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DAVID J. FRANCIS

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STEPHEN W. OWEN
Colonel, AV
Director of Training and Doctrine
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The Doctrine Division, Directorate of Training and Doctrine (DOTD), U.S. Army Aviation Center of Excellence (USAACE), Fort Rucker, AL 36362 produces the *Aviation Digest* quarterly for the professional exchange of information related to all issues pertaining to Army Aviation. The articles presented here contain the opinion and experiences of the authors and should not be construed as approved Army policy or doctrine.

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JAMES C. MCCONVILLE
General, United States Army
Chief of Staff

Official:

KATHLEEN S. MILLER
Administrative Assistant to the Secretary of the Army
1917803

About the Cover:
A portrait of Second Lieutenant (2LT) Walter B. Stone, a P-47D Pilot who went missing in northern France during the earlier years of World War II.

The Command Corner

Doctrine is the language of military professionals. As an Army, the last 18 years of counterinsurgency (COIN) operations have taken us away from this discipline. As we transition and prepare for Large-scale Combat Operations, the study and understanding of our Doctrine is essential.

We must again become fluent in our professional language. How do we do that? Focusing on Doctrine in our professional military education courses is a start and currently underway. More importantly, individual reading and study of Doctrine is essential and the responsibility of every leader.

Further discussion of Doctrinal issues, fresh points, and challenges in forums such as Aviation Digest demonstrate both an understanding and application of our Doctrine in current and future environments.

I highly encourage all of us to get back in our Doctrinal manuals and start to speak our professional language again.

So let's get after it—get back into the Doctrine and start showing your expertise and apply that Doctrine in this—our "professional tactics journal." I look forward to the discussion!

ABOVE THE BEST!

David J. Francis
Major General, USA
Commanding

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U.S. Army photo by Visual Information Specialist Pierre-Etienne Courtejoie

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Managing Editor
Amy Barrett

Art Director
Brian White

Contact
usarmy.rucker.avncoe.mbx.aviation-digest@mail.mil

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Visual materials such as photographs, drawings, charts, or graphs supporting the article should be included as separate enclosures. Please include credits with all photographs. All visual materials should be high-resolution images (preferably set at a resolution of 300 ppi) saved in TIFF or JPEG format. For Official Use Only or Classified images will be rejected.

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GRAY EAGLE AERIAL GUNNERY

By CPT Geoffrey M. Hansen and WO1 Alexander Bender

Current large UAS platforms like this Gray Eagle provide important capabilities but need a runway to take off. These systems also have lower airspeeds and depend on data links and GPS signals. Future systems will need to be more independent to operate in a complex battlespace. Image courtesy of the Aviation and Missile Research, Development, and Engineering Center

Within the recent history of hostilities throughout the Middle East, unmanned aircraft systems (UAS) have been increasingly called upon to conduct lethal strikes on targeted military objectives. The Gray Eagle in particular has conducted more air-to-surface engagements than any other U.S. Army platform. To put this into perspective, in recent hostilities, a single Gray Eagle company averages more Hellfire engagements than an entire AH-64 battalion during similar combat rotations. All withstanding, the amount of training and preparedness a Gray Eagle operator receives is significantly less than its sister aerial combatants.

In this article, we attempt to do two things; first and most important is to share how we approached the problem of preparing our operators for combat to help minimize the initial startup cost associated with building such a comprehensive gunnery program in like Gray Eagle units. Second, to provide feedback to the greater Army community on where gaps may exist within the UAS gunnery program, we utilized the doctrine, organization, training, materiel, leadership and education, personnel, and facilities approach. We will share lessons learned during our last aerial gunnery as a potential guideline to mitigate enterprise risks at the company level. An important thing to note about this article is that like many other Gray Eagle companies, D/82nd Aviation Regiment's training cycle was misaligned with the rest of the division due to a company-level patched deployment.

THE COMPANY

In order to provide context for how the Army traditionally resources and trains aerial weapons platforms, we will use the AH-64 attack reconnaissance battalion as a baseline. There are several significant contrasts between the AH-64 and Gray Eagle community that must be considered as we adapt and modify time-tested rotary-wing training techniques to the UAS community. The beginning of this comparison is the enterprise-level factors that disadvantage a UAS company from the very beginning. This article looks at the best equipped UAS unit, the Gray Eagle company. This is important as one applies the topics discussed in this article to Heavy Attack Reconnaissance Squadron Shadow units and the much more disadvantaged brigade combat team (BCT) Shadow units.

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ORGANIZATION

A typical Gray Eagle company's modified table of organization and equipment (MTOE) provides one 15W30 UAS instructor operator (IO) and one 15W20 UAS IO to each of the three flight platoons within the company, for a total of six IOs. Additionally, the MTOE allots one 150U warrant officer (WO); three platoon leaders; and one 150U WO2 per flight platoon, a headquarters platoon leader, and a flight operations officer in charge, for a total of eight UAS WOs.

The advantage that the Gray Eagle company provides over a Shadow platoon is the consolidation of these leaders under one company guidon. In an effort to combat our misaligned manning structure, we removed one IO and one WO from each flight platoon. We consolidated two IOs and two WOs to form a company standardization section. One IO was given the responsibilities of the standardization operator, while the other was designated as the master gunner. The third IO was used as a platoon sergeant that was dual-slotted by human resources command. The three WOs became the training officer, the standardization officer, and the gunnery officer. This restructuring enabled the company to focus its flight platoons on the demanding level of home station support requirements (e.g., Soldier leadership, fire support coordination exercise, and BCT training events) and company current operations. The company WOs focused on developing future training events, such as the gunnery program and other high workload company programs (e.g., standardization program and flight operations).

It would have been extremely difficult to build a gunnery program if we did not have the advantage of mass. However, it is important to note that our gunnery officer position was the first to be cut when faced with manning shortages due to aggregate number of 150Us assigned and the requirement to phase 150Us to the Warrant Officer Advanced Course (WOAC). For the purposes of this gunnery event, we were only able to man our gunnery officer position for 2 months prior to, and through, the bulk of aerial gunnery training before shifting him to a flight platoon position as the flight platoon leader attended WOAC.

LEADERSHIP AND EDUCATION

The next major challenge came with educating our new gunnery leadership. The logical solution to this challenge is institutional training through the Aviation Master Gunner Course. Unfortunately, all of our attempts to attend the course were denied due to the fact that the military occupational specialty of 150U and 15W lack the qualifying prerequisites for course attendance. We were able to overcome this challenge through self-study and mentorship from our rotary-wing counterparts, but the process would have been significantly less challenging if we had been properly resourced with the training necessary to build a gunnery program. Our first recommendation moving forward would be to include a master gunner on the MTOE with the appropriate additional skill identifier to support the position.

PEOPLE

This gunnery event was executed three quarters prior to our patched deployment, with the intent to be as close to deployment as possible. The reason this quarter was nominated was the remaining two quarters were filled with higher echelon training requirements. Specifically, one quarter was dedicated to home station BCT field training exercise support, and the other was dedicated for support to a Joint Readiness Training Center (JRTC) rotation. The remaining available training time was preserved in order to accomplish a projected 24 readiness level progressions and the training and development of nine aircraft commanders necessary for optimal crew manning during the upcoming deployment. The issue generated is because of Expiration of Term of Service, permanent change of station, and manning timelines, only roughly half of the deploying operators were able to take part in the company's dedicated phased aerial gunnery. A large cause of this is there is no enterprise tracked patch chart or deployment order that provides visibility of the Gray Eagle companies' deployments, so the requirement to inform the necessary parties of the company's mission has fallen on the unit.

PHASE ONE: INDIVIDUAL GUNNERY TRAINING

In accordance with Training Circular (TC) 3-04.3, "Combat Aviation Gunnery," the individual gunnery phase begins at the institutional level and ends at the completion of the first gunnery gate, Table 1.3, at the unit (Department of the Army [DA], 2019).[1] We tailored this phase to our deployed area of responsibility by having our battalion S2 consolidate a list of the top 20 most important combat vehicle identification (CVID) elements that we wanted our operators to rapidly recall. These top 20 CVID elements were used throughout the gunnery academics, gunnery skills tests, and 1.3 gunnery tables.

TRAINING

In accordance with TC 3-04.3 (DA, 2019), the schoolhouse is responsible for the introduction of gunnery skills to new aircrew members. As we look at this requirement, it is important to understand that unlike the seasoned Army veterans who transition to rotary-wing WOs, the bulk of MQ-1C operators are straight out of high school and have little to

[1] **This Training Circular is available via the Enterprise Access Management Service-Army with a valid common access card.**

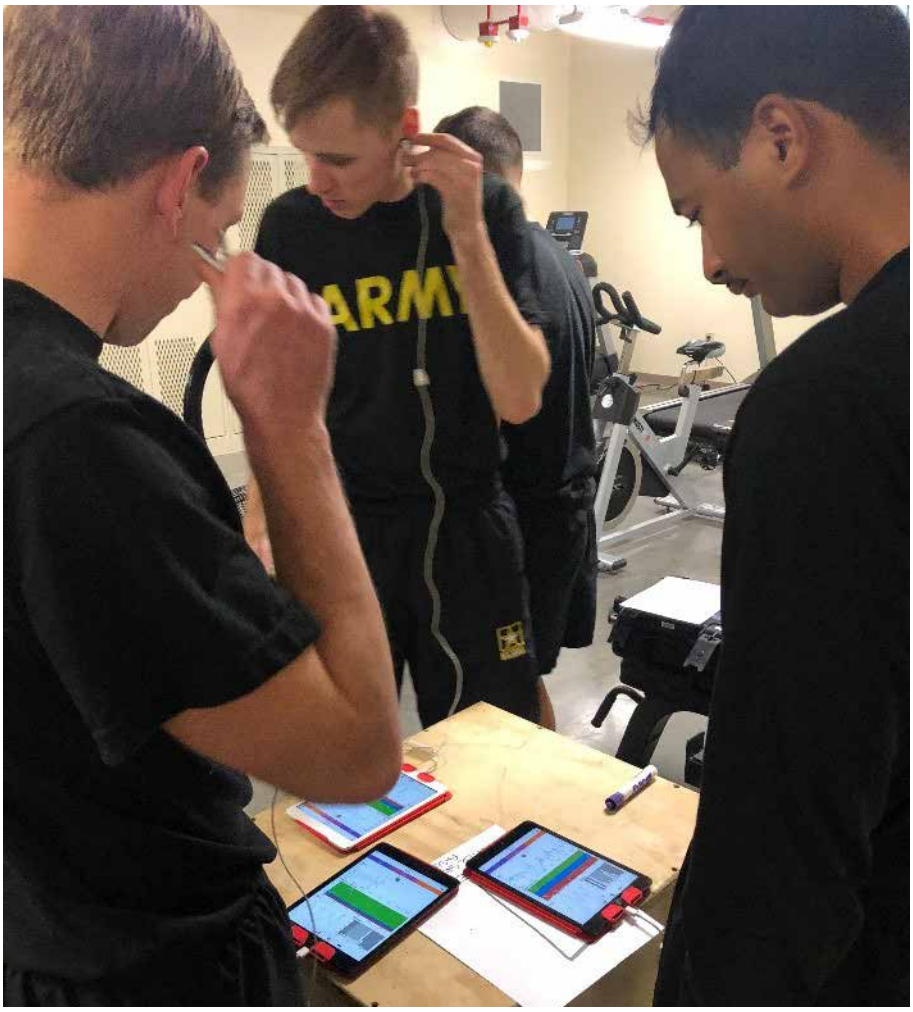
no fundamental knowledge of what it means to be a Soldier, much less fly an armed intelligence, surveillance, and reconnaissance (ISR) platform. I would argue that this gap in understanding that armed ISR platforms are designed to end people's lives is something that should be addressed at the very beginning of the training pipeline. The first time I fixed bayonets during basic combat training, I remember before we ever stabbed a dummy, we were taught a chant to respond to every time the drill instructors questioned us:

DRILL SERGEANT:
"What makes the green grass grow?"

NEW SOLDIER:
"Blood, sergeant, blood makes the green grass grow."

We may be doing this, but at the end user level, there is still room for improvement. An example of this deficiency was discovered during one of our initial close air support (CAS) training events. During the training, one of our junior crewmembers was asked why she looked so perplexed. She responded with the question, "Are we talking about killing people?" This provided one of many indicators that the schoolhouse does little to mentally instill an attack mindset in our young, armed ISR operators.

We are retraining our armed ISR operators to think more aggressively, ensuring we address that our purpose is to remove the enemies of the United States from the battlefield before they can do harm to our families stateside. Additionally, we are utilizing footage from downrange to critique gunnery skills with the intent of showing the end state of a successful engagement, i.e., dead terrorists.



SGT Vicente, SGT Herwig, and PFC Sorenson practice settling their heart rate after a period of high stress. Photo courtesy of U.S. Army CPT Geoffrey M. Hansen

PERSONNEL

The age of our enlisted operators provides another unique challenge. By virtue of age alone, they lack a lot of the developed mental agility and resilience of our more Army-seasoned Apache pilots. In order to mitigate this deficiency and better prepare our operators for the many stresses of combat, we enrolled the help of the performance experts at the R2 (ready and resilient) Performance Center on Fort Bragg. The R2 Performance Center provides customized performance training that enables Soldiers to sustain personal readiness, enhance resilience, optimize performance, and build unit cohesion

As we sat with the performance experts, the first challenge we encountered was replicating the fact that an engagement typically comes after extended periods of low cognitive function and extremely low mental engagement time period (i.e., hour 7 of a mission while on hour 1000 of a deployment) to an extremely high stress environment within seconds. For this, we determined physical training was the best stressor to replicate this change in engagement levels. Through exercises, not only could we get our 15Ws in shape, we could induce stress levels similar to those encountered in the engagement sequence. At these high stress levels, we taught our operators not only how to return their physiology to a more normal state, but also enabled a training plan that required our operators to be able to recall information at a similar stress level as experienced in combat.

The next challenge of teaching young operators is retention and a

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lack of fundamental gunnery knowledge from the schoolhouse. With this, we determined that very narrow training objectives for each training event would enable us to repeat the objectives enough times necessary to instill the lesson into the operator. As such, during each of the 10 training events, we picked one topic taught by the R2 performance experts and one gunnery topic taught by our master gunner staff, to instill in our operators. Ready and resilient performance topics focused on how thoughts impact performance and overall confidence, how to manage the relationship between the sympathetic and parasympathetic nervous systems in order to control fine motor skills and executive brain functions such as recall and decisionmaking, and improving memory. Gunnery topics include nine line CAS, keyhole CAS, five line call for fire, company engagement tempo tactics, techniques, and procedures, and laser-to-target line/gun-target line considerations. Topics were introduced academically in the first 15 minutes of the session and were reinforced throughout the physical training-enabled stress sequence.

PHASE TWO:
AIRCREW GUNNERY TRAINING

In accordance with TC 3-04.3, (DA, 2019), the UAS aircrew gunnery phase begins with Table V and ends with successfully completing Table VI. Prior to beginning this gunnery phase, it was important to look at our deployed mission and conduct analysis on how we best train our aircrews to fight in that environment. The major thing we determined was that UAS aircrews received mission updates and taskings from a variety of different communication systems, e.g., radios, transverse and secure voice over internet protocol. Therefore, we thought it was important that this variety was replicated during our gunnery training.

WO1 Caudil and PFC Gustafson practice keeping track of the battle during advanced table gunnery. Photo courtesy of U.S. Army CPT Geoffrey M. Hansen

These resources allowed us to make the operators feel as though they were "alone" in the ground control station (GCS). Many Gray Eagle units place IOs inside the GCS to read scripts that drive the overall flow of the event. Oftentimes, they may help crews solve problems that are not directly related to the criteria being evaluated (airspace deconfliction, range issues, communications problems, etc.). These communication enhancements allowed us to use dedicated script readers. Our IO in the GCS remained in a strictly passive grader. Without the need to interact with the aircrew, we saw that the amount of assistance and guidance from the IO to the operator was significantly reduced. Without the safety net of an IO, any issues that were discovered forced the operators to rely on their experience and react accordingly to work through it. The crew passed or failed based on their own skill sets that were developed during the individual gunnery phase and practice table.

ORGANIZATION

Building this training environment, we exposed a severe lack of institutional knowledge necessary to construct the communication hierarchy for this training event and during combat operations. Based on the MTOE, we are only provided one 25B20 radio communication Soldier. This means that for all the issues we had with building and maintaining our upper tactical internet communication hierarchy, we had to either rely on one of our Soldiers or leaders to get smart on technical requirements outside his military occupational specialty or rely on an outside element for assistance. This poses a potential source of risk as we look at the common employment of Gray Eagle companies detached from their parent or even an adjacent aviation headquarters element.

PHASE THREE:
COLLECTIVE GUNNERY TRAINING

In accordance with TC 3-04.3 (DA, 2019), the UAS aircrew gunnery phase begins with team tables and ends with the completion of the platoon tables. Since the ability to employ the Gray Eagle system as a platoon is not common in the counterinsurgency environment, we determined that utilizing the decisive action training environment would better enable us to achieve the

planning, battle tracking, and realistic scenario that we wanted. However, we thought it was important to stress our company command post's ability to ***Perform Unmanned Aircraft System (UAS) Flight Operations Section/Command Post (CP) Duties*** throughout the aerial gunnery.

Prior to the planning step/measure, we were able to produce a company operation order (OPORD) with execution checklist (EXCHECK) for the platoon leaders to refine with increased analysis on each of the operational evaluation (OE) variables and more detailed mission planning. Throughout the planning step, particular emphasis was placed on leaders to understand the indicators that answered priority intelligence reminders, the enemy order of battle, the enemy possible courses of actions, and the friendly scheme of maneuver.

During the execution stage, both fight operations and the operators were resourced with tactical SECRET Internet Protocol Routers and secure voice over internet protocol. This enabled the white cell to utilize the EXCHECK throughout the script to indicate the movement of the battle for the mission coordinator and battle captain to track. This proved to not only help increase the company CP functions, but enabled the reinforcement of the doctrinal understanding of how the Army fights; particularly how the ground force generates knowledge of enemy movement and responds with friendly maneuver. As the crews and battle staff moved from Tables VII to XII, the script introduced more variables for the CP to track while becoming less prescribed to the template enemy courses of action.

MATERIEL

The biggest challenge any company has with creating realistic training within a dynamic and complex (4+ OE Variables and Hybrid Threat) training environment is the ability to replicate the base order. Fortunately, the 82nd CAB has addressed this issue with the creation of the Pegasus area of operations and the Pegasus Storm OPORD. With the bulk of the work creating the combat environment and mission for the Gray Eagle company being completed by the CAB staff, generating a script and OPORD for the company to fight off of was significantly more realistic and less time consuming to produce.

The next materiel issue faced by the Fort Bragg Gray Eagle gunnery team was the lack of interoperability between the unmanned system and the aviation combined arms tactical trainer. This lack of interoperability resulted in the requirement to execute the virtual tables in the aircraft and subject the gunnery progression to restrictions based on weather and maintenance.

The last major materiel gap is the lack of moving targets. To the best of my knowledge, the Army lacks any 3-dimensional moving targets that can be utilized for just laser operations. This means that UAS operators must practice their tracking of moving targets separately from their gunnery sequence.

DOCTRINE

Each table, when executed based on the full intent of the gunnery script, required roughly 1-1/2 hours to complete. That means in order to progress the entire company through collective gunnery without the use of virtual tables, UAS collective gunnery alone requires 270 flight hours (45 operators x 4 tables x 1.5 hours) for both the Gray Eagle and the AH-64 flying in support of the table. Once the higher weather requirements (8000-foot ceilings at Fort Bragg) for UAS to conduct gunnery are factored in, this flight hour requirement resulted in Gray Eagle collective gunnery to extend beyond that of the attack reconnaissance battalion's aerial gunnery. Though we were able to make this gunnery's script in terms of movement from crew to platoon level, there was no change in the individual tasks being performed within the box. Thus, we were able to achieve a trained status of all the platoon-level leadership within only a few iterations of the Tables IX to XII script development.

It is important to consider that there are a significant number of differences between UAS and the rotary-wing community at large. As we continue to develop this, we believe it is important that a more UAS-tailored gunnery program is developed that addresses these differences. A recommendation for the framework of this program would be a less progressive gunnery program than our rotary-wing progression, e.g., individual, crew, team, and platoon. Since UAS do not have air mission commanders to test at the team level, a better use of the training calendar might be to focus team-level training on interoperability of UAS with other fixed-wing platforms. At this gate, the UAS operator could be introduced to overlapping scan techniques, battle damage assessment vs. squirter sensor assignments, CAS flow, engagement tempo, etc., while the "platoon" training could be focused on the interoperability of the Gray Eagle operator with unit's higher headquarters, namely AH-64 formations, and testing the platoon leadership's ability to track and manage the battle.

CPT Geoffrey Hansen is the D/82nd Aviation Regiment "Gray Eagle" Company Commander. He is a current AH64D/E Pilot in Command who deployed to ORS from 2016-17. CPT Hansen has served as a Platoon Leader and Executive Officer in B/1-101 and a member of the 1-101st ARB and 82nd CAB S3 staff.

WO1 Alexander Bender served as the D/82nd Master Gunner during this training event. He is a prior Gray Eagle Instructor Operator/Standardization Operator who deployed the Gray Eagle system to ORS 2015. Following his redeployment, WO1 Bender served as the master gunner for D/10th Aviation Regiment as they prepared to deploy to OIR.

Reference:

Department of the Army. (2014). *Combat aviation gunnery* (Training Circular 3-04.45). Washington, DC: Headquarters, Department of the Army.

SUSTAINING THE AVIATION TASK FORCE

By MAJ John Bolton, CPT Cole Deroy, and CPT Ben Larson

Photo by U.S. Army SGT Tyrone Marshall

The authors wish to extend a heartfelt thank you to the Aviation Task Force Observer-Controller/Trainers who helped facilitate TF Diamond Head's rotation.

During Joint Readiness Training Center (JRTC) rotation 19-02, Task Force (TF) Diamond Head (2-25 Assault Helicopter Battalion [AHB]) supported both 2/25 Infantry Brigade Combat Team (IBCT) and a constructive joint task force (JTF) headquarters. The 19-02's rotational design forced TF Diamond Head to work for multiple entities spread over a large area, replicating real-world conditions, as an aviation TF is unlikely to support only a single brigade combat team (BCT). Importantly for Army aviation, the rotation validated the need to plan forward arming and refueling points (FARPs), sling-load and driver training, and sufficient staffing deliberately while demonstrating shortfalls in the aviation modified table of organization and equipment (MTOE). This article highlights the logistical operations TF Diamond Head conducted and the associated successes and failures before concluding with recommendations for unit training and MTOE shortfalls.

During reception, staging, onward movement, and integration (RSOI) activities through training day three (T+3), TF Diamond Head operated out of Self Army Airfield with FARPs there, as well as at Peason Ridge live fire. After deploying to a tactical assembly area (TAA) 40 kilometers (km) north of Fort Polk, the TF's forward support company (FSC) had six distinct missions: FARPs, cold fuel, transportation, maintenance, field feeding, and TAA security. To support operations 50 km away in "The Box," the TF eventually emplaced two FARPs with only cold refuel available at the TAA. Operating three sites taxed the distribution platoon's 26 Soldiers.

The burden on the FSC to prepare, emplace, and secure the FARPS in conjunction with other activities such as command post manning, maintenance, and security quickly exceeded its capability. Moreover, M978 heavy expanded mobile tac-

Two UH-60L Black Hawk helicopters from 2nd Battalion, 25th Aviation Regiment, Task Force Diamond Head, are hot refueled by Forward Arming and Refueling Point Soldiers at Contingency Operating Location Normandy, in Diyala Province, Iraq, Jan. 10. Photo by U.S. Army SPC Michael Alberts

tical truck (HEMMT) fuelers were not readily available—Diamond Head deployed seven fuelers and four 2,500-gallon trailers, one hard broke and remained in the rear—meant fuelers quickly became the TF's critical item. Using 500-gallon blivets slung by CH-47s and the Advanced Aviation Forward Area Refueling System did reduce the strain. However, when coupled with receiving Class I/III/V, the distribution platoon remained taxed, operating three 24/7 sites supporting 23 aircraft, though augmentation did help.

One issue that JRTC quickly revealed was Army aviation's tendency to treat FARPs as an administrative task, requiring certification, rather than as a tactical operation. During an attack by AH-64s and RQ-7B Shadows, both FARPs came under attack, with opposing force (OPFOR) destroying one immediately. Even after displacing the next day, OPFOR rotary wing destroyed the remaining FARP. The main reason for this was not OPFOR guile but poor tactical emplacement. Not until the third emplacement was OPFOR unable to locate TF FARPs. Task Force Diamond Head planned, briefed, and rehearsed every operation but initially failed to consider the tactical emplacement of FARPs fully. The TF cannot simply give the distribution platoon a location without explicit guidance for ***how*** and ***where*** to setup the FARP, along with the FARP's purpose. Tactical emplacement, not just technical setup and certification, is critical to the success of FARPs and has an obvious, direct effect on aviation operations.

Notably, friendly aircraft had trouble locating some well-emplaced FARPs also, demonstrating the need to mark FARP points for all aircraft types. AH-64Ds, for example, cannot see chemical lights and prefer a person guiding them to the point. Training FARP personnel on every type of Army aircraft is critical.

Operating tempo, along with security and FARP requirements, meant the forward support company (FSC) had difficulty meeting transportation requirements. The FSC's limited organic transportation capacity means sustainment planning must sequence FARP operations with commodity resupply. Essentially, the FSC distribution platoon can run FARPs or conduct limited transportation with its sole HEMMT load handling system, but not both. Since the JRTC scenario had TF Diamond Head dislocated from the BCT and supported by a combat service support battalion (CSSB), a lack of transportation capacity meant the FSC operated almost exclusively used throughput distribution rather than supply point, resulting in an unescapable dependence on the CSSB for vital Class III/V resupply. Every logistics package (LOGPAC) became a consolidated TF effort since the FSC could not conduct unilateral supply operations, particularly to move unique equipment such as forklifts, blade boxes, and containers.

Daily visits to a logistics synchronization (LOGSYNC) hosted by the CSSB greatly aided TF Diamond Head's sustainment operations. The staff quickly learned that sustainment requires the same focus as attack/reconnaissance and air assault operations. In fact, they require more focus since the TF cannot rely on the companies to fill in the gaps for sustainment planning; for sustainment, there is no bottom-up refinement option.

Any major issue emerged from reliance on the CSSB: the unique requirements of aviation fuel. The CSSB, on three separate occasions, attempted to deliver substandard

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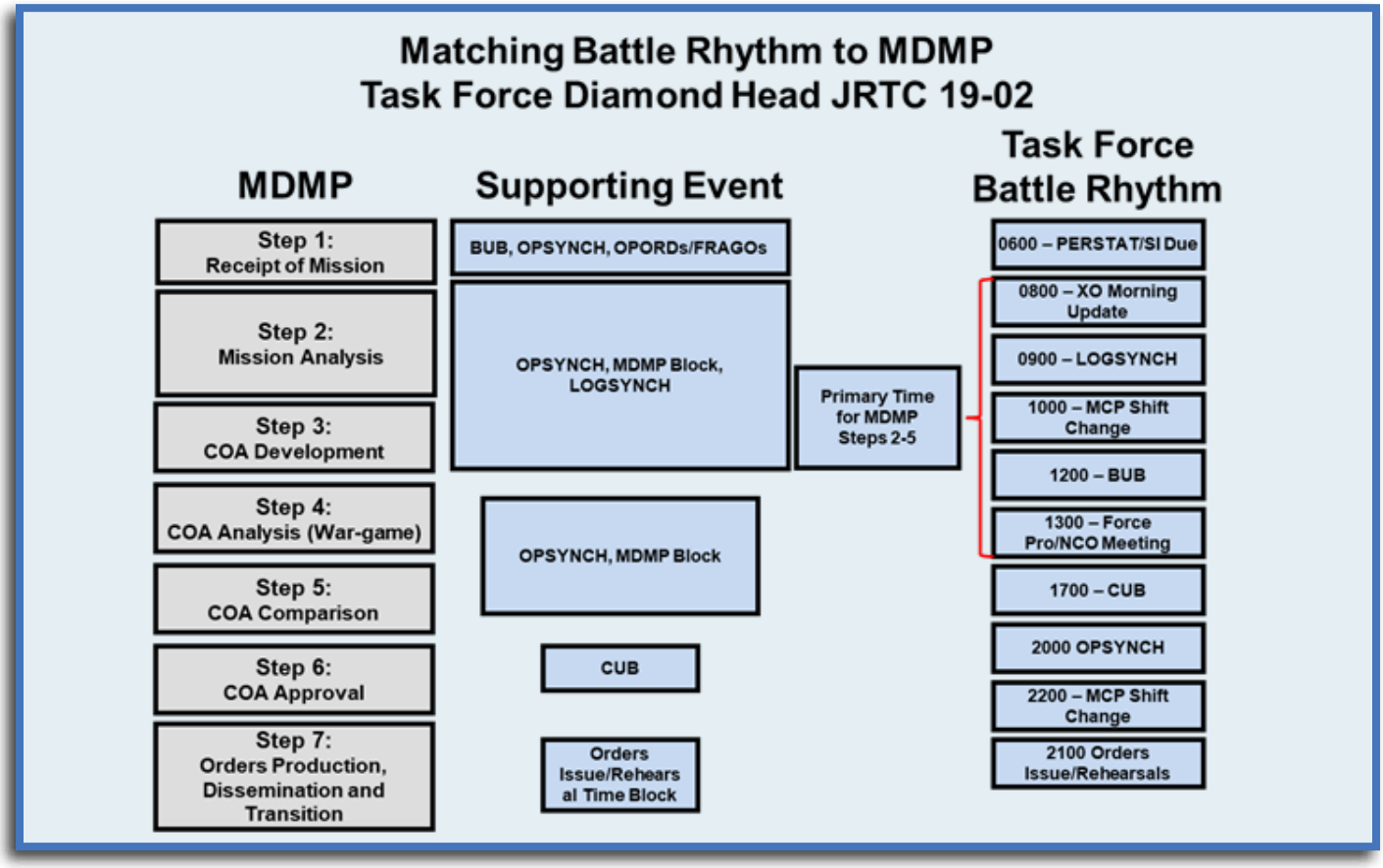

Figure: Matching battle rhythm to MDMP–TF Diamond Head, JRTC 19-02.

fuel, resulting in risk to force and mission delays. This was due to the TF not making the requirements for Aqua-Glo and filter efficiency tests explicit during RSOI. Reaching out prior to the rotation, through the leadership training program, and during the sustainment planning process, to ensure the CSSB (and brigade support battalion) fuel met aviation standards would have prevented a great deal of frustration.

A series of administrative restrictions on convoy operations complicate sustainment operations, particularly for hazardous materials. Admittedly, these restrictions replicate host-nation restrictions, but placing the burden on the TF S4, FSC, and CSSB is critical to allow for "sharing" of clearances to maximize convoy capacity and throughput. Moreover, due to administrative processing times often exceeding 5 days, rotational units must get an early lead on clearances.

Another key process in sustaining the TF was the battle rhythm. In addition to mission analysis as part of the military decisionmaking process (MDMP), the TF conducted twice-daily battle rhythm events to support sustainment planning. According to Field Manual 6-0, "Commander and Staff Organization and Operations," the "…battle rhythm consists of a series of meetings (to include working groups and boards), briefings, and other activities synchronized by time and purpose." Ultimately, "***The battle rhythm*** is a deliberate daily cycle…" that synchronizes current and future operations while nesting with higher headquarters (Department of the Army, 2014, p. 1-12). The staff must integrate the daily battle rhythm with MDMP to keep a predictable schedule for subordinate units.

Task Force Diamond Head's key sustainment event was a 0900 LOGSYNC that included first sergeants and supply representatives, both to develop the logistics common operating picture, receive supply requests, coordinate LOGPACs (ground and air), and provide inputs for MDMP.

Above other considerations, a battle rhythm must be functional, providing "good enough" information and orders to the TF (Figure). The TF executive officer must be "father time," ensuring that the staff stays on track to support the commander's decision making to provide the companies/troops with sufficient time to plan (MAJ Donald Sulpizio, personal communication, October 27–November 15, 2018). Importantly, the commander must be prepared to skip MDMP steps or forego producing some products. To speed the process, the staff can combine some products with others, such as a daily fragmentary order and operations synchronization meeting. Lest we become "preoccupied with process," units must focus on quick but effective staff work with limited time and information (Hendell, 2018). Task Force Diamond Head succeeded at battle rhythm integra-

tion because all events occurred with requisite attendees, and the orders produced allowed subordinate units to begin movement early.

Task Force Diamond Head served 7,000 hot meals and more than 10,000 meals, ready to eat, pumped 60,000 gallons, and loaded 96 Hellfire missiles, 6,000 rounds of 30 millimeters, and 960 Volcano mines during JRTC rotation 19-02. Soldiers were well fed, and aircraft only occasionally lacked fuel due to broken or battle-damaged fuelers. However, there were several key lessons learned in terms of both training for the combat training center (CTC) and MTOE shortfalls. Specifically, aviation TFs require sling-load and driver training prior to CTCs, as well as augmentation from the aviation support battalion (ASB) to provide additional fueling/distribution capacity.

The JRTC validated pre-rotational training such as night driver training and sling-load rigging. Night driver training is self-evidently worthwhile, but units should consider developing sling-load capacity in their FSC. This is truly a worthwhile capability as it allows the aviation TF to move equipment organically, including containers, light equipment, and fuel blivets. During JRTC, TF Diamond Head conducted over a dozen sling-load operations, extending the TF's operational reach and reducing requirements passed to the CSSB. Lastly, FSCs must deliberately train jump FARP operations, including but not limited to tactical emplacement, non-line of sight communications, and camouflage. As previously mentioned, out of the six FARPs that the FSC emplaced during the rotation, only one remained undetected by the enemy. Units must be able to emplace and sustain FARPs over the horizon quickly and tactically. Doing so greatly increases the capacity of an aviation TF to support lift and attack/reconnaissance operations.

In addition, validating the necessity of this pre-rotational sling-load and driver training, JRTC made clear some aviation MTOE gaps, which units must fill through borrowing or reassigning equipment. Both must occur with enough time to respectively train or team-build. Given that aviation battalions tend to deploy to JRTC/National Training Center as a multifunctional TF, battalion/squadron staffs and FSCs require standardized capabilities. After all, the problem set is similar for each rotation. For example, an assault battalion FSC requires additional flat racks and trucks to move AH-64 ammunition, while both general support and assault battalions require a fire support officer. Lacking both creates a significant gap between what a TF ***can do*** compared to what it ***must do***.

Most aviation FSCs also require organic transportation capacity beyond their MTOE; this applies to FSCs across Army aviation, which lack the lowboy trailers need to move forklifts, scamp cranes, blade boxes, etc. Fuelers are also not even across aviation: By MTOE, aviation battalion/squadrons have between nine–19 fuelers. Each organization also retains modular fuel tanks on trailers, but the M978 fueler remains the backbone of aviation sustainment. All of the FSCs lack sufficient number of sling sets. Notably, an AHB FSC does not even have external load equipment on its MTOE. During garrison and or-

Soldiers of Company E, "Road Runners," 2nd Battalion, 25th Aviation Regiment, Task Force Diamond Head, refuel a UH-60 Black Hawk helicopter at Contingency Operating Base Speicher, near Tikrit, Iraq, Feb. 5. Cold refuel and defuel operations are conducted after an aircraft is shutdown. Photo by U.S. Army SPC Michael Alberts

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ganic operations, the MTOE works, but every CTC rotation has a similar task organization and, therefore, a similar challenge. As a stopgap, deploying aviation TFs should ask for augmentation from parent combat aviation brigades. The ASB can provide transportation assets and additional distribution platoon Soldiers to help with FARPs and 24/7 security.

Given maintenance, launch-recover-launch, and Mission Command requirements, aviation TFs cannot secure themselves while conducting the type of distributed operations required in support of a BCT and a constructive JTF. Task Force Diamond Head assumed risk by only maintaining 50 percent security at the TAA—a deliberate command decision that allowed flight companies to focus on missions. Each aviation TF attending a CTC would be wise to request an ASB transportation platoon to alleviate the stress on their FSC, both for additional distribution/transportation capacity and for security. Doing so would help TFs meet aviation center of excellence training objectives such as TAA security while helping the ASB train mission-essential tasks. Additionally, FSCs require sling sets to be MTOE'd property book items in increased quantities (an AHB FSC currently has none on the MTOE), regardless of the battalion's primary aircraft, to extend the aviation TF's operational reach.

Ultimately, our aviation skills and the ***expected*** capacity of Army aviation are irrelevant if we cannot support them through fueling, fixing, or feeding operations. Sustainment may be the "ultimate deterrent" by enabling Army aviation as it supports the Joint Force (Beaumont, 2018). The critical tasks include developing an effective battle rhythm; effective sustainment training including jump FARPs, sling loads, and night driver training; and the right augmentation to make sure the TF has enough logistics, Soldiers, and equipment for the mission. By focusing on the logistical processes required to support Army aviation, aviation TFs can better forecast requirements and better sustain operations.

Major John Bolton is the Executive Officer for 2-25 Assault Helicopter Battalion. He is a graduate of the Command and General Staff College's Art of War Scholars Program and holds degrees from West Point and American Military University. An AH-64D/E aviator, his assignments include 1st Engineer Battalion, 1-1 Attack Reconnaissance Battalion, and 4/25 IBCT (Airborne) with multiple deployments to Iraq and Afghanistan.

Captain Cole Deroy is the Commander of Forward Support Company, 2-25 Assault Helicopter Battalion. He is a graduate of Mississippi State University. His assignments include Aide de Camp to the Deputy Commanding General of the 1st Theater Sustainment Command. He has deployed to Afghanistan and Kuwait.

Captain Ben Larson is the S4 for 2-25 AHB. He is a UH-60M Pilot in Command, having graduated in 2014 from Utah State University.

SGT Eloyes Ratliff, petroleum supply specialist, Company E, "Road Runners," 2nd Battalion, 25th Aviation Regiment, Task Force Diamond Head, refuels a UH-60 Black Hawk helicopter at Contingency Operating Base Speicher, near Tikrit, Iraq, Feb. 5. Photo by U.S. Army SPC Michael Alberts

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RAPID MINE EMPLACEMENT: PLANNING CONSIDERATIONS FOR AIR VOLCANO EMPLOYMENT

By CPT Jonathan Lee

Soldiers from 2nd Bn., 2nd Aviation Regiment, 2nd Combat Aviation Brigade, use a UH-60 Black Hawk helicopter to employ M-139 Air Volcano Mines during a capabilities exercise at Bisung Range near the city of Yangpyeong, South Korea. Courtesy Photo

The brigade combat team (BCT) stands prepared for the defense. Engineers emplace obstacles and develop engagement areas, and the brigade sets in for the Donovian breach. Initial Donovian reconnaissance reports identify a weak point in the defense. The central corridor is largely impassible. The brigade engineer battalion spent hours establishing obstacles in the central corridor in the vicinity of Moose Gardens to the south and the Iron Triangle to the north. Obstacles are clearly arrayed to turn the Donovian breaching force into the Stryker Brigade's (SB) armor company attachment. But the brigade clearly missed something. Just one Stryker company defends Bicycle Lake Pass, and obstacles are minimal.

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The Donovian breaching force begins the breach with the assault force in tow. After feinting toward the central corridor, two armor companies push south to Bicycle Lake Pass. The Donovian company commanders expect to make easy work of the Stryker company's lacking defense. But Donovian intelligence efforts failed to detect a nearly kilometer-long antitank minefield established in the Pass. The tank companies begin to turn around, when a platoon of AH-64s arrive and begin engaging the T-72s, making quick work of the slow moving armor. In a matter of minutes, the AH-64s and antitank Strykers neutralize the attacking armor, significantly weakening the breaching force.

The above scenario results from the effective tactical employment of the M-139 air Volcano. Often termed a "PEZ dispenser for mines," the air Volcano provides the capability of rapidly delivering antitank and antipersonnel mines as quickly as the UH-60 delivering them can fly. The quick employment of such minefields can surprise enemy breaching forces and significantly hinder assault forces, turning assaulting armor into engagement areas. Successful employment of air Volcano requires three key planning considerations (a) engagement area development, (b) use of the air assault planning process, and (c) effective logistics planning.

ENGAGEMENT AREA DEVELOPMENT

The site selection for Volcano employment requires detailed analysis of enemy courses of action, and the best planning practices involve planning the site in conjunction with an engagement area. As detailed in Army Techniques Publication 3-04.1, "Aviation Tactical Employment," engagement area development is a four-step process (Department of the Army [DA], 2016). Combined with effective reconnaissance, the mobility of the air Volcano can be used to surprise enemy maneuver forces and turn, block, disrupt, or fix enemy maneuver within or around an engagement area.

A partially loaded air Volcano system. A trained team of four FARP personnel can load the system in 30 minutes to 1 hour. Photo by U.S. Army CPT Colin Buchans, A Company 2-25, 25th CAB

During the intelligence preparation of the battlefield (IPB) portion of engagement area development, the S2 seeks to determine potential enemy courses of action. Questions that should be asked include: what would the enemy do if faced with a minefield, and what terrain will the enemy use as a route to the breaching site? Intelligence preparation of the battlefield requires time-distance analysis, as well. With effective time-distance analysis, the Volcano can be used to surprise enemy assault forces with a previously unforeseen obstacle. Effective IPB further enables crew posturing, allowing the aviation company time to equip crews in loading and preparing the system.

Effective ground selection for the engagement area ensures a suitable site to disrupt the enemy maneuver. Sites can be selected that change the enemy's course of action, disrupt enemy movement within an engagement area, or force the enemy to turn into an engagement area. During National Training Center (NTC) 19-04, Task Force (TF) Saber and 1/25 Stryker BCT (SBCT) used the former of these options, employing air Volcano in Red Lake Pass to force the enemy into the northern corridor. The aircraft employed the minefield in an area that offered two avenues of approach and effectively sealed one, making the Donovian breach force choose the unimpeded route.

If air Volcano is used to disrupt movement within an engagement area or force the enemy into an en-

gagement area, canalizing terrain is necessary to create the desired effect. Adding a minefield to terrain that is already restrictive severely inhibits movement and should be strongly considered as a location for Volcano employment. The NTC offers terrain that enables a testing ground for such employment. During NTC 19-04, TF Saber and 1/25 SBCT employed a minefield in the vicinity of Hidden Valley, SW to push Donovian efforts into central corridor engagement areas.

While air Volcano was effectively employed during NTC 19-04, further work could have been done to integrate the engagement areas developed during the rotation. In an ideal scenario, air Volcano would be employed as a trigger based on reconnaissance efforts, and the minefield would be employed to disrupt or turn enemy breaching forces. The resulting slowdown creates an ideal space to develop an engagement area integrated with attack aviation, armor, antitank weapons, and indirect fires. The slowdown created by minefield emplacement buys time for the arrival of attack aviation and allows observers to engage enemy breaching forces with indirect fires. Coordinating indirect fires at key intersections or near the beginning of the minefield creates multiple dilemmas for the breaching force.

Communicating the minefield location to the attack aviation air mission commanders enables simple and effective direct fire planning within the engagement area. Situational awareness of the minefield's left and right limits enables the troop planners to understand enemy mobility limitations and plan direct fires accordingly. Such knowledge facilitates the requisite detail for attack aviation to effectively employ weapon systems on the breaching armor and engineer assets, thwarting the enemy breaching force's advances.

USE OF THE AIR ASSAULT PLANNING PROCESS

Once the ground is selected for minefield employment, the next step is understanding how and when the mines will be delivered. From a planning perspective, the air Volcano should be treated similarly, if not exactly like an air assault supporting the BCT engineer battalion. Since the engineer battalion is responsible for obstacle emplacement, the battalion should synchronize the air Volcano into the brigade scheme of defense. Task Force Saber planned Volcano emplacement starting with an IPC during NTC 19-04 and continued through with the air assault planning process in accordance with Field Manual 3-99, "Airborne and Air Assault Operations," to include an air mission coordination meeting, air mission brief, and rehearsal (DA, 2015). The TF considered the emplacement of the minefield the ground scheme of maneuver, and the engineer battalion commander acted as the ground force commander.

Using the air assault planning process helped facilitate an understanding of the timing required to emplace the Volcano system. Task Force Saber communicated these needs with the 1/25 Brigade staff and the engineer battalion through the use of the entire process. With the exact route and timeline planned, the actual employment can be used in either an on-order or time-based construct. The on-order construct is difficult to employ because it requires effective lines of communication and a clear trigger. Task Force Diamondhead used the on-order construct during Joint Readiness Training Center (JRTC) 19-02, but confusion with the trigger caused multiple delays. Lack of communication from the BCT caused multiple delays at the forward arming and refueling point (FARP), and the launch was delayed by several hours. Task Force Saber used a time-based trigger built on time-distance analysis during

Volcano mines after employment during 2-6 CAV's familiarization training at NTC 19-04. Photo by U.S. Army CPT Colin Buchans, A Company 2-25, 25th CAB

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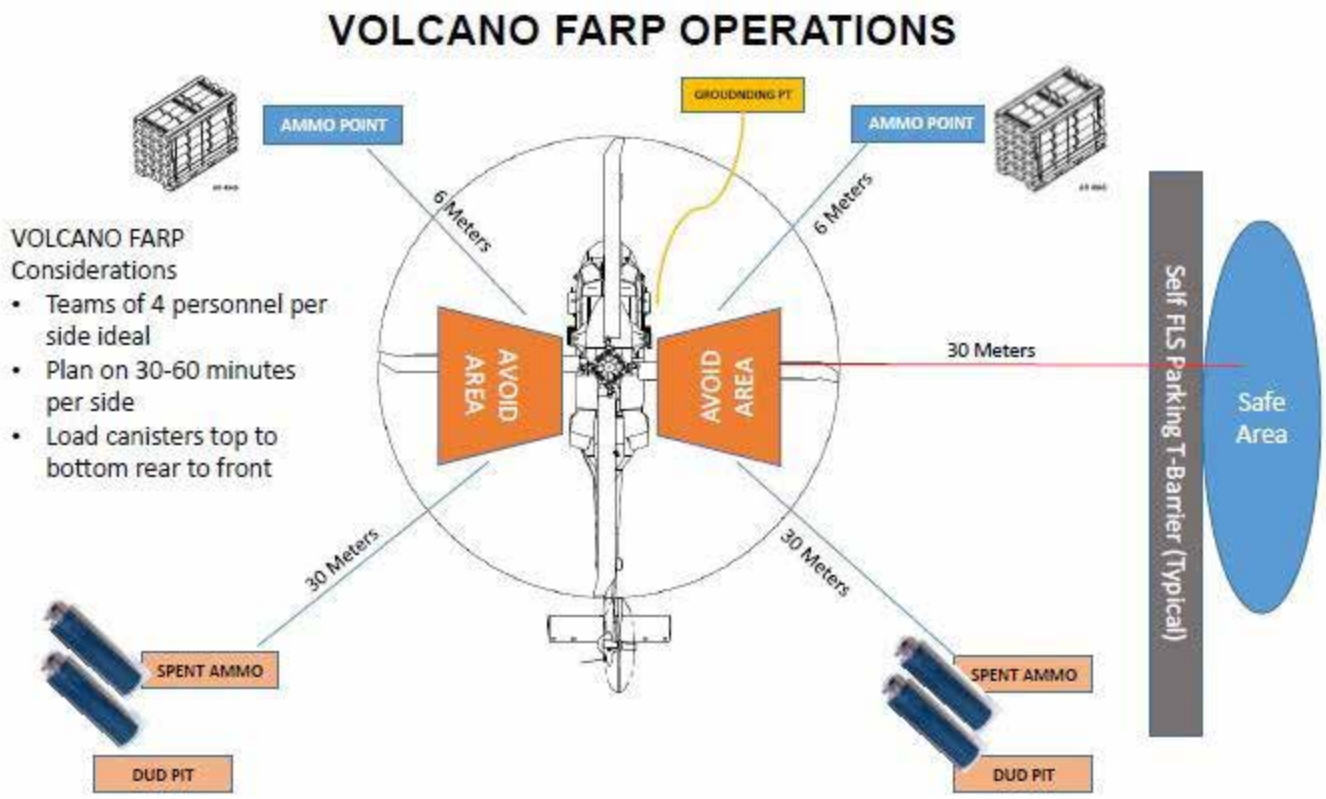

Diagram of Volcano FARP operations. Diagram credits to U.S. Army CW4 Chuck Rhoden, 2-25 AVN AHB.

NTC 19-04. The trigger was relatively effective because it changed the enemy's course of direction and rendered multiple mobility kills. Time-based triggers require accurate time-distance estimates of enemy movement if the 4-hour duration mines are employed. For 48-hour and 15-day time sets, time-based triggers may be more effective but require elevated legal approval.

An additional requirement for air Volcano operations that parallels the air assault planning process is the use of an aerial escort and additional security measures. Either an additional Black Hawk or Apache must be used as an aerial escort, depending on the location of the emplacement. Task Force Saber used an AH-64D escort during NTC 19-04 for an emplacement beyond the forward line of own troops (FLOT), and TF Diamondhead used a UH-60M escort during JRTC 19-02 for an emplacement behind the FLOT. The use of the air assault planning process facilitates the use of suppression of enemy air defenses (SEAD) during Volcano mine delivery as well. Full employment of SEAD (early warning or fires) disrupts enemy air defense artillery as the minefield is emplaced. Given that the aircraft typically conducts a low-area reconnaissance and then lays the minefield in a 557 x 320-meter area at low airspeeds, the aircraft is particularly vulnerable in a radar-contested environment. Suppression of enemy air defenses or electronic warfare jamming mitigates the risk that the slow-moving aircraft falls prey to enemy air defense.

EFFECTIVE LOGISTICS PLANNING

Consideration must also be given to the logistics aspect of Volcano operations. The mines and system are very heavy. A fully loaded Volcano system weighs 6,477 pounds, and movement of the 160 Volcano mine canisters requires a full-sized flat rack or heavy expanded mobility tactical truck (Department of Defense Form 365-4, 1996). The FARP's location must be coordinated early in the planning process. For example, during NTC 19-04, TF Saber used one FARP in the aviation tactical assembly area and one near the engineer battalion, with each TF providing the logistical support for its FARP operations.

The Volcano can be loaded by a team of four personnel per side and takes approximately 30–60 minutes to load, depending on the level of proficiency and number of personnel available. Dud pits are required at 30 meters from the FARP at the 4 and 8 o'clock position, and the area off the 3 and 9 o'clock of the aircraft should be clear (Diagram). In the event of an accidental discharge, the area should be cleared by a minimum of 2,000 feet. Load training is an absolute necessity because of possible unexploded ordnances.

An additional takeaway from NTC 19-04 and JRTC 19-02 was the requirement for a FARP rehearsal and the deliberate preparation of the aircraft prior to execution. Prior to arrival at the FARP, the Volcano aircraft must run-up, conduct a jettison check, conduct a built-in test

check, conduct a health indicator test check, and be prepared to take on fuel and canisters. Failure to do so could cause H-hour for mine employment to be significantly delayed. A FARP rehearsal also adds value because the Volcano mission essential task (MET) is rarely trained. For the maintainers and FARP personnel involved, rehearsals create a shared understanding of the requirements to load the aircraft and should include contingencies for duds and emergencies.

The air Volcano, while providing a unique tactical capability, does come with the cost of reducing the TF's air assault capabilities. With an aircraft established as a Volcano platform, the attack helicopter battalion (AHB) is capable of moving 10 fewer Soldiers per turn. When the demand for air assault operations is high (which is usually not during the defense), the reduced carrying capacity could prove costly. Additionally, the transition from an assault platform to a Volcano platform took the 25th Combat Aviation Brigade's (CAB) TF Diamondhead approximately 5 days and could take longer, depending on the availability of parts.

If effectively planned, the air Volcano provides the unique capability of rapid minefield employment designed to turn, fix, disrupt, or delay enemy breaching forces in the decisive action fight. The 25th CAB effectively employed air Volcano during JRTC 19-02 and improved upon those results during NTC 19-04, emplacing constructive minefields in Hidden Valley Pass, SW and Red Lake Pass. While not discussed in this writing, the required maintenance and training for Volcano operations come at a cost since the system is rarely employed. Future combat training center (CTC) rotations should focus efforts to take a more trigger-based approach to fully integrate air Volcano emplacement with engagement areas. Given the speed, magnitude, and element of surprise afforded by the air Volcano, units should strongly consider training the MET and planning employment at future CTCs.

Captain Jonathan Lee is an Assistant Operations Officer in the 2-6 CAV, 25th CAB. He is a 2014 graduate of the United States Military Academy, with degrees in economics and operations research. He served as Brigade LNO and attack aviation planner to the 2/25 IBCT during JRTC 19-02 and served as a planner for TF Saber during NTC 19-04. He is a rated AH-64D Aviator.

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Soldiers from 2nd Bn., 2nd Aviation Regiment, 2nd Combat Aviation Brigade, stand by as a UH-60 Black Hawk helicopter lands after successfully completing a Volcano capabilities exercise at Bisung Range near the city of Yangpyeong, South Korea. Courtesy Photo

COMBAT TRAINING CENTER AVIATION TRAINING AUDIENCE

By MAJ Kevin Ryan

During the conduct of multiple decisive action (DA) command post exercises, including corps and division warfighter exercises, the 25th Infantry Division (ID) assigned specific missions for the 25th Combat Aviation Brigade (CAB) that effectively shaped the enemy throughout the breadth and depth of the division's battle space. The CAB's missions and tasks included movement to contact, reconnaissance and security operations, aerial attacks, and air assault.

The CAB executed command and control of these deliberate operations with the AH-64 attack reconnaissance battalion (ARB) focused primarily on aerial attacks out-of-friendly-contact, while the AH-64 heavy attack reconnaissance squadron (HARS) conducted reconnaissance and security operations and movement to contact largely in-friendly-contact, with AH-64 platoons acting in a direct support role to the Division's lead brigade combat team (BCT) cavalry squadrons. The assault helicopter battalion (AHB) and general support aviation battalion (GSAB) focus on air assaults, paired with infantry brigade combat teams (IBCTs)–units with limited operational reach due to a lack of organic mobility assets. Each of these missions was assigned to a specific battalion to achieve success. Though aviation brigades look to fight their aviation battalions/squadrons as organic formations during large-scale ground combat operations (LSGCO), U.S. Army Forces Command (FORSCOM) still requires CABs to task organize aviation battalions into multifunctional aviation task forces at combat training center (CTC) rotations, a method better suited for supporting stability operations. Combat aviation brigades should design their aviation battalion's task organization for CTC rotations the way they intend to employ them under DA conditions, namely pure or near-pure battalion/squadron formations.

Current FORSCOM requirements task active duty aviation brigades to support a BCT's CTC with multifunctional aviation task forces. That aviation task force design provides a BCT with the same capability aviation task forces provide during counterinsurgency operations in Iraq or Afghanistan. While there is a need to train and prepare for the transition upon completing LSGCO, the focus of our CTC rotations remains on DA operations.

Regardless of the type of aviation battalion/squadron acting as the

The 25th Combat Aviation Brigade, 25th Infantry Division flies 19 AH-64 Apache helicopters in an organized formation around Oahu, May 1, 2019. U.S. Army photo by SGT Ryan Jenkins

task force headquarters at a CTC, aviation battalion/squadron staffs must mission command and train against every mission-essential task (MET) that occurs in the CAB: attack, reconnaissance, security, movement to contact, air movements, air assaults, aeromedical evacuation (MEDEVAC), aviation casualty evacuation (CASEVAC), air traffic services, and personnel recovery. Under the current CTC construct, an ARB must train against AHB and GSAB METs. This adds three to four METs for a battalion due to their task organized assault helicopter company, heavy lift platoon, MEDEVAC platoon, and air traffic services detachment. These additional tasks dilute the focus on core METs during a rotation. Aviation battalion staffs are not manned nor trained to execute the operations process against such a broad scope of missions in a DA LSGCO fight. Although as BCTs and battalion staffs will likely remain the primary training audience of CTCs into the foreseeable future, aviation units should focus their training objectives on how they expect to employ their formations during LSGCO. Additionally, we should align aviation battalions/squadrons against the appropriate CTC to best meet the training requirements of their core METs.

For example, aviation brigades should utilize the National Training Center (NTC) for the ARB and HARS so they may deploy pure or near-pure formations (at a minimum, two attack reconnaissance companies/troops) to support Stryker or Armor BCTs (SBCT/ABCT). This would allow ARB and HARS staffs to train in conducting both in-friendly-contact and out-of-friendly-contact attacks, all while executing manned-unmanned teaming. The "Division" (CTC Operations Group) will then be able to apportion AH-64 platoons for the BCT's use in-friendly-contact, while the ARB/HARS is able to command and control simultaneous out-of-friendly-contact attacks with their other AH-64 platoons, shaping the division deep area. This scheme of maneuver is aligned with how the 25th ID looks to employ AH-64 formations during LSGCO. The HARS with three troops of AH-64s provides a direct support troop to each BCT along the division forward line of troops. Our ARB focuses its AH-64 companies on executing out-of-friendly-contact attacks in the division deep area. Any task-organized UH-60 or CH-47 assets to the ARB/HARS should be used to support the large sustainment requirement and CASEVAC support for an ABCT/SBCT, largely the aviation capability utilized during warfighters for ABCTs/SBCTs. This near-pure addition to the ARB/HARS task organization would allow for limited air assaults in support of the SBCT's infantry companies/troops.

In addition to adjusting the aviation unit's task organization, the NTC live-fire operation improvements provide aviation brigades the opportunity to execute collective gunnery tables (GT IX and XII) for their manned and unmanned platforms during the live-fire portion of the 14-day exercise. Focusing AH-64 units on the NTC provides an opportunity to conduct advanced gunnery tables during the exercise, potentially decreasing the number of aerial gunneries required at home station. Additionally, the NTC's MQ1-C Gray Eagle Company (B/229) should allow rotational units (RTU) to bring one platoon's worth of Gray Eagle personnel to execute manned-unmanned teaming and gunnery qualifications with their organic AH-64 units. By allowing division-aligned Gray Eagle companies to utilize B/229's Gray Eagle equipment, similar to taking advantage of other CTC prepositioned equipment; units will save money, transit time, and possible shipping damage to MQ1C systems; all while providing an opportunity to build readiness.

Similarly, aviation brigades should utilize the Joint Readiness Training Center (JRTC) for GSAB and AHB rotations in order to better exercise assault helicopter companies and heavy lift platoons in larger capacity air assaults. Though the training area at Fort Polk is significantly smaller, it provides the necessary environment to execute battalion- and brigade-level air assaults. With the JRTC being the primary training center for IBCTs, pairing the GSAB and AHB against IBCT rotations allows them to focus on air movement and air assault operations. During the execution of LSGCO, the GSAB and AHB must be highly proficient at battalion- and brigade-level air assault operations in order to enable the ground force success as part of the division commander's scheme of maneuver. The current CTC construct requires units to task organize one UH-60 assault company and one CH-47 heavy lift platoon for the JRTC. Accounting for maintenance, this provides the ground force commander with the capacity to move approximately 140 Soldiers per lift during an air movement or air assault. By focusing the rotation around the AHB/GSAB and deploying an additional UH-60 company and/or CH-47 heavy lift platoon, the number of Soldiers an IBCT commander can move in a lift increases to more than 300. This increased capability allows the IBCT commander to mass forces on an objective, closely matching the size of force we contemplate during the conduct of warfighter–a brigade air assault. The near-pure addition of an AH-64 company/troop to the task force provides air assault security and attacks in-friendly-contact for the IBCT. Similar to the recommendations for the NTC, FORSCOM needs to adjust the task organization of aviation RTUs, while adjusting the task and purpose for the scope of missions that unit will train against. The correct apportionment of missions to the aviation task force allows them to focus on their core METs, air assaults, and air movements in the JRTC construct. More importantly, they can focus the aviation battalion staff on similar risk decisions their formations will face in LSGCO.

The risk for deliberate operations such as battalion- and brigade-level air assaults is owned at the division

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level. In the current CTC command and control construct, the aviation battalion task force is either operational control to the BCT or "Division" (Operations Group). This adds friction into the planning and targeting process, demonstrating to our battalion and company leadership the wrong flow of information during the execution of the operations and targeting process. Instead, an aviation brigade mission command node should deploy to the CTC to act as the higher headquarter of the aviation RTU and a buffer between the division and aviation task force. Additionally, the CAB headquarters can provide the necessary level of staff work to coordinate laterally with BCTs for hasty and deliberate in-contact attacks and air assaults. The CAB headquarters works with division to execute the targeting process in order to build proper enabler packages for deliberate operations across the division coordinated fire line. Division artillery, the U.S. Air Force, Division G39 (Information Operations Division, U.S. Army Cyber Command),DIV G39, DIV G2, Aviation Brigade, DFSCOORD, and the JAGIC provide realistic outputs of a division targeting cycle to the aviation brigade. The aviation brigade staff provides the ability to coordinate enablers and support the division targeting process, allowing the battalion to focus on mastering the maneuver and command and control of multiple companies/troops in depth.

Sending pure or near-pure aviation battalions/squadrons to the CTCs will limit training opportunities for the supported brigade combat team. IBCTs at JRTC will have limited opportunities to work with AH64s, while ABCTs/SBCTs will have limited lift and MEDEVAC support. This risk to mission can be mitigated by utilizing the aviation observer-controller/trainer teams to replicate that capability and/or utilize the installation aviation units for small training opportunities. For example, during the last two NTC rotations for the 25th CAB, we executed fewer than five MEDEVAC missions for the supported BCT. The lack of iterations is likely due to the training level of the BCT medical officer; however, in a DA fight it is unlikely that MEDEVAC assets will pick up at point of injury at the forward line of troops. Additionally, the likelihood of executing air assaults at the NTC with an ABCT is low because it isn't a MET for their formation. While it is important to expose BCTs to all the capabilities of the CAB, we are doing so to the detriment of our aviation battalions/squadrons.

With these changes, there are three expected outcomes all focused on improvements to readiness inside the current CTC model.

First, it would provide aviation battalions/squadrons with an opportunity to maneuver multiple organic company/troop formations in the execution of their cores.

Second, it would intensify the proficiency of our unmanned aircraft system (UAS) units conducting manned-unmanned teaming in a DA fight.

Finally, it would increase lethality and readiness by utilizing the live-fire portion of the NTC to qualify -AH64 companies and UAS platoons in collective tables from VIII to XII.

These readiness improvement concepts are not one size fits all across the operational Army. However, these recommendations for aviation unit task organization and employment at CTCs will significantly enhance combined arms maneuver and increase lethality for a BCT. Division and corps commanders should retain the flexibility to right size their aviation RTUs at CTCs to fully prepare units for DA.

Kevin Ryan is a 2005 West Point graduate with a major in Mechanical Engineering. Upon completing the AH-64 course at Fort Rucker, he spent the next 5 years in the 4th ID CAB serving as a platoon leader, battalion staff officer, and company commander. While serving in 4ID CAB, he deployed to Camp Taji, Iraq and Sharana, Afghanistan for two yearlong deployments. Upon completion of his second deployment, he served at Fort Rucker training AVBOLC-B students, AVCCC students, and commanding A/1-145th AVN REGT. Post-Command and General Staff College, he was stationed at Schofield Barracks, Hawaii, and Wheeler Army Airfield serving as the BAO in 2/25 IBCT, Squadron Operations Officer in 2-6 CAV, and recently as the 25th CAB Operations Officer. MAJ Ryan currently serves as the 25th ID Deputy Chief of Staff. MAJ Ryan is married to the former Amanda Gaudette and has two daughters, Elizabeth (3) and Charlotte (2).

On May 2019, the 25th ID's 2nd Squadron, 6th Cavalry Regiment flew to commemorate the 158th anniversary of the regiment's activation. U.S. Army photo by SGT Ryan Jenkins

MODERN "DEEP ATTACK" CYCLE:

ATTACKS OUT-OF-CONTACT IN SUPPORT OF THE DIVISION DEEP FIGHT

By MAJ Kevin Ryan and Aaron Trobee (CPT, U.S. Army)

As the Army shifts its operational focus away from counterinsurgency to decisive action as part of Unified Land Operations, commanders must return to the employment of rotary-wing attack aviation, specifically AH-64s, to deliberately attack enemy forces beyond the forward line of troops.

A Task Force Iron Eagles' Apache takes off here in Afghanistan ready to conduct aviation operations in support of our regional, coalition, and NATO partners. U.S. Army photo by CPT Roxana Thompson

The modern battlefields consists of multi-domain operations and combined arms maneuver, thus making it imperative for divisions and corps to shape the fight for subordinate headquarters. Corps and division-level engagements focus on shaping the enemy within the appropriate deep areas to enable the successful maneuver of their subordinate ground units. As a division-level shaping operation, an out-of-contact attack is optimally coordinated and planned at the division- and brigade-levels over 96 hours, utilizing four daily battle-rhythm events to create shared understanding, integrate enablers, and coordinate effects. These four battle-rhythm events are the Division Target Coordination Board (TCB), Combat Aviation Brigade (CAB) Targeting Working Group (TWG), CAB Commander's Update Brief (CUB), and the Division Targeting Working Group (TWG). Both the 24-hour battle rhythm and the overall 96-hour out-of-contact attack planning process are nested with the division's 96-hour targeting cycle and the 72-hour joint air tasking order (ATO) cycle.

Based on the outputs from the division's targeting cycle and the joint ATO cycle, the planning process for out-of-contact attacks produces distinct outputs at each of the 96-hour, 72-hour, 48-hour, and 24-hour windows. Targeting guidance received from the division commander at the 96-hour portion of the Division Target Coordination Board triggers simultaneous planning efforts at echelon for an out-of-contact attack: division, brigade, attack reconnaissance battalion (ARB), and the associated attack reconnaissance companies. Each echelon is responsible for specific pieces of the overall planning effort, as well as integrating their plan into the overall operation. The overall success of rotary-wing attacks against enemy forces out-of-friendly-contact is largely a function of the division targeting process, utilizing the four daily battle-rhythm events and rigid integration of both offensive and defensive effects.

Attacks-out-of-contact are conducted throughout the depth and breadth of the division area of operations to include close and security areas (the only qualifier being that the targeted enemy is not in contact with a present friendly ground force). Field Manual 3-04 defines attacks against enemy forces out-of-friendly-contact as when:

"Army Aviation rotary-wing and UAS, maneuvering independently against an enemy force not in close contact [read direct fire] with friendly ground maneuver forces conducts hasty or deliberate attacks to divert, disrupt, delay, or destroy enemy capabilities before they can be brought to bear effectively on friendly forces" (Department of the Army [DA], 2015, p. 3-6, section 3-23).

Narrowing the definition to attacks against enemy forces out-of-friendly-contact in support of a division headquarters, these attacks almost exclusively take place in the division deep area; forward of both the forward line of troops and coordinated fire line (CFL), but short of the Corps' designated fire support coordination line (FSCL). On a contiguous battlefield, the deep area is usually forward of the close area

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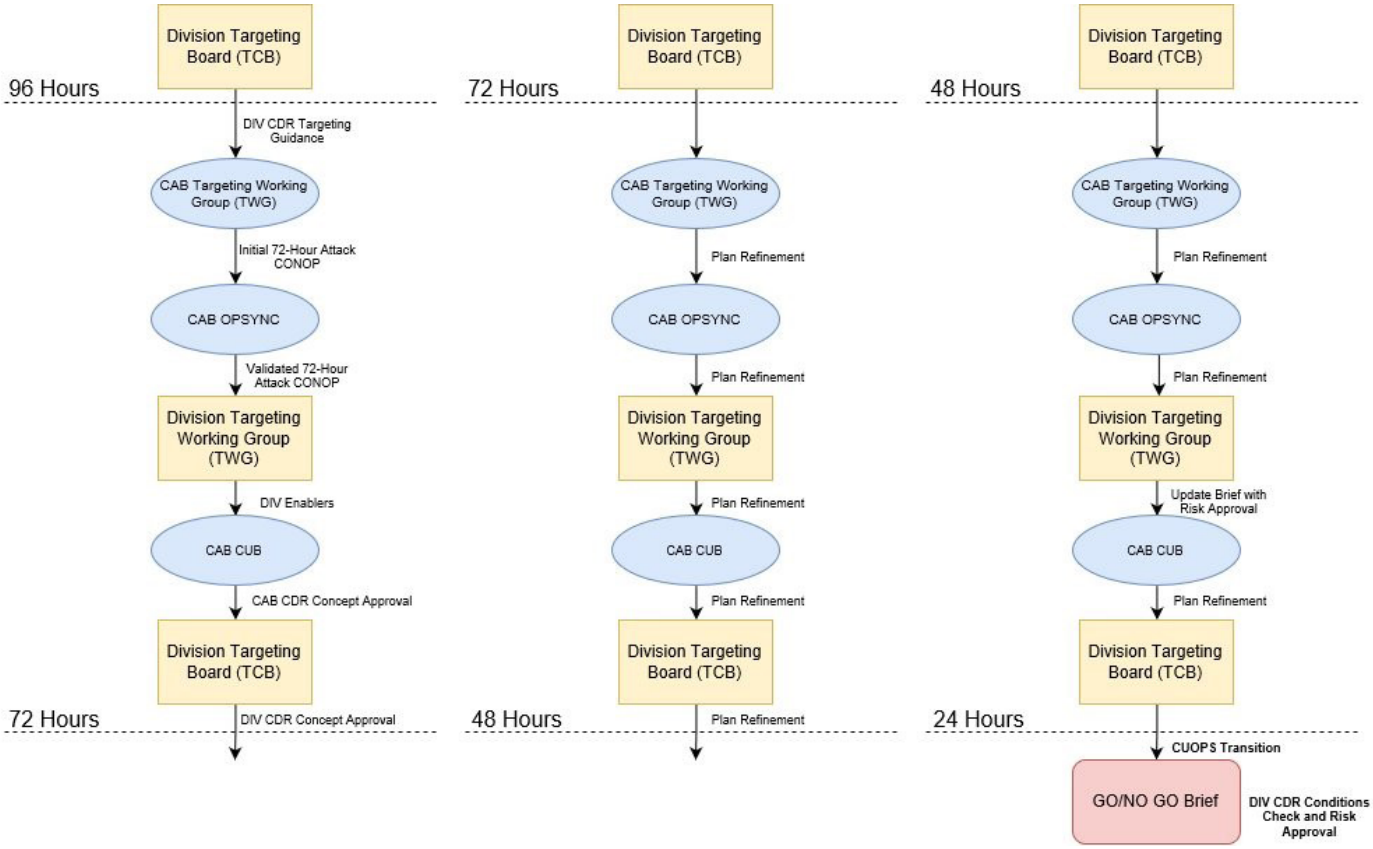

Figure 1. 25th CAB attack plan life cycle.

that a commander uses to shape enemy forces before they are encountered or engaged in the close area (DA, 2012, p. 1-11). The deep area typically extends between the forward boundaries of subordinate units (brigade combat teams) to the forward boundary of the controlling echelon (division) (DA, 2012, p. 1-11). Previous Army aviation doctrine categorized these specific types of attack as interdiction attacks, which are colloquially referred to as "deep attacks" (DA, 2007, p. 3-63). In this context, rotary-wing "deep attacks" are division combined arms operations conducted with CAB aircraft, deliberately planned with inputs by subordinate echelons against an enemy that is not in direct contact with a friendly ground force. The purpose of these types of attacks is to target enemy forces or capabilities before they can be brought to bear effectively on friendly forces (DA, 2016, p. 2-6). The targeted enemy force is a function of the division's 96-hour targeting cycle, focused on enemy high-value targets including air defense systems, anti-aircraft artillery, long-range artillery, mobile artillery, armor reserves, etc. This process is critical to mitigate both risk to mission and risk to force inside a division's area of operations. The division uses deep attacks to mitigate risk to mission by shaping ahead of maneuver units with attack aviation. To achieve the desired shaping with this capability, CAB integration into the division targeting process gains the requisite enablers (e.g., artillery, electronic warfare, air interdiction [AI], UAS, etc.) to mitigate risk to force. The combined effort of the division staff increases the probability of a successful operation, shaping the division deep area.

DIVISION TARGET COORDINATION BOARD (TCB)

Figure 1 illustrates the life cycle of an attack plan, divided by a 24-hour division battle rhythm with the division TCB at both the beginning and the end. The division TCB is attended by the CAB commander, CAB S3, CAB Fire Support Officer (FSO), and CAB S2. The primary output of the TCB is division commander approval for the next 72 hours of targeting. The division staff, division artillery (DIVARTY), and the CAB will provide the board with an update for the operations concepts for H-24 to H-48 hours, allowing the division commander to refine guidance as targeting moves into the *execution phase*. Division enablers and the CAB confirm the plan for any upcoming deep attacks within the H-24 hour timeframe with a "Go/No-Go" brief by warfighting function for the purpose of seeking final risk approval from the division commanding general. Finally, each TCB is concluded with the division commander's targeting guidance for shaping operations between H-72 to H-96 hours in relation to a named objective or enemy critical capability in the division deep area. With the division commander's targeting guidance received during the division TCB at H-96 hours, key division staff sections (to include Division

Electronic Warfare, Division Air Liaison Officer, G3 aviation, DIVARTY) work with the CAB staff to develop the overall division-level concept of the operation (CONOPS) throughout the remainder of the H-96 hour battle-rhythm events. The CAB carries this guidance forward to the CAB TWG and uses it to focus deep attack planning for the next day's battle-rhythm events. Further discussion will show how a CAB develops a concept for approval at the following ATO day's division TCB.

COMBAT AVIATION BRIGADE TARGETING WORKING GROUP (TWG)

To allow maximum time for target development and deliberate planning, the CAB TWG should be as close to the division TCB as possible. At the H-96 hour iteration of the CAB TWG, the working group establishes the initial attack concept, utilizing targeting guidance received from the division commander in the division TCB. The purpose of the CAB TWG is to provide analysis, coordination, and synchronization of the targeting process so planners may recommend targets for deep attacks at the CAB CUB and division TCB (DA, 2015, p. 4-8). The CAB TWG is attended by brigade representatives from all the warfighting functions inside the brigade staff and special staff including: brigade S1, S2, S3, S4, S6, air defense and airspace management, tactical operations, brigade unmanned aircraft systems (UAS), brigade master gunner, and brigade electronic warfare. Intelligence provides the enemy situation for the proposed mission window, as well as the refined analysis of the air defense artillery threat present in the targeted unit and surrounding area of operation. Intelligence and fires work together to select a target based on specific enemy formations, functions, and capabilities in accordance with the division High Payoff Target List, highlighting that which requires shaping in order to allow friendly ground maneuver elements to be successful. Target selection is completed by utilizing the Army targeting methodology of: Decide, Detect, Deliver, and Assess (D3A), which helps the staff decide what targets must be acquired and engaged (DA, 2015, p. 1-20). For target selection, focusing on specific enemy capabilities or enemy unit formations—rather than just named objectives—is key to selecting a target that is worth the risk to force of conducting a deep attack.

Targeting for the CAB between the CFL and FSCL allows for organic division artillery to support suppression of enemy air defense (SEAD) en route and on the objective. In an ideal task organization, the division will allocate two lines of Gray Eagle in support of a CAB deep attack, allowing for both persistent surveillance and battle damage assessment. S2, fires, and brigade UAS integrate these two lines to act as primary observer for SEAD to and from the objective and importantly, to assist in confirming the target's location on the objective. Gray Eagle (or a similar capability) is absolutely essential to the success of the mission, both to identify the target (risk to mission) and provide dynamic targeting to improve SEAD (risk to force). Critical inputs from other warfighting functions are Class III and V estimates provided by the brigade S4, and the CAB's personnel status provided by the brigade S1. These running estimates, along with the proposed target, drive the size of the formation allocated for massing in the attack and the sustainment required to support. Operational reach and other environmental factors will shape the initial attack planning. The key outputs from the CAB TWG are the specific enemy unit or capability to be targeted and an overall attack concept; a deliverable that is briefed at the CAB CUB. Follow-on action post-CAB TWG is coordinating for enablers, typically controlled at the division level (i.e., EW, AI; Gray Eagle; and long-range artillery). All are critical to mitigating both the risk to force, as well as risk to mission accomplishment.

Between the H-72 hour and H-48 hour iterations, the attack concept is continually refined with updated intelligence estimates derived from the mission assessment of previously planned attacks and analysis from division and corps intelligence resources. At the H-24 hour iteration, the CAB attack plan is finalized and packaged for presentation at later H-24 hour battle-rhythm events. At H-hour, the mission is executed as planned. At H+24 hours, the CAB TWG is used to determine the attack's effect on the targeted enemy capability based on the reported battle damage assessment, coming from multiple intelligence sources. Division G2 and CAB S2 collaborate to analyze and update the enemy situation and provide this feedback during the next iteration of battle-rhythm events.

CAB COMMANDER'S UPDATE BRIEF (CUB)

After the target is developed at the CAB TWG, the target must be nominated for approval by the CAB commander or representative with delegated targeting decision authority (DA, 2015, p. 4-3). Due to conflicting requirements, the commander, or delegated authority, is frequently unable to attend the CAB TWG to approve the target immediately upon nomination. The CAB CUB acts as the CAB Targeting Decision Board and is the ideal outlet to receive the CAB commander's approval for targets and attack CONOPS. First, S3 current operations and the S2 section brief the assessment from the previous ATO cycle's operations. Second, the S3 plans team and the S2 section describe the H-24 and H-48 hour enemy/friendly concept to illustrate how the friendly action, enemy reaction, and friendly counteraction necessitates the aviation scheme of maneuver. The commander should also be able to visualize how the attack plans for the next 72 hours are nested with the di-

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vision's overall shaping effort in the deep area and can use this forum, if necessary, to make any changes prior to the execution of the already approved missions. Finally, the S3 plans team proposes the H-72 hour deep attack CONOPS to the commander for approval prior to the division TWG.

Once the CAB commander approves the H-72 deep attack nomination, the CAB publishes a warning order to the appropriate ARB. The provided information will allow the ARB to begin the military decisionmaking process and assign an attack reconnaissance company to the mission for parallel execution of troop leading procedures. The ARB FSO collaborates with the CAB FSO and DIVARTY planners to begin formulating the initial SEAD plan and integrate the engagement area. At the H-72 hour iteration, the CAB commander directs changes to the plan as necessary. At the H-48 hour iteration, the CAB commander will again provide any command-directed changes to the plan. These changes, along with the latest intelligence estimates, will be captured and published as necessary in a subsequent operations order (OPORD) to the ARB. During the H-24 hour iteration, the CAB commander is briefed on the attack operation or the following ATO cycle by current operations, including the timeline for execution checklist (EXCHECK) rehearsals.

DIVISION TARGETING WORKING GROUP (TWG)

Once a target and initial concept are approved by the CAB commander at the CAB CUB, the CAB S3, S2, and FSO attend the division TWG. The CAB S3 reviews any changes to the H-24 and H-48 hour deep attack CONOPs with the deputy commanding general for operations (DCG-O) and division operations officer. The CONOP shown in Figure 2 serves as the principle briefing format to describe the synchronization of enablers and effects to mitigate risk during the operation. The brigade staff publishes all necessary detail through mission orders to the battalion. For H-72 hours, the CAB staff proposes CAB commander-approved nominations for deep attacks to the targeting enterprise for discussion and refinement. The required enablers for a CAB deep attack provide input on their ability to support the plan based on updated running estimates, target locations, and enemy situation for that ATO cycle. Additional enabler input allows the CAB to adjust the plan based on what effects enablers can and cannot provide during the mission window, highlighting any increased risks to the mission or force. At the conclusion of the division TWG, the CAB has a more refined deep attack plan with approved division support from the DCG-O and division G3.

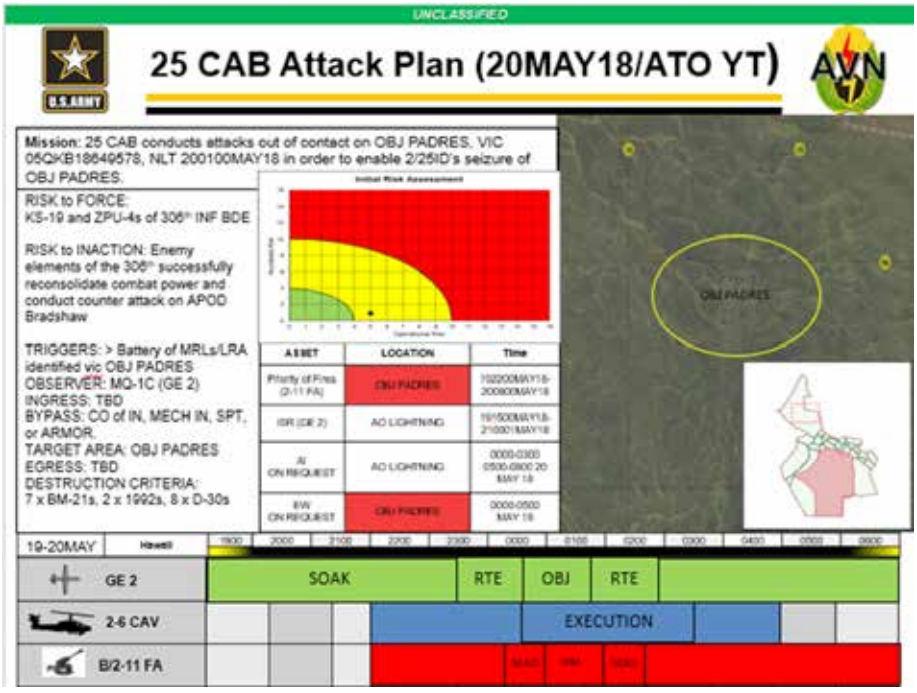


Figure 2. 25th CAB attack CONOP.

DIVISION TARGET COORDINATION BOARD (TCB)

Once resources are apportioned by the division operations officer, the CAB plans team makes necessary adjustments to the H-72 hour deep attack plan. At the H-72 hour iteration of the division TCB, the CAB commander, CAB S3, CAB FSO, and CAB S2 present the H-72 hour concept as refined in the previous division TWG. This course of action brief highlights the targeted enemy unit, friendly assets assigned to this mission, and the enablers required for risk mitigation. The brief's course of action slides clearly illustrate the scheme of maneuver, scheme of fires, and how enablers are integrated throughout the operation. The division commander will approve or amend the overall concept, as briefed by the CAB staff, for further action. The commanding general's targeting guidance completed 24 hours of staffing and is ready for course of action approval during the H-72 hour portion of the division target coordination board.

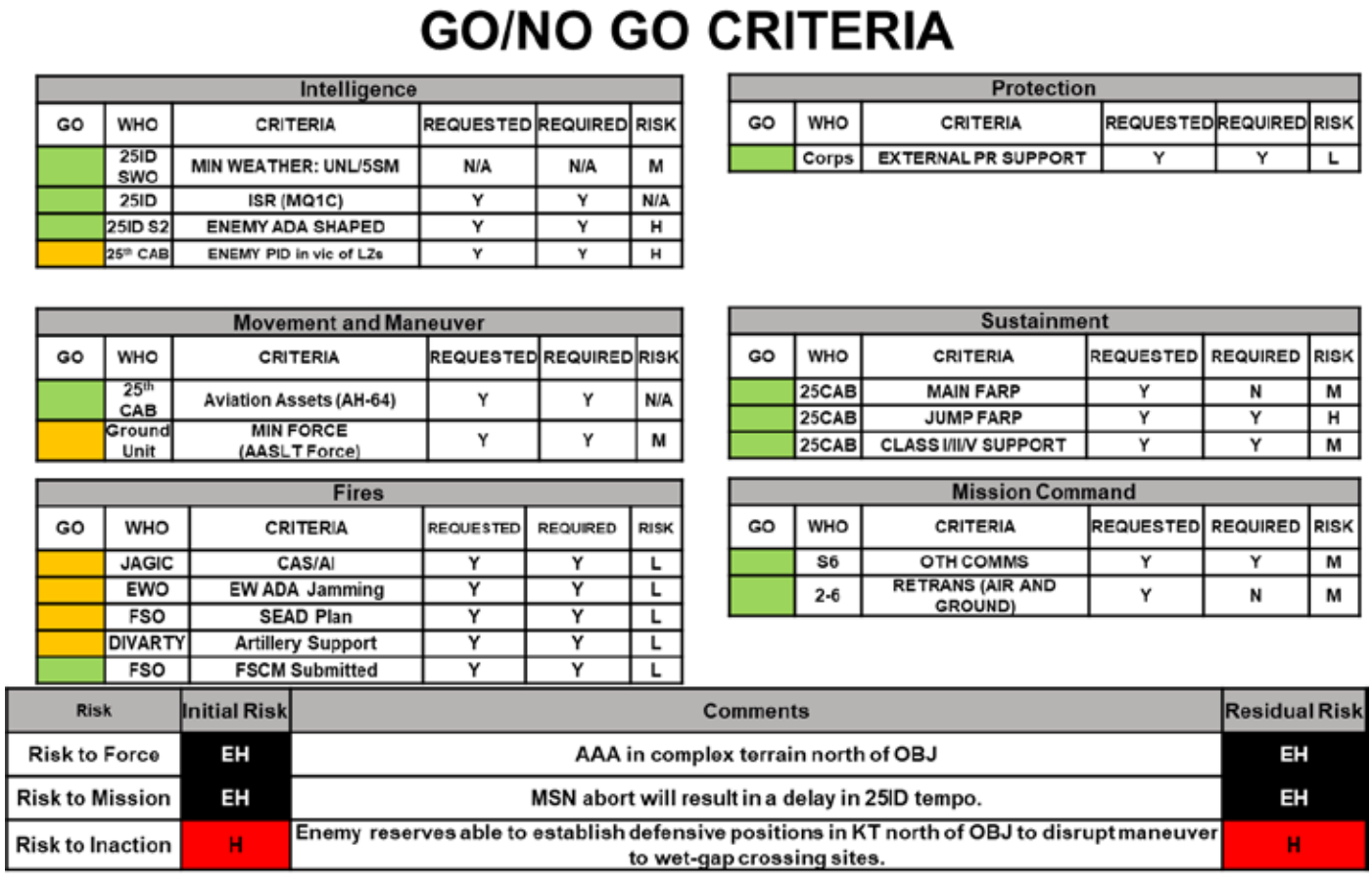
As the plan progresses to within the H-24 hour iteration, the CAB commander uses the division TCB to brief the division commander or appointed mission approval authority on the approaching operation. This "Go/No-Go" brief should include any final changes to the CONOPS, weather impacts, enemy disposition updates, participating enablers, primary/alternate routes, flight profile, SEAD plan, actions on the objective, personnel recovery plan, and

any applicable contingency plans. As the underwriter of the inherent risk in this division operation, the division commander is the final mission approval authority and uses this briefing as a decision point to launch, delay, or abort the attack based on established division-level Go/No-Go criteria (Figure 3). With the attack guidance refined (by both the division and CAB commanders) and attack plan approved, the CAB produces a final OPORD/fragmentary order to the ARB with added and refined details from the second iteration of battle-rhythm events.

Before mission execution the CAB current operations leads two EXCHECK rehearsals, one that is 24 hours prior to execution and one that is 2 to 4 hours prior. This rehearsal is run by the CAB current operations and ties in the division Joint-Air-Ground Integration Cell, DIVARTY, and the ARB. The staff uses the final rehearsal to confirm enabling functions and Go/No-Go criteria approved by the division and CAB commanders. With "Go" criteria confirmed, the operation is executed as planned and is monitored at the division, brigade, and battalion levels. After the mission is complete, effects on the targeted enemy capability are assessed during the subsequent CAB TWG (at H+24 hours) based on the reported battle damage assessment. Based on the assessment of previous attacks, the 96-hour attack planning process is continuously adapting to the updated enemy situation.

CONCLUSION

As both historical anecdotes, and more recently, lessons learned from constructive simulations indicate, the success of out-of-contact attacks in the division deep area is a direct function of the quality of the deliberate planning effort and integration of critical enablers to make a combined arms attack. Nesting the attack planning effort with the already established 96-hour targeting cycle and the 72-hour ATO cycle to create a 96-hour attack planning process has proven to be an effective way to plan deep attacks and receive the required support from division-level enablers and joint fires. Attacks of this nature are truly a division operation and require detailed levels of planning, coordination, and integration beyond the scope of expertise found within the CAB staff alone. Therefore, it is necessary to anchor the deliberate aviation planning process to the division targeting process controlled by regular battle-rhythm events. This process creates shared understanding, integrates the necessary enablers, and coordinates desired effects for a successful deep attack. This process ensures that all risk (risk to force, risk to mission, and risk to inaction) is understood at all echelons, and most importantly, approved at the appropriate level—the division commander.



GO/NO GO CRITERIA

Intelligence

GO	WHO	CRITERIA	REQUESTED	REQUIRED	RISK
	25ID SWO	MIN WEATHER: UNL/5SM	N/A	N/A	M
	25ID	ISR (MQ1C)	Y	Y	N/A
	25ID S2	ENEMY ADA SHAPED	Y	Y	H
	25th CAB	ENEMY PID in vic of LZs	Y	Y	H

Protection

GO	WHO	CRITERIA	REQUESTED	REQUIRED	RISK
	Corps	EXTERNAL PR SUPPORT	Y	Y	L

Movement and Maneuver

GO	WHO	CRITERIA	REQUESTED	REQUIRED	RISK
	25th CAB	Aviation Assets (AH-64)	Y	Y	N/A
	Ground Unit	MIN FORCE (AASLT Force)	Y	Y	M

Sustainment

GO	WHO	CRITERIA	REQUESTED	REQUIRED	RISK
	25CAB	MAIN FARP	Y	N	M
	25CAB	JUMP FARP	Y	Y	H
	25CAB	CLASS I/II/V SUPPORT	Y	Y	M

Fires

GO	WHO	CRITERIA	REQUESTED	REQUIRED	RISK
	JAGIC	CAS/AI	Y	Y	L
	EWO	EW ADA Jamming	Y	Y	L
	FSO	SEAD Plan	Y	Y	L
	DIVARTY	Artillery Support	Y	Y	L
	FSO	FSCM Submitted	Y	Y	L

Mission Command

GO	WHO	CRITERIA	REQUESTED	REQUIRED	RISK
	S6	OTH COMMS	Y	Y	M
	2-6	RETRANS (AIR AND GROUND)	Y	N	M

Risk	Initial Risk	Comments	Residual Risk
Risk to Force	EH	AAA in complex terrain north of OBJ	EH
Risk to Mission	EH	MSN abort will result in a delay in 25ID tempo.	EH
Risk to Inaction	H	Enemy reserves able to establish defensive positions in KT north of OBJ to disrupt maneuver to wet-gap crossing sites.	H

Figure 3. Example GO/NO-GO criteria.

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As the battlefields of the future become more complex and the Army shifts focus to division- and corps-level execution of large-scale ground combat operations, the CAB's ability to plan, lead, and execute attacks in the division deep area will certainly increase lethality for divisions across the Army.

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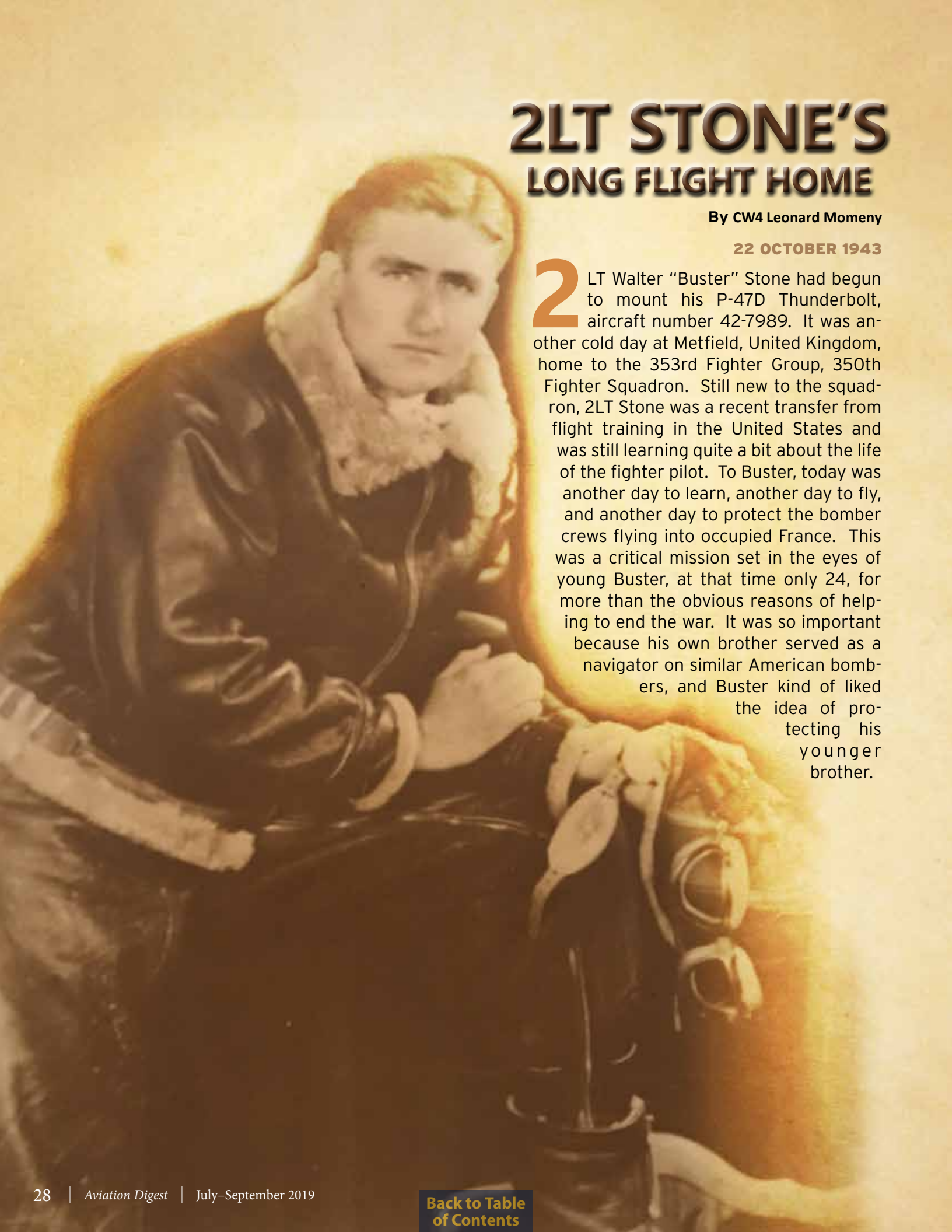
Kevin Ryan is a 2005 West Point graduate with a major in Mechanical Engineering. Upon completing the AH-64 course at Fort Rucker, he spent the next 5 years in the 4th ID CAB serving as a platoon leader, battalion staff officer, and company commander. While serving in 4ID CAB, he deployed to Camp Taji, Iraq and Sharana, Afghanistan for two yearlong deployments. Upon completion of his second deployment, he served at Fort Rucker training AVBOLC-B students, AVCCC students, and commanding A/1-145th AVN REGT. Post-Command and General Staff College, he was stationed at Schofield Barracks, Hawaii, and Wheeler Army Airfield serving as the BAO in 2/25 IBCT, Squadron Operations Officer in 2-6 CAV, and recently as the 25th CAB Operations Officer. MAJ Ryan currently serves as the 25th ID Deputy Chief of Staff. MAJ Ryan is married to the former Amanda Gaudette and has two daughters, Elizabeth (3) and Charlotte (2).

Aaron Trobee graduated from West Point in 2011 and was commissioned as a 2LT in the Aviation Branch. He served as class leader during the BOLC and IERW at Fort Rucker, Alabama, and graduated as the Distinguished Honor Graduate in his flight class with qualifications for the UH-60L and UH-60M helicopters. In 2013, he served as a platoon leader and executive officer at Fort Campbell, Kentucky within the A/7-101 Command Aviation Company, including a combat deployment in support of OEF to Afghanistan (Regional Command East). In 2014, he assumed command of A/7-101 and provisional command of the 7-101st GSAB and completed their inactivation as part of an Army-wide aviation restructuring initiative. After graduating the 6-month AVCCC, he reported to the 25th CAB in 2016 at Wheeler Army Airfield, Hawaii. In 25th CAB, he held numerous roles on the brigade staff to include training officer, plans officer, and readiness officer. He recently separated from the Army to pursue a career in business.

An AH-64 Apache soars through the sky here in Afghanistan providing mission essential aviation support for Operation Freedom's Sentinel and Resolute Support. U.S. Army photo by CPT Roxana Thompson

2LT STONE'S LONG FLIGHT HOME

By CW4 Leonard Momeny



22 OCTOBER 1943

2LT Walter "Buster" Stone had begun to mount his P-47D Thunderbolt, aircraft number 42-7989. It was another cold day at Metfield, United Kingdom, home to the 353rd Fighter Group, 350th Fighter Squadron. Still new to the squadron, 2LT Stone was a recent transfer from flight training in the United States and was still learning quite a bit about the life of the fighter pilot. To Buster, today was another day to learn, another day to fly, and another day to protect the bomber crews flying into occupied France. This was a critical mission set in the eyes of young Buster, at that time only 24, for more than the obvious reasons of helping to end the war. It was so important because his own brother served as a navigator on similar American bombers, and Buster kind of liked the idea of protecting his younger brother.

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The mission brief had concluded as any other, and White Flight, a fighter escort assigned to protect a flight of B-26 Bombers from the 9th Air Force, was about to depart on another mission over occupied France. The weather was fairly decent over England, a pleasant change from typical days, but once over the Channel, just prior to the coast of France, it was briefed that the flight would see a substantial increase in cloud cover. If that happened, they would simply close up the formation, stay on each other's wing, and fly through the cloud cover. It was thought of as almost advantageous, because then the FLAK guns could not engage you directly, but instead hunt and peck the sky by shooting at aircraft sounds.

As the Pratt & Whitney R-2800 roared to life, Buster knew he had every bit of horsepower and armament that a pilot could want at his disposal, should the need arise. Like most pilots during this time, Buster was hopeful; after all, Italy had just surrendered in September, and the Army was advancing to Rome. It wouldn't be long until the Yanks were in France and then straight into Germany. Once that was done, he could go home—back to Andalusia, Alabama...back to the waiting arms of his young wife—and back to his Mama Stone, who worried every day about her four sons who were currently serving the U.S. Military. You see, Buster had a big family and was one of nine siblings. Aside from Buster and his brother, Earl, who were both currently serving in the Army Air Forces in the Allied Air Campaign over occupied Europe, there were two other brothers, Bill and Doyle, also serving in the Philippines. It seemed that the Stone Family had been ripped asunder and spread to the four corners of the earth, but Mama Stone knew everyone would come back.

Buster and his flight were finally ready, and the P-47D had little trouble lifting off the ground despite the weight of his eight, fully loaded .50-caliber Browning machine guns

REPUBLIC P-47D THUNDERBOLT

combined with 10 x 5 inch- (127 mm) unguided rockets. The dependable Pratt & Whitney engine made easy work of the craft, which now weighed nearly 13,000 lb. The mission was a go and after takeoff, Buster easily slid into slot four, his assigned position in the White Flight formation. Before long, the flight would find itself over Nazi-occupied France.

It was to be as the weather projected, with cloud cover becoming increasingly thick after crossing the channel. Flight into and out of clouds was something they had trained to do, but this seemed incredibly challenging. White Flight lead would call visibility in clouds to be less than 100 ft, and it was starting to get difficult to see the rest of the flight, regardless of how close they were to each other. Buster's P-47D lurched along with the rest of the flight, and the White Flight lead thought things would get better for the flight at 16,000 ft; however, the change in altitude did little to arrest the concern of lead. Finally, the decision was made to abort the mission and return to Metfield, United Kingdom. However, at some point during the decision to abort the mission due to weather, Buster called visual loss of White Flight... one minute they were there and the next, they seemed to vanish into the clouds. It's never good to be separated, and so Buster called the flight that informed him to turn to a general heading and to keep flying until out of the clouds. Buster turned to the heading...

29 MARCH 2019

CW4 Momeny was spending another day at the office when the call came in. "Mr. Momeny," said the voice over the phone, "it's the Casualty Assistance Center (CAC), and we have a case for you."

"Alright, I'll be right in," he said, fully knowing there was a typical short recall associated with such duty. Initially, he was filled with the same sense of fear that everyone feels upon notification for Casualty Assistance Officer (CAO) duty, because while a tremendous honor to perform such duties, it is also known to be incredibly sensitive, if not downright taxing, as death is never an easy topic to discuss. Then his initial fear turned to curiosity after what was said next.

"Don't worry sir, this is a good assignment...it's not typical...you'll see

when you get here" she explained. And with that, the call was over.

At the CAC, CW4 Momeny was informed that he would be CAO on a repatriation case. Repatriation means that a veteran from a previous war who was initially known to be missing in action, or MIA, has been found. It turns out that this case was concerning the recovery and identification of a Second Lieutenant (2LT) Walter B. Stone, a P-47D Pilot who went missing in northern France during the earlier years of World War II. CW4 Momeny was informed that there was to be a meeting on 3 April to the family, a briefing of sorts, by a special member of the Human Resource Command (HRC) who worked specifically with the office of Past Conflict Repatriation Branch, or PCRB. After inquiring as to the location of the meeting, he was informed that he would meet both the family and the HRC representative in Andalusia, Alabama. While there he was to meet the PADD, or Person Authorized to Direct Disposition, of the returning Service member, who in this case happened to be 2LT Stone's oldest living relative.

The PADD was named Marcus Stone. Marcus is an energetic and intelligent man of 84 years and spends most days between Andalusia and Pensacola, Florida. At 84, Marcus was approximately 8 years old the last time he had seen 2LT Stone, or as he was more affectionately known in the family, Uncle Buster.

3 APRIL 2019

CW4 Momeny and the representative from HRC met up about an hour early in a small café in Andalusia. Over coffee, the gentlemen discussed the broad scope and focus of the coming brief. Within 3 hours, they were going to cover the details of the event that led to the loss of the Service member and all associated and supporting documents. The details would then be laid out to the family concerning how 2LT Stone was located and identified. Finally, CW4 Momeny was instructed on how he was to brief the family concerning the awards of their fallen loved one. With all items covered in detail, the two set off to meet the family.

Upon arrival, both the representative from HRC and CW4 Leonard Momeny were enthusiastically greeted by the family. Marcus quickly made his way to CW4 Momeny, who was dressed in the distinctive Army Service Uniform, a requirement for specific functions of a Service member tending to CAO duties. It was a prescient initial meeting to say the least, and now CW4 Momeny, an aviator and veteran, was about to assist a family in bringing another Army aviator and veteran home for good. Once inside the local funeral home, it became apparent that Mr. Marcus Stone, nephew to Uncle Buster, was not the only one here for the brief…family and friends had traveled in from across the Nation to learn about what had happened to the once missing family member. It quickly became obvious to CW4 Momeny that the family ties in the Stone family ran deep and true.

THE BRIEF AND THE FAMILY

The fascinating brief provided by the special representative from HRC outlined the entire process, from 22 October 1943 until present, on how the Army categorized and later searched for 2LT Stone. From the earliest recovery efforts during the 50s until the 90s, to a refined and corrected reinvestigation that would showcase the talents of an incredible archeological team from the University of Wisconsin, 2LT Stone's countrymen and their dedi-

BOCAGE COUNTRY ON THE COTENTIN PENINSULA, LOWER NORMANDY

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cation to his recovery was detailed in its entirety. Everything was fairly objective in its presentation, and all was fine until the question of how 2LT Stone was positively identified would arise. That's when it happened…accompanying a very detailed scientific explanation was Buster's dog tag. Emotions began to well up in everyone, to include CW4 Momeny, who slowly moved his hand to the set of dog tags around his own neck. The most basic symbol of service in the military…the piece of identification no member of the Navy, Army, Marine Corps, Air Force, and Coast Guard is ever without daily…the dog tag had just traversed space and time to bring a little bit of Buster back to the entire room.

To say that everyone in the room was agog over what had just been presented would be putting it lightly. Accompanying the dog tag was a small neck chain, sixpence, and some buckles. It all presented a very physical connection to a family member who had been missing for quite some time. After all, Buster entered into service in the spring of 1943, and was only now, nearly 76 years later, returning to his native soil. It was all very powerful. As the family began to gather themselves, the stories flowed. People reassured each other, hugged, clasped hands, and then began to talk of family.

THE TIE OF FAMILY & SOLDIER

For such a large group in attendance, most (save for Marcus) removed by distance from Buster in years, it initially struck CW4 Momeny as a bit odd that all felt so connected to the missing Service member. However, as the discussion turned to Grandmother Stone…or Mama Stone, it became obvious that the connection to service ran throughout the entire family. For you see, Grandmother Stone never gave up hope that one day her entire family would be home again.

Grandmother Stone was a woman of strong faith and conviction, and I suppose that she had to be considering she had nine children to mother. She was incredibly dedicated to not only her family but the local church, were she was a mainstay for decades. No matter how far family would venture out, as far as New England for the children of Buster's brother, Albert Earl Stone, or how close they stayed to home, like granddaughter Nelda Godwin, Mama Stone's confidante and daughter of Buster's sister, Sarah Alice Stone Cassidy, the connecting line seemed to be the guiding love of a Soldier's mother. Family, even so many years later, was all-encompassing and important to the Stones. Additionally, it was more than obvious that they were incredibly proud of the difference their family made in one of the greatest struggles the world had ever known.

The stories flowed, and even Marcus who only briefly knew Buster as a boy of about 8 when he shipped off to Europe, recalled the ties of family through the memory of Grandmother Stone. The strength of the family and their dedication to country was more than impressive. Grandmother Stone had four boys serve during World War II, with two in the Philippines, one bomber crewmember / navigator, and one fighter pilot… Buster, who was the only one not to come back. She even had a grandson, the oldest son of Jewell, Army Specialist 4 Jerry Michael Stone of the All-American 82nd Airborne Division, who served honorably in Vietnam and sadly, was killed in action. Through all of it, there was always hope that Buster would return, especially from his mother. However, it can also be said that there has obviously never been a question to the resolution and dedication to country by the members of the Stone family.

In fact, when Buster's niece, Kate Stone was only a child in the 1960s, her father Earl took a job in France. It did not seem of much consequence to her at the time, and their entire family moved to establish a new life in Europe. Earl never said much as to why he took the job in France, but Kate remembers weekend trips to the French countryside where her father was scouring the land for any sign of his missing brother's plane. The family never forgets, and the briefed information about where Buster was found reminded Kate of that very point… as she was taken back to something that so clearly connected her to both her father and Grandmother Stone. Neither the brother nor his children ever forgot about Buster.

The gap left by Buster was exceptional. The news was devastating to his young wife, who waited 10 years before seeking to remarry. The wife never forgot, and more powerfully than that, it was Grandmother Stone who gave her blessing on the young widow's marriage. Grandmother Stone kept going, and time seemed irrelevant to her as she never moved on…telling everyone that Buster would one day come home. Even Marcus recalled all these years later, that the last thing she said to him was that, "Buster would come home." The mother never forgot, and because of that, no one did… none of Buster's siblings, or their children, or their grandchildren. No one.

CLOSING

So why tell this story? Simple. The bravest that this Nation has to offer are never alone. When they leave to fight and win the Nation's wars, they take with them the hopes of that Nation, and more specifically, the hearts and thoughts of a family. That deep commitment to our Nation and therefore, each other, is at the very essence of America's great moral compass and fabric. There are still over 82,000 missing from wars such as World War II and the Korean War, but our Nation keeps looking and tirelessly working to identify those who are found. As demonstrated in the Stone family situation, there is no amount of time that will dispel either the love or pride of family. Thank goodness for that, and thank heaven for American families like the Stones. This is

so much more than just a particular tale that bridges both spirit and history; this is something that ties us all together as Americans, Service members, and family members. Our prisoners of war and MIA are gone, but certainly not forgotten. We should make it our solemn oath as a Nation to never forget all that they and the families who sent them off to service have sacrificed upon the altar of freedom, for they are our better angels.

On 9 May 2019, 2LT Walter B. Stone made one last flight from an Air Force Base in Nebraska to Pensacola, Florida. Upon arrival, he was met by family and a team from the Fort Rucker Casualty Assistance Center and Honors Detachment. A solemn procession followed on the long drive home to Andalusia—back to his family—and where his journey began so many years ago. On 11 May 2019, and just a few days after what would be his 100th birthday, 2LT Stone—Buster—was laid to rest among the family and mother who loved him so dearly. Family, friends, and the people of Andalusia all showed up in support of the returning Soldier, even in the face of early morning pounding rain. Four F-16Cs from the 169th Fighter Wing also made the long flight from South Carolina in order to perform a missing man formation. After all, they draw their unit lineage from 2LT Stone's original organization. It was a touching final tribute from his fellow aviators. Still, it seems only right to close this story with a word from Buster himself. What follows is a letter that Buster wrote to his mother, Grandmother Stone, on Mother's Day. What a fitting ending and tribute to the woman who always knew her Soldier would come home.

May, 1940

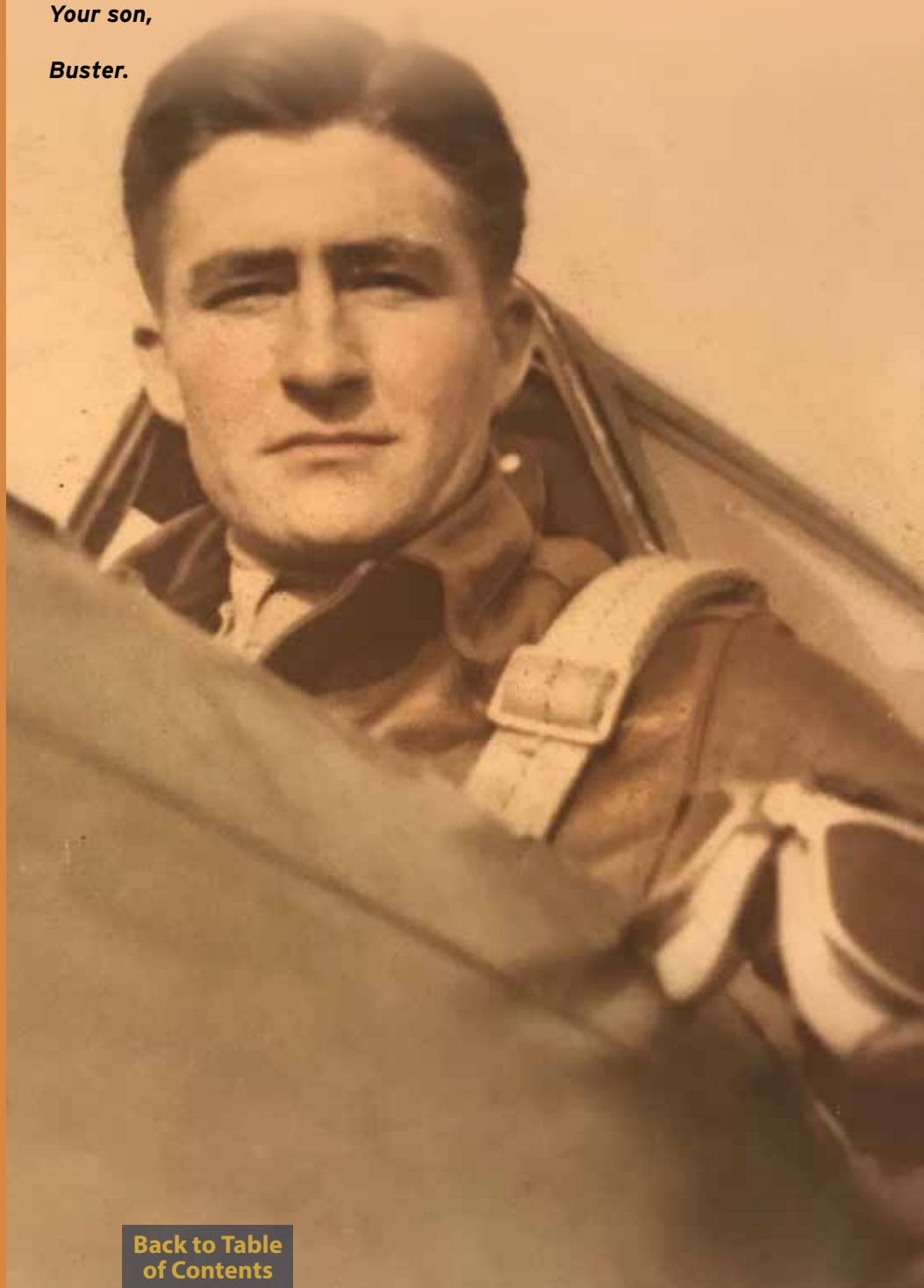
Dear Mom,

If I were a poet, I'd write a poem which would be worthy of a mother on Mother's Day. Or if I were rich, I'd buy a present which would be worthy. But being neither a poet, nor rich, I send you only a few lines which I sincerely hope will make your day a brighter and more cheerful day for you.

After all, neither words, no matter how arranged, nor gifts, no matter how costly, can pay the debt which every son owes his mother, especially when he is fortunate enough to have a mother like mine. So we must not set aside one day in every year in honor of Mother, but must try to make every day a Mother's Day. You are and always will remain my best girl.

Your son,

Buster.



CW4 Leonard Momeny currently serves as a Doctrine Writer and Tactics Analyst with the Directorate of Training and Doctrine, Fort Rucker, Alabama. Prior assignments include Fort Drum, Fort Riley, Fort Rucker, Fort Lewis, and Army Europe. He holds degrees from Southwestern College Kansas, Liberty University, and American Military University and is a graduate of Ranger School.

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NORMALIZED DEVIATION IN ARMY AVIATION

By MAJ Jeff Warren (Ret.)

NORMALIZED DEVIATION IS TOP-DOWN

Normalized deviation is defined by American sociologist, Diane Vaughan, as:

"Social normalization of deviance means that **people within the organization become so much accustomed to a deviant behavior** that they don't consider it as deviant, despite the fact that they far exceed their own rules for the elementary safety." People grow more accustomed to the deviant behavior the more it occurs (Vaughan, 1996).

As a product of organizational culture, this normalization is a top-down driven behavior, whether that be starting at the strategic or the tactical organizational level. It tends to permeate organizations that have high-risk and/or high-pressure task that they must execute. In the case of Army aviation, it incorporates both as a very high-risk and high-pressure operational environment.

HOW DOES IT PRECIPITATE?

Army leadership, given shortage of personnel, logistics, equipment, and training still state they will get the mission done. Borne from a time-honored tradition of the U.S. Army always completing the mission of defending our great country, it is instilled in Soldiers that no matter the situation, we can get it done. We improvise, adapt, and execute.

While the concept is time honored, it also breeds the normalization of deviations that hinder the ability of the organization to make organizational and system changes to maintain a safe operational environment for Soldiers while executing their missions. Within our actions to improvise, adapt, and execute, the culture begins to build a preaccident "incubation period" as termed by British writer and editor, Barry A. Turner (Turner & Pidgeon, 1997). Turner defined this period as "A historical background in as much as a number of decisions and unfavorable circumstances at safety level progressively generate a pre-accident situation, long before the occurrence of the initiating event and the triggering of the accident sequence" (Turner & Pidgeon, 1997).

This preaccident safety period can also be speeded up or worsened within Army aviation organizations due to heavy demand of low-density aviation units and their critical support to the ground force commander during combat operations, whether counterinsurgency or peer/near-peer.

GETTING THE MISSION DONE

Organizational pressures to execute the mission to meet expectations of senior leaders and match peers easily creates the systemic behavior to value production over safety. Risk is inherent in Army aviation and as such, leaders must accept some risk or the mission could not be accomplished. But as these risk are accepted, organizational behavior can produce the normalization of the risk acceptance, which then tends to creep to higher and higher levels of risk acceptance.

During the times where units are operating in the preaccident period, the defensive layers that were in place to prevent a mishap from occurring slowly begin to fail as personnel slowly begin to accept more and more risk in each of the organization's functional areas. Some examples are:

Maintenance: "The aircraft has been running fine even though the gimbal

The 25th Combat Aviation Brigade, 25th Infantry Division flies 19 AH-64 Apache helicopters in an organized formation around Oahu, May 1, 2019. 25th ID's 2nd Squadron, 6th Cavalry Regiment is flying to commemorate the 158th anniversary of the the regiment's activation. U.S. Army photo by SGT Ryan Jenkins

seal is leaking, so it can make the mission."

Standards: "Even though Mr. X had that violation for operating outside his briefing, he still needs to stay Pilot-in-Command (PC) because we are short on PCs and need him to meet the mission requirements."

Commander: "We don't have a choice. The mission has to go, so I am willing to accept more risk with crews flying beyond the brigade crew endurance standard operating procedures (SOP) time."

NORMALIZATION

Normalization: the more we continue to complete the mission with no catastrophe the more normalized the deviation becomes. When you first start deviating from maintenance procedures to get the aircraft up for the mission, you worry and hope it makes it back without a mishap due to the circled red "x" that actually should have been a red "x" condition. But once it makes it back safely and no issues, the next time you do it, it doesn't seem so worrisome. With each occasion, this deviation becomes the standard. So no one can understand it when the aircraft has a catastrophic crash with all crew and combat Soldiers in back becoming fatalities. The trailing accident investigation annotates that maintenance procedures in accordance with the appropriate technical manuals weren't followed and probably several other human error and contributing/noncontributing factors were annotated. But, was normalization of deviance one of the factors?

At a higher level, normalization also occurs. Take degraded visual environment (DVE) operations. Degraded visual environment operations have become normalized for years across all services. We annotate it in the aircrew training manual as a consideration only; we continue to pump millions of dollars into finding a solution and we overcome it through hard, realistic training. But if we look at the facts associated with DVE operations, we continue to see the majority of fatalities associated with Army aviation involve DVE.

So, the only logical conclusion is that the inherent risk of DVE operations has been normalized because even with hard, realistic DVE training it continues to be fatal in mishaps. Although, when you continue to do the same thing (we train hard for DVE but it continues to lead in fatalities from aviation mishaps) over and over and expect different outcomes, some refer to this as the definition of insanity; we continue to fail to "get it" as an institution.

OVERCOMING NORMALIZATION

Overcoming normalization should be an important tool in each commander's toolbox. But to overcome

U.S. Soldiers assigned to Bulldog Battery, Field Artillery Squadron, 2nd Cavalry Regiment upload into a UH-60 Black Hawk helicopter, operated by U.S. Soldiers assigned to the 1st Combat Aviation Brigade, 1st Infantry Division, during an air assault mission at the 7th Army Training Command's Grafenwoehr Training Area, Grafenwoehr, Germany, March 12, 2019. U.S. Army photo by PFC Denice Lopez

A UH-60 Black Hawk from the Idaho Army National Guard's 1-183rd Aviation Battalion prepares to land at Gowen Field, Boise, Idaho on April 25, 2019. The helicopter was returning from a routine training mission. U.S. Air National Guard photo by MSG Joshua C. Allmaras

the deviation requires a paradigm shift in how we look at mishaps, their causes, and especially analyzing our organizations to identify if we are in the preaccident "incubation period" (Turner & Pidgeon, 1997).

We can utilize near-miss reporting (Cavnor, 2018), systems safety, and a culture check of our organizations to nullify the effects of normalizing deviations. Parts of the equation are the senior leaders in Army aviation, the Combat Readiness Center, the division and divisional unit aviation commanders, program executive office leaders, the Directorate of Evaluation and Standardization, and the individual Soldier.

No one entity is capable of making the organizational changes that will lead to a safer and more capable Army aviation force. But it must start from the top leaders and move downward. With each of the particular areas addressing their part in the process. At the unit level, instituting near-miss reporting is the start, which can help the commander and safety officer understand where deviations are currently occurring and take remedy for them.

At the acquisition level, taking actions on getting systems into the aircraft, interim followed by program of record systems, which can address hazards such as DVE and threat systems defenses help as part of the reduction in deviations. Ensuring the proper amount of equipment and fielding are executed will continue to drive down the deviation and bring units out of the preaccident period.

At the aviation enterprise level, commanders implementing a culture check on their organizations can bring to light areas that are placing their organizations into the preaccident period. Formalizing SOPs to include near-miss reporting programs and incorporating reporting up the chain of command that then can be consolidated and analyzed as an enterprise product can provide direct feedback to the command. The enterprise-level consolidation and analysis can help establish if deviations are one-off problems or if they are an enterprise problem, such as DVE mishaps.

Normalization of deviation occurs in all organizations; the difference in the outcome for each organization relies on action taken by senior leaders, near-miss program institution, and systems safety prioritization. These three actions: cultural, programmatic, and system, can give leaders and teams in Army aviation the capability to execute their combat mission while having situational awareness of deviations, institute fixes, and the aptitude to prevent their organizations from incubating the next accident.

Jeff is a retired Army Master aviator with over 20 years of service. He conducted operations as a maintenance test pilot, maintenance manager, and instructor pilot in the UH-60. He served in air cavalry, assault helicopter, and MEDEVAC units throughout his career. He served division assignments with the 7th ID (LIGHT), 2ND ID, the 101st Airborne Division (AIR ASSAULT), and the Aeromedical Research Laboratory. He has worked with the Directorate of Training and Doctrine producing doctrinal publications, producing tactical classified manuals, MEDEVAC proponency as a subject matter expert, and the Combat Readiness Center as an aviation technical writer. Additionally, Jeff holds a master's degree in management.

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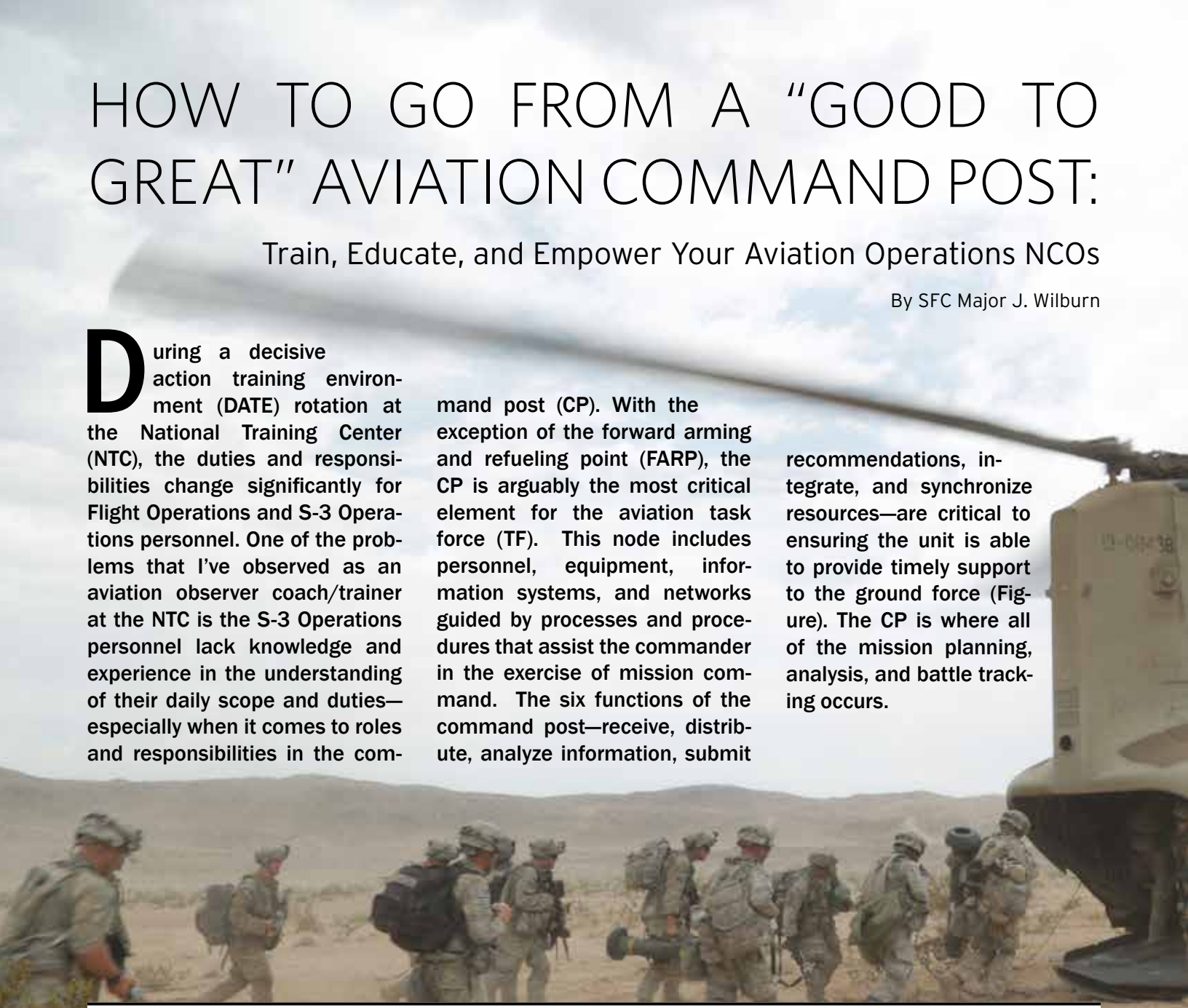
HOW TO GO FROM A "GOOD TO GREAT" AVIATION COMMAND POST:

Train, Educate, and Empower Your Aviation Operations NCOs

By SFC Major J. Wilburn

During a decisive action training environment (DATE) rotation at the National Training Center (NTC), the duties and responsibilities change significantly for Flight Operations and S-3 Operations personnel. One of the problems that I've observed as an aviation observer coach/trainer at the NTC is the S-3 Operations personnel lack knowledge and experience in the understanding of their daily scope and duties—especially when it comes to roles and responsibilities in the command post (CP). With the exception of the forward arming and refueling point (FARP), the CP is arguably the most critical element for the aviation task force (TF). This node includes personnel, equipment, information systems, and networks guided by processes and procedures that assist the commander in the exercise of mission command. The six functions of the command post—receive, distribute, analyze information, submit recommendations, integrate, and synchronize resources—are critical to ensuring the unit is able to provide timely support to the ground force (Figure). The CP is where all of the mission planning, analysis, and battle tracking occurs.



1. Receive information.

- Receive messages, reports, and orders from subordinate units and higher headquarters (HHQ).
- Monitor tactical situation.
- Maintain a journal of all significant activities and reports.
- Maintain and update unit locations and activities.
- Monitor enemy situation.
- Maintain a status of critical classes of supplies.

2. Distribute information.

- Submit reports to HHQs.
- Serve as a communications relay between units.
- Publish orders and instructions.
- Process and distribute information to appropriate units or staff sections.

3. Analyze information.

- Consolidate reports.
- Anticipate events and activities, taking appropriate action as required.
- Conduct predictive analysis based on the tactical situation.
- Identify information that relates to the CCIR
- Conduct the MDMP
- Identify the need to execute contingency plans based on the current situation.

4. Submit recommendations to the commander.

5. Integrate resources

6. Synchronize resources

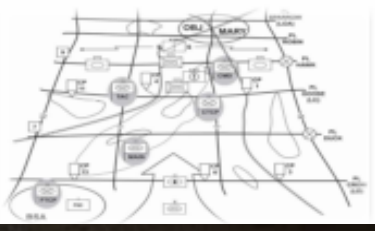


Figure. Command post functions.

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U.S. Army Soldiers from 1st Brigade Combat Team, 1st Infantry Division, prepare for an air movement during Decisive Action Rotation 16-08 at the National Training Center, Fort Irwin, California, August 4, 2016. Decisive Action Rotations create a realistic training environment that tests the capabilities of Brigade Combat Teams, preparing them to face similarly equipped opposing forces. U.S. Army photo by SPC Dedrick Johnson, Operations Group, National Training Center

Unfortunately, our aviation Soldiers and noncommissioned officers (NCOs) are significantly underutilized in this node, mainly due to a lack of familiarity with their "field job," unit standard operating procedures (SOPs) and training and repetitions in operating the CP. In order to build redundancy, it is important to have a well-rounded and trained team to share the burden of both planning operations and executing missions. There is a need to ensure all the positions in the CP are clearly understood, and individuals are trained appropriately in order to successfully execute their duties and responsibilities.

There are three key positions within the CP that are the nucleus to mission command and executing missions: Assistant S-3/Battle Captain, the Assistant Aviation Operations Sergeant/Battle NCO, and the Aviation Operations Specialist/Radiotelephone Operator. The overlooked role of Assistant Aviation Operations Sergeant is one that is filled by dedicated Soldiers, but more often than not, they lack the appropriate training and knowledge to effectively complete their duties. In addition to unit training through CP exercise and tactical operations center exercise and mentorship from peers and senior NCOs and officers, there are many classes available to all CP/Battle Staff NCOs so they don't have to rely solely on "on the job" training.

The most important course to an Assistant Aviation Operations Sergeant for operating in the DATE is the Battle Staff Noncommissioned Officer Course (BSNCOC). This course provides NCOs the highly valued skills and knowledge needed to effectively perform their duties and assist with planning while in a decisive action environment and intertwine that knowledge into their CP's operations. This course should be required for all S-3 Operations NCOs to ensure that they are trained and contributing members of the CP from planning to execution. The tactical and technical training materials contained in this course would assist in preventing Soldiers being put into positions and situations that they are unqualified for or unfamiliar with.

Another beneficial course for any Soldiers operating in the CP is the Joint Firepower Course (JFC). This course allows 15P NCOs to augment the fire support element in asking and coordinating for echelons above brigade fires and intelligence collection assets. In addition, this course gives aviation operations personnel a deeper understanding of the air tasking order and airspace control order (ACO), which is normally relegated to the TF tactical operations/Aviation Military Support Officer (AMSO). Specifically, this would allow the TF AMSO to integrate more with the S-2 section to assist with mission planning and allow the battle NCO to focus on ACO production and distribution.

In conjunction with these courses, the Assistant Aviation Operations Sergeant should also ensure a unit training plan exists to include operating and conducting basic maintenance on all single-channel ground and airborne radio system, high frequency, and satellite radios. Additionally, personnel should have extensive training in Blue Force Tracker operation and the Command Post of the Future system—attending the Mission Command Digital Master Gunner Course would benefit the CP, ensuring that the unit understands how the mission command systems work together. Having at least the Aviation Operations Sergeant attending some of these courses would ensure that more personnel in the CP/Battle Staff are trained to conduct the military decisionmaking process (MDMP) and understand the importance of mission planning on both analog and digital systems.

An additional, extremely beneficial course for any Assistant Aviation Operations Sergeant to attend is the Air Cavalry Leaders Course (ACLC). The ACLC develops cavalry leaders through an indepth study

of the fundamentals of reconnaissance and security by building on what students learned in the BSN-COC and JFC. Military occupation specialty 15P NCOs would greatly benefit from this course to help shape planning for these missions, ensuring the COP includes appropriate graphics and so that operations and intelligence (O&I) briefs are tailored to both aviators and aero scouts performing these missions, specifically with clear and concise commander's reconnaissance and security guidance. Additionally, the knowledge gained in this course would allow 15Ps to become more active participants in the MDMP.

With the advanced training and knowledge of the Assistant Aviation Operations Sergeant, the NCO will be more effective in contributing across all phases of the CP. Additionally, the NCO will be better able to manage and train their junior Soldiers and to assist the Assistant S-3 in his duties. This will free up the Assistant S-3 to spend more time tracking operations at a macro level, anticipating friction and facilitating a smoother future operations (FUOPS) to current operations (CUOPS) transition.

One responsibility of the Assistant S-3 that can be effectively completed by the Assistant Aviation Operations Sergeant is managing aircrew O&I briefings/updates before missions. With a good unit format and proper guidance from the Assistant S-3, the Assistant Aviation Operations Sergeant will be able to gather all the appropriate information needed for the briefs and successfully brief all air crews. With this information, the Assistant S-3 will be able to spend more time learning and understanding FUOPS and coordinating with higher and adjacent units, allowing for a better transition of missions and operations from plans to CUOPS.

Armed with the knowledge of all the operating systems in the CP and how they work together, the Assistant Aviation Operations Sergeant will be better prepared for the mentorship of their subordinate Soldiers, creating an atmosphere where the NCO can develop and improve their Soldiers' abilities and competencies in operating in a CP/on a Battle Staff. The Soldiers, with the Assistant Aviation Operations Sergeant's guidance and leadership, will be able to operate and maintain systems such as CPOF and Blue Force Tracker to display a digital COP, while managing an array of radio systems (frequency modulation, ultrahigh frequency, high frequency, and satellite communications) professionally.

The Assistant Aviation Operations Sergeant will be able to fill a critical gap in the CP with proper training and clear, well-defined roles and responsibilities in the CP, allowing the Assistant Operations Officer more freedom to maneuver between CUOPS and FUOPS. This training and knowledge will give the Assistant Aviation Operations Sergeant the understanding of the gravity of his responsibilities in the CP and the ability to train and mentor his Soldiers in the CP. Ultimately, this will lead to a more informed and capable Battle Staff.

In order to operate and maintain proficiency, all personnel in the CP should have their SOPs and job training outlines readily available. The outlines should clearly inform the Assistant Aviation Operations Sergeant and the Aviation Operations Specialist of their roles and responsibilities. Additionally, the unit should have its own tactical operations SOP (TACSOP) and planning SOP (PSOP) created in order to simplify the format of unit products that are easy to reference and broken down into how the unit plans and fights. A usable TACSOP and PSOP allow the battle NCO and the rest of the staff to quickly anticipate and react to unforeseen circumstances. In a time-constrained environment with an incomplete staff present, the unit's SOPs offer a blueprint and common framework for how the unit and CP conduct business. All of the trackers, battle boards, etc., used and maintained should be listed, giving personnel the knowledge of the areas and roles they are responsible to complete. All specific unit tactics, techniques, and procedures for CP Operations must be codified and disseminated in order to cross-train CP personnel, keeping the team well balanced and operating effectively and efficiently.

In closing, with the appropriate personnel possessing the correct training, the CP will proactively thrive in the DATE. With a highly trained and diverse force, the unit will be able to successfully execute all of the functions of the CP in the time-constrained and high-operating tempo environment.

SFC Major Wilburn is currently serving as Eagle 3E, the Aviation Command Post NCO Observer Coach/Trainer at the National Training Center. With more than 13 years of active duty service as a Flight Operations Specialist, he has worked in variety of jobs and has usually served on a Battalion Staff. Some of the duties associated with these positions included tasking NCOIC, Schools' NCOIC, AMR NCOIC, and Flight Operations NCOIC.

U.S. Army Soldiers from Alpha Company, 4th Battalion, 17th Infantry Regiment, 1st Stryker Brigade Combat Team, 1st Armored Division, offload from a CH-47 Chinook helicopter during Decisive Action Rotation 15-08 at the National Training Center on Fort Irwin, California, May 30, 2015. Decisive Action Rotations create a realistic training environment that tests the capabilities of Brigade Combat Teams, preparing them to face similarly equipped opposing forces. U.S. Army photo by SPC Randis Monroe/Released

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THE NEED TO STANDARDIZE AVIATION MAINTENANCE EQUIPMENT

By MAJ Greg Pasquantonio

High-performance teams utilize the finest equipment available to retain their professional dominance and competitive edge. This concept is well recognized in numerous industries, most accessible to the public through sports teams in top-level leagues or pit crews of highly-engineered purposed-based racing machines. The United States Army maintains the largest fleet in the world of specialized mission-design series multimillion dollar high-performance helicopters. Sometimes, the operational demands on these helicopters operating in combat aviation units throughout the world push the limits of mechanical endurance and extreme conditions. Yet, some of the maintenance equipment utilized by aviation Soldiers appears generationally behind the civilian sector in terms of equitable investment compared to dollars spent training high-performance aviators to fight tonight and win.

The Combat Aviation Brigade of the 1st Infantry Division (1CAB) set out on a mission beginning in the spring of 2018—an endeavor to modernize the capabilities of the Aviation Support Company (B Company, 601st Aviation Support Battalion [ASB]) prior to serving on a U.S. European Command (EUCOM) rotation in support of Operation Atlantic Resolve. The vision was inspired by professional competitive teams—to equitably invest in maintenance bay equipment the Soldiers utilize daily with intent to standardize the layouts across the 1CAB. In line with optimized pit crews, the equipment populating each dedicated phase inspection bay, regardless of location in the 1CAB, should retain validated similarities in layout and employment. The 601st ASB fielded the first four maintenance bays at Illesheim Army Airfield, Germany, and is currently iterating phase maintenance inspections utilizing the first set of equipment with intent to optimize and standardize the layouts and equipment. The goal is to utilize the experience and focused opportunity of 18 scheduled phase maintenance inspections to certify this approach, and to explore efficiencies before seeding this concept to the line battalions of the 1CAB, and potentially, the Army aviation maintenance enterprise.

The experience of recent U.S. Army aviation operational history tends to guide commanders to place emphasis on the "Launch-Recover-Launch" cycle to meet the ground commander's intent. Generally, this methodology requires significant divestiture of the aviation support company (ASC) personnel and dedicated assets through integration into geographic aviation task forces in order to maintain pace with split-based operational demands. Ultimately, this technique retains value in the U.S. Central Command area of responsibility even today, but neuters the inherent organic capabilities of the ASC while bolstering a reliance on nodal operational contract support teams to meet intermediate field-level maintenance demands.

Current aviation doctrine and resourcing directives reduce reliance on contract support, inducing a need for CAB operations to regard a

A CH-47F assigned to B Company, 2-1 General Support Aviation Battalion, Combat Aviation Brigade, 1st Infantry Division, is inducted into a 400-Hour scheduled maintenance inspection conducted by B Company, 601st Aviation Support Battalion. Photo courtesy of U.S. Army MAJ Greg Pasquantonio

A UH-60 Spika Phase Maintenance System is emplaced during a Preventative Maintenance Inspection-2 on a UH-60M assigned to 3-1 Assault Helicopter Battalion, Combat Aviation Brigade, 1st Infantry Divsion. Photo courtesy of U.S. Army 1LT Marie Olszewski, Airframe Repair Platoon Leader assigned to B Company, 601st Aviation Support Battalion

balanced dependency on the capacity of the ASC to generate combat power. Furthermore, to preserve combat power forward, the reduction in logistical size of line aviation battalions is essential in retaining maximum flexibility and their operational agility (Department of the Army [DA], 2015). Concurrently, each aviation battalion's aviation maintenance company (AMC) must develop a lean approach to maintenance support to ensure emplacement as far forward as the tactical situation allows. The ASC must embrace an inversely "heavy" identity, and focus on scheduled phase maintenance while located to a brigade support area or a centralized rear-area facility (DA, 2017). The 1CAB chose to invest in the capabilities of the ASC in this methodology for the current EUCOM rotation: beginning a maintenance bay equipment standardization program within the 601st ASB to centralize combat power generation, and keeping two aviation task forces forward and as lean as possible.

As Army aviation reduced dependency on contractual support maintenance and equally increased utilization of maintenance support provided by Soldiers, it became apparent that we tasked our maintenance Soldiers to accomplish excellence without providing them any of the physical means inherent to professional teams. Standard modified table of organization and equipment materials provide the instruments for conducting the maintenance, but not at a level of investment in line with civilian professional counterparts. Following the importance of command emphasis outlined in Army Techniques Publication 3-04.7, "Army Aviation Maintenance," the 1CAB desired to invest in maintenance bay professionalization, specifically providing the Soldiers the equipment required to achieve a culture of excellence, safety, and maintenance emphasis. To do so required aggressively seeking unscheduled funding through the 1st Infantry Division leadership to purchase both professional fall-protection work platforms and transportable parts and equipment storage solutions (DA, 2017).

"An efficient, properly resourced maintenance program will provide the maximum number of aircraft available on a consistent basis for mission support" (DA, 2015, p. 4-1).

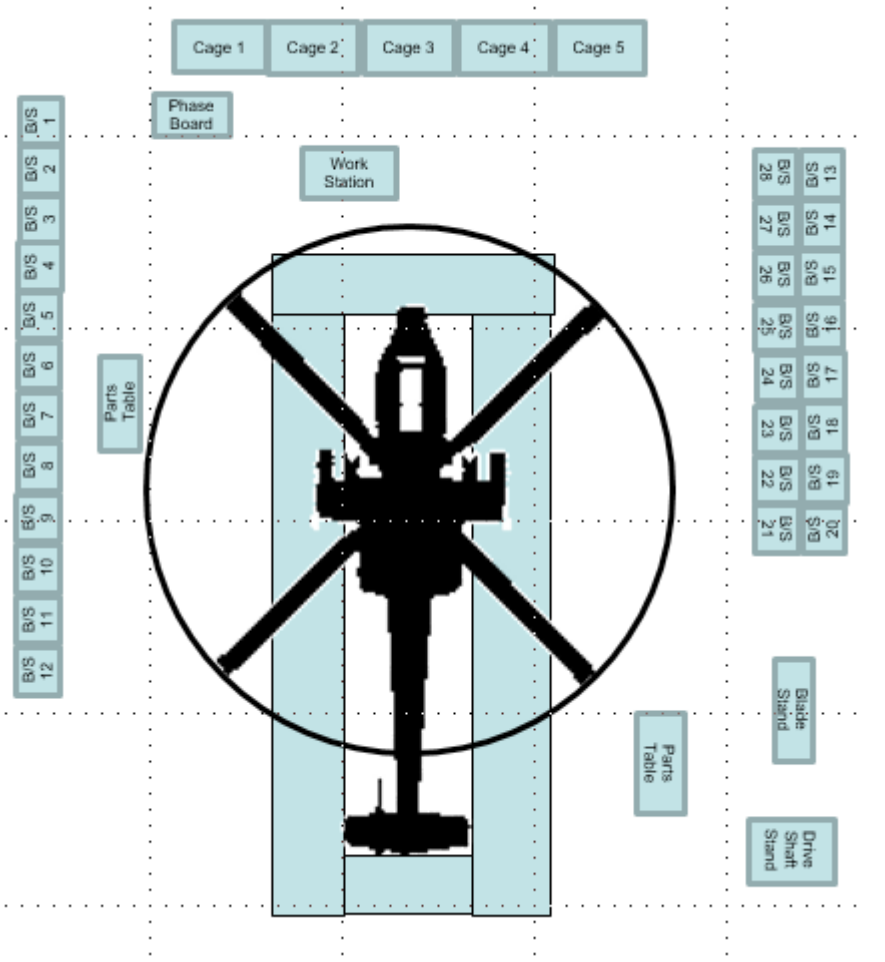
Maintenance leadership in the 601st ASB gained clarity on how the modernized phase bays are structured and equipped by drawing inspiration from three functional sources: personal knowledge of how operational contract support teams are outfitted, experience of witnessing operations at helicopter reset facilities, and touring the maintenance facility of the 160th Special Operations Aviation Regiment. From the combined lessons learned, the 1CAB proposed an initial investment in two each of UH, CH, and AH Spika maintenance stands as a Government Services Administration avail-

Soldiers assigned to B Company, 601st Aviation Support Battalion, Combat Aviation Brigade, 1st Infantry Division, easily and safely access portions of helicopters to conduct maintenance. Photo courtesy of U.S. Army SGT Patrick Jubrey, Public Affairs Office, Combat Aviation Brigade, 1st Infantry Divsion

An AH-64E assigned to 1-6 Heavy Attack Reconnaisance Squadron, Combat Aviation Brigade, 1st Infantry Division, is pictured after the stands are pulled away from the helicopter following a 500-Hour phase maintenance inspection. Photo courtesy of U.S. Army 1LT Marie Olszewski

able and rapidly procured industry standard. In addition, transportable and lockable shelving manufactured by SHARKCAGE® was selected as secure parts and equipment storage.

To demonstrate the relative transportability of the phase bay assets, the new Spika stands and SHARKCAGEs® were brought forward in support of the current EUCOM rotation. The 1CAB leadership recognized the value of employing the new equipment immediately, as the opportunity to determine the capabilities of the standardized phase bays forward was crucial to validate the proposed layouts utilizing real operational data. Additionally, these standardized layouts provide a striking visual impact when visiting the ASC's hanger. By competitively resourcing the often ignored maintenance Soldier, the motivational benefits and increased enthusiasm has already provided a cultural shift in the maintenance unit (DA, 2017).



An initial rendering generated by B/601st ASB of a standardized AH-64 maintenance bay layout. This is representative of a larger product detailing the breakdown of each component down to tool sets, part locations, and content listings. Drawing courtesy of U.S. Army MAJ Greg Pasquantonio

As the ASC accomplishes iterations of scheduled maintenance inspections during this EUCOM rotation, initial improvements to effectiveness and efficiency were immediately realized, as adherence to U.S. Army Forces Command work-day guidelines have been reached in a unit that historically performed just outside of this timeline.

After this EUCOM rotation draws to a conclusion, the 1CAB will have both a tested and a standardized aviation maintenance bay capability. With real operational data utilized as the reinforcing justification for additional investments, the 1CAB anticipates having equivalent layouts fielded in the AMCs, driving interoperability between battalions, and highlighting the effects of efficient and standardized maintenance facilities. Regardless of assigned battalion or hanger facility, a maintenance Soldier will recognize the standardized employment of equipment, and that a particular component, bench stock item, or tool set is stowed in the same location. Furthermore, the Soldiers trained in the ASC can seed the 1CAB with experience of the pit row mentality derived from professionalized aviation maintenance bay layouts. Ultimately a long-term investment, the efficiency retained from current standardization efforts will optimize the combat power generation program from the Soldier level. This structured and professional approach to maintenance equipment is just one piece of a deliberate method the 601st ASB is utilizing to achieve maximum training effort per flight hour against the bottom line flying program dollar execution.

MAJ Greg A. Pasquantonio is the former Commander of B Company, 601st Aviation Support Battalion, Combat Aviation Brigade, 1st Infantry Division.

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THE CHANGING FACE OF ATLANTIC RESOLVE

By MAJ Scott Jackson, MAJ William Lewis, and LTC Jamie LaValley

The United States Army European Command/U.S. Army Europe (USAREUR) and Atlantic Resolve (AR) mission for rotational Army forces-combat aviation brigades (RAF-CAB) continues to evolve and provide unique challenges and training opportunities to leaders and Soldiers across the aviation enterprise. The 6-17 Cavalry (CAV), a Heavy Attack Reconnaissance Squadron (HARS) in the 4th Infantry Division (ID) CAB stationed at Fort Carson, Colorado, recently completed the 2018–19 RAF rotation to Europe.

This AR rotation fostered mission command down to the lowest level, with geographical dispersion of subordinate leaders and echelons stretching more than 1000 miles across Europe. This article will discuss how dynamic rebasing in the United States European Command (EUCOM) during the 4 CAB's rotation provided unmatched leadership development and training opportunities, and will conclude with proposed focus areas for future RAF-CABs. Ultimately, USAREUR's area of operations and AR aviation rotations provide a dynamic and challenging mission set building resiliency, readiness, and relationships that strengthen ties with North Atlantic Treaty Organization (NATO) and partner nations.

An AH-64D from task force KRONOS conducts live fire Table XII gunnery on Litochoro range, Mount Olympus, Greece in January 2019. Photo credits: 4th CAB Public Affairs Officer, MAJ Brian Burns

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Apaches with A/6-17 CAV conduct live fire at Grafenwoehr range with elements of the 1 CAV RAF Armored Brigade Combat Team. Photo credits: 4th CAB Public Affairs Officer, MAJ Brian Burns

NORTHERN EUROPE—INITIAL MISSION SET

The 6-17 CAV, 4th CAB supported the AR mission in order to deter aggression in the European region and increase the available combat power of USAREUR. Upon arrival in theater, the 6-17 CAV split into three locations between Poland and Germany with two multi-functional aviation task forces (MFATF) consisting of three separate airframes. The squadron's TF in Illesheim, Germany, consisted of 40 aircraft and four different mission design series between the medical evacuation (MEDEVAC) Black Hawk, utility Black Hawk, Shadows, and Apaches. The second MFATF of 11 aircraft was 400 nautical miles east in Powidz, Poland, while the squadron unmanned aircraft system (UAS) was based out of Vilseck, Germany. The TF's RQ-7s were also the first RAF aviation unit to base and fly out of Vilseck.

While split between Germany and Poland, the TF conducted training across the entire European theater. The 6-17 CAV MFATF supported ground units across a footprint the size of California and extended their operational reach 200–1200 nautical miles from their assigned airfields to support various ground forces' commander requirements. This distance is similar to flying from the California coast to support a force in Nebraska or Oklahoma. The TF also supported multiple Joint Multinational Readiness Center exercises in Grafenwoehr and Hohenfels, Germany. Various International Civil Aviation Organization (ICAO) rules, border crossing requirements, and differing country regulations further complicated aviator planning efforts as they traversed across the expanse of Europe. During this rotation, the 6-17 CAV's MFATF supported operations in Poland, Bulgaria, Germany, the Czech Republic, Croatia, Romania, and Greece by providing attack, reconnaissance, air assault, air movement, MEDEVAC, and contingency operations support to conventional and special operations forces for the U.S. and NATO ground forces.

THE BALKAN TRANSITION—GREECE

In October 2018, then Secretary of Defense, James N. Mattis, and Chairman of Joint Chiefs of Staff, Joseph F. Dunford, visited the Baltic region of Europe. During their trip, they visited senior members of the Hellenic Ministry of Defense and determined a new path for the U.S. and Greek militaries. This diplomatic opening presented an opportunity immediately seized by the 4th CAB Commander, COL Scott Gallaway, and his staff. The ideal weather in Greece and permissive operating environment offered training opportunities to enhance the readiness of rotational forces in Europe. The 4th CAB conducted planning, preparation, and site recons along with staff from USAREUR and the mission command element to set the conditions for the first Army aviation rotational force in Greece.

On 5 November 2018, the 6-17 CAV formed TF KRONOS (MFATF) and dynamically rebased from Northern and Central Europe to Greece. Task Force KRONOS consisted of elements of the 6-17 HARS, 2-4 general support aviation battalion (GSAB), 404 ASB, and the 4th CAB. It included 24 total aircraft: 14 x AH-64Ds, 3 x CH-47Fs, 3 x HH-60Ms, and a platoon 4 x RQ-7Bv2 Shadow UAS. These 24 aircraft and 350+ personnel conducted air and ground movements from Germany to Stefanovikeio and Volos, Greece. This move demonstrated the ability of U.S. Army aviation assets to rapidly relocate across Europe and further highlight EUCOM's commitment to mitigate threats in the theater. The new location further enabled the TF to maximize training time in weather conditions and environs prevalent in southern Europe, allowing the squadron to execute gunnery through Table XII, which increased readiness and built an enhanced partnership with Hellenic ground and aviation forces.

Additionally, basing the TF in Greece provided operational environments for aviation with a wide variety of training areas, enabling an aviation element to train extensively and accomplish Aviation Warfighting Initiative (AWI) tasks. Within 20 miles of the basing location of Stefanovikeio

were overwater training areas and ranges, aerial gunnery ranges, low-level areas/routes for nap of the earth flight, established helicopter training areas and landing zones, high-altitude training areas and landing zones on Mount Olympus, military operations in urban terrain, and areas to train against modern air defense systems.

Training areas and ranges in Greece provided realistic decisive action focused training events, and Greek airspace proved highly permissive to military and UAS operations both on the numerous military training areas and in civil airspace. The proximity and availability of the Litochoro Live Fire Range (Mount Olympus) to Stefanovikeio proved to be a critical training asset to the TF; however, we recommend alternate ranges for follow-on RAF CABs, as there are much larger, more capable live fire ranges throughout Greece. During TF KRONOS' deployment to Greece, the 7th Army Training Command (ATC) conducted a joint reconnaissance of ranges across Greece and further identified in Askos and Kranea ranges as the preferred locations for future rotational Army aviation units. These ranges, coupled with improvements the 7th ATC plans to add, will ensure future RAF-CAB units will have a high quality, robust target array for future aerial gunneries to maximize crew proficiency (Figure).

There are also opportunities in Greece to support EUCOM operations plans while conducting multinational and interoperability focused training. The 1st Hellenic Aviation Brigade at Stefanovikeio and the 32nd Marine Brigade at Volos provide direct partnership and training opportunities with local ground forces. The 32nd Marine Brigade, a special operations capable unit, regularly trains air assault, troop/cargo transportation, airborne/paradrop operations, amphibious assault, and raids. United States units regularly rotate through Greece as well, including embarked U.S. Marine Expeditionary Units with amphibious ships, facilitating deck landings for Army aircraft, as well as joint training both overwater and onshore. The U. S. Air Force (USAF) joint terminal attack controllers from Germany also participated in the Table XII live fire with TF KRONOS, providing support and training both to the Army RAF-CABs and Greek personnel.

The challenge of basing in Greece was the lack of established U.S. logistical support or infrastructure. However, this lack of a mature footprint again allowed junior leaders and Soldiers opportunities to refine skills associated with conducting operations in immature theaters. For example, upon entry into Greece, English publications, maps, and procedures did not exist for most of the training areas, ranges, or airfields in Greece. The ATC procedures required the attachment of airfield services personnel to accompany the TF from the 2-4 GSAB. These tower operators experienced an operations tempo unmatched in other AR rotational locations for the RAF-CAB. They found themselves working alongside Hellenic tower operators, improving airfield and tower facilities, and establish-

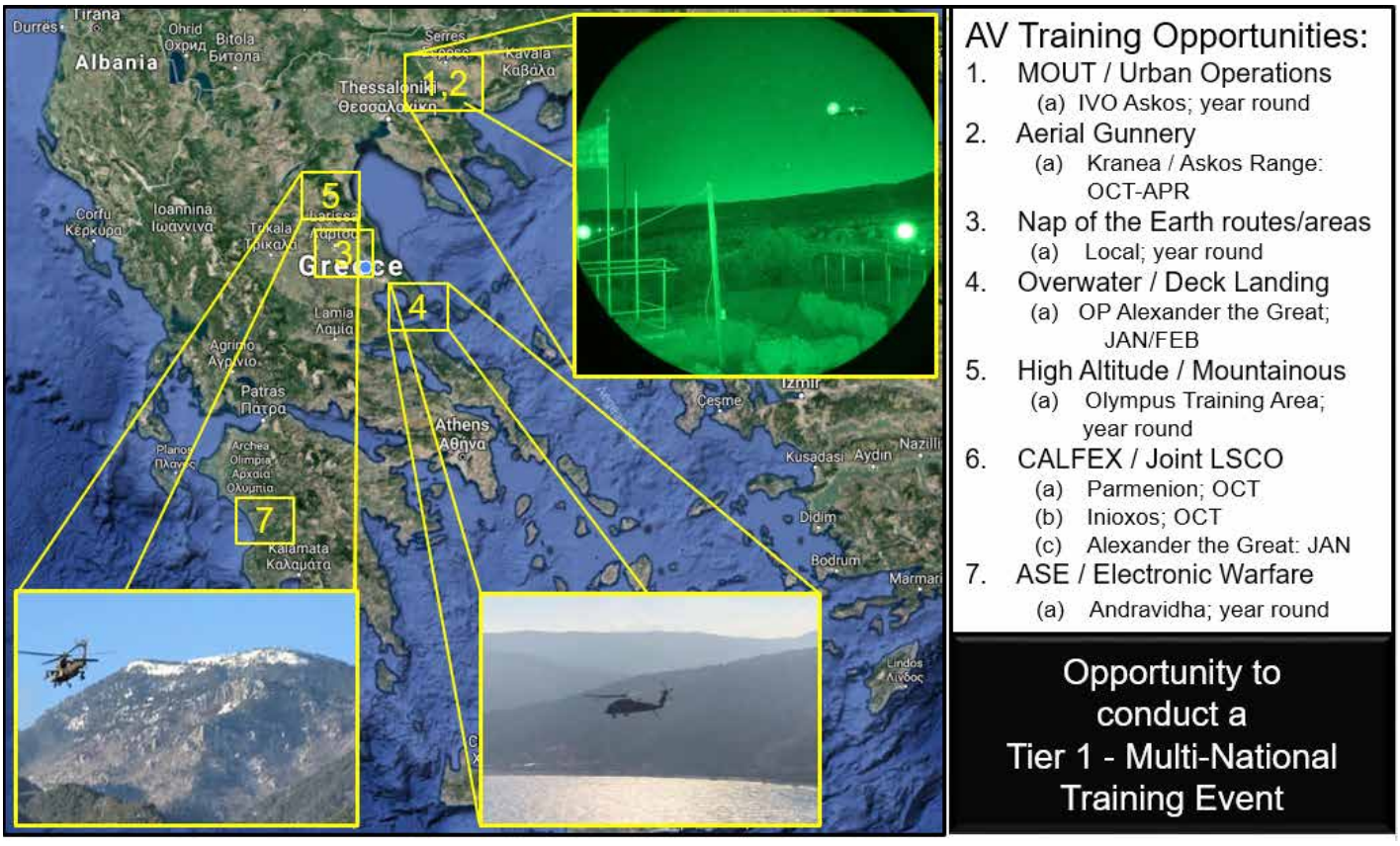

Figure: Training opportunities in Greece.

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ing joint Hellenic/U.S. procedures to ensure the safety of manned-unmanned traffic. These skills are invaluable as aviation forces seek to enhance their expeditionary capabilities with requirements to operate in immature areas of responsibility.

The TF quickly overcame the initial challenges experienced in Greece with support from theater sustainment forces, contracted services, and our Hellenic partners from the 1st Aviation Brigade and 32nd Marine Brigade. This support enabled the MFATF to exceed its flying hour program, a challenge for a RAF-ATF during winter months in Northern Europe, and redeploy with more modified table of organization and equipment aircrew qualified through Table XII. In total, the TF qualified nine CH-47F nonrated crewmembers on door gunnery and 25 AH-64D crews for the HARS in Table XII.

The TF was also able to execute a capstone personnel recovery exercise with our Hellenic partners, which included USAF JTACs from the 2nd Expeditionary Air Support Operations Squadron, Marines from the Hellenic 32nd Marine Brigade, and AH-64As and Ds from the Hellenic 1st Aviation Bridge. This event highlighted the capabilities of the TF and our partner nation's forces, which improved joint readiness and interoperability. This opportunity further allowed the TF to demonstrate EUCOM's commitment and readiness to our Hellenic allies and built a bond between our respective brigades that has further enhanced U.S. and NATO relationships in the region.

LESSONS LEARNED

The most evident lessons learned from this rotation focus on junior leader development opportunities, logistics planning and coordination, and supporting operations with immature life support areas (LSA) and maintenance facilities. Each of these three areas presented challenges to the TF, but they also provided unique development opportunities that are relevant to potential large-scale conflicts against a near-peer adversary. These lessons are particularly relevant to ongoing RAF-CAB mission sets executed in the EUCOM area of responsibility.

MEDEVAC HH-60 assigned to TF KRONOS aircrews conduct high-altitude training in Hellenic training areas near Mount Olympus in Greece. Photo credits: 4th CAB Public Affairs Officer, MAJ Brian Burns

The most significant lesson and opportunity from the AR mission is how unit dispersion across Europe fosters immense personal and professional development in junior leaders. Mission command nodes, flight crews, and planners regularly led and executed missions with limited oversight from troop or squadron leadership. Leaders at every level participated in engagements with national and military agencies and often interacted with officials at the highest levels of the host nation's government. Many of these interactions and planning sessions occurred with limited lead-time and often involved media engagements featured on national news networks. These training opportunities and leader engagements have lasting impacts on the U.S. Department of Defense and Department of State relationships with host nation leadership, and preparing junior leaders beforehand was essential to success.

To ensure that junior leaders were empowered to lead these exercises and engagements in this dispersed environment, they required clear commander's intent, risk analysis, and host nation familiarization. As troop- and platoon-level leaders were often dislocated from the main mission command nodes of the squadron and brigade, junior leaders had to receive clear intent for the exercise and risk-level guidance through tactical and commercial systems prior to execution. This guidance ensured that junior leaders could make immediate decisions and shape mission execution in order to remain within the risk constraints dictated by the commander. Additionally, detailed public affairs guidance and statements regarding the RAF-CAB's actions in the host nations were essential in allowing junior leaders to interact successfully with foreign agencies and to ensure that the TF's messages and themes nested within the EUCOM and mission command element strategy.

The second major lesson learned relates to the dynamic logistical support required to support the diverse and dispersed AR missions given to the RAF-CAB. The task organization required to support missions across Europe often limited the forward support elements and Aviation Maintenance Company's capacity to support multiple concurrent exercises. Tactical convoys often executed multiday road marches to establish forward arming and

Troop commander and aircrews provide short-notice capabilities brief with the Croatian Secretary of Defense in transit to Greece from Germany. Photo credits: 4th CAB Public Affairs Officer, MAJ Brian Burns

refueling point (FARP) and maintenance nodes with limited personnel. In many cases, the timing and distances associated with the TF's missions exceeded the unit's organic ability to extend logistics chains far enough to support these missions. This required significant reliance on resupply requests through the supported ground brigade combat team support operations (SPO), and commercial line-haul request through the RAF-CAB's SPO.

Often, the distances associated with these missions required additional commercial and civil coordination to support logistical requirements beyond the TF's organic capabilities. Route planning required the incorporation of consistent contract fueling at each refuel stop. Units that were successful in cross-country movements planned specifically through private fuel contractors and did not rely on base-level airport fuel services. Using a U.S. military friendly fuel contractor allowed the TF to coordinate time, fuel quantify, and additional resources needed for an expedient and fluid refuel process at each civil airport. United States military aircraft are not the priority at most European airports; therefore, without coordinating with a specific contractor, the refuel process can be unreliable. Additionally, every unit should understand the Aircraft and Personnel Automated Clearance System (APACS) and the registration and filing process. The APACS clearance information is also associated with specific time windows for each border crossing, and maintaining contact with the United States Defense Attaché Office (USDAO) in each host nation is critical when responding to hasty mission changes and time-sensitive approvals.

FARP personnel conduct rearming and refueling operations from unimproved locations in Northern Poland. Photo credits: 4th CAB Public Affairs Officer, MAJ Brian Burns

These logistical requirements highlight two important issues for future RAF-CAB rotations to Europe. First, aviation units must place an emphasis on training extended FARP and maintenance operations located significant distances away from established maintenance facilities. Traditionally, aviation units place limited emphasis on this type of training or are constrained by training area limitations at their home station. Second, commercial support is essential to extending the range of RAF-CAB units in Europe, but this support is likely to prove unreliable in an actual conflict scenario. Effective coordination with commercial logistical support will allow for excellent training opportunities across Europe, but it also highlights a critical task in a RAF-CAB's potential wartime mission in Europe.

The third major lesson highlighted by this rotation relates to the challenges and limitations imposed by operating out of non-standard, immature LSA and maintenance facilities. In both Poland and Greece, the 6-17 TFs relied on host nation housing, dining facilities, gyms, hangar space, and offices. Squadron- and troop-level leadership was directly involved in shaping statements of request to the host nations, which involved staffing through EUCOM, USDAO, host nation national-level military staff, and the host nation-sponsoring unit in which the TF was collocated. Squadron leadership was regularly working directly with these agencies to identify requirements, coordinate contracting support to fill gaps in the available host nation support, and amend agreements between the U.S. and host nation forces.

This rotation highlighted that RAF-CAB units can dynamically rebase into immature areas, but executing these movements rapidly will likely

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Troop and squadron leaders meeting with BG Papadoupolis, Hellenic 32nd Marine Brigade, to coordinate host nation support in Volos, Greece. Photo credits: 4th CAB Public Affairs Officer, MAJ Brian Burns

result in standards of living below typical EUCOM garrison standards. In lieu of significant preplanning and coordination, dynamic rebasing will generally place units in a hybrid condition that falls between garrison and field conditions. Limited dining facility equipment in Greece and Poland required supplementation with tactical fielding mess equipment and personnel. Additionally, limited maintenance, office, and living space required augmentation with tents, contracted offices, and expando-van systems. This mix of garrison and field operations highlights the increasing expeditionary capabilities of RAF-CABs. However, dynamic rebasing requires significant coordination with the host nation and still results in field-like conditions for TFs operating in these immature facilities.

FUTURE OPERATIONAL NEEDS FOR RAF-CABS

As future RAF-CABs continue to build upon the evolving operational environment presented in Europe, there are number of additional initiatives relating to these lessons learned that future MFATF in EUCOM should pursue. First, there will continue to be a requirement to move and rebase across Europe rapidly and with short notice, and junior leader development will need to capitalize on the dispersed training opportunities. Second, the tactical logistical support chains must expand to better support real-world contingencies. Third, RAF-CABs should identify potential basing locations early to coordinate and posture equipment needed in these immature locations more efficiently. These efforts will ensure that future RAF-CABs can continue to serve as a dynamic and expeditionary deterrent in Europe, while further building partnerships with our NATO allies.

Dynamic rebasing and operations across Europe will continue to be an essential part of RAF-CAB AR missions and provide significant leader development opportunities. The need for different summer and winter basing locations to capitalize on favorable weather conditions will better support EUCOM flying-hour programs while maximizing partnerships with a greater array of NATO partners. Further investment in tactical mission command and communications nodes that can deploy quickly and be of use at multiple locations simultaneously will allow empowered junior leaders to operate in remote locations while senior commanders can continue to provide oversight and risk mitigation.

An additional recommendation is that RAF-CABs must have access to weapons packages and aircraft survivability equipment specifically designed to defeat or mitigate threats in EUCOM, similar to the stay behind equipment provided in combat theaters. Army aviation aircraft are increasingly training against Tier-1 IADS threats, which are able to detect and engage aircraft at distances exceeding 40 kilometers (km). To counter these threats, RAF-CABs should consider submitting operational needs statements (ONS) to acquire over the horizon capable, non-line of sight weapons systems,

Hellenic AH-64A aircrews from the Greek 1st Aviation Brigade conduct training flights with 6-17 CAV AH-64D aircrews near Stefanovikeio, Greece. Photo credits: 4th CAB Public Affairs Officer, MAJ Brian Burns

Hellenic Marines conduct a raid with support from RAF-CAB CH-47Fs at Litochoro Range, Greece. Photo credits: 4th CAB Public Affairs Officer, MAJ Brian Burns

with >30 km range, such as the Spike non-line of sight missile, as well as upgraded aircraft survivability equipment suites, ensuring RAF-CABs can effectively be employed against the modern IADS fielded in the region.

Additionally, combining expanded and dispersed mission command nodes with a more robust logistic support chain can effectively distribute fuel and ammunition in contingency operations. The 6-17 TF in Greece was able to capitalize on an additional mobile supply support activity (SSA) that traveled with the TF; however, this SSA still relied heavily on commercial carriers with limited contingency support in place.

Finally, RAF-CABs should continue to pursue additional theater-provided equipment dedicated to improving LSA and maintenance facilities in immature locations. Semi-mobile aircraft maintenance tents, physical training equipment, and dining facility storage and preparation equipment should be identified and secured to rapidly improve conditions in newly identified basing locations. These rebasing packages would allow the RAF-CABs to supplement and coordinate with the host nation-provided services in a way that would allow dispersed TFs to operate within EUCOM living standards while maintaining an expeditionary posture.

SUMMARY

The RAF-CAB in AR needs the ability to dynamical rebase throughout Europe to facilitate training, capitalize on the seasonal flying conditions, and provide flexible response options for USAREUR and EUCOM. For RAF-CABs to be successful in both creating readiness and supporting the combatant commander's contingency plans, they must operate where they can maintain readiness while also being adequately equipped to counter near-peer adversaries in the theater. The RAF-CAB must be able to move, train, and communicate, not only with itself but also with NATO partners, as it transitions from one area of responsibility to another. The 4th ID CAB's rotation to Greece was rewarding to TF KRONOS, both from a readiness and partnership perspective. The Greeks were excellent hosts, and the opportunity for future training is virtually limitless. They operate similarly to U.S. Army aviators and are eager to train with, teach, and learn together. Integration with our Hellenic partners also allowed our TF to gain a deeper understanding of the region's challenges, allowed better development of junior leaders, exercised and expanded logistic capabilities, and permitted operations from immature basing locations in an expeditionary manner. The AR rotation in EUCOM allowed the Soldiers to operate across a host of countries, operate thousands of miles apart, support NATO and U.S.

ground forces, create readiness and self-reliance, and deter aggression in Europe.

As the RAF-CABs in Europe continue to look forward to enhancing their expeditionary capabilities, these lessons and opportunities can, and will be, further enhanced. Improved mission command nodes, logistics chains, weapons and aircraft survivability equipment, and mobile basing equipment will extend the RAF-CABs' operational reach and ensure that they possess the lethality to deter modern adversaries. These efforts will allow future RAF-CABs to continue to maximize training opportunities and readiness, while simultaneously being postured to conduct expeditionary contingency operations across Europe.

MAJ Scott Jackson is the Executive Officer for 6-17 CAV and was the XO for TF KRONOS in Germany and Greece in 2018–9. He is qualified in the AH-64D with combat experience in Iraq and operational experience throughout Europe and multiple FORSCOM units.

MAJ William "Bill" Lewis is the Operations Officer for 6-17 CAV and was the TF KRONOS XO/S3 in Germany and Greece in 2018–9. He is qualified in the MH-47G and AH-64D/E, with combat experience in CENTCOM and AFRICOM. He has operational experiences in PACOM and EUCOM working in the 160th SOAR and multiple FORSCOM AH-64 units.

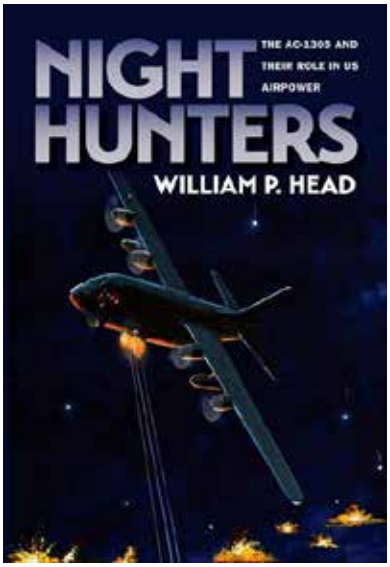
LTC Jamie LaValley, Commander of 6-17 CAV, was the TF KRONOS CDR in Germany and Greece in 2018–19. He is qualified in the AH-64D/E, with combat experience in Iraq and Afghanistan, and operational experience in PACOM and throughout EUCOM.

U.S. Soldiers with the 6th Squadron, 17th Cavalry Regiment, 4th Combat Aviation Brigade go for Cavalry Stetson and Spurs at Oberdachstetten Range Complex in Ansbach, Germany, Oct. 16, 2018. The Soldiers come with CH-47 Chinook helicopter transports to the Forward Arming and Refueling Point (FARP) and march to the shooting range and the obstacle course to take on the traditional challenge. The Spur Ride is the only means of joining the Order of the Spur, aside from a wartime induction. The conduct of a Spur Ride varies, but it is generally an event held over multiple days during which a Trooper must pass a series of physical and mental tests relevant to the Cavalry. U.S. Army photo by Eugen Warkentin

Night Hunters: The AC-130s and Their Role in US Airpower

Written by William P. Head, Published by Williams-Ford Texas A&M University Military History Series. College Station: Texas A&M University Press, 2014. 440 pages

A book review by Timothy Heck (Major, USMC).



The fearsome AC-130 gunship is one of the most iconic components of American airpower. From its origin over Vietnam through deployments in Grenada, Panama, Desert Storm, and this century's wars in Afghanistan and Iraq, the AC-130 has remained an essential asset in support of ground operations. William P. Head's ***Night Hunters: The AC-130s and Their Role in US Airpower*** tells the history of the gunship. Though well researched, the book is largely a programmatic history, focusing not on its applications in combat nor its crews, but on the budgetary, technical, and organizational history of the aircraft.

Night Hunters is divided into 16 chapters with a conclusion, notes, glossary, bibliography, and index. The first two chapters recount the development of the AC-130's predecessors, the AC-47 and AC-119. Head has previously told the stories of the predecessors in ***Shadow and Stinger: Developing the AC-119G/K Gunships in the Vietnam War***. Their shortcomings (including lack of range, altitude, loiter time, and firepower) led to the selection of the C-130 airframe as the next evolution in American gunships to be created for service in Vietnam. Head painstakingly describes the internecine politics present in the Air Force, in Vietnam, and at the Pentagon as the C-130 was adopted and adapted. The book's emphasis on contractor selection and employment, budgetary concerns, and technical modifications are filled with detail and serve to explain the difficult gestation the AC-130 underwent. This writing is heavy on Air Force lingo and terminology, making it difficult for lay readers to fully process.

Chapters three through nine place the AC-130s over Southeast Asia, where they quickly outperformed their predecessors and hampered North Vietnamese efforts. Like other books on America's war in Vietnam, Head relies heavily on attritional-based statistics to prove efficacy. These numbers, such as reported trucks destroyed, were likely unintentionally inflated as later Air Force testing determined trucks were rather hard to destroy. Regardless, AC-130s were impressive and a more suitable close air support weapon and interdiction asset than fast-moving jet fighters or even the venerable A/B-26K Invaders and A-1 Skyraiders.

Post-Vietnam developments of the AC-130 are covered in chapters 10–16. Again, programmatic history drives much of the book's content with indepth discussion of airframe modifications, electro-optical upgrades, and weapons systems taking center stage. Relatively short portraits on combat operations in Latin America and during Desert Shield/Storm demonstrate the AC-130's tactical role. Our recent wars in Iraq and Afghanistan are covered in chapters 14 and 15, revealing the AC-130's continual presence and position as the weapon of choice for ground combat units in need of close air support at night.

While ***Night Hunters*** can be considered the definitive text on the AC-130s, it falls short of telling the complete story of the aircraft. First, absent from much of the text are the crews themselves. There are limited vignettes that describe combat operations or the realities of operating and maintaining the aircraft. This omission gives the book a decidedly sterile feel. For readers interested in a similar, but more human-focused approach to special operations C-130s, see Jerry Thigpen's ***The Praetorian STARShip: The Untold Story of the Combat Talon***.[1] Secondly, despite its subtitle, the book does not address the doctrinal impact of the AC-130 on American airpower. While there is some discussion of employment concepts in the sections on Vietnam and Iraq, there is limited discussion of the AC-130 as an element of American air power. Changes in U.S. doctrine since the aircraft's creation are only briefly covered. As an example, AirLand Battle doctrine, which helped lead to American success in Desert Shield/Storm, is entirely absent.

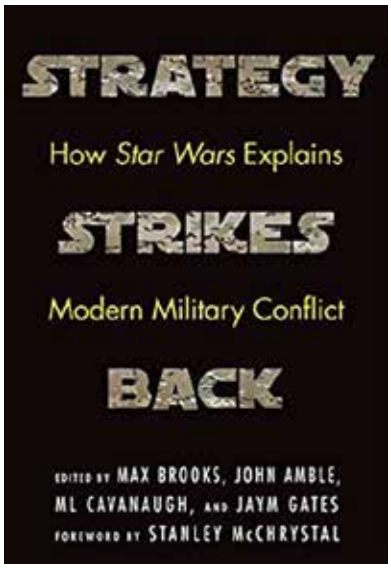
Head has done a remarkable job covering the development of a singularly unique airframe. From its origins in the late 1960s through combat in Afghanistan, the AC-130 has provided America and its allies unique capabilities in close air support and interdiction. For readers interested in how an aircraft goes from a stopgap concept to become commander's required asset, ***Night Hunters*** will be a staple text.

[1] Thigpen, J. L. (2001). *The praetorian STARShip: the untold story of the combat talon*. Maxwell Air Force Base, Alabama: Air University Press. Retrieved from http://www.au.af.mil/au/awc/awcgate/au/thigpen.pdf

Strategy Strikes Back: *How Star Wars Explains Modern Military Conflict*

Edited by Max Brooks, John Amble, ML Cavanaugh, and Jaym Gates
Published by Potomac Books of the University of Nebraska Press, 2018. 246 pages

A book review by 1LT Christopher S. Poppleton



An outstanding collection of essays written by a wide array of scholars and strategy-theorists, ***Strategy Strikes Back*** is every Star Wars fan's essential breakdown of many of the major characters and events that have cemented both the film and books amongst the most significant science fiction classics to date. The book is assembled by four main authors. Max Brooks, author, public speaker, and fellow at the Modern War Institute at West Point, who wrote ***World War Z***. John Amble, a veteran of the Iraq and Afghanistan wars and an Army Intelligence Officer, who is the editorial director of the Modern War Institute. ML Cavanaugh, a U.S. Army strategist with global experiences that have spanned duty stations across the world, also at the Modern War Institute and has written for a number of major publications, such as the ***New York Times*** and ***Wall Street Journal***. The fourth editor is Jaym Gates, a renowned science fiction editor and author with a multitude of publications, who currently serves as a creative lead at Harrisburg University on a course aimed at developing awareness and strategy directed to assist with crises response efforts. The compilation itself brings in authors ranging from General (Ret.) Stanley McChrystal and all manner of Soldiers with diverse backgrounds and occupations, to scholars and technological theorists and scientists who have devoted their efforts to researching and understanding history and the recourses of military decisions and events. The epic of ***Star Wars*** is the forum in which all these contributors have chosen to correlate military theory and the reasons behind why we fail or succeed, and how history can either be predicted or avoided in some cases as we navigate the turmoil of today's ever-shifting military engagements.

The book is comprised of four sections, all relating to critical characters and events within the ***Star Wars*** galaxy, but covering particular perspectives in which a war relates to societies, is resourced, waged, and then ultimately assessed. Within each section, a theory or attribute about a common or recurring topic seen throughout the book is fleshed out to provide new and fresh perspectives. Relationships and identities, namely how society connects or disconnects to either a clone army in correlation to today's Soldiers, or how technology shapes the battlefront and the decisions made politically and strategically, are major themes throughout which authors seek to recognize and dissect. While every essay is an author's individual take on a subject, the conclusion to each portion is always correlated in either a general way or for a specific military theme that is meant to be a modern day lesson.

The very first essay is perhaps one of the most important for today's audiences, correlating the Ewoks of Endor and the destruction of the Empire to much simpler cultures that can be seen in today's foreign engagements in which the maintaining of good relationships has proven vital to the United States' history and to its future throughout various particular regions (Brooks, "The Case for Planet Building on Endor," page 6). ***Star Wars*** examples, such as the destruction of Alderaan and its strategic uses and why it was destroyed by Grand Moff Tarkin, are also used to demonstrate a major theme in both military employment of power and especially its repercussions, as that single event alone is considered to have united the Rebel Alliance against the Empire, leading directly to the need for and eventual destruction of the Death Star (Cook, "On Destroying Alderaan," page 31). Each author is immensely convincing in their points, highlighting simple topics or characters that conclusively can and in most cases, did change how a character was perceived or why an event did come to pass.

Star Wars has presented audiences with a timeless tale of good vs. evil, light vs. dark, and more simply, the story of those that are compassionate and those that are selfish (Lucas, "Epilogue," page 236). Yet, at a closer glance, the actions of the classic light-saber and blaster-wielding heroes and villains requires a subsequent look. Who knew that the infamous "Who Shot First" fan theory of Han and Greedo in the Mos Eisley Cantina, which has been rereleased to audiences in four different versions, could highlight one of the most profound messages in the entire series: that there is preemptive vs. preventive action, and that this concept needs to be applied to just about all military strategy and decision making (Bies, "Han, Greedo, and a Strategy of Prevention," page 128)? More importantly, while the fan universe believes Jar Jar Binks was a major enabler of the rise of the Empire, the hook pertaining to Yoda's overall contributions in this grand event are perhaps one of the most groundbreaking criticisms of the entire book.

This assortment of imaginative and fun analyses is an absolute essential for any military theorist, strategist, critic, and lover of the ***Star Wars*** saga that to this day, continues to inspire, expand, and hold a profound sway in our imaginations. Every library should have a copy of this collective work, and I would certainly not be surprised if the authors took it upon themselves to develop further works, taking a look at other major science fiction works and fantasy epics that, while only fictional, are often heavily drawn upon and mirror the events and histories occurring in reality every day.

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ATTN: ATZQ-TDD
Directorate of Training
and Doctrine, Bldg. 4507
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