allowed us to immediately initiate synchronized deliberate planning. When the stress level increased, their communication with us increased allowing us to meet their needs when the plan needed to flex. In addition, this enabled us to mass fires at decisive points in the battle and provide the GFC with relevant information tied to key decision points.

3. That we could retain integration of JTACs and maintain operation as a maneuver force.

Ground commanders face significant stress during decision making and communication on the battlefield. Even the GFCs that understood our role as maneuver element would transfer us to a JTAC during a time of pressure. Then the JTAC does what JTACs do. They know type 1-3 controls for targets of opportunity and would immediately revert back to that, usually due to having a lack of understanding of the ground scheme of maneuver. We need to push the learning curve with GFCs at the lowest level to become comfortable with integration of aviation assets. We lose the situational awareness of the commander's intent and slowly lose relevance when attack assets are pushed off, as tempting as it often is for the GFC. A well planned deliberate operation doesn't require a large amount of communication during the execution and we need to be at that level. Realistic rehearsals and contingency planning allow for minimal communication and smooth execution, only enabled when the proper time to plan is allowed. When the aviation unit can develop a relationship with the JTACs and the JTACs are able to understand the shift of their role from controllers to that of airspace deconfliction managers and advisors to the GFC, they will be an effective asset on the battlefield. Until the JTACs are able to make that shift, they only complicate a non-permissive environment.

4. As an aviator, we must not only be subject matter experts on aviation doctrine but the maneuver doctrine as well.

If we expect the GFCs to trust and utilize us as we anticipate in a DATE, then we need to not only be the subject matter experts of aviation DA doctrine, we need to learn ground maneuver doctrine as well. Armed with the knowledge of the GFC's TTP and standing operating procedures we will be better able to integrate ourselves into the ground force's plan. As stated by LTC Kelsey Smith in the *Aviation Digest*, "Success breeds opportunity. Units that successfully demonstrate the lethality and agility of attack aviation capabilities earn a seat at the table and future opportunities to demonstrate those capabilities."[2]

As many readers of Aviation Digest are senior aviation officers, I hope that viewing these cultural and doctrinal transitions from the vantage point at the company and platoon level provides some insight into the challenges we are facing as aviation captains and lieutenants transitioning warfighting functions. If the GFC is to effectively use Army Aviation in the DA fight, we all must expect all aviators and especially the company commanders, platoon leaders, and air mission commanders to be aviation doctrinal experts.

[1] U.S. Department of the Army, *Commander's Aircrew Training Program for Individual, Crew, and Collective Training*, TC 3-04.11 (Washington D.C.: U.S. Department of the Army, November 2009), 20.

[2] LTC Kelsey Smith, "Attack Ops & MUM-T in the Decisive Action Training Environment," *Aviation Digest* (October – December 2015) Volume 3 Issue 4. 20

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Acronym Reference

ADP - Army doctrinal publication	**GSAB** - general support aviation battalion
AO - area of operation	**JMRC** - Joint Maneuver Readiness Center
ARB - attack reconnaissance battalion	**JTAC** - joint terminal attack controller
ARI - Army Restructuring Initiative	**MDCOA** - most dangerous course of action
CAB - combat aviation brigade	**MLCOA** - most likely course of action
CALFEX - combined arms live fire exercise	**NATO** - North Atlantic Treaty Organization
CAS - close air support	**QRF** - quick reaction force
COIN - counterinsurgency	**SA** - surface-to-air
DA - decisive action	**TTP** - tactics, techniques, and procedures
DATE - decisive action training environment	**ULO** - unified land operations
FM - field manual	**USAREUR** - United States Army Europe
GFC - ground force commander	

MULTINATIONAL INTEROPERABILITY –
Beyond the Treaties

By LTC E.P. 'Charlie' Barton
Australian Army Aviation
Liaison Officer USAACE.

Australia has been fortunate to share an enduring bond with the United States in terms of a military relationship. Even though the Australia, New Zealand, and United States Security Treaty was signed in September of 1951, the first demonstration of this relationship occurred in 1908 when the 'Great White Fleet' of the United States Navy arrived in Sydney. Since the Second World War, Australia and the United States have fought together in locations such as Korea, Iraq, East Timor, Borneo, Papua New Guinea, Vietnam, Somalia, and Afghanistan. We have maintained an enduring bond that has survived many conflicts.

But the attitudes of United States and Australia are quite different. This difference extends well beyond a federal constitutional republic versus a federal constitutional parliamentary democracy. Australia has signed a number of treaties that the United States has elected not to sign. Treaties such as the Ottawa Treaty on land mines, the Dublin Treaty on cluster munitions, and the Rome Statute of the International Criminal Court. As a result, the political landscape of each nation is quite different, but bilateral operations and exercises still occur between our two respective nations thanks to our enduring bond.

Australia, like the United Kingdom and Canada, is a strong ally of the United States and has proven this over many years. Even though we have a myriad of bilateral exchanges and operations that we provide, interoperability continues to be an issue. It is such an issue, that interoperability is one of the 20 U.S. Army Warfighting Challenges.[1] But how have we achieved interoperability to this point, what limitations exist, and how can we improve them in the future?

Historically, necessity has generally been the means by which we have achieved interoperability. The most obvious example of necessity driving interoperability is from Vietnam. The United States government requested Australia to provide more helicopter pilots to assist in the conflict and the Iroquois pilots of the Royal Australian Navy Fleet Air Arm from 723 Squadron were all that was left uncommitted. The 135th Assault Helicopter Company Experimental Military Unit (EMU) was established in February 1967 with a fully integrated chain of command where the commanding officer was American and the executive officer was Australian. The motto of the unit was "Get the Bloody Job Done" which is what occurred. Over the next five years, the unit would be involved in some significant operations throughout the Vietnam conflict over five separate bases, accumulating over 121,000 flight hours while operating 147 aircraft. This is a great example of how strategic policies and national agendas can be overcome if the demand is actually there. It is worth noting that the 135th has an honour roll erected in Veterans Park at Fort Rucker, Alabama, which is the only honour roll that has foreign Soldiers named.

How are we achieving interoperability now? Joint Publication (JP) 3-16, *Multinational Operations* is an excellent document that provides the foundations for multinational operations. The document uses a quote from General Dwight D. Eisenhower after the Second World War in which he noted that "mutual confidence" is "the one basic thing that will make allied commands work." This attitude of mutual confidence manifested itself into an interoperability program called the American, British, Canadian, Australian, and New Zealand Armies' Program (ABCA). This was initiated in 1947 with the United States, Britain and Canada with Australia and New Zealand ratifying it some 20 years later. Even though the ABCA Program was also borne out of necessity, it is still used today to optimize interoperability between armies.

The ABCA Program is a great mechanism, but there are still some obstacles that prevent effective interoperability. In the III Corps Multinational Corps-Iraq (MNC-I) Initial Impressions Report, there are some observations that are relevant to this discussion. The report states that "LNOs [liaison officers] were a critical link because technical and foreign disclosures became barriers. The SIPR [secure internet protocol router] Portal was difficult to

utilise for coalition, and information was manually transferred from the battlespace situational awareness network (CPOF [command post of the future]) to the authorative event database (CIDNE [combined information data network exchange])."[2] The report also states that "over classification of material and overly restrictive classifications guides preclude timely sharing of information with coalition partners."[3] Whilst this report is now over eight years old, these issues are still relevant today.

Exercise TALISMAN SABRE is a biennial, exercise between the Australian Defence Force and the United States Pacific Command. In 2015, an Australian Army Aviation Battle Group was force assigned to the Headquarters 25th Infantry Division (HQ 25ID) with command relationships to the Australian 7th Brigade (7CB) and the 25ID, 3rd Brigade Combat Team (BCT) simultaneously. Technological gaps exist between Australian Army Aviation and U.S. Army Aviation and present a significant challenge to joint exercises. The only Australian helicopter fitted with Blue Force Tracker (BFT) is the CH-47F. The Tiger attack reconnaissance helicopters (ARH) and NH-90 multirole helicopters have proprietary data links that are currently not compatible with BFT and until an air-gap is rectified, this issue will remain for some time. To overcome this issue, the Commander of Battle Group Griffin deployed an array of liaison teams to HQ 25ID, 7CB, and 3BCT. The commander also personally attended a number of planning events so as to ensure the intent was clear and there were no communication issues. The exercise for Battle Group Griffin was a great success and regardless of

technological gaps, the heavy use of liaison personnel that was relevant in 2006 with MNC-I is still relevant today. This is a further reinforcement of JP 3-16 which states "terminology, authorities, level of commitment, and imposed constraints and restraints may not mirror those of US forces. Therefore JFCs [joint force commanders] should establish early and continuous liaison to enhance mutual understanding."[4]

The other observation from MNC-I was over classification of working documents and I believe that this is the greatest limitation of Armies today. Over classification is an unfortunate reality of large organisations with a corporate governance mandate. Small documents

An Australian Army S70A-9 Black Hawk and a CH-47D Chinook assigned to Australian 5th Aviation Regiment, conduct flight operations from the flight deck of the amphibious assault ship USS Boxer (LHD 4) in support of Talisman Sabre 2005.

can easily be overlooked when considering foreign disclosure. Australia, along with other ABCA nations share numerous bytes of information via existing standing agreements, intelligence networks and operators: yet, I am continually confused that documents that are restricted in distribution or lower, are not (by design) releasable to key coalition partners. One such example is the U.S. Army Aviation's gunnery manual which is "distribution authorized to U.S. Government agencies and their contractors only to protect

technical or operational information that is for official government use."[5] Australian Army Aviation employs the same calibres of machine-gun, mini-gun, canon and rocket. Australia has also installed the AGM-114 Hellfire missile on our ARH, yet assessment of gunnery tables and the probability of compatible range templates and flight profiles is questionable due to the restriction of some doctrine.

Army Regulation (AR) 34-1, *Multinational Force Interoperability* states that "CG TRADOC [Commanding General Training and Doctrine Command] will ensure that ratified NATO [North Atlantic Treaty Organization] STANAGs [Standardization Agreements] and ABCA standards are incorporated into appropriate Army Field Manuals and other doctrinal publications."[6] Australia is not only a member of ABCA whose mission is to "optimize ABCA armies' interoperability in order to deliver success on coalition operations,"[7] but are also members of the Airspace Interoperability Council, the Australia, Canada, United Kingdom, and United States Naval Command, Control, Communications, and Computers Organization and The Technical Cooperation Group.[8] Australia and the Unites States also hold Army

to Army Staff talks. Whilst an argument could quickly erupt into who is granted access to what doctrine, a committee on security classification is a worthy recommendation to determine levels of foreign access relative to the identified tier of coalition partnership.

A willingness to release doctrine such as the Army Aviation gunnery manual will provide significant advantages. It will improve interoperability and standardization, expand the horizons on tactics, techniques, and procedures, improve methods of weapon employment, and increase the opportunities for wholly integrated live fire application. All of this can occur without a threat to intellectual property or International Traffic in Arms Regulations given the existing standing agreements that are in place with 'defined' coalition partners. The release of this doctrine may also have the potential to increase foreign military sales.

In the foreword to The Army Operating Concept (AOC), General Odierno states "The Army Operating Concept describes how future Army forces will prevent conflict, shape security environments, and win wars while operating as part of our Joint Force and working with multiple partners."[9] Whilst this mandate has been reinforced in many documents such as JP 3-16 and AR 34-1, it is difficult to put into practice. Historically, it has been a necessity that has driven interoperability, but as nations develop, additional limitations seem to challenge interoperability. What has stood the test of time, however, has remained the solid employment of the liaison officer in order to overcome any technical or procedural barriers. The future for interoperability could be promising if we, as collective coalition members, decide to invest in making the simplest of issues, doctrine, more releasable and available to those that want to embrace the writings of the AOC and General Odierno's message.

Lieutenant Colonel Barton is an Australian Army Aviation Officer with extensive command and operational experience, including command of a Reconnaissance Troop, Reconnaissance Squadron, and the School of Army Aviation. He is rated on the OH-58A/C and EC-665 Tiger Armed Reconnaissance Helicopter. He has deployed to East Timor, Iraq and supported the Olympic Games in Sydney, 2000. Lieutenant Colonel Barton also has extensive experience with Unmanned Aerial Vehicle Acquisition, Joint Effects, and Joint Targeting.

[1] http://www.arcic.army.mil/app_Documents/ARCIC_AUSA-Flyer_Army-Warfighting-Challenges_18MAR15.pdf
[2] U.S. Army Combined Arms Center, Center for Army Lessons Learned, *Initial Impressions Report III Corps AS Multi-national Corps Iraq, December 2006 – February 2008*. 31.
[3] Ibid. Topic 3.3.1 Foreign Disclosure. 214.
[4] Joint Staff, J-7, Joint Publication 3-16, *Multinational Operations* (Deputy Director, Joint Education and Doctrine, 16 Jul 2013). I-2.
[5] Although the author has not viewed this manual, the information was relayed to the author.
[6] U.S. Department of the Army, AR 34-1, *Multinational Force Interoperability* (Headquarters, Department of the Army, 10 July 2015). 15.
[7] www.abca-armies.org
[8] AR 34-1. 16-17.
[9] U.S. Department of the Army, TRADOC Pamphlet 525-3-1, *The U.S. Army Operating Concept* (Headquarters, United States Army Training and Doctrine Command).
  Page I, Foreword1.

Acronym Reference

3BCT - 3rd Brigade Combat Team	**CIDNE** - combined information data network exchange
7CB - Australian 7th Brigade	
ABCA - American, British, Canadian, Australian and New Zealand Armies' Program	**JP** - joint publication
	LNO - liaison officer
AOC - Army Operating Concept	**MNC-I** - Multinational Corps-Iraq
AR - Army Regulation	**NATO** - North Atlantic Tearty Organization
ARH - attack reconnaissance helicopters	**SIPR** - secure internet protocol router
BFT - Blue Force Tracker	**STANAG** - Standardization Agreement
CPOF - command post of the future	

INTEROPERABILITY IN MULTINATIONAL OPERATIONS:
The Successful Integration of French Task Force La Fayette Within a U.S. Division in Combat

By LTC Emmanuel Wolff
French Army Aviation Liaison Officer
to USAACE & Fort Rucker

France and the United States of America have successfully been operating and fighting alongside for a few centuries now, the most famous and emblematical example being the battle fought and won together in Yorktown, Virginia in 1781. Since then, our countries have kept strong bonds and fought alongside one another in both World Wars as well as in later operations and conflicts.

This was the case in Afghanistan, where French forces were deployed with their American brothers-in-arms as early as 2001, with the bulk of the French contingent operating in a separate sector. In 2009, in order to maximize operational efficiency, both countries agreed to place the French Brigade, Task Force (TF) La Fayette (TFLF), under operational control (OPCON) of a U.S. division in Regional Command East (RC-East). Operating together for more than three years, the French and U.S. command posts and units achieved a great level of interoperability and were really successful in the fight.

This was a big step in terms of interoperability, but the efforts made by both countries to make it work proved that such a level of common understanding and interaction can be reached. As interoperability is currently one of the most important objectives for our armies, it is worth understanding what interoperability really means and defining the level that could be achieved.

The experience of TFLF in Afghanistan is a great case-study and helps to detail what worked well and what can be enhanced, especially in the aviation environment.

What is Interoperability?

There are several definitions of interoperability. The general understanding is that it represents the capacity of several entities or units to operate together, due to the compatibility of their organizations, doctrine, procedures, equipment, and relationship. As far as France is concerned, it means that our defense forces should be able to either operate alongside other countries in a multinational operation or for a French unit to be able to be efficiently integrated in an allied higher unit. It also means that a French unit should be able to support an integrated allied subordinate unit in its order of battle.

The countries willing to achieve an advanced level of interoperability will have to work on four main domains. These are: doctrine, organization, equipment, and training. As a matter of fact, these domains will define the common understanding which will allow each unit to operate together, understand each other, and communicate efficiently.

France and the United States have a lot in common and share many similarities in their doctrine. Moreover, the North Atlantic Treaty Organization (NATO) provides standards which have been incorporated into each of our procedures and equipments, even if each nation has its own particularities. Our countries are able to operate together without any problem if it's necessary, but reaching an advanced level of interoperability requires more in depth studies and training.

As a matter of fact, the level of interoperability to be achieved defines the level of investment in terms of equipment capabilities, mutual training, and doctrine or procedures evaluation. This is the reason why our Army Chiefs of Staff signed a Common Strategic Vision in July 2015, defining the pace which will allow our Armies, by 2020, to integrate a French brigade within a U.S. division or a U.S. brigade within a French division, for any operation.

As this has been done successfully in the past with TFLF being part of the U.S. Combined Joint TF (CJTF) in RC-East in Afghanistan, it is interesting, from a French point of view, to study what really worked and what can be improved.

Task Force La Fayette, a French Brigade Within a U.S. Division in Combat

In 2009, the French forces in Afghanistan consisted of two battle groups. One was under American command in RC-East and the other one under French command in Regional Command - Capital, with a company size aviation detachment and various support elements. To maximize the tactical efficiency of these forces, the French government decided, in agreement

with the U.S. forces, to increase the number of troops and to gather all these units in a single brigade which would be integrated in the U.S. CJTF. Task Force La Fayette was then created on 1 November 2009 and operated in the Kapisa Valley, East of Bagram.

The French Brigade was placed OPCON to CJTF and, as any other brigade, retained control of its area of operation as Battlefield Space Owner. To be able to communicate properly with higher command, TFLF tailored its command post organization to match the U.S. division. Being used to operating in Afghanistan, the French headquarters and units were familiar with NATO and theater procedures and "Americanized" them to enhance the mutual understanding. As for any unit, the principle of support was direct support through the French brigade elements and general support provided by the CJTF. This was especially the case for fire-support and aviation support. Task Force Musketeer, the French Army Aviation Battalion based in Kabul, supported the brigade with recce and attack helicopters (Gazelles and Tigers) and utility helicopters (Cougars and Caracals). For larger scale operations requiring general support, the CJTF provided the heavy lift capabilities from the general support aviation battalion based in Bagram.

Through the NATO command system, the French and American units were able to properly plan and execute operations. They exchanged information to provide each headquarters accurate situational awareness, within classification limitations. But the crucial element, which greatly helped on a day to day basis to ensure mutual understanding, was the liaison elements. The French brigade had a liaison team in the CJTF in all the staff elements and, in reciprocity, the U.S. division had a strong liaison team in the TFLF headquarters with the U.S. command systems. As there was no compatibility between the French and American mission command systems, the French battle groups on the ground were equipped with the U.S. Blue Force Tracker (BFT) and radios.

Concerning aviation, there was a lot to be done since there had only been a few exchanges between the French and American units in theater at this time. Therefore, the French crews of TF Musketeer flew to Bagram to receive a detailed brief on the procedures used in RC-EAST and to receive a presentation of the U.S. helicopter capabilities. The French crews also briefed the capabilities of their aircraft and then participated in a gunnery training exercise using the procedures previously briefed. This combined French/U.S. gunnery exercise was performed for all the new pilots deploying with TF La Musketeer during the first few months.

In TFLF headquarters, the aviation S-3 was in charge of the planning and execution of all the aviation support. The cell was augmented with an American liaison officer, who was a key asset for the proper coordination of aviation missions between the brigade and the division, for planned or unplanned support.

Being able to understand each other, knowing all the capabilities and limitations of each nation's helicopters, and training together resulted in the U.S. and French crews operating alongside for three years with great efficiency. The ground troops were supported by either French or U.S. helicopters in TFLF's area of operations, a French platoon commonly relieving a U.S. platoon in place, or the reverse, after a proper hand-over on the radio.

Gaining experience and mutual confidence and trust, the French and American units operated successfully.

There were of course different aspects that could be improved, especially in communication systems. As the American and French radios were designed by different companies, their encryption systems were not compatible and on some frequencies were not interoperable. On the most recent aircraft, especially the Tiger and the Caracal, the more recent radios were more capable but, to be able to understand each other, the crews could not use the radios' secure modes. Moreover, the BFT systems were not compatible and there was no common operational picture (COP) available on board the aircraft or in the headquarters.

Steps to Improve the Existing Interoperability

The integration of TFLF demonstrated that an advanced level of interoperability can be reached between two nations that have a common goal. Yet, this close cooperation was specific to Afghanistan, in a counterinsurgency operation and for a limited time. In order to be able to capitalize on what has been very well achieved and to build on the interoperability between our two armies and aviation capabilities, it is necessary to maintain the level of experience we gained together and to improve what did not work so well.

In order to do that, it would be interesting to review the lessons learned in Afghanistan to get a detailed picture of what has been accomplished, what has to be retained, and what has to be improved. This is especially true for the compatibility issue that exists between the different communication systems. This assessment might bring interesting discussion topics and would represent a solid starting point to enhance the interoperability in a more demanding operational context.

Common training is the most efficient way to understand each other and to experiment with procedures and equipment. Our units should take every opportunity to get together, at all levels, for simple or more complex exercises whenever possible. Without completely changing the design of communications equipment, which would be very expensive, the addition of specific software

or hardware might be able to create a bridge allowing two systems to interact with each other. That is what happened, for example, during exercise "Flanders 2011," when a British brigade operated under a French division. Both mission command systems were enhanced with a bridge, allowing the headquarters to share a COP.

Liaison officers are crucial elements to ensure a better common understanding during an operation. France and U.S. Army Aviation should develop/expand liaison officer networks. It would be beneficial to create exchange posting for short or longer assignments. The exchanges of liaison or officers are a very good way of developing the mutual knowledge and trust that will allow us to operate successfully.

Our Army chiefs of staff signed a common strategic vision last summer in order to reach a tactical interoperability as early as 2020. This goal can be reached in time if we use the lessons learned in past operations to capitalize on our successes in terms of interoperability and if we resolve the problems or imperfections we encountered. Moreover, trust and mutual understanding step towards interoperability. Our Aviation branches should develop the existing exchanges of liaison and exchange officers in France and in the U.S. This is exactly the mission I have been assigned at the United States Army Aviation Center of Excellence.

LTC Emmanuel Wolff has been in the French Army for 27 years and an aviator for the last 22 years. He has an attack-recce background and is rated on the SA 342 Gazelle. His experience includes command of a reconnaissance and attack platoon, an attack company, and an aviation support battalion. He has deployed in multiple operations in the Balkans and Africa as well as two tours in Afghanistan with Task Force La Fayette in 2009-10 and 2012. He was assigned as the French Liaison Officer to the United States Army Aviation Center of Excellence in July 2015.

Acronym Reference

BFT - Blue Force Tracker	**OPCON** - operational control
CJTF - combined joint task force	**RC-East** - Regional Command East
COP - common operational picture	**TF** - task force
NATO - North Atlantic Treaty Organization	**TFLF** - Task Force La Fayette

A Case for Multinational Training

By CPT Frank A. Czerniakowski

Dating back to the colonial times, the United States military has regularly worked with foreign governments and armies against aggressors. The nations who have supported us, as well as the amount and type of assistance provided, has fluctuated over the course of history. While the number of troops other countries deploy in a combat zone may seem small compared to our own, the fact they volunteer to fight with us is commendable. Often times, our foreign allies fight alongside us in battle. When I say that they fight alongside us, I do not necessarily mean they are integrated into our formations and conduct daily operations with our units, as one of our own. Rather they tend to conduct their own missions, collect their own intelligence, and though from time to time we conduct joint operations with them, it is almost as if we are fighting two separate wars against two separate enemies. Why is that?

At first, I thought it must be the language barrier as I was quickly reminded of one of my first flights in Afghanistan. My crew and I were conducting a mission informally known as a ring-route; basically, moving personnel and supplies from one forward operating base to another. Approximately 20 miles from one of our stops, we contacted the airspace controller to identify ourselves and state our intentions to land. The voice that responded surprised us because his instructions were spoken in English, but carried a heavy Spanish accent. You can imagine the incompetent feeling we had when we asked for clarification two or three more times. This went on for another month or two until most of us could finally understand what each controller was saying through their various accents. While hampered communication never prevented us from completing our mission, it certainly contributed to some misunderstandings and close-calls in the air. Now multiply this communication issue by several orders of magnitude and imagine conducting a complex multi-aircraft air assault with a foreign military aviation unit with which you have had little to no prior interaction.

Language barriers can quickly have devastating consequences; misinterpretation of a word's meaning or simply not knowing the meaning of military jargon or acronyms could jeopardize an entire operation. While assigned as a deliberate operations planner and working with several foreign ground force units, I found that I had to speak more slowly and deliberately to avoid jargon and acronyms that flow almost as unconsciously as a second language. Many times after a long meeting or planning session, I would still feel like we did not have a complete understanding of one another's plan. While simple communication does pose somewhat of a challenge, there are plenty of foreign military members that speak fluent English and vice versa. It always helps when you have a good communicator working in your plans section.

Next, I thought that it must be the difference in the way we fight and operate that divides us. Our militaries are different and therefore have different doctrine, regulations, and standing operating procedures. Some might argue that foreign forces have an immense knowledge of U.S. doctrine and from most of my experiences this is true. I would also add that while our written doctrine may be different, it is largely based on the same philosophies. Additionally, I would argue that the tactics, techniques, and procedures for U.S. and multi-national militaries tend to converge over time within a specific theater or region.

While we may be fighting with separate and distinct goals in mind, the means to achieve the end state are fairly unanimous. Anyone that has worked with a foreign military for an extended period of time knows that the restrictions placed on them by their governments are significantly different than ours. These restrictions place severe limits on the capacity in which they can operate. This can be very frustrating and disrupt even the simplest of plans. As a UH-60 Blackhawk pilot, the majority of my missions have involved moving people and equipment across the battlefield. On one mission, we were providing support to a foreign ground force while they were conducting a relief in place with their predecessors. The mission involved flying approximately an hour and half from our airfield to a smaller operating base to pick up men and equipment and take them to a small outpost nearby. Once our flight of two landed at the small operating base, we quickly determined that our passengers were nowhere to be found. Several minutes later, two foreign CH-47 Chinooks, coming from the same airfield we had departed earlier, landed and began off-loading personnel and their gear. Our mission suddenly became quite clear. Rather than flying one trip into the outpost with two CH-47s, we were going to fly four trips to accomplish the same mission because the CH-47 crews were

not permitted to fly into an unsecure and potentially dangerous landing zone. We, however, had no such restrictions and could get the job done. Beyond this one example, there were several other times when working with foreign militaries where constraints like this impacted operations. Whether it is the limited number of hours they can fly in a month, the fact that they can't fly during the darkest nights, or any number of other limitations, it is the reality of multinational operations. Such limitations must be identified early while establishing operational relationships so that mission impact is minimized.

The biggest factor limiting multi-national operations today is that we do not conduct those missions frequently enough. Soldiers like to stick with what they know; change makes them uncomfortable. We certainly do not train enough with foreign militaries while we are in garrison; therefore, we are forced to either conduct training in the midst of combat or simply accept some risk to accomplish the mission. There are

certainly assets that foreign militaries bring to the table that U.S. forces do not, and vice versa. Combining our combat power can only have positive effects on operations. Through my experiences, I have found even the most basic training to be beneficial on several levels. By conducting simple aircraft familiarization with foreign ground forces, both aircrew and ground unit leaders developed a more complete perception of each other's strengths and limitations. Too often, I found that foreign ground forces wanted to jump right into operations with no previous working relationship. Even working with elite U.S. ground forces, it is beneficial to take a crawl, walk, and run approach before conducting complex air assaults or providing aerial security. Add in communication barriers and unfamiliarity with common procedures and disaster is on the horizon. Short deployment rotations on both sides also made matters worse, making continuity seem non-existent. It seemed like every couple of months, ground forces would switch out and we would be working with someone

new. Consequently, we would have to start the process over again. By the time a reasonable working relationship was developed, either they or we were heading out of theater. The common saying is to train train as you expect to fight. When it comes to multi-national operations, we need to fight to train together.

The United States cannot fight many of today's enemies alone. Conflicts are becoming more frequent and global. Strong allied relationships will be essential to defeat our enemies. Simply increasing force numbers will not suffice; we must maximize each other's strengths while guarding our weaknesses. We must increase multinational training in preparation for combat and avoid training while in the midst of combat operations. Working with foreign forces should become just as natural as working with our own. This process will mitigate some of the challenges caused by language barriers, doctrinal differences, and government restrictions.

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V CORPS AVIATION PARTICIPATION IN Spearpoint '80

Lieutenant General Willard W. Scott
V Corps Commander
U.S. Army, Europe

Colonel Jessie E. Stewart
12th Aviation Group Commander
and V Corps Aviation Officer

General Scott

Colonel Stewart

FLEXIBILITY, responsiveness and reliability are necessary characteristics of a military force engaged in modern warfare. V Corps aviation is ready to meet these challenges in its own or any other sector, working for either U.S. or Allied commanders—efficiently and safely. Our aviation units were privileged to plan, execute and experience these responsibilities during the recent Autumn Forge series of exercises in 1980, but under a unique set of circumstances. There were 210 U.S. helicopters assembled near Hannover, West Germany, in September. Their mission — to operate under control of the 1st British Corps. Employing nap-of-the-earth (NOE) tactics in an unfamiliar area, U.S. pilots flew 5,400 hours with zero mishaps in a 16-day period.

Traditionally during the annual Return of Forces to Germany (REFORGER), V Corps and VII Corps of the United States Army, Europe (USAREUR) alternate responsibilities. One corps participates in a field training exercise (FTX) and the other conducts a command post exercise (CPX). V Corps, during its CPX this time, was given the unique opportunity to participate and experience firsthand interoperability with Allied forces of the Northern Army Group in an exercise called Spearpoint '80. This exercise was the largest British operation on the continent since World War II.

Planning for Spearpoint was a greater challenge than for previous exercises. The extended distances between the exercise area and the aviation units' home stations caused most problems, but varying command and staff techniques between the different nationalities also provided some anxious moments. However, during the planning phase interoperability procedures were developed which later proved highly successful. The resulting benefit from these initial difficulties was that V Corps aviation units were able to deploy with less detailed plans than are traditional for an exercise of this magnitude. Flexibility and general preparedness were therefore given a real test.

Perhaps the greatest challenge was faced by the 12th Combat Aviation Group (CAG) headquarters. A three-battalion task force, placed under the 12th CAG by USAREUR order, was comprised of elements from 14 different organizations — nine with which 12th CAG has no normal peacetime command relationship. In some cases control was chopped en route, and some units were given their precise locations by radio just prior to landing. After assembling, units were briefed, issued maps and sent to work. The 12th CAG indeed validated doctrine that an aviation group headquarters can accept, control and employ several battalions on short notice—anywhere.

Within the 1st British Corps Headquarters, a U.S. Army Air Support Operations Center was established. This center, a compact but well-designed mobile facility,

U.S. ARMY AVIATION DIGEST

provided necessary space for operations. The 12th Group commander, his staff operations element, and two coordinating officers from V Corps Aviation Office manned the center. Operating 24 hours a day, they functioned as part of the Exercise Director Headquarters. This control cell became operational only a few hours prior to the arrival of the initial U.S. Army Aviation assets.

Close and continuous coordination with the 1st British Corps was paramount. When forces were chopped from V Corps, an almost perfect integration to the British command occurred. The only rough spots were with some language quirks. One British Soldier remarked that there was a bit of a communication problem with the American version of the "King's English." U.S. aviators also had to do some adjusting. Pilots didn't know at the start that "cleared to join right for the upper third mate," meant in American to "enter right downwind, plan to land long." These minor differences, however, only served to highlight the camaraderie which quickly developed between the British and the American forces and continued throughout the exercise.

During Spearpoint the 8th Combat Aviation Battalion (CAB) was attached to the 2d Armored Division, a REFORGER unit from Ft. Hood, TX. About 40 continental United States (CONUS) based aviators deployed to Europe and also were infused into the 8th CAB. This aviator augmentation may have aided in the excellent tactical support and rapport that quickly developed between a USAREUR combat aviation battalion and a CONUS REFORGER division. The CAB readily responded the instant the division's advance party arrived.

An arrangement with the 1st British Corps also was made which permitted British/U.S. pilot exchange during Spearpoint. This pilot exchange provided each nationality an appreciation for the other's tactics and procedures. This type of exchange could prove very beneficial in a wartime situation when familiarization with the area of operation is limited.

The 295th Aviation Company, augmented by six Chinook helicopters from the 205th Aviation Company (CH-47), was under operational control of the "Disruption" Brigade (opposition forces). The disruption brigade (a composite U.S./British force under the command of the 2d Brigade, 82d Airborne Division) was designed to simulate the Warsaw Pact airmobile threat. These tactics highlighted the tremendous versatility of the CH-47. During the exercise the CH-47's flew 11,219 troops and hauled 2,590 tons of cargo. This task was accomplished while operating and maintaining the aircraft under actual field conditions. The unit had to ensure that 18 CH-47s were available on a daily basis throughout the period of the exercise. This was done with 24 Chinooks flying about 800

hours during a 16-day period. Maintenance actually improved in spite of a 300 percent surge over the normal flying rate.

From a tactical point of view, the most important aspect of employing the 295th was the ability of the CH-47s to make raids deep into the opposition's territory and deposit large numbers of combat troops and equipment rapidly. Umpires reported that the winding and twisting NOE flights, operating in groups of two or three aircraft, simply could not have been detected by fixed wing fighter aircraft. Raids by CH-47 transported units were conducted as far as 80 miles into enemy territory and subjected the opposition forces, regardless of location, to the threat of an airmobile attack.

Elements of the 59th Air Traffic Control Battalion, a USAREUR asset, were assigned to the 12th Group commander for air traffic control. The 250 plus helicopters operating within the exercise area were supplied with effective flight following, weather briefings and rapid dissemination of urgent aeronautical information. This unit played a vital role in flight and ground movement safety. More than 12,000 movements of aircraft were controlled at Hildesheim during the exercise without a single incident. Their planning and operating procedures were a tremendous success.

As in all successful training exercises, participants at all levels learned new methods for accomplishing old tasks and were able to perfect procedures that had worked well in the past. One of the more significant lessons learned included a definite need for a new NATO (North Atlantic Treaty Organization) standardized map for tactical helicopter operations. During past major FTXs, USAREUR aviators participating in tactical play were required to remain within 150 feet of ground level and were issued 1:50,000 wire hazard maps. These maps proved too large and difficult to handle in the cockpit. This large-scale map was easy to navigate from, but covered only a small area. "Flying off" the map happened often. These disadvantages have been accepted by pilots because the only alternative was the 1:250,000 Allied Forces Central Europe low flying chart whose small scale does not provide sufficient detail for contour and NOE flying. The British Army of the Rhine provided a better alternative during Spearpoint '80. The map was actually 1:50,000 maps put together and reduced to 1:100,000 scale. Using this method, a single sheet, printed front and back, depicted the entire 40 by 90 km maneuver area without the loss of detailed information. The British special map was clearly superior to the U.S. provided wire hazard maps and was almost universally employed by U.S. pilots even though they were not standard issue to our pilots. In reaction to the positive acceptance of the British map, the 12th CAG commander directed his staff to ask participating aviators

to assess the map's pilot acceptance and effectiveness. The survey results confirmed initial impressions that the 1:100,000 scale map was the preferred size. The after-action report recommended that a study be made to determine the feasibility of making this scale map available for U.S. Army tactical helicopter navigation.

Training with other NATO forces and out-of-sector operations are always prime methods of enhancing our combat effectiveness. Working with the British provided V Corps aviators an outstanding opportunity to experience Allied procedures and operations. Exchanging new techniques with the British, fine tuning of contingency plans, and perfecting implementation of NATO Standardization Agreements all combined to greatly improve the overall Allied combat readiness.

Intensively managed and task organized, all aviation units provided flexible, responsive and reliable aviation support while maintaining an unblemished safety record.

CH-47s of the 295th Aviation Company lift 44 British combat troops and a land rover into a landing zone in Northern Germany during REFORGER 1980 exercise Spearpoint

The Power of Learning Leaders in Organizations

It is NOT the critic who counts; NOT the man who points out how the strong man stumbles, or where THE DOER OF DEEDS could have done them better.

The credit belongs to the man who is actually in the arena, whose face is marred by dust and sweat and blood; who strives valiantly; who errs, who comes short again and again, because there is no effort without error and shortcoming; but who does actually strive to do the deeds; who knows great enthusiasms, the great devotions; who spends himself in a worthy cause; who at the best knows in the end the triumph of high achievement, and who at the worst, if he fails, at least fails while daring greatly, so that his place shall never be with those cold and timid souls who neither know victory nor defeat.
- President Teddy Roosevelt

By COL Robert T. Ault

There is a Difference Between Good and Great Units

Almost anyone can take charge of a unit and survive. Almost anyone can "be the boss" and direct tasks. In fact, just a casual survey of some organizations may reveal some pretty good performing units despite their less than average leader. This is an unfortunate condition for any organization. Leaders are put in place to solve problems and build teams. Leading the learning of the organization is a leader's charge.

What is learning to an organization? Learning is the process by which organizations get smarter, more agile, and more capable of adapting to uncertainty. Army units and formations build this capacity through repeatedly performing specific tasks as listed in their mission essential task list. These tasks and their supporting collective tasks attempt to broadly define expectations of performance in both training and real world application. In combat or during an operational deployment, conditions will arise that are unforeseen. These unanticipated conditions will demand a reexamination of basic facts and assumptions about a unit's capabilities. Units that know how to learn are able to redefine themselves and recast their task and purpose to meet current and emerging conditions. Good units perform their mission to standard. Great units redefine what's possible in accomplishing their mission. The question is: Who is expected to do the learning for the unit?

Who is Responsible for Learning?

Leaders at all levels are expected to learn, grow, and adapt to changing conditions. While ideally everyone in a company should be expected to learn, grow, and adapt, it is the direct responsibility of the leaders. Learning leaders are curious by nature, always asking "why" in order to understand. Once they achieve understanding, competent learning leaders drive relentlessly to produce results or accomplish the mission. There is no age or rank limit to learning. There is, however, a demand to suspend judgement in order to see and listen. The ability to remove one's self from the equation is the hallmark of a life-long learner and a learning leader.

There is a Difference Between Bosses and Learning Leaders

Leaders come in two varieties: those that lead others where they themselves have been, and those that lead others to places neither have been. The first leader is analogous to the company commander that wrote the training plan, secured the training area, and personally coordinated the logistics resupply for their company situational training exercise. This leader views his primary task as keeping his unit training exercise as close to the plan as possible. He knows what's coming next. His leadership is mainly focused on compliance to standards. This is not a bad model but it is very different from the second type of leader.

The second leader is closer to Ernest Shackleton attempting to lead an expedition to traverse the South Pole when the team's ship is caught in the ice flow and destroyed. Shackleton doesn't know how long until they're rescued, how far help is away, or what he'll find beyond the sinking ship. In fact, he doesn't have all the tools to solve many of the problems his crew will face along the way. He and his crew will have to learn their way forward. Shackleton and his crew's ability to understand and learn is central to their very survival.

Future Army leaders must be not only ethical, smart, and adaptive, they must also be able to learn. Fundamental to learning is the ability to ask the right questions. The key to asking the right questions is the ability to listen for the answers. Especially those answers that don't conform to preconceived ideas or those that go against cultural stereotypes. Future Army leaders must be able to learn their way through problems, problems they may not know they have yet. This is leading in complexity and uncertainty. These are the leaders that understand solving one problem most likely creates other problems. Not unlike astronaut Mark Whatley in the book *The Martian*[1], future leaders must operate from a solid base of competence but also be able to see the limits of their knowledge and learn in order to expand their competence and grow new skills as the environment changes. Creating these kinds of leaders takes time and tolerance.

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Developing learning leaders requires a tolerance of failure. Much like how the majority of shots taken during a basketball practice session will miss, so too will some decisions made by a learning leader miss the mark, especially at junior levels. In the words of Simon Sinek "leaders make people feel safe."[2] This is not to say leaders accept mediocrity. Great leaders expect extremely highly standards but never at the expense of safety of the teamwork climate. Great leaders are able to express disappointment without threatening. They convey the necessity to reflect on lessons learned and discover courses of action for improvement. This is important if learning is to occur. Contrary to popular belief, learning is not accelerated by stress. In fact, at some level it is stifled by too much stress. In order to develop learning leaders, Army culture must allow younger leaders to try and fail, to strive and fall short. Failure must not be confused with defeat. Learning leaders must be allowed to develop the skills the environment demands in order to win.

Army Aviation and the U.S. Army are learning organizations comprised of learning leaders. Tactically and operationally, we attempt to see ourselves, the terrain, the enemy, and all of the other seemingly unlimited variables as we formulate mission plans and orders. Successful operations start with sound training plans where leaders focus on gaining mastery through progressively complex iterations. Learning leaders realize that great knowledge lies within each training event and at the root of achieving proficiency in any task rests a learning opportunity. Seeking these opportunities, gaining knowledge, and continuing to build upon foundations - that's the power learning leaders bring to organizations.

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[1] Weir, Andy. The Martian. New York: Random House, 2014. Print.
[2] Sinek, Simon. "Why Good Leaders Make You Feel Safe." Online video clip. YouTube. YouTube, May 19, 2014. Web.

25TH Combat Aviation Brigade UNMANNED AIRCRAFT SYSTEMS FORUM

By CW5 Matt Fitter

Assignment to Hawaii offers many special training opportunities that can only be found in these unique islands. The training area also presents significant challenges. This is especially true with respect to unmanned aircraft system (UAS) operations. Although most UAS units share difficulties with accessing training airspace, Hawaii is very confined from both the ground and airspace perspective. As more UAS units are assigned on the island of Oahu, additional stress will be added to the already claustrophobic conditions. In an attempt to understand and find solutions that would benefit all stakeholders, the Commander, 25th Combat Aviation Brigade (CAB) directed the brigade to host a UAS forum in December 2015. The forum hosted representatives from the RQ-7B Shadow UAS Program Manager, U.S. Army Garrison Hawaii master planning, brigade combat team (BCT) UAS leaders, Training and Doctrine Command Capabilities Manager-UAS (TCM-UAS), Federal Aviation Administration (FAA), U.S. Army Pacific Aviation Resource Management Survey (ARMS), and U.S. Marine UAS units from Marine Corps Air Base, Kaneohe. Classes and topics of discussion centered on core aviation issues to include airspace, safety, standardization, maintenance, facilities, and Aviation Resource Management Surveys. The overall purpose of the forum was to facilitate the synchronization and optimization of both the ground and airspace required to maximize UAS operations in Hawaii for all joint partners while hosting discussions on topics relevant to leaders of UAS units. Just as importantly, the forum provided a foundation and a starting point from which all stakeholders can begin to prioritize and address both internal and external operational challenges.

Airspace

In order for UAS units and operators to train, they must have airspace in which to fly. This challenge is not unique to UAS units across the national airspace. Available airspace for flight training is extremely scarce and approval for UAS operations is a tedious process. To complicate matters in Hawaii, the main joint range complex is located on the island of Hawaii, over 200 miles away from Oahu. This proves to be an expensive option for flight training and can only be scheduled certain times of the year. On the island of Oahu, the challenge is not only a lack of available airspace for training but also the juxtaposition of the Honolulu Class B airspace. Couple these with an extremely cramped airfield that is home to 25th CAB assets and a Hawaii Army National Guard general support aviation battalion and the ability to operate UAS diminishes further. While restricted airspace exists next to Wheeler Army Airfield (WAAF), only two UAS can fly at a time and only when air traffic control services are available. The challenge is getting UAS operators the flying time they need to meet aircrew training program requirements.

With two 25th Infantry Division (ID) BCT UAS platoons, a Marine UAS unit, and an incoming 25th CAB Shadow UAS company assigned to the cavalry squadron, airspace availability for the individual operator is at a premium. The long term solution to this dilemma is to try and expand the usable airspace for UAS operations. Coordination has already begun with the Department of the Army Representative to the FAA – Western Service Area to begin negotiations with the FAA to create an altitude based restricted area with an attached corridor from WAAF. It is well understood that this will take a significant amount of time, patience, persistence, savvy, and likely a good deal of compromise to achieve success. In the short term, all aviation units utilizing WAAF and the adjacent restricted airspace will need to synchronize schedules and times. Equally important, the air traffic control facilities will need to be flexible in their operating times when inclement weather trends prevent UAS operations.

Safety and Standardization

The most significant role that the 25th CAB offers is assistance with safety and standardization programs within the 25th ID BCT Shadow platoons - this initiative conducted in accordance with the Forces Command, Command Training Guidance for Fiscal Year 2016. Historically, BCT UAS platoons have struggled with these programs simply because they do not have oversight from a knowledgeable aviation headquarters. As with most CABs across the Army, the 25th CAB is partnering with the platoons to assist. The 25th CAB is helping them with the core aviation programs as well as providing insights into their most difficult problems.

With regard to safety programs, the BCT platoons have to train Soldiers as safety officers. This is an additional duty for the BCT Soldier who still has military occupational skill requirements in his assigned job within the unit. The safety officer skillset becomes more of an issue as the Soldier moves on

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to increased responsibilities within the unit or changes duty stations. One solution we have suggested, is for the 25th ID BCT platoons to adopt the 25th CAB Safety and Standardization Standing Operating Procedures and our Mission Risk Assessment Worksheet. This would ameliorate issues with continuity, standardize programs, and standardize risk management across both BCTs and the CAB. Additionally, we have invited UAS platoon leadership in both BCTs to participate in the 25th CAB Command Safety Council where their safety and standardization issues can be addressed.

The 25th ID BCT Shadow platoons have demonstrated difficulty in properly managing flight records. The 25th CAB and BCTs have coordinated for the

25th CAB Commander, COL Kenneth Chase, sets the agenda for the 25th CAB UAS forum.
(Photo by CPT Heba Bullock, 25th CAB PAO)

installation of the Centralized Aviation Flight Records System (CAFRS) onto the BCT UAS platoon's computers. Additionally, they will be integrated into the 25th CAB's CAFRS server to provide the ability for back-up services and synchronization with the CAFRS national server at Redstone

Arsenal. Integrating the BCTs into CAFRS also allows the brigade standardization section to monitor, inspect records, and assist with flight records management on any computer with CAFRS installed.

Maintenance

Maintenance was a topic of significant discussion during the safety, ARMS, and maintenance presentations. Accident research through the risk management information system conducted by the 25th CAB Aviation Safety Officer revealed telling problems with component failure. Over a five year period from 2011 through 2015, known component failures accounted for over 70% of the Class D through B UAS accidents. As required by Department of the Army Pamphlet 738-751, *Functional User's Manual for the Army Maintenance Management System - Aviation,* component failures require a Product Quality Deficiency Report be sent to the Aviation and Missile Command (AMCOM), Communications-Electronics Command (CECOM), and Tank Automotive Command (TACOM) to recommend corrections and improvements to aircraft, UAS subsystems, and aviation mission equipment. This report additionally serves to alert AMCOM/CECOM/TACOM to problems encountered by units due to the receipt of defective equipment. The 25th BCTs did not know about these reporting requirements. It can be assumed that this is systemic across the Army Aviation UAS community. The cost of unmanned aircraft is rising significantly and the acceptance of component failure can no longer be tolerated as normal. The 25th CAB and BCTs must monitor known component failures and ensure proper maintenance reports are completed.

The Unmanned Aircraft System – Interactive system for maintenance tracking and documenting UAS repair parts is vastly different from the Unit Level Logistics System-Aviation (ULLS-A) used in Army

Aviation. Although tracking differences can be overcome, the primary issue is the ordering of parts. An estimated 90% of Shadow parts must be ordered through the Field Service Representative (FSR) because the parts are not in the Federal Logistics Data (FEDLOG) system. This system functions until a UAS unit deploys. Since there is only one FSR in Hawaii, it is unlikely he will travel with the deploying unit. Also, since there is no technical supply system for the BCT Shadow platoons to assist in tracking and receiving parts, the remaining 10% of parts must be ordered from unit supply which is an extremely slow method of procurement. Understanding the hurdles involved, we are recommending that UAS maintenance be brought under the ULLS-A and that UAS repair parts be registered in the FEDLOG system.

To summarize, many of the issues mentioned in the previous paragraphs associated with safety, standardization, and maintenance are a result of the observations stemming from two 25th ID BCT UAS platoon ARMS. The 25th CAB fully embraces its oversight role as a trusted sponsor and takes responsibility to help improve the 25th BCT UAS programs through a permanent partnership. This forum was received with enthusiasm and fulfilled the expectations of all the participants. We now have a unique opportunity to shape and influence UAS operations, management, and leadership. We also have the distinct responsibility as a branch to leverage our knowledge and experience to coach, teach, and mentor UAS junior officers, warrant officers, and non-commissioned officers who will eventually be the future leaders in the Aviation Branch. That means we have to be inclusive, innovative, and most importantly, unafraid of change so that the support we provide and the trust we have earned from the Soldier on the ground may remain unbroken.

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Acronym Reference	
ARMS - Aviation Resource Management Survey	**ID** - infantry division
BCT - brigade combat team	**TCM-UAS** - Training and Doctrine Command Capabilities
CAB - combat aviation brigade	Manager-UAS
CAFRS - Centralized Aviation Flight Records System	**UAS** - unmanned aircraft system
FAA - Federal Aviation Administration	**WAAF** - Wheeler Army Airfield

Unit Flight Hour Management & Training Accountability

By MAJ Jason King

> "As the Army's resource position becomes increasingly difficult over the next few years, commanders and trainers have the responsibility to maximize funding to the greatest extent possible."
>
> *- U.S. Army Chief of Staff GEN Mark Milley Army Readiness Guidance*

In 1925, Army Air Corp Pilot, Brigadier General (BG) "Billy" Mitchell wrote an opinion editorial (OPED) that was picked up in newspapers across the nation. It was a time of mass budget cuts and infighting within the War Department (Predecessor of the Department of Defense and the National Security Act of 1947). Brigadier General Mitchell's OPED was a very public warning shot for the War Department and its services in the misuse and underfunding of air assets and the future of air power. His OPED earned him a court martial and media attention for the era that rivaled the frenzied coverage of the OJ Simpson case. Fast forward to 2016 where history is repeating itself with harsh decrements in military budgets and increasing instability on a global scale

The major difference between 1925 and 2016 is that leaders at all levels acknowledge the need for Army Aviation to maintain its superior vertical lift, attack and unmanned capabilities. These capabilities are comprised of people, initiative, technology, innovation, and the delicate balance of funding priorities for each. The requirements for these capabilities go well beyond Army Aviation. In an effort to provide purpose, direction, and motivation for the Army to regain combined arms capability, on 20 January 2016, the Army published U.S. Army Chief of Staff General Mark Milley's Army Readiness Guidance for CY 2016-17.* This guidance clearly defines Army Readiness and establishes strategic guidelines to transition the force to Sustainable Readiness (SR). In his guidance,

GEN Milley states "As the Army's resource position becomes increasingly difficult over the next few years, commanders and trainers have the responsibility to maximize funding to the greatest extent possible."[1]

Strategic leaders like the Aviation Branch Chief manage Army Aviation capacity (number of units, force structure) and capability (modernization, readiness, and sustainment). Conceptually, operational leaders resource and tactical leaders execute the given capacity and capability. In short, all Aviation leaders and professionals are stakeholders. As stakeholders in this fiscally challenging environment, it is up to the operational and tactical leaders to increase efficiencies with the resources allocated. Bottom line - What can we, as leaders, do to implement the U.S. Army Chief of Staff's guidance and the Aviation Branch Chief's priorities to ensure readiness through constrained resource in the operational training domain?

Sustainable Readiness is the Army's force generation concept adapted to the needs of a contingency force that is globally responsive and regionally engaged.

We can start by observing the commercial aviation industry and the economics they face on a daily basis. A common quote for the industry is "We only make money when the plane is in the air." The premise is simple, if the income generating resource is on the ground and we are funding the systems that maintain it, we lose money. The world of economics would take this

dilemma a step farther by specifying the positive and negative outcomes caused by a canceled flight (lost opportunity). A positive outcome might be the Soldier who got to spend a couple of extra days at home because his flight into theater was canceled. A negative outcome would be the business leader who didn't get to their destination to finalize a global business deal. Negative outcomes from lost opportunities cost millions. As with major airlines, the negative outcomes and associated lost opportunities are ruthless antagonists for Army Aviation training.

How ruthless? Every day the Army expends money on inefficient training. Aviation training is linked to an Aviation commander's unit training management (UTM) plan. Infantry training is linked to an Infantry commander's UTM plan. In the majority of units, multi-echelon training is only linked on an exercise basis. These conditional links costs the Army millions of dollars every year in lost opportunities and, let's not forget, where there is a lost training opportunity, there is a lost leader development opportunity as well. It is easy to visualize and quantify the opportunity cost of an aircrew scrubbing a flight due to a minor maintenance issue. Unfortunately, due to our *raison d'etre*, it is not appropriate to limit the lost training opportunities to that of pilots and crews. Every time an Attack/Scout Weapons Team is simulating the ground element while flying or a Blackhawk crew is executing infiltration and exfiltration missions with no passengers, the lost training opportunity cost is adding

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* The duties of the Chief of Staff of the Army are outlined in Title 10 sub-section 3033 of the U.S. Code. While it is a fascinating read, it suffices to say the Chief of Staff of the Army is appointed by the President of the United States and subject to the authority, direction, and control of the Secretary of the Army. What does this mean? It means it is in our best interest, as Aviation leaders, to do our part to maximize allocated training funds

up. While the crews in these situations (which we have all seen multiple times) pat themselves on the back for their ability to improvise multiple players over the radio, the truth is, an infantry squad or team somewhere on the installation would have benefited from and added realism to the now spent flight hours. The result, an increasing (lost) opportunity cost due to the lack of a systemic multi-echelon training plan. By definition, multi-echelon training "optimizes the use of time and resources to train more than one echelon simultaneously."

"Multi-echelon training is a training technique that allows for the simultaneous training of more than one echelon on different or complementary tasks. It optimizes the use of time and resources to train more than one echelon simultaneously. Commanders ensure subordinate units have the opportunity to train their essential tasks during the higher unit's training event while still supporting the higher echelon's training objectives. Planning for these events requires detailed synchronization and coordination at each echelon." [2]

Do we stop with the opportunity cost to the crews and maneuver element or does it go further? What about the lost opportunity at the staff planning and synchronization level or the current operations battle tracking level? It doesn't take long to see lost training opportunity costs increase exponentially. Can we calculate the cost of lost training opportunities? If we set aside the operational risk of semi-trained maneuver elements, yes. We know the average (published) cost of a flight hour for Army airframes. We also know the hours allocated for individual and collective training from Readiness Level (RL) 3 to RL 1. Suppose, that for an Apache pilot, RL2 to RL1 wa defined as mission training and allocated 20 hours. At roughly $4,600 a flight hour for the AH64D, the estimated mission training cost is $92,000. Mission training is normally done in teams so the cost is doubled. For one pilot, the mission training cost is now $184,000. What is the annual lost opportunity cost if 50% of the mission training hours for every new Apache pilot, RL progressed after leaving Fort Rucker, fail to be multi-echelon?

This amount doesn't even begin to address semiannual training at the multi-echelon level, integrating ground elements into the Table II-VI gunnery tables, and the possibilities for realistic proficiency evaluations similar to those of a joint tactical air controller.[‡] The obvious question is - How does Army Aviation as a whole minimize these lost training opportunity costs?

The first and most important step toward the minimization of the lost training opportunity cost and maximizing readiness is active division and brigade leadership making air-ground operations (AGO) not just a priority but a system. Division training guidance that prescribes training events encompassing air support must be published, adhered to, and most importantly audited in the processes that make up the quarterly training brief (QTB) - processes that have laid dormant in many organizations. The Army Force Generation (ARFORGEN) process was exceptional for rapid force generation in an environment providing nearly unlimited resources. That process pushed units, by virtue of massive resources, from untrained to trained on a dictated mission essential task list (METL). Under the SR concept, QTB processes align with the SR Modules (Prepare, Ready, and Mission). The SR process aims to build and preserve the highest possible unit readiness over time. From a SR perspective, the goal is to maintain Aviation units inside the training readiness band of excellence (C1/C2).[‡‡] Staying in the band of excellence will reduce the time and resources required to provide a fully deployable aviation unit. This differentiation between ARFORGEN and SR

is critical to Army Aviation. As commanders and staffs progress through their training strategies they will no longer have a period of minimal readiness. Put another way, tactical aviation commanders will always have a collective training / multi-echelon capability within their command. This transformation provides combat aviation brigade (CAB) and division commanders the ability to consistently reinforce AGO during QTBs and, in turn, increase the overall training readiness of associated ground maneuver units.

The SR and QTB processes, while the most important, are just the first steps in the equation. The next step is to take AGO from a concept to a system that occurs as a normal operation as it has over ten years and two wars. The phrase AGO itself implies two separate entities that need to expend additional energy to accomplish the mission. The basic mission planning and

execution elements required in a combat environment do not change in a Continental United States training environment (with the exception of certain armament and flares). Known commander priorities for support and published integration protocol prior to an aircraft lifting off the ground make the concept of AGO an established, verifiable system instead of a vague entity.

As we move further into fiscal uncertainty with tightening purse strings, the question becomes how to maximize AGO (conceptually, synchronization of ground and air elements). It begins with aviation battalions no longer scheduling flight training from week to week. The aviation culture prides itself on flexibility and the

[‡]The author acknowledges Table II-VI are aircraft, individual, and crew tables. The author also acknowledges the time he was given an 8 digit grid for a troops-in-contact mission over Baghdad with no grid zone designator. Training Soldiers on the radio starts at the same base level as training pilots.

[‡‡]C1, Composition (Compo) 1 – Active Duty; C2, Compo 2 - Army National Guard

launch – recover – launch concept that provided unprecedented mission success in an unconstrained combat environment. In a constrained environment, it behooves us to take a few tips from our sister services towards maximizing training flight hours. The Marine Corps uses the Frag Conference (a quarterly air support scheduling conference at the Marine Expeditionary Force level with all stakeholders and O-6 level officer oversight) to maximize flight training while the Air Force and U.S. Special Operations Command use the Joint Airborne Air Transportability Training (JAATT) and the Joint Air Asset Allocation Conference (JAAAC) respectively.

What do the Frag Conference, JAATT, and JAAAC have in common that makes them systemically more mature than the typical divisional air mission request process? Each of these scheduling conferences represents a continuation of the procedures we operate with every day while deployed using established protocols to ensure mandatory requirements are adhered to with a transparent auditing channel. The Air Force JAATT system goes a step farther with a point system for training mission approval. This point system is designed to ensure the benefits of training exceed the cost of the flight. That phrase is worth repeating - The benefits of training exceed the cost of the flight. The system is audited by personnel outside of the wing structure in a dedicated negotiation phase. How many brigade

aviation officers or battalion operations officers have received a call from division saying "Your planned training event doesn't pass muster. Increase the level of training or you don't get air."

The Air Force system may be a step too far but what can Army Aviation gain by adding a systemic check to the scheduling of flight training and support? Two words - efficiency and predictability. Efficiency gained in the form of multi-echelon training and predictability due to the inherent requirement to schedule and plan training. This systemic check can be audited and validated in a well-organized QTB. In addition, a professional organization requires the scheduling of aircraft and training at a level capable of enforcement. This level is not inherent within the CAB. Unlike the Armored Cavalry Regimental design of the past, the CAB has no organic authority to ensure the integration of ground elements. This lack of an effective audit tolerates inefficient use of training resources and puts our sacred trust to support Soldiers on the ground at risk. The only way to ensure the flight hours spent within the CAB are efficiently exercised is to have full visibility on the flights at the division level. When a division commander is briefed the number of quarterly flight hours flown in the QTB, the first question should be - How many hours were flown in direct support of the brigade combat teams and maneuver units? How have the

spent flight hours increased the training readiness of the division as a whole, not just that of the CAB? (Note, a multi-echelon flight hour metric could also be worked into unit status reporting on a monthly basis). The answer won't be found in doctrine. It must developed in executable procedures and policies. For instance, the recently published Army Aviation Training Strategy 2016 (January) is a pinnacle text for aviation leaders from platoon through brigade. It is a coherent, logical integration of institutional and doctrinal training knowledge (possibly even some tribal lore). While an exceptional document, it stopped short of prescribing a way to maximize flight hours and force collective training efficiencies. These efficiencies must originate in divisions, CABs, and aviation battalions.

Inefficient training is putting our ability to generate trained and ready combat aviation forces at risk. In the current fiscal reality, we will not cede the initiative and we will ensure the next generation of aviators and Soldiers are ready, maintained, and sustained. We must improve and in some cases develop a system that audits and validates the expenditure of flight training hours. We must get back to the basics of QTB processes, and implement SR in a way that takes full advantage of multi-echelon opportunities with ground forces, like we have proven we can do in combat.

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[1] Milley, Mark A., Army Readiness Guidance, Calendar Year 2016-17, Memorandum for All Army Leaders (Washington D.C.; U.S. Department of the Army, 2016).
[2] U.S. Department of the Army, Training Units and Developing Leaders, Army Doctrine Reference Publication 7.0 (Washington D.C.; U.S. Department of the Army, 2012), 2-3.

Acronym Reference

AGO - air-ground operations	**MG** - Major General
CAB - combat aviation brigade	**OPED** - opinion editorial
JAAAC - Joint Air Asset Allocation Conference	**QTB** - quarterly training brief
JAATT - Joint Airborne Air Transportability Training	**RL** - readiness level
METL - mission essential task list	**UTM** - unit training management

The Gray Eagle 'Aeroscout' Lens

By CPT Derek J. Debruhl

The Aviation Branch has had extensive discussions on the MQ-1C Gray Eagle and other unmanned aircraft systems (UAS). How the UAS should be tasked, controlled, trained, and ultimately employed are questions that we continue to struggle to answer. The limited doctrinal information available for the MQ-1C and other UAS has provided sufficient guidelines to units on how to task and control the system in a relatively short time span. The Training and Doctrine Command Capabilities Manager for UAS has supplied the force with a healthy collection of useful products, slideshows, and checklists that inform Army leaders of the capabilities of the UAS and what it has been designed to do. With the release Field Manual (FM) 3-04, *Army Aviation*, we now know where the Gray Eagle company resides and who it is expected to support. Creating shared understanding is futile, though, if we cannot train our operators to live up to the expectations of the system they employ. Despite the vast amount of information available, we have yet to accurately frame what is expected of an "unmanned aeroscout." What is more, I have not seen a logical starting point for injecting the cavalry mentality into UAS operators or specifically how to transform them into aeroscouts.

I contend that we can significantly reduce the UAS instructional literature to reflect three distinct UAS missions: 1. information collection, 2. tactical support, and 3. rotary-wing integration or manned-unmanned teaming (MUM-T). These three missions are not new, but by differentiating them we can train our operators to conduct each mission independently to a standard of proficiency. Once the operator has mastered the tactics, techniques, and procedures unique to one mission, he could move to the next, eventually combining the competencies of all three missions to create the versatile operator that we want and need to fight future wars.

Anyone who has participated in a combat training center rotation or attended a professional military education course recently understands that the Army's focus is on decisive action operations against a near peer threat with almost simultaneous involvement in wide area security operations involving insurgents, terrorists, organized crime, and other small, loosely organized groups of bad actors. Conducting an attack against a conventional force with a sophisticated air defense would be executed in a different fashion than an attack against a criminal organization. The centers of gravity would be vastly different and few similarities would exist among their logistical networks. Their orders of battle would conflict and their methods of protection would definitely vary. To attack one would look completely unlike attacking the other. I believe you should train to attack a criminal organization and you should also train to attack a massed conventional force before you can be expected to attack both simultaneously.

We must train UAS operators to put on different lenses through which to view their different tasks. Conveniently, training to see missions through different lenses is also the crux of developing "aeroscouts." The agility and adaptability that we expect from leaders needs to be applied to training UAS operators. It is not about the Gray Eagle system and its capabilities; it is about the operator and his knowledge base.

Three UAS Missions

Information collection or intelligence, surveillance, and reconnaissance (ISR) is the mission most commonly associated with the UAS and made possible by the extended flight times that UAS boast. These mission requests typically originate with the G-2 or division intelligence cell.

Tactical support provides dedicated support to ground maneuver forces and is arguably more difficult to train because of the variety of supported units within the divisions. Once fully fielded, the Gray Eagle will be more commonplace on the battlefield and the aeroscout will be relied upon to support ground force commanders from the company through the division, not unlike the reconnaissance and security support that the OH-58D so dependably provided. The presence of the one system remote video terminals in the hands of maneuver forces greatly enhances situational awareness and builds the common operating picture. Missions to be performed under this method are discussed in FM 3-04 and

would originate with G-3/S-3 at division or lower operations cells.

Manned-unmanned teaming missions include talk-ons, battle and target handovers, maintaining situational awareness or positive identification, target acquisition, aerial cordon and search, and ultimately, cooperative engagements and combined attacks. Though this method would often support ground maneuver elements (like tactical support discussed above), the focus involves integrating the capabilities of both manned manned and UAS as a team. Another overlooked example of MUM-T involves providing situation reports and full motion video to the EH-60C Army airborne command and control system. These missions originate with the combat aviation brigade (CAB).

to perform, and how those tasks will impact or enhance the maneuver force's ground tactical plan. Finally, they need to understand how AH-64s are employed and how they will integrate with them during MUM-T operations.

each of these missions, it is essential that the academic knowledge continue to be pressed home and that they understand their overall contribution in combined arms integration. Knowledge by osmosis is not an option.

How to Train the Gray Eagle Aeroscout
Training the Gray Eagle aeroscout for the missions I have identified should follow the basic crawl, walk, run methodology of training but would apply to each mission separately. In other words, a mission would be trained and completed to standard prior to moving to either of the other two missions.

The UAS aeroscout requires a firm foundation in doctrine. The qualification course teaches technical employment of the Gray Eagle but the unit is responsible to develop tactical skills. Aeroscouts need to understand G-2 planning, how the Gray Eagle fits into the division collection plan and the fundamentals of the tactical tasks they can be expected

You can see then, the extensive scope of topics provided by academic training, capabilities and air-ground integration briefings, team briefings, and table talk.

The walk phase includes conducting practical exercises of each mission to ensure the academic principles and concepts of each of those missions are understood. It is easy, at this point, to allow roles to switch and the UAS operator become the training aid for staff planners or aircrews, but it is especially critical to keep the training focus on the UAS operator. It is important to also keep in mind that the intent of this training is not to further develop the UAS operator's flying skills. As relatively new additions to the Army Aviation community, it is their doctrinal skills that must be developed. In

Once the standards for each of the mission sets have been demonstrated, the run phase will focus on transitioning between missions in a complex environment. Simulation and actual flight time should be part of this training. The extended air time of the UAS make a mission change a likelihood – visualize the Gray Eagle operators tasked to perform ISR for a future operation as it completes a MUM-T mission supporting a ground maneuver unit. These events should be a validation of what was performed in earlier stages and success should be measured in quality of training rather than flight hours.

There are endemic issues that must be addressed by the Army before Gray Eagle companies can conduct the integrated training required to accomplish the myriad of tasks to complete each of these missions. First, Gray Eagle units have traditionally deployed off cycle from their parent unit. It is difficult to synchronize the schedule of an attack reconnaissance battalion (ARB) preparing for an Aviation Resource Management Survey with a Gray Eagle company preparing for deployment. Similarly, an ARB preparing for a combat training center rotation might struggle to integrate with a Gray

Eagle unit in reset. Another concern resides in the breadth of resourcing required to train all three UAS missions at home station. The mission sets can be conducted in simulation but becomes a challenge to train the ISR mission if the G-2 is unable to dedicate resources to the exercise. Manned-unmanned teaming is also difficult to resource, even in simulation, if the Gray Eagle company is on a separate schedule from the remainder of the ARB. Conducting the tactical support mission could be tough if there isn't a precedent of G-3 controlling the UAS within the division. Lastly, the Gray Eagle is not fully fielded and will likely remain a program in adolescence until fielding is complete. Until personnel and equipment resourcing matures, Army doctrine will be a challenge to implement on a wide scale across the Army.

Takeaways

In the end all of these struggles can be thwarted by an all-out offensive to bring these companies into the future. Gray Eagle operators and mechanics alike have the drive to develop the art of UAS employment, we just need to give them opportunities to do so.

Consider the story of a brand new aviator… upon making RL1, my unit took me on my first Scout Weapons Team training mission. Unbeknownst to me, the warrant officers had their typical initiation planned. Designed to show new scouts how much they needed to learn, these flights ran rookies through the ringer. They wanted me to call for fire, send digital messages, acquire targets with the sight, take fire and engage in return, relay a medical evacuation request, keep my wingman covered, and make a cherry/ice call for an imaginary air assault. After failing miserably, I did the only thing I really could do - study and practice. And you don't learn that scope of knowledge all at once. I had to single out specific topics and work on them separately during multiple gunneries, capabilities briefs, platoon validations, situational training exercise lanes, walk and shoots, high altitude mountain training, and repetitive flight mission planning before I ever had a chance to survive at the Joint Readiness Training Center or downrange.

This same idea can be applied to Gray Eagle operators. I think to date we have been expecting them to see MQ-1C tactical tasks through a kaleidoscope. There are so many roles we rely on them to fill but have not thought to train them on prior to execution. We must simplify Army UAS employment down to just three lenses to give the UAS aeroscout a fighting chance. Limiting their focus in training will create agile operators who can transition rapidly from one method to another in support of the division plan and ultimately the ground force commander.

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Acronym Reference	
ARB - attack reconnaissance battalion	**ISR** - intelligence, surveillance, and reconnaissance
CAB - combat aviation brigade	**MUM-T** - manned-unmanned teaming
FM - field manual	**UAS** - unmaned aircraft system
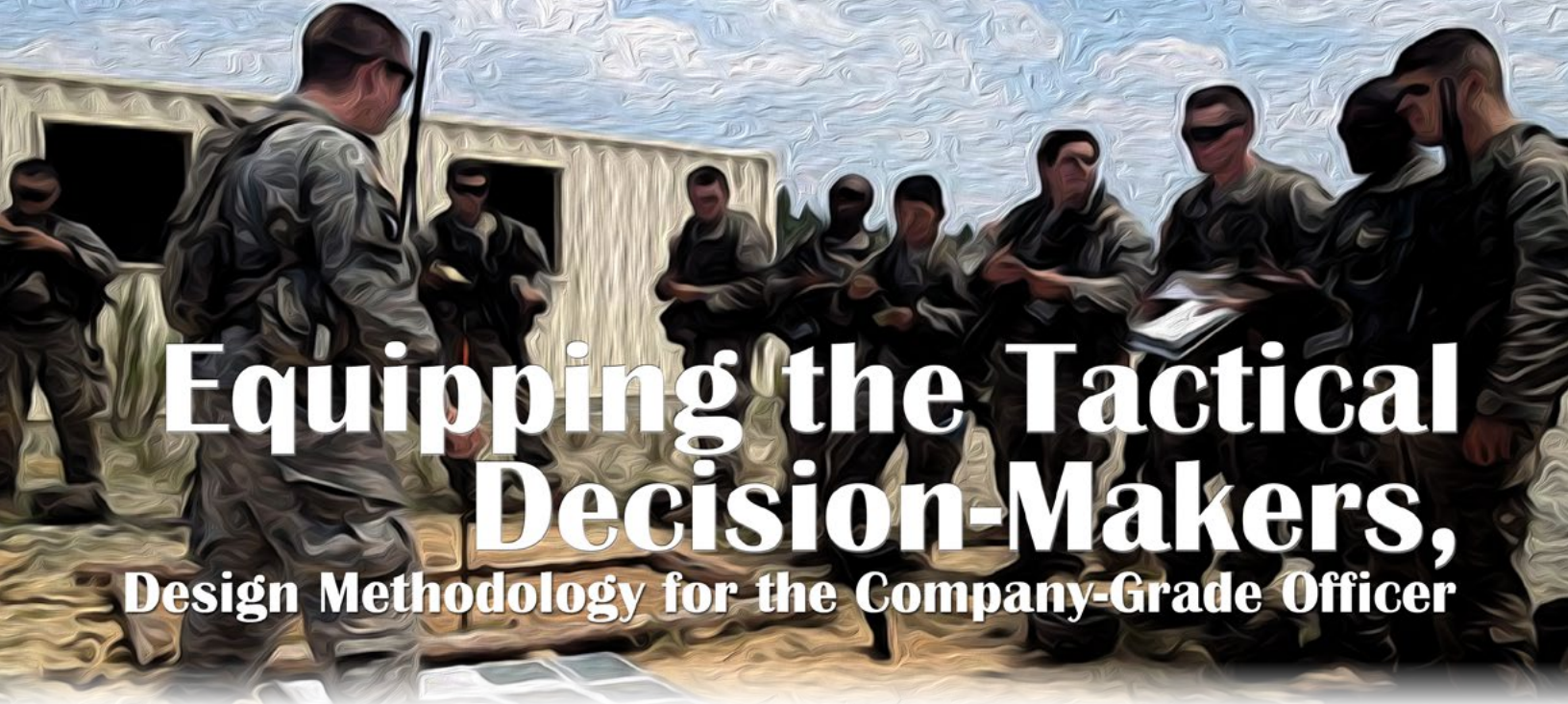
Equipping the Tactical Decision-Makers,
Design Methodology for the Company-Grade Officer

By CPT Thomas C. Rice

The first taste of command, for most officers, is at the company level. Arriving at this point in their career, most officers participate in leading platoons, staff operations, and a few manage companies as executive officers. Additionally, further refinement of their professional skills begun by battalion commanders and other company commanders, occurs at a career course; yet, too often, these places of learning solely focus on checklists and processes in order to convey how to become a staff officer first followed by a company commander second. Accepting the fact that good company commanders make good formations, this approach to developing future officers is outdated. In the battlefield of the decisive action environment in which understanding and predication of an event is difficult, a checklist or regimented process constricts creative thought such that officers approach situations with an outdated mindset. Some aspects, such as design methodology, have crept into the planning process of the Army; yet, these elements remain the hostages of other institutions such as the Command and General Staff College or the School of Advanced Military Studies. In essence, the Army, by restricting the company-grade officers to just checklists and not equipping them with the tools to enable creative thought such as the design methodology, sends the message that mechanistic approaches to problems, at the company-level, are adequate for mission success.

Too often, company commanders take these step-by-step instructions as the only way to approach a problem and fail to address the situation fully. As the Army rightly states, the commander is central to the operations process. At this point, the commander is understanding, visualizing, describing, and directing formations so that mission command is clear and executable to enable disciplined initiative of his or her subordinates. Breaking the process down further, the commander understands the problem, visualizes the end state as well as the design of the operation, describes aspects such as time, space, resources, purpose, and action, and then finally directs the warfighting functions. These aspects tie together in the commander's intent and the planning guidance. This process that the commander engages in is the design methodology.

The elements of design methodology, though, manifests itself beginning at the field-grade level. Design methodology exists to handle odd, complex, or "wicked" problems. Design methodology embraces creativity. Outside-of-the-box thinking based upon an in-depth understanding of the operational environment allows for solutions to develop. Regrettably, as previously stated, the Army stresses this creativity at the battalion and above level, but company commanders can utilize the same techniques to identify problems. Typically company commanders can understand a situation well based upon the application of mission variables such as mission, enemy, terrain, troops, time, and civil considerations and can follow the process in which orders develop at the company level known as troop leading procedures (TLP). The failure in the current design is that critical thinking becomes the most important aspect for the company commander while creative thinking becomes more of an obstacle. Typically, company commanders have little time to fully develop a plan so they arrive at conclusions through critical thinking instead of allowing for tactical patience in which the situation may develop further. Specifically, company commanders go with the first possible problem presented even if it is the wrong problem. This assumption allows TLP to continue but the problem addressed is wrong and may lead to mission failure or wasted energy. Therefore tactical decision makers, the company commanders, require design methodology in order to focus the energy of their company towards addressing the right problem.

Within the TLP, receipt of mission facilitates the design methodology at the company commander level. Once a company commander receives the mission, he must immediately begin the critical thinking required to understand the mission. This collection of information in order to allow critical thinking begins with reading higher's warning order, fragmentary order, and operations order. This critical

information pull also involves digesting the graphics contained in the annexes, listing the known facts, analyzing time, and the resources available. All of this involves critical thinking and meshes well with the commander's responsibility of describing the mission in the operations process. However, this critical thinking fails to address whether the commander can understand the operational environment as well as visualize the end state in order to effectively describe the mission. The process of receiving the mission continues with the acronym, PLANNING, which stands for parallel planning, limiting risk, applying sequencing of operations, nesting support, using necessary control measures, beginning an information collection plan, never violate the one third/two third rule and go to the end state. Once again, a great process to allow a new company commander to follow in order to not fail but a potential limiter of innovative solutions.

Creative thinking spurs innovation and enables adaptability. Too often, company commanders receive little freedom of maneuver due to a lack of faith by higher headquarters in their abilities. Therefore, company commanders feel pressured into following a certain path and a prescribed mode of thinking that restricts other solutions. When given clear guidance with left and right limits that facilitate learning opportunities, a company commander may feel equipped to engage in design methodology. After reading the order, internalizing the commander's intent, and grasping the situation through critical thinking, the company commander must allow time and tactical patience in order to ensure that the right problem or obstacles are addressed. Due to time constraints, this may be difficult, but a simple, quick

method exist in the business world and it is known as the 5 Why Method.

Sakichi Toyoda, a father of the Japanese industrial revolution and founder of Toyota Industries, popularized this technique during the 1970s based upon a philosophy which embraced an in-depth knowledge of the situation and the processes of those within the factory. This technique depends on the experience and in-depth knowledge of those at the front lines and, in the case of the company commander, this technique stresses a healthy interaction with the platoon sergeants or senior warrant officers in the formation. Their expertise and knowledge of seeing similar problems in the past allows the commander, as the decision maker, to gather more facts in order to develop innovation solutions through creative thinking. To get at the root of the problem, the 5 Why Method states that the leader must ask "Why" no fewer than five times. In other words, commanders shouldn't settle for the first response. As a personal example, I took over a light infantry company two weeks before heading to the Joint Readiness Training Center (JRTC). Luckily, I had gone on the Leader Training Program so I understood the situation as far as the two weeks in the "box" were concerned but I had little grasp of the live fire exercise which my company would complete before entering the "box." After arriving at JRTC and completing the usual craziness of ensuring all equipment and men arrived, we moved to the live fire range on Peason Ridge. We conducted all of the day iterations with minor adjustments but arrived at an obstacle before beginning the night iterations. One of our two 60mm mortars did not have the required equipment to fire in conventional mode and both mortar tubes were required to operate in conventional mode at night.

This requirement existed because one of the tubes had to fire illumination rounds in order to allow the other tube to fire high explosive rounds. Faced with the possibility of losing a major, causality producing weapon, I pulled all of my platoon sergeants and the first sergeant together to discuss the situation. I began with asking why we need illumination to engage targets at night. Quickly moving beyond the safety reasons, one of the platoon sergeants stated that the illumination would allow for more accurate fires. I then asked why couldn't we use another means to provide illumination. Another platoon sergeant stated that we didn't have a large supply of star clusters available to provide the illumination required and those star clusters were allocated for signals. My next question asked why we are limited to star clusters. My first sergeant stated that we are not limited to star clusters and that we could use the parachute illumination rounds from the M203. The fourth question involved asking why we couldn't use the parachute illumination rounds to which another platoon sergeant stated that they were also part of the signal plan. The final question asked involved digging into why we can't change our signal plan in order to allow for the use of the parachute illumination rounds. In the end, we changed the signal plan, tasked all of the M203 gunners to shoot illumination rounds in order to allow the mortar men to see the target, and accomplished the night mission. During the after action review, the observer controller stated that they had never seen a solution like that before in the past and asked how we had arrived at the solution. My first sergeant quickly responded that the commander continued to ask why like a five year old until we discovered the solution.

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Acronym Reference

TLP - troop leading procedures

Leading and Training from an NCO's Foxhole

By CSM Scott McGee

When asked to write an article for *Aviation Digest*, initially I drew a blank. I had no idea what I should have been looking to share with prospective readers. What does the Aviation Community need to hear from a non-commissioned officer's (NCO) perspective? Collective and Individual training? Leader development? The unit training management process? The only answer I could come up with was, **ALL OF IT**. I could have picked one aspect and focused on it, or I could have come to the table with why training, both individual and collective, is the key to operational success. I decided that an all-encompassing discussion of these topics may be the better approach. Every member of the total Army family begins training the first day they come to work. That training process doesn't stop until the Soldier takes off the uniform when he leaves the Army. It is essential that we all understand the domains in which we conduct training and how to work within them.

To understand training, we have to understand the people who conduct the training - the leaders. How do we groom them? Army Doctrine Reference Publication (ADRP) 7-0, *Training Units and Developing Leaders*, states that we do this through training, education, experiences, and self-development. Do we really understand and apply this concept as it is intended? That newly promoted NCO has been developed to take charge, conduct section training, perform tasks, and counsel/mentor his Soldiers. Eventually, the goal is to develop him to accept ever increasing responsibility and to train larger numbers of Soldiers. We do this using the Leader Development Model, which shows us that the Army has a long-term plan for investing in its NCOs and officers. The three training domains: operational, institutional, and self-development allow leaders to grow by building knowledge, skills, abilities, and behaviors. We build the first three through assignments, work ethics, and education. We build the last through counseling, mentorship, and ethos. At the end of it all, we encourage our younger leaders to grow through constantly pushing them to be better.

Conducting Unit Training

Individual training improves each Soldier's proficiency to conduct his mission. Be it weapons familiarity and qualification, military occupational specialty training at each skill level, or physical readiness training, individual training ensures that we can conduct our mission and survive on the battlefield. This is done at both the institution training domain and home station unit training. In Army Aviation, we directly correlate our individual skills and training to the ability to fix and fly helicopters or perform duties in support of the same. A well trained and proficient NCO supervises the maintenance team in preparing an aircraft to conduct missions in combat. A well trained and proficient NCO supervises the daily operations of battalion and brigade level command posts which exercise command and control of an aviation task force engaged in combat operations. As stated in ADRP 7-0, each of these missions directly relies on the NCOs being expertly trained "to perform specified tasks to an assigned duty position or skill level."

Collective training takes the skills developed during individual training and ties them together in order to support the unit's mission and readiness posture. We send NCOs to advanced and senior leaders courses to learn skills that contribute to the overall effectiveness of the unit in the operational training domain. Operational training, or training occurring regularly at home station, maneuver combat training centers, and mobilization sites serve to sustain unit readiness by achieving and sustaining proficiency in the mission essential task list (METL). Higher headquarters will provide the enablers to help units develop mission readiness.

NCOs use these enablers to help mission readiness by training themselves and their Soldiers to more effectively complete the missions of the small teams or sections they lead. For example, which enabler might help the flight operations NCO request and obtain orders for a non-rated crewmember to perform flight duties while assigned to a battalion? Which office, directorate, or program would the maintenance platoon sergeant need to be in contact with constantly to help his platoon maintain or improve the number of aircraft they have ready for missions every day? Enablers may be provided by the higher headquarters, but the NCO is demonstrating how to establish and maintain the relationships required to make the mission happen.

In training and in leader development, the commander's role is paramount.

The commander exercises mission command in both training and in operations by providing intent to subordinates, including the NCO. As NCOs, we determine how to achieve the intent; WE FIGURE IT OUT. The NCO uses the innovation and initiative of their subordinates, just as the commander would, to come up with ways to achieve the training objectives. Once tasked to plan and conduct a multilateral training event, I was given intent, personnel, and resources and then let loose. My commander encouraged me, and gave me the knowledge and skills required to achieve mission readiness. He trained and mentored me using various activities. He made sure I understood his intent, had a mental picture of the end state, could describe the scenario, could brief it to the personnel who would assist me, and gave me the latitude to direct and make adjustments, as needed, and provide direct leadership of the entire planning process and training event. Lastly, he allowed me to assess the training and the personnel conducting the training. I would not say it went off without a hitch, but I was grateful for the opportunity to plan and conduct an event of that magnitude. This event, and many others that followed, allowed me to develop as a leader. That was the plan all along.

That former commander and command sergeant major (CSM) enabled me to grow as a leader. It wasn't until later, when reading ADRP 7-0 and trying to understand and develop myself as a leader of larger formations, that I saw what they had been doing. Using several principles of leader development, they invested in my development and were responsible for creating effective training at the same time. They performed their leadership roles so subtly that I never recognized them for what they were. The

commander and CSM led by example. They attended every planning session and actual training event. They both developed subordinate leaders, officers, and NCOs alike. The command team created a learning environment for all of us. They expertly showed us mission command, even though I didn't really understand it at the time. As part of the process to develop the training, I learned to adapt and react to changes or other issues that were identified along the way. I learned how to be creative with my plan and my resources. Finally, I learned about the people I was put in charge of and why they do their jobs every day. Finding out that it was basically textbook leader development came as a shock. Excellent leaders make it look natural; my commander and his CSM did just that.

Unit Training Management

The Army developed the Army Training Network to provide modules, tutorials, and examples for Soldiers at all levels to use. These tools are the Army's approved method of training development and should be used in lieu of other training management processes. Leaders manage training by using the unit's METL, commander's guidance, as well as selected collective tasks. These task selections enable units to accomplish

the missions they perform successfully. However, a unit cannot perform all METL tasks to proficiency at one time. Commanders will usually select a number of tasks on which the unit will train. The NCO will be at the forefront, ensuring the commander's guidance is met and training is done to standard.

I could give other examples of how leaders influence collective and individual training. I could talk about how the use of enablers can make a training event go from being just a "check the block" event to one that actually enhances the unit's capability on a large scale — one that teaches not only the people conducting it something new, but the people planning it on the back end learn as well. I could also discuss how the commander's guidance and priorities of unit training management of the training we conduct has molded our Army more effectively than ever before. We have seen the results of our training and consistent use of the tools provided in ADRP 7-0. Our method is proven. Through professional military education, counseling, and experience we have provided the Army with a force of adaptive leaders and expert trainers who will continue to make our Army the most advanced fighting force in the world.

CSM Scott McGee is presently serving as CSM, 1-223rd Aviation Regiment, Fort Rucker, Al. Previous assignments include Operations Sergeant Major, United States Army Special Operations Aviation Command, various duty positions within Special Operations Aviation, the 82nd Airborne Division and 101st Airborne Divisions. CSM McGee has deployed to Afghanistan for Operation Enduring Freedom, to Iraq in support of Operations Iraqi Freedom, and various locations in Africa and the Middle East in support of national interests. He has 24 years of Army Aviation experience.

Acronym Reference	
ADRP - Army Doctrine Reference Publication	**METL** - mission essential task list
CSM - command sergeant major	**NCO** - non-commissioned officer

ARE YOU WILLING TO TAKE THE DECISIVE ACTION GAMBLE?

By CW4 Jared S. Jones

In June 2015, the 1-211th Attack Reconnaissance Battalion (ARB) conducted annual training (AT) from the historic Wendover Army Air Corps Base, Utah and conducted missions within the Utah Test & Training Range (UTTR). In addition to conducting aerial gunnery, our unit incorporated numerous multi-ship missions in a decisive action environment against a near peer threat. The threat included a variety of enemy radars emitting from UTTR's Granite Peak Electronic Warfare (EW) Range. The missions were initially conducted at a platoon and company level, but culminated in a large battalion mission using multiple attack by fire (ABF) positions.

The tactics, techniques, and procedures (TTP) we trained and continue to incorporate into our missions are non-airframe specific. These TTP are an evolving compilation of lessons learned from the 1-211th ARB's experience working with a number of units. These include the British Apache Helicopter Force on the United Kingdom's Royal Air Force Base Spadeadam's EW range; the Navy's Helicopter Sea Combat Squadron 85 "Fire Hawks;" the 34th Fighter Weapon School, an Air Force HH-60 Pave Hawk training unit that conducts instruction and evaluation within the Nellis Test & Training Range; and other units within Granite Peak and other operational areas within UTTR. Our experience also includes attendance at the North Atlantic Treaty Organization Electronic Warfare courses at Oberammergau, Germany;

working with a myriad of the units that have trained at the UTTR; and lessons learned obtained from the Army Aviation Mission Survivability (AMS) Branch and the Aircraft Survivability Development and Tactics (ASDAT) Branch.

The UTTR contains a diverse selection of terrain and, in conjunction with the Granite Peak EW Range capabilities, supports a variety of collective training missions and realistic aircraft survivability equipment (ASE) challenges. Granite Peak can tailor the radar threat to the needs of the unit, and in addition to providing an extensive variety of radar threats, can emulate anti-aircraft artillery system's capability to conduct line of sight aircraft tracking. They are also able to provide instantaneous feedback via radio whether their assets have successfully acquired, tracked, and engaged specific unit aircraft - extremely useful feedback when assessing crew effectiveness or the effectiveness of a TTP against a radar or optically directed threat. Granite Peak's staff supports the unit's after action review by providing a Microsoft Excel spreadsheet detailing tail numbers of aircraft identified by their threat systems, the length of time the aircraft was tracked, and if engaged, its probability of hit or miss.

Prior to flying the missions, crews received a classified brief of unit approved defensive and offensive TTP in response to optical threat, anti-aircraft artillery, radar, and laser guided weapons. The crews then flew rehearsal missions

in the Aviation Combined Arms Tactical Trainer (AVCATT) before flying against the live emitters in the UTTR. What's worth emphasizing here is that some of the TTP being trained by the 1-211th ARB are new to Army Aviation. Many of the TTP were taught by the British Apache Helicopter Force during their ongoing exchange with the 1-211th ARB, and have been incorporated into the unit's core survivability TTP. These TTP have been captured in a white paper and sent to the AMS Branch as well as to ASDAT Branch and are available upon request.

Air tasking order special instructions were specifically tailored for our AT and were a key part of every mission. For aviators who have not deployed, this was a chance to learn about such things as sectored airspace, rules of engagement, and the many aspects of personnel recovery which included hands on training from Air Force survival, evasion, resistance, and escape specialists out of Hill Air Force Base as well as completing evasive plans of action for the flight missions. Following detailed mission planning, each company briefed their mission to the crews and battalion leadership at a terrain board detailing proposed tactical movement based on known or anticipated threat locations.

Each mission included at least one fire control radar and radar frequency interferometer equipped AH-64 Apache to identify and share targets, make zone assignments, and assist with detecting the radar threat. Upon arrival at the

ABF positions, the aircrew moved into their assigned sectors and capitalized on range to threat and supporting fields of fire to best complete the mission. While conducting the attack, units had to utilize terrain and appropriate tactics to counter the live emitters. As a separate exercise, the 1-211th ARB also conducted advanced gunnery tables that incorporated emitters from the Granite Peak EW Range to further challenge the crew's TTP responses at a crew level. Overall, the training afforded at the UTTR offered a level of realism that is often underutilized by Army Aviation. Many of our aviators admitted that this was "the best training" or "most realistic training" they had ever had. Even though the training at the UTTR raises our proficiency, we in Army Aviation can never develop the confidence in the active defensive systems designed to enhance our survivability if we are unable to use the common missile warning system and the integrated chaff/flare dispensers as they are designed to be used. The analytic data provided by the Granite Peak operators is immensely useful but we are unable to know whether chaff could have

"bought" us more maneuver time from radar directed weapons until these tools become available for training. Simulation is great; HOWEVER, most AVCATTs are more completely equipped with aircraft survivability equipment than most of Army Aviation's operation fleet of aircraft. Simulation is great; HOWEVER, without use in our aircraft, how do we know with any reasonable degree of certainty - whether our ASE will work, as advertised, when called upon? The Army should look at fielding units that are situated near EW ranges with the complete suite of ASE/EW equipment, including chaff and flares, to not only train but test TTP. The UTTR and Granite Peak EW Range and facilities provide a level of realism that every Army Aviation unit must incorporate into their unit training plan if they are to adequately prepare for the decisive action fight.

The UTTR facilities are unique and among the best. The UTTR features the largest combined restricted land and closed "special use" airspace area in the United States. The good news is that there are a number of other EW training options

available at locations near you. Have your unit tactical operations officer contact the Aviation Mission Survivability Branch for the locations of EW facilities in the United States, their capabilities, and points of contact. Without an effective measure of your unit's ability to use terrain and TTP effectively and without the knowledge of whether your installed ASE/EW will protect your aircraft, you are playing a decisive action gamble that you will likely lose.

The 1-211th ARB considers itself fortunate to be able to make regular use of the UTTR's facilities. As in high altitude operations, we have become very knowledgeable and relatively proficient in EW operations. We have gathered useful TTP from this exercise and many others while flying against the Granite Peak operators. As noted earlier, we have worked with a number of units in EW operations and have obtained experiences many other units have not. We will share our experiences and knowledge with any Army Aviation unit requesting our assistance. Contact the author to get started.
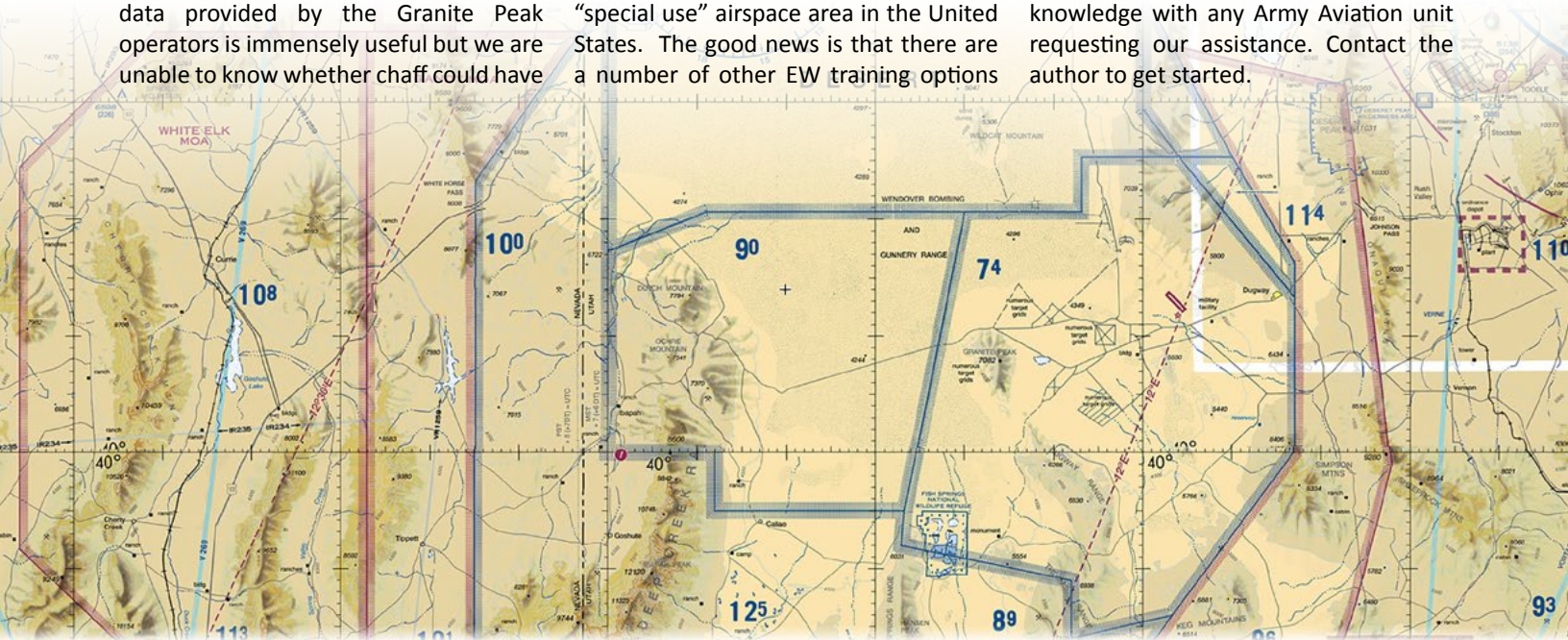
CW4 Jared Jones is an AH-64D Apache Longbow Tactical Operations Officer and Standardization Pilot for the 1-211th Attack Reconnaissance Battalion, Utah Army National Guard, Salt Lake City, Utah. Mr. Jones has been a member of the Utah National Guard as an Active Guard and Reserve Soldier for 17 years with over 14 years aviation service. CW4 Jones has deployed to Afghanistan twice in support of OEF V (RC East) and OEF XII (RC-North). He is qualified in the OH-58 A/C, and AH-64 A/D.

Acronym Reference

ABF - attack by fire	**AT** - annual training
AMS - Aviation Mission Survivability	**AVCATT** - Aviation Combined Arms Tactical Trainer
ARB - attack reconnaissance battalion	**EW** - electronic warfare
ASDAT - Aircraft Survivability Development and Tactics	**TTP** - tactics, techniques, and procedures
ASE - aircraft survivability equipment	**UTTR** - Utah Test & Training Range

Rebuilding a General Support Aviation Battalion After Combat

The Challenges of a Battalion Rebuilding After Enduring Freedom XIII-X

By LTC Jacob Dlugosz

The 2-1st General Support Aviation Battalion (GSAB) deployed to Afghanistan in support of Operation Enduring Freedom XIII-XIV in July 2013 and redeployed to Fort Riley, KS in May 2014. The battalion faced various plans and directives in terms of rebuilding following redeployment, both from a personnel and equipment perspective. Receiving aircraft from multiple units across the Army, personnel turnover, and competing unit operational demands presented major challenges to the battalion's reset.

The Aircraft Transfer Plan

A Company/2-1st returned from Afghanistan with no aircraft and received their first airframes following redeployment in July 2014 when four UH-60Ls were transferred from the 4-3rd Assault Helicopter Battalion (AHB) at Hunter Army Airfield. In September 2014, they received a transfer directive to sign for two UH-60Ls from 16th Combat Aviation Brigade and send them directly to the reset facility at Hunter Army Airfield. After several months without the reset facility being able to begin work, the two aircraft were sent to Fort Bragg, NC for reset. In October 2014, A/2-1st received four more UH-60Ls from the 4-3rd AHB. In November 2014, A/2-1st received one UH-60L from the 3-82nd GSAB from Fort Bragg, NC. In December 2014, A/2-1st laterally transferred one UH-60L to the 1st Air Cavalry Brigade at Fort Hood, TX and two UH-60Ls to the

Ranger Flight Company at Fort Benning, GA in February 2015.

If this trail of aircraft transfers seems difficult to follow, it is because it was. The company is authorized 8 UH-60Ls; however, the unit was ultimately directed to sign-for 11 UH-60Ls over the course of six months. Eventually three were transferred to other units in the Army, leaving the authorized eight aircraft on-hand. Despite multiple aircraft movements across the Army, it was not until May 2015 when the company received its final two aircraft from the reset facility at Fort Bragg, NC that the unit was at full strength.

The situation with B/2-1st was not any easier due to a combination of factors, the first of which began before the redeployment of the unit. Forces Command (FORSCOM) completed an analysis and determined the makeup of the CH-47F fleet in post-deployment was to be a reconstituted force. The unit was directed to redeploy two of 12 authorized CH-47Fs; one of which would fly straight to a reset facility via strategic airlift and the other which would be sent to a reset facility approximately six months after its return. The remainder of the company's aircraft were to be transferred from sister Chinook companies from across the Army. It was the quintessential Army Aviation aircraft shuffle, much like the case with A/2-1st. The scale of these transfers would become the root of most

of the company's maintenance problems over the next year.

In anticipation of the low number of aircraft which would return from Afghanistan, the aircraft movement began approximately two months prior to the return of the company's main body in April 2014. Losing units flew four CH-47Fs to Fort Riley to be staged for usage during the company's reintegration training. These aircraft came from as far away as Alaska and were flown by crews from units from Alaska and Texas. This situation raised three immediate red flags:

1. Since B/2-1st was still deployed when the new aircraft arrived, the rear detachment commander, an individual who was not qualified to properly inventory and accept CH-47Fs, signed for them. A maintenance test pilot redeployed early from Afghanistan with a crew in order to mitigate this risk, but they would not arrive in-time to intercept all of the property transactions.

2. The aircraft were received at home station when the unit redeployed instead of being afforded the timeline to pick them up. The aircraft were parked on the unit's ramp and were now the unit's problem - and the problem was a large one. For example, one aircraft was flown from Alaska on a 10-time maintenance flight

exception in order for the crew to limp it across Canada and halfway across the Continental U.S. The aircraft had a broken former, a major structural defect, and went immediately into the hangar where it underwent extensive repairs to make it airworthy again.

3.   Lastly, third-party crews executed a portion of this initial phase of transfers (crews that were neither of the gaining nor losing units). This scenario creates a condition where personal responsibility and accountability are not of great consequence.

The next round of transfers for B/2-1st occurred in the early fall of 2014. This time the unit conducted this transaction. The crews flew commercially to Texas with a transfer directive ordering the return with two CH-47Fs of specific tail numbers; however, the two flight crews only returned with one aircraft. The maintenance test pilot deemed the other aircraft unacceptable because of significant maintenance issues; a decision that fell squarely in line with the commander's intent. Fortunately, inheriting a problem aircraft was avoided but only after wasting taxpayers' dollars to fund travel for the additional crew. In rectification of this incident, the losing

unit amended the aircraft tail number that would be transferred and experienced fairly intense command pressure to ensure that this would not be repeated.

Prior to deployment in June 2013, C/2-1st transferred 15 UH-60Ls to the 2-3rd GSAB. Upon redeployment, C/2-1st began to receive the original 15 UH-60Ls from C/2-3rd GSAB. Ferry missions were segmented into flights of 3-4 in order to accommodate the 2-3rd GSAB's Global Response Force mission and H-60M new equipment training/new equipment fielding timeline. Ferry missions occurred in May (4 x UH-60L), July (3 x UH-60L), and October/November 2014 (8 x UH-60L). Beginning with the first transfers in May, it was apparent that the aircraft had multiple maintenance issues. The maintenance personnel were informed that the poor condition of the aircraft was due to reduced manning levels of UH-60L qualified personnel in C/2-13rd. There were few crew-chiefs and pilots available to maintain and fly the aircraft.

Problems with the Transferred Aircraft

A major source of maintenance problems for the UH-60Ls originated during the return from a flyable storage program or reset facility. An email from the FORSCOM G-4 for Aircraft Distribution stated: "The aircraft are not going to be

perfect when you transfer them but they should be in good working order and safe for flight. If there is a concern that a fault may cause the aircraft to PL (make a precautionary landing) somewhere in the 3 day flight back to Fort Riley, then it needs to be addressed." This is basically the condition that the aircraft were returned, in particular to A/2-1st. The aircraft were placed in a condition to legally make the flight to Fort Riley, but problems were continuously discovered. Three of A/2-1st's aircraft required tail rotor gear box replacements, and several aircraft had at least one main rotor blade repaired; some aircraft required multiple main rotor blade replacements due to cracks that were found during inspections. Maintenance personnel identified additional discrepancies that required maintenance. Further challenges were created once a part was identified to be repaired and other discrepancies would be found during the repair process. It was not unusual for an aircraft to undergo a maintenance test flight to correct a fault only to return with three new deficiencies. This process resulted in unanticipated and extended maintenance efforts to return aircraft to fully mission capable status.

Airframe Condition Evaluation (ACE) inspections are intended to find cracks on aircraft structural components. These inspections generally result in extended down times because of the inspection requirements and the work required to repair the crack(s) once found. When the battalion's aircraft underwent their ACE inspections, A/2-1st had cracks found in all of their airframes and C/2-1st had cracks in the majority of its fleet. Common to both UH-60L units, multiple cracks were found at engine mounting sites which required the removal of the engine to properly inspect the crack. Additionally, one of C/2-1st's aircraft required its main transmission to be replaced.

Significant issues were also identified across the fleet related to avionics equipment and wiring. The amount of in-depth trouble shooting that was required to repair the vast majority of these problems often took multiple days or required civilian maintenance assistance. A specific example was an Aviation Safety

Advisory Message for the fire detection system that required a very extensive knowledge of aircraft wiring schematics. Several A/2-1st aircraft were non-flyable over a two week period while a civilian representative trained D/2-1st avionics Soldiers on the proper method to fix the problem. Additionally, it was noted by the avionics non-commissioned officer in charge that each of the C/2-1st UH-60s had the radar warning receivers disconnected. This led to maintenance issues since those systems were not turned-on or tested for an extended period of time while in flyable storage further adding to the headaches of receiving aircraft transferred from other units.

The steady arrival of aircraft made it difficult to establish a phase flow for all airframes that were transferred to the battalion. Aircraft were selected on what was best for the transfer criteria rather what was best for the battalion. The seemingly endless requirement for unscheduled maintenance resulted in the bulk of flight training to be flown on the more reliable airframes which exacerbated the dismal phase flow. At one point in the spring of 2015, three CH-47Fs were in phase at the same time. Another three CH-47Fs were scheduled to go into phase once the initial three were completed.

Personnel Turnover

It took 12 months for the battalion to return to its previous strength following the loss of key personnel after re-deployment. A majority of losses occurred within non-commissioned officer (NCO - E6) and senior warrant officer (CW3) populations. The mission essential requirements (MER) for report windows between October-March 2015 should have identified all officer and warrant officer losses that would need backfills. The MER developed in February did not accurately reflect the projected losses which led to backfills not populating until April 2015. This resulted in significant shortages and very little overlap between outgoing and incoming personnel. The majority of personnel turnover was in key duty positions and personnel with the most experience within their respective area. Backfills were not the right grade and/or additional skill identifier,
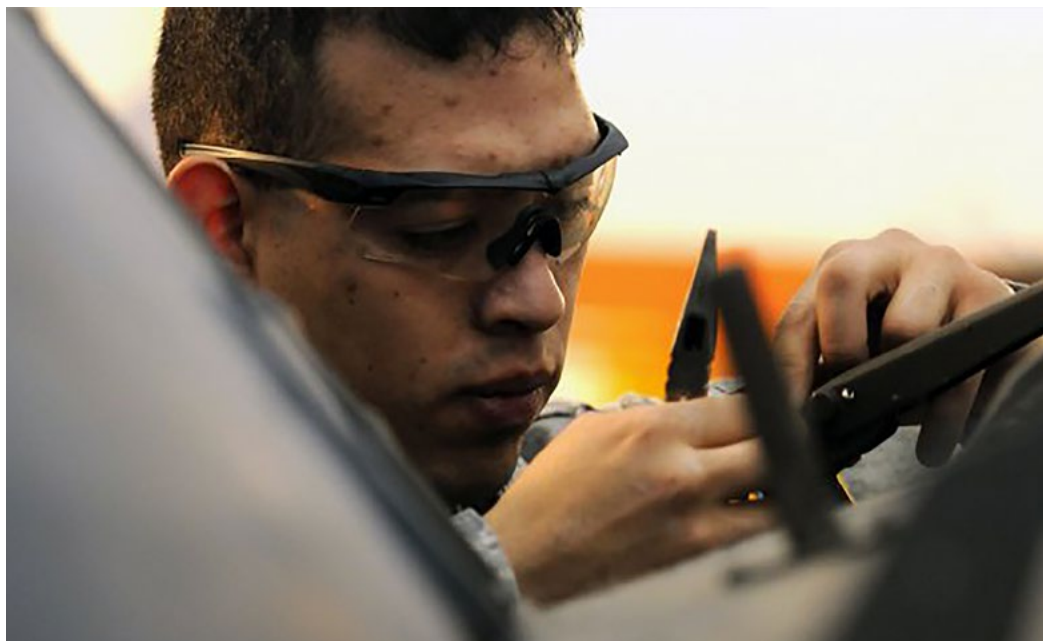
which created an overall aggregate number that exceeded unit manning requirements, but did not provide the right experience to facilitate the mission or re-integration inspections. At the unit level, the inability to anticipate losses other than permanent change of station, to include officers, warrant officers, and senior NCOs electing to retire or those electing to be released from active duty, contributed to the personnel issues.

Issues Within the Organization

A sense of pride in ownership did not exist within the UH-60 companies initially. On one occasion, I provided guidance to one of the platoon Leaders, who was serving as the acting commander, that he needed 80% of his aircraft in a mission capable status before the end of the week. His reply to me was simply: "not with these aircraft, sir." I could see that the leadership at the platoon level did not have a sense of pride in ownership with these airframes, and that they were more of a burden to them due to the nature of their condition. If the platoon leaders felt and expressed themselves in this manner, then what did the rest of their platoon feel? This was further evident when I attended the daily production control meeting and hardly a platoon leader would be present. Those that were present did not have any sense of what their aircraft maintenance status looked like for the day. As the battalion commander, I generally had

more knowledge of their airframes than they did. The unit standing operating procedure states that the platoon leader, or platoon sergeant, is the primary briefer for their aircraft, but this was not taking place.

The Unit Level Logistics System - Aviation (ULLS-A) program was not being utilized to the full extent for back shops and the database administrator was not versed on many different techniques to repair faults to the ULLS-A program resulting in multiple failures in aircraft logbooks. The process for creating work orders to a higher level maintenance authority was not implemented.

Forecasting maintenance was a major concern, and continues to be a challenge with phase maintenance, but is being corrected. The application of new modifications was difficult with the CH-47Fs. All modification work orders are now scheduled during the phase maintenance on the CH-47Fs, however, previously this was a problem and aircraft were down for extended periods of time while the modifications were being applied. The UH-60Ls are now experiencing a similar situation with the scheduled 48 month inspections on the flight controls, cabin tub, and fuel cells. Poor forecasting resulted in all of the scheduled inspections occurring within a six month window for the majority of the airframes.

The problem, people, parts, plan, time, tools, and technical assistance concept was not being followed. Tasks on aircraft were being started by aircraft technicians without a review of the technical manual or ensuring the required items were on-hand to complete the maintenance. This technique caused a majority of maintenance to be re-done two to three times before projects were completed to standard.

Changes We Made

The most prevalent change made was the administrative grounding of all UH-60Ls in the battalion in May 2015. The intent of the grounding was for all flight operations to cease, with the exception of maintenance test flights, in order to focus on bringing the aircraft to Department of the Army standard. This meant that all training and evaluations would be postponed allowing maximum effort towards aircraft maintenance within the battalion and across the brigade. The 2-1st GSAB became the main effort for aviation maintenance. If additional support was needed, such as sheet metal repairers, avionics technicians, hanger space, parts ordering priority, etc., 2-1st GSAB was at the front of the line.

Organizational changes within the battalion needed to be made, starting by engaging leaders at the platoon level. Platoon leaders are now attending production control (PC) meetings, understanding their aircraft status,

and applying the emphasis on mission readiness through their leadership. They brief their status and apply platoon priorities towards aircraft maintenance which lead to building a sense of pride in ownership. The second part of this was for companies to assign a pilot in command and crew chief to each aircraft. This effort took some time to catch-on but, eventually, it worked. A lot of spot-checking took place to ensure the pilot in command and crew chiefs were on-top of their aircraft maintenance status but, ultimately, it enabled a sense of caring and ownership within the organization.

Setting the conditions at the PC meeting for successful aircraft maintenance is critical. One of the deficiencies noted during the PC meeting was that priorities of the day were not being established. The companies would brief their aircraft, ask for assistance, and what was left would be a laundry-list of things to be fixed, repaired, or inspected without any direction or priority. This led to inefficiencies within the organization. This meeting was adjusted to where the PC officer sets the priorities up-front which enables all those attending to focus their efforts and getting additional assistance from the other support organizations. This seems like such a simple and obvious change to make but it has improved operations and was clearly needed.

The battalion established a swing-shift incorporating all of the companies maintainers to expand maintenance operations from 0900 to 2300 daily in order to accomplish the volume of work. By eliminating distractions and having a smaller, yet more focused work force, it became apparent that the swing shift personnel were successful while working after the normal duty day, especially while working on the phase aircraft.

Changes were made to repair system faults on ULLS-A, work orders, and parts requests which are now streamlined by using the functions that come with the system. An internally generated Microsoft Excel status sheet from aircraft laptops was not matching the current reporting system. The solution was to fix migrations from aircraft laptops to have current information transferred to a one page document reflecting the information being briefed during PC meetings and running CAT5 cable from the PC office into the company areas enabling an ease of laptop migration for the crew chiefs.

Recommendations

The practice of transferring aircraft to re-deploying units is not likely to change any time in the foreseeable future. However, based on our experiences and lessons learned, we offer the following recommendations to minimize the inefficiencies of apparent jettisoning of "hangar queens" or the transfer of aircraft with uncorrected faults.

Establish aircraft maintenance as the priority when receiving aircraft from other units. Experience has shown that aircraft being transferred from other units require a focused effort to ensure they are integrated into the unit properly. Ensure the right level of experience and leadership is present to conduct the inventories and maintenance acceptance flights from the losing units.

Transferring aircraft from flyable storage should be avoided. The losing unit's ability to maintain these airframes is difficult and places the gaining unit in a position where it must expend valuable man hours and other limited resources to place these aircraft back into a flyable status. If the Army chooses to continue this process, then the transfer directive should allow the gaining unit to receive

the airframes in fully mission capable condition versus mission capable.

Reduce the number of reassignments for aircraft maintainers following a deployment, especially if multiple aircraft transfers are planned. This will improve capability by having experienced leaders on-hand to work thru the expected challenges.

Enable improved communications. Maintenance test pilots should have constant dialogues with higher level aviation maintenance officers, who in-turn should communicate with the losing unit and hold frank discussions on the product that is being transferred. They should ask the tough question, such as, "Is this aircraft truly ready?" If its status prevents it from being transferred within the published timeline, recommend the changes to timeline and adjust accordingly.

Gaining units should have a greater say in the specific tail numbers scheduled to be transferred based on how an aircraft fits into its phase flow, especially with a transfer that occurs with multiple airframes.

Ensure brigade, battalion, and company level leadership meet in-person with the losing units to ensure a smooth transfer of aircraft within directed transfer criteria.

Units undergoing new equipment training and/or aircraft transfers should be relieved of all internal and external taskings to ensure the unit can be fully invested in maintaining two fleets of aircraft.

Utilize all available personnel to assist with supporting maintenance efforts such as using pilots to tag parts and scrubbing log books, medics and other personnel to conduct aircraft washes,

etc. This leaves maintainers to do their jobs and it creates a team effort.

Summary
The battalion aviation maintenance program is stronger today and better organized than it was before. Challenges faced with the aircraft received through the transfer process, personnel turnover, and deficiencies within the organization, led to many struggles to maintain our fleet at the Department of the Army standard. Improvements continue and the maintenance posture gets better each day from both an organization perspective and ability to meet mission requirements. In writing this, my goal is to share our lessons learned for other battalions that will likely undergo similar issues following the return from overseas so that they may not experience some of the issues we faced.

LTC Jacob Dlugosz is currently serving as Commander, 2-1st General Support Aviation Battalion (GSAB), 1st Combat Aviation Brigade, 1st Infantry Division. His previous assignment include: Commander, Headquarters Headquarters Detachment, 421st Medical Evacuation Battalion, Wiesbaden, Germany; Platoon Leader, 377th Medical Company (Air Ambulance), Camp Humphreys, Korea; Executive Officer, 571st Medical Company (Air Ambulance), Fort Carson, CO; Chief, Current Operations, U.S. Army School of Aviation Medicine, Fort Rucker, AL; Commander, C/3-25th GSAB, 25th Combat Aviation Brigade, Wheeler Army Airfield, HI; G-3, 18th Medical Command, Fort Shafter, HI; and Deputy Division Surgeon, 1st Infantry Division at Fort Riley, KS. LTC Dlugosz has deployed three times in support of Operation Iraqi Freedom. He has 20 years service and is qualified in the UH-60.

Acronym Reference	
ACE - Airframe Condition Evaluation	**MER** - mission essential requirements
AHB - assault helicopter battalion	**NCO** - non-commissioned officer
FORSCOM - Forces Command	**PC** - production control
GSAB - general support aviation battalion	**ULLS-A** - The Unit Level Logistics System - Aviation

A CRITICAL NEED
- Integrated Electronic Warfare Capability in Army Aviation

By CPT Michael Eoute

Army Aviation is currently incapable of executing two of what it has outlined as its core competencies. The competencies of Air Assaulting Ground Maneuver Forces and Destroy, Defeat, Disrupt, Divert, or Delay Enemy Forces (Attack, Reconnaissance and Security operations) necessitate that Army aircraft often operate beyond the support of ground forces and beyond the forward line of own troops (FLOT).[1] Combined with the increasingly complex electromagnetic spectrum (EMS) operations of near peer threats, this presents Army Aviation with a unique dilemma - how can Army Aviation fulfill two of its core competencies when it cannot operate beyond the FLOT?

Army Aviation as a branch is uniquely vulnerable to manipulation of the EMS. Aviators rely on line of sight radios to communicate between aircraft during normal and combat operations. Aviators brief lost communications procedures before each flight as a potential emergency condition. The aircraft that are flown are heavily dependent on the global positioning system for navigation, flight control input, weapons employment, and communication. How can aviation assets be employed effectively when a sophisticated enemy can jam them into an emergency situation at will?

The flight profiles in which Army aircraft operate also make them vulnerable to enemy radar guided short range anti-aircraft defenses such as the new Pantsir S-1(SA-22) or even older 2S6 Tunguskas. With these facts to consider, it is easy to see where Army Aviation is currently at a significant disadvantage if it wishes to employ its aircraft beyond the range

of friendly artillery fire. Aviation organic fires and aircraft survival equipment are currently inadequate to deal with this threat, effectively barring aircraft from being deployed in the vicinity of these or comparable systems.

For all practical purposes, this limits Army aircraft to operating behind the FLOT and beyond the reach of these enemy systems and relegates them to conducting administrative movements at best. Russia is utilizing a potent mix of these effects in the Ukraine and has effectively grounded Ukrainian aircraft.[2] The Russians are able to deny the Ukrainians the ability to communicate which has had far-reaching effects on the way that they employ their forces on the ground as well. Russia has integrated these capabilities at much lower levels than seen in the United States Army giving Russian commanders great flexibility in limiting the threat of Army Aviation to their forces.

While the Army currently employs a number of ground-based systems and one corps level air-based system, that are capable of manipulating the EMS for various effects they do not meet the needs of Army Aviation.[3] The ground systems, such as Ground Auto Targeting Observation Reactive Jammer (communications jamming) and AN/MLQ-40 Prophet (signals collection), are either immobile or designed only for listening. Communications Electronic Attack with Surveillance and Reconnaissance is a jamming and surveillance pod that is affixed to select Army C-12 aircraft and is highly proficient at jamming low-tech communications devices but is not capable of jamming radars or more

advanced radios.[4] None of the current systems fills the capability gap that will be necessary to allow Army Aviation to fulfill all of its core competencies. Army Aviation is highly mobile and needs a system that will be deployed with the aircraft as they maneuver about the battlefield to both protect them from enemy radar guided threats and allow them the ability to attack enemy command and control node's communication abilities. This was an Army capability until the 1990s when "the Army essentially ceded electronic warfare (EW) operations to the Air Force and Navy."[5] For Army Aviation to regain its relevance on the modern battlefield it must acquire an electronic warfare capability as well.

The Marines provide a good example of how integrating electronic warfare at the unit level could work. The Intrepid Tiger II (IT2) system is a modular jamming pod that attaches to an aircraft pylon in place of a rocket pod or missile rack and is the result of a rapid acquisition process initiated in 2008.[6] According to a Marine Corps Aviation representative, the system was designed to be as user friendly as possible and is manipulated by the crew via specific loads similar to the way moving maps are loaded. The system gives the Marines the capability to influence a wide range of frequencies across the EMS. The capability gaps that drove the IT2 acquisition (integrated wide spectrum jamming) are very similar to what the Army is currently experiencing. Due to the fiscally constrained nature of their service, the Marines were also able to develop the system at a very low cost.[7]

The IT2 is a system that the Army could either purchase outright or develop an analog to fill its own capability gap.

However, what is clear is that the Army needs a system to fill this need and must do so rapidly to continue to be relevant on a modern battlefield. However, there will be several challenges in incorporating this type of capability into Army Aviation as a whole and not just the Military Intelligence aircraft. Whether the Army works with the Marines to acquire a similar system to IT2 or develops their own systems, Army Aviation will need to closely coordinate with the Signal Corps for development of what is traditionally a Signal or Military Intelligence function for an Aviation system.

The Army must organize and employ such a system at the battalion level to survive and be effective. Tactical operations officers are often under-utilized in their primary job. Giving them additional training in EW and a system that can jam threat radars and communications will give units at all levels greater capability to effectively employ their aircraft cross-FLOT in a near peer fight. This will also be an added capability, which the Aviation Branch can offer to the ground force commander. An airborne electronic warfare capability will be especially enticing for light units who will be air assaulted behind enemy lines and may not have an analogous system with them. During an attack not in contact with friendly ground forces with an EW capability, such as IT2, employed with AH-64s would allow them to initiate an attack with electronic fires disorganizing the enemy and preventing a cohesive response to direct fire attack.

An intermediate standalone system similar to the Marines IT2 could fill this capability gap at a reasonable cost in the near term while the Army works towards a fully integrated system. The Marines have a combat tested system in IT2, which could potentially fulfill the Army's needs until it completely deploys its next generation electronic warfare family, the Multifunctional Electronic Warfare System in the 2020s.[8] The Army has slated the future group of systems for installation (fixed), ground, and unmanned aircraft system (UAS) platforms. While UAS platforms are a valuable asset, and the Army could deploy them for this purpose, they operate at high altitudes and are extremely vulnerable to air defense systems. There is a requirement for a system that can fly in the same profile as Army aircraft. A modular system that can be pylon mounted would allow commanders the flexibility to move the system from aircraft to aircraft as the mission dictates and allow for attachment to growth systems such as Future Vertical Lift without structural modification.

Beyond the challenge of acquiring a capable system, the most difficult obstacle to integrating electronic warfare into Army Aviation will be shifting the mindset of commanders. While Army Doctrine Reference Publication 3-0, Unified Land Operations says that all commanders will incorporate cyber-electromagnetic activities (CEMA) into their planning process; the view is that the Army does not perform that mission set. The mindset of "that is the Air Force/Navy's job" or

"that is the Signal Corps job" is wrong. In addition, while CEMA is everyone's job, commanders also need the tools at their disposal and the knowledge to employ and affect the electromagnetic battlefield instead of those assets being assigned at the corps level. The Army must teach commanders the basics of electronic warfare. This subject would be a great addition to professional military education for company level leaders and above.

It is apparent that Army Aviation currently has a capabilities gap that will prevent it from using its lift and attack aircraft across the FLOT. While it is working to rectify this glaring deficiency within a future ten year time frame, there is an urgent need now. Enemy jamming and threat radars combine to present the Aviation commander with multiple simultaneous dilemmas. The commander needs a tool that will allow him to counter the enemy threats and also provide the ground force commander with increased capabilities. The only way that the Army will be successful in making its aviation force relevant again will be to fully integrate electronic warfare at the battalion level. It is imperative that Aviation commanders be given not only the ability to defend themselves but present the same dilemmas to enemy commanders at the same time. Jamming systems will increase the survivability of Army Aviation in a complex electromagnetic battlefield and give the ground force commander a valuable and responsive new tool.

Acronym Reference	
CEMA - cyber-electromagnetic activities	**FLOT** - forward line of own troops
EMS - electromagnetic spectrum	**IT2** - Intrepid Tiger II
EW - electronic warfare	**UAS** - unmanned aircraft system

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IMPROVING ARMY AVIATION SUPPORT
While Conserving Resources

By CPT Wyatt Britten

I grew up in rural West Texas, where the primary source of revenue for the local populace was farming. At an early age, I learned to operate and service tractors. At the end of driving my tractor up and down fields for twelve hours a day, I topped off the fuel tank so I could get straight to work in the morning.

Fast forward a decade, and I am an attack helicopter pilot in the United States Army. I am preparing my aircraft for a training mission at my first duty assignment. I notice on pre-flight, that we only have a quarter tank of fuel. I call for cold fuel, but refueling personnel, their vehicle, or both are unavailable. Instead, I reposition to the forward arming and refueling point (FARP) before taking off on my mission and sit at flight idle while taking on fuel. Before beginning the training mission, I have expended 20 minutes, or 0.4 in flight hours of the scheduled mission time.

At the conclusion of the mission, flight operations directs me to refuel at the FARP. Only two points are operational, and with four aircraft ahead, this adds one hour to my mission time. I log an hour sitting on the ground, with minimal training benefit for resources expended. On this day, I spend a total of 1.4 Apache blade hours waiting for fuel when I could have spent that time supporting ground forces. Unfortunately, I have seen this scenario play out hundreds of times in training and combat environments. While the lost training or combat time of one aircraft doesn't attract much attention, a total of lost resources from one day of Army Aviation daily operations would likely raise some eyebrows.

The overarching paradigm of using hot refuel in a FARP at the onset and conclusion of combat and training missions is that the practice costs 4 - 13% of mission hours. Army Aviation units can improve their attack-reconnaissance station time, duration of utility and heavy lift operations, and ultimately extend their reach on the battlefield by that 4 - 13% with resources already on hand by changing one procedure. By utilizing warm or cold refuel operations, Army Aviation can preserve maintenance hours on airframes, conserve aircrew flight hours, save fuel, provide more reconnaissance and security time to ground forces, improve response time for lift operations, and decrease the potential for accidents during high risk hot refuel operations.

Rotary wing aircraft refuel using one of three methods - hot refuel, warm refuel, or cold refuel. Hot refuel is executed at a FARP with aircraft engines running, blades turning, and aircraft time and fuel being consumed. The purpose of hot refuel is quick turn-around, minimize ground time, and get aircrews back in the fight. During cold or warm refuel operations, a fuel truck comes to the aircraft and conducts refueling while the aircraft is shut down. During warm refuel, only the aircraft's auxiliary power unit remains on to keep sensors, displays, and communications equipment operational. Warm refuel consumes little fuel while keeping aircraft systems mission ready. In both cold and warm refuel situations, neither airframe nor aircrew flight time is logged.

Army Aviation mission support to ground forces decreases and operational costs increase every time an aircraft is refueled at the FARP instead of warm or cold refuel at the onset or conclusion of a mission. Consider the blade time on an Apache. On the low end, an Apache will use 0.3 hours refueling at an efficient FARP or a FARP in which a refuel point is immediately available, 0.4 hours at an average FARP, and 0.5 hours, or more, at an inefficient FARP or one in which several aircraft are waiting in front of you. The cost estimate for an Apache blade hour is approximately $2,500, meaning each time an Apache refuels at "an efficient" FARP it costs $1000. Multiply by the number of mission aircraft and the figures begin to get your attention.

The high cost and inefficient use of FARP operations by Army Aviation necessitates a critical evaluation of the practice in favor of warm and cold refuel procedures under all practical circumstances. As mentioned previously, hot refuel operations are inherently a high risk operation – main and tail rotor blades are turning, helicopters are arriving/departing, and personnel are constantly moving about the FARP. Add to the recipe a large volume of volatile fuel, the obligatory mixture of explosive ammunition all being handled

at night, under extreme environmental conditions, or a combination of both in which Army Aviation regularly operates and the potential for something really bad happening is significant. Add to the discussion a situation in which aircraft are sitting in a FARP undergoing refuel operations and a platoon of aircraft are on short final for a quick turnaround mission. What is the cost to the supported ground commander of lost aviation assets, time, intelligence, and battlefield effects while waiting for those assets to refuel? What is the cost to the supported ground commander when end of mission hot refuel considerations require that the air mission commander short the ground commander the time expected to refuel his flight after the mission?

In order for Army Aviation to maximize available flight time to our customer, standing operating procedures (SOP) should specify when hot refuel is absolutely necessary and when it makes more sense to cold refuel and conserve customer flight time, maintenance resources, and aircrew flight time. To ensure that the forward support company is on-board, a battalion SOP should establish a priority for what aircraft are refueled at the FARP and a similar priority established for the order that aircraft on the flight line are cold refueled. Following each mission, aircrews could use color coded streamers to indicate aircraft fuel status to fuel handling personnel – green streamer, fill all tanks; amber streamer, fill main tanks only; black streamer, fuel status OK, do not fuel; white streamer, fuel handlers have completed requested operation; etc. Providing the FARP with radio communications would allow crews to make fuel and ammunition requests or receive FARP traffic status while inbound and increase operational efficiency. It is important that FARP personnel understand their positions within the unit and their critical link to mission success.

Practically every piece of literature broadcast from higher headquarters, and endless professional publication articles discuss the Army's and Army Aviation's, in particular, shrinking resources. By incorporating these recommendations into the aviation unit SOP, units will preserve maintenance hours on airframes and aircrews, save fuel and money, and provide more reconnaissance and security time on station to ground forces, all with the people and equipment already on hand. Units will be more lethal, agile, and effective in training and combat.

CPT Wyatt Britten is presently serving as the Deputy Aviation Operations Trainer at the National Training Center, Fort, Irwin, CA. CPT Britten has served as platoon leader in an attack reconnaissance company and Commander, B/1-101st. He has deployed in support of Operation Iraqi Freedom and twice in support of Operation Enduring Freedom. CPT Britten has 10 years' service. He is qualified in the AH-64.

Acronym Reference

FARP - forward arming and refueling point	**SOP** - standing operating procedures

TURNING PAGES
~ book reviews of interest to the aviation professional

Leadership and Self-Deception:
Getting out of the box

A book review by CPT Mike Schreckenbach

In Leadership and Self-Deception, The Arbinger Institute conducts an introspective look at what leadership should be or rather could be when leaders place people first. The book illustrates how self-deception can lead to a limited or narrow view of a problem, referred to by The Institute as being "in the box." Once leaders are in the box, they begin to justify themselves through excuses while blaming others for their shortcomings.

Using on the job and family life challenges we all face, The Arbinger Institute uses "Tom's" experiences as examples to guide us through Leadership and Self-Deception. In an early job performance counseling session, Tom's supervisor discusses traits that have placed him in the box. Tom is unaware of his own self-deception. His supervisor explains how self-betrayal causes our failure to see that we have deceived ourselves and, more importantly, recognize that we may be the cause of the problem. Tom's supervisor discusses a situation in which Tom overreacted to an employee's performance. As Tom realizes how he reacted and how his actions were perceived, the central argument of the book is revealed. In order to deny self-betrayal and stay out of the box, one has to view people as people and not objects. The Arbinger Institute further explains how being in the box is self-perpetuated and directly impacts the way others respond to our actions and to us. Only when we realize we are in the box can we fully comprehend that our view of reality is distorted and are unable to see others or ourselves clearly.

Leadership and Self-Deception extends The Arbinger Institute's concepts into Tom's personal life to show that they can apply to any relationship. As Tom delves deeper and deeper into the lesson, he realizes self-justification is the catalyst which has placed him in the box. Many of us can relate to this self-perpetuating concept. We believe we are good Soldiers, good leaders, good aviators, hard workers, good fathers/mothers, etc. All of these can and are used to justify our actions when we have committed self-betrayal. The Arbinger Institute contends, "We end up carrying these self-justifying images with us into new situations… We don't see people straightforwardly, as people. Rather, we see them in terms of the self-justifying images we've created. If people act in ways that challenge the claim made by a self-justifying image, we see them as threats." Furthermore, once we begin to self-deceive ourselves and enter the box our resulting outlook will most likely encourage others to enter the box with us. This concept identifies how our behavior and how we view others perpetuates the same reaction in them. Hence we fail to identify that we may be the cause of the "problem" and we will only continue to blame others for our own faults.

The obvious question is, how does one get "out of the box"? The Arbinger Institute explains what does not work and offers a view on the path forward that questions your virtue.

The Arbinger Institute allows latitude for a reader to interpret the concepts to his life. You can easily replace Tom's character with any Army leader or his company for any military organization. After reading Leadership and Self-Deception, the term "mission first, people always" will take on a new meaning. All Soldiers, and especially leaders at all levels could benefit from this lesson. The Arbinger Institute does a good job of expanding on "The Golden Rule" and they conclude, "The thing that divides fathers from sons, husbands from wives, neighbors from neighbors - is the same thing that divides coworkers from coworkers as well. Companies fail for the same reason families do…both are organizations of people." Leadership and Self-Deception ends with the advice that until we "get out of the box" and displace the distortions it causes, "we don't know who we work and live with."

TURNING PAGES
~ *book reviews of interest to the aviation professional*

The Guns at Last Light:
The War in Western Europe, 1944-1945

By Rick Atkinson. New York: Henry Holt and Company, LLC. 876 pages. Available in hardcover, paperback, Kindle, audible, and CD formats at http://www.amazon.com/Guns-Last-Light-1944-1945-Liberation/dp/0805062904

A book review by CPT Sean Clement

Rick Atkinson delivers the Liberation Trilogy, capped by his work The Guns at Last Light, in a visceral, goosebumps inducing way that will have you swearing you can reach out and touch the hedgerows, smell the smoke in the dank bunkers of the German high command, or feel the muddy fields of France under foot. Unsurprisingly, Mr. Atkinson won the Pulitzer Prize for his work on the series, specifically attributed to the first book An Army at Dawn but all three works are of consummate quality and depth. In his last book, Atkinson covers the period of January 1944 until the surrender of the Third Reich in 1945. Beginning in the Prologue, as you read, you're provided with much more additional context that so many other works gloss over. The frosts of England stunting fruit production, wild flowers growing in bombed out lots, nightly blackouts, and the feather like contrails of the flying fortress ripping across the sky. In its more than 600 pages we are taken on a ride along with famous generals, heads of state, common people caught in the crossfire, privates in the foxholes, and the proud but nervous families they left behind.

There is a characteristic chaos to Atkinson's story telling that can sometimes be hard to follow. As he shifts between differing accounts and battles he paints a messy but coherent picture of cause and effect, of engagements, happenstance, victories, defeats, fratricide, and the seldom thought of the challenges of leading an army penetrating deep into enemy territory. Each one of these small, sometimes seemingly irrelevant stories, begins to provide, piece by piece, pixel by pixel, a rich and enthralling look into 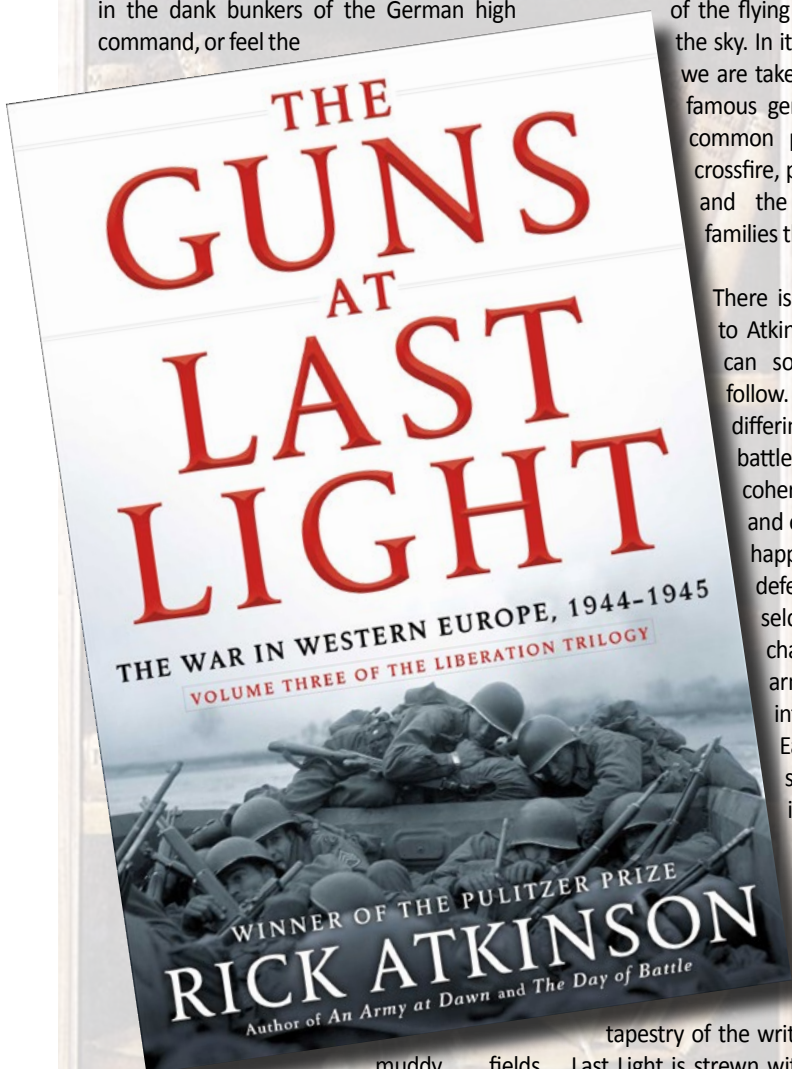World War II. In addition to this rich tapestry of the written word, The Guns at Last Light is strewn with maps of all kinds as well as pictures from all over Europe and the war's effects on her.

In addition to personal accounts and the human aspects of war, the technological advances are also discussed at great length. For example the American proximity, or pozit, fuse equipped on anti-aircraft and artillery rounds later in the war. The posit fuse, by some estimation, "'the most remarkable scientific achievement of the war' except for the atomic bomb" as it made anti-aircraft fire up to five times more effective and made artillery effective against even the most entrenched enemy forces. While the Germans amassed a fleet of rockets and jet technologies, the Americans employed a weapon that, as one German prisoner put it, "The devil himself could not escape."

While no doubt the modern battlefield brings with it its own challenges and complexities, there are innumerable lessons to be learned from review of past conflict. In The Guns at Last Light, we glimpse back into a world at war in a conflict spanning thousands of miles and involving millions of combatants. Lessons on working with partner nations and the delicacies of alliances under fire are aspects of war that will likely never change. The hardening or Franco-American relations after the failures of the 1st French Army and 2nd French Corps to attain victory in the Colmar pocket are relatable experiences to anyone who has spent an extended time with coalition allies. Even the best of international "friends" can be frustrating to work with for any number of reasons.

The Guns at Last Light is a superbly woven literary tapestry which closes the final chapters of World War II in stunning detail and specificity. The entire series is detailed yet easy to read and back with hundreds of pages of source material. In his catalog twilight hours of the last world war, Rick Atkinson delivers us a look back into the martial struggles of our previous generations. Full of cautionary tales, personal accounts on the brutality of industrialized warfare, and the heroics of ordinary people thrust into extraordinary circumstances, Atkinson's work stands as a testament to the power of historical literature. Anyone searching for a more holistic understanding of the Western Front as seen by American forces in World War II need not look any further.

Sometimes, ...

The pen *is* mightier than the sword.

If there is any one secret of success, it lies in the ability to get the other person's point of view and see things from that person's angle as well as from your own.
~ Henry Ford

We cannot solve a problem by using the same kind of thinking we used when we created them.
~ Albert Einstein

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