AIR LAND SEA BULLETIN

Joint Close Air Support

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Cover photo: An A-10 Thunderbolt II from the US Air Force Weapons School at Nellis Air Force Base, Nevada, drops a AGM-65 Maverick during a close air support training mission over the Nevada Test and Training Range (NTTR) Sept. 23, 2011. Weapons school students participate in many combat training missions over the NTTR during a six-month, graduate-level instructor course. (Photo by Senior Airman Brett Clashman, US Air Force)

DIRECTOR'S COMMENTS

For 37 years, the Air Land Sea Application (ALSA) Center has bridged Service interoperability gaps by listening to ideas from the field and sharing information among the Services. In that spirit, ALSA purposes to foster the relationships necessary to develop relevant multi-Service tactics, techniques, and procedures (MTTP) for today's warfighter.

As we look towards the coming year and the changes to operations in Afghanistan, we see many lessons that impact warfighters across the Services that tactical doctrine should capture. ALSA's MTTP are the means to do this. For example, based on lessons learned in Iraq, ALSA initiated new MTTP publications for Biometrics and Engagement Teams which will be available this year. In addition to these, ALSA incorporated recent operational lessons in revising several MTTP, including Cordon and Search and Aviation Urban Operations; and creating a new publication titled, Integrated Monetary Shaping Operations. (These MTTP are available on the ALSA website.)

One of ALSA's latest revised MTTP is Joint Application of Firepower, or JFIRE, (Army Techniques Publication 3.09.32, Marine Corps reference publication 3-16.6A, Navy tactics, techniques, and procedures 3-09.2, Air Force tactics, techniques, and procedures 3-2.6). It was released in November 2012 and represents TTP, acquired through decades of cooperation, to improve close air support (CAS) among the Services.

As we compiled the articles for this ALSB, we see CAS remains an essential form of applying airpower supporting ground operations. The articles in this bulletin complement the recently published JFIRE MTTP and continue the dialogue offering experiences and considerations to the JCAS techniques from execution to debriefing.

The first article, "Coordinated Attacks …", was authored by Capt Ethan Sabin of the 66th Weapons Squadron at the United States (US) Air Force's Weapons School. It addresses coordination challenges of multiple CAS flights engaging multiple targets for a single ground commander.

The second article, "Brief, Stack, Mark…", written by Lt Col Robert Chavez, Deputy Commander of the 57th Operations Group, discusses distributing the CAS workload between the joint terminal attack controllers (JTACs) and supporting aircraft.

"Digitally-Aided Close Air Support…", written by 1st Lt Dennis Seay assigned to the 605th Test and Evaluation Squadron, is the third article, which champions the use of digital CAS to increase effectiveness and efficiency.

Chavez also provides the forth article, "Variation on the Keyhole Template", which explores alternative approaches to the traditional target-centric templates.

The fifth article, "JCAS and the US Army Close Combat Attack", by Lt Col James McGlone, describes the differences between JCAS and Army close combat attack techniques.

The sixth article, written by Capt Michael Smith of the 66th Weapons Squadron, provides detailed techniques for effectively debriefing CAS missions. It is titled, "Joint Terminal Attack Controller Debriefing Guide".

During the past few months, the ALSA staff began a transition. We said goodbye to TSgt Christal Jefferson (USAF), MAJ Michael Saxon (USA), Maj Jeffrey Hughes (USMC), and LTC Reginald Armstrong (USA). Their contributions to ALSA and the joint doctrine community are numerous and will enhance multi-Service, tactical level operations for years to come. We thank them and wish them well.

We solicit your feedback and encourage you to visit our web page at **http://www.alsa.mil** to find MTTP, including information on upcoming revisions, and previous Air Land Sea Bulletins. Let us know how we are doing and what we can do for you!

BRUCE V. SONES, Colonel, USA

Director

COORDINATED ATTACKS: AN A-10C PILOT'S PERSPECTIVE

US Air Force Senior Airman Corban Caliguire and Tech Sgt Aaron Switzer, 21st Special Tactics Squadron joint terminal attack controllers (JTACs), call for an A-10 Thunderbolt II aircraft to do a show of force during a close air support training mission Sept. 23, 2011, at the Nevada Test and Training Range. (Photo by Tech Sgt Michael R. Holzworth, US Air Force)

By Capt Ethan E. Sabin, USAF

Tactical Problem: Hog 1 is a two-ship flight of A-10s working close air support (CAS) with a joint terminal attack controller (JTAC), call sign Zombie 21. Following the area of operations (AO) update to the Hog flight, Canon 1 (another two-ship flight of A-10s) checks-in. After deconflicting the stack and building Canon's situational awareness (SA) of the AO, Zombie 21 asserts he has a priority target, a soft-skin, five-vehicle convoy oriented north to south that the Ground Force Commander (GFC) wants to attrit prior to it moving south from its current position. There is a ZSU 23-4 (a lightly armored, self-propelled, Russian anti-aircraft weapon) at the front of the convoy and Zombie notes the vehicle convoy looks like it may be preparing to move. Zombie and the A-10 flights understand the timeliness of the attack is paramount, and desire to mass firepower to accomplish the GFC's intent and prohibit vehicle movement. Zombie is considering how best to use the CAS assets on station and queries Hog for a recommendation. What should Hog do?

This tactical problem demonstrates a situation where coordinated attacks offer a solution for solving a tactical problem. However, if the coordinated attack gameplan devised by Hog and Canon is inefficient and cannot ensure proper flight path and weapons deconfliction, they may not be able to achieve the desired effect in a timely fashion. Coordinated attacks continue to be a problem for many pilots in the combat air forces (CAF). Both upgrading and young, inexperienced flight leads (FLDs) demonstrate difficulties in executing coordinated at-

Coordinated attacks continue to be a problem for many pilots in the combat air forces (CAF).

tacks mainly due to the lack of clear and concise gameplans. Also, FLDs demonstrate problem areas with sound deconfliction before, during, and after an attack. When the tactical situation dictates, coordinated attacks serve as easy force multipliers in the CAS fight and effect the timely and efficient execution of fires. Coordinated attacks also serve as a means to split target defenses and augment a flight's ability to mitigate threats. This article looks at the composition of the coordinated attack and aims to offer techniques for execution so flights do not become bogged-down with lengthy attack discussions and are able to put fires on target more efficiently.

There is a tendency for CAF pilots to stray away from the procedures and terminology regarding coordinated attacks depicted in Joint Publication (JP) 3-09.3, *Close Air Support.* JP 3-09.3 states, "Coordinated attacks include multiple flights of aircraft using either combined or sectored tactics in conjunction with some type of deconlfiction measure." At its most basic level, coordinated attacks mean running aircraft down the same or a separate final attack axis and not hitting one another with their own aircraft, ordnance, or ordnance effects. With this point in mind, FLDs need to understand that coordinated attacks are not necessarily the standard neither are they automatically approved when working with other aircraft on station. The tendency of many FLDs is to assume coordinated attacks are automatically authorized when, in fact, the JTAC/forward air controller (airborne) (FAC(A)) must first approve the use of coordinated attacks. A CAS fighter, should query the JTAC/FAC(A) for approval to use coordinated attacks if they desire to utilize them. FLDs and CAS aircraft likely have not integrated with ground forces to the extent necessary and they are not completely familiar with the entire ground scheme of maneuver. As such, JTACs/FAC(A)s may have alternative uses for a fighter's ordnance or a different gameplan in mind than that of the FLDs. Should JTACs/FAC(A)s grant approval for coordinated attacks and the tactical situation dictates their use, it is incumbent for the players involved to designate an on-scene commander (OSC) for the coordinated attack.

There remains confusion over who is the OSC and what is his role in a coordinated attack. JP 3-09.3 states, an "OSC is appointed for coordinated attacks." The JTAC/FAC(A), if not assuming the OSC role individually, should designate the flight lead with the highest SA of the target area, as the OSC. It is incumbent upon the OSC to take charge, lead, and coordinate all attacks with the JTAC/FAC(A). Also, the OSC should remember that while the OSC directs deconfliction between flights for an attack, the JTAC/FAC(A) is still the "owner" of the target area. This juncture is a historical point where confusion arises among the fighters on station. FLDs, under an erroneous assumption or miscommunication from the JTAC/FAC(A), deviate from the constraints for the coordinated attack and cause a breakdown in overall AO SA.

One technique to use when designating an OSC for coordinated attacks is JTACs/FAC(A)s should state that a particular FLD has "OSC for the coordinated attack(s)" or the FLD has OSC for a coordinated attack and is subject to a specific set of restrictions for the duration of the coordinated attack. This technique ensures there is no confusion over the timeline for the duration with which a FLD has OSC and whether or not the FLD has OSC for the entire AO.

In the tactical problem, Zombie 21 would state, "Hog, you have OSC for the coordinated attack." "Hog, work with Canon and report back with gameplan." Hog would reply with his call sign to acknowledge understanding the request. Hog and Canon can use an alternate frequency (i.e., Hog can swap over to Canon's inter-flight frequency to conduct attack coordination to avoid saturating the strike frequency in case other fighters check in,

> At its most basic level, coordinated attacks mean running aircraft down the same or a separate final attack axis and not hitting one another with their own aircraft, ordnance, or ordnance effects.

threat calls are made, etc.). JP 3-09.3 comments on this technique when it states, "while the JTAC/FAC(A) and aircrews must conduct the attack using a common frequency, the aircrews can use a separate frequency to conduct inter-flight coordination (e.g., ordnance, deconfliction, timing, etc.)."

At this juncture Hog 1 must expeditiously and efficiently communicate the coordinated attack gameplan to Canon to get him on-board with the plan. A trend in the CAF regarding communication during coordinated attacks is that pilots fail to use JP 3-09.3 terminology or misapply the concept of designating an OSC altogether. This point becomes especially pertinent when dealing with non-United States Air Force assets. To the maximum extent, pilots should adhere to the communication standards and procedures listed in JP 3-09.3 and avoid colloquialisms or aircraft-specific slang. Hog 1 recognizes, in this tactical problem, the Maverick (AGM-65) is a good choice to destroy the vehicle convoy and provides stand-off from the collocated threat. Hog elects to use a combined-sequential-visual attack using Mavericks. Hog switches his flight over to Cannon's inter-flight frequency and passes the following gameplan:

[INFLT] "Canon, Hog, your inter-flight, call ready for coordinated attack gameplan."

[INFLT] "Hog, Canon, ready to copy."

[INFLT] "Canon, Hog, coordinated attack gameplan is combined-sequential-visual. Hog will be in from the east off south with Maverick. Request you in trail with Maverick. Maintain trail off target. Sort, Hog 1, leader then north, Canon 1, Trailer then south. Canon, any questions about the coordinated attack gameplan?"

[INFLT] "Hog, Canon, negative."

[INFLT] "Canon, Hog, visual is your left 9 o'clock."

[INFLT] "Canon, visual."

[INFLT] "Canon, go trail."

[INFLT] "Canon." "Canon saddled."

[INFLT] "Canon, Hog, call ready."

[INFLT] "Hog Ready."

[INFLT] "Canon Ready."

[STRIKE] "Zombie, Hog, coordinated attack gameplan is combined-sequential-visual, Hog then Canon, in from the east off south with Maverick."

[STRIKE] "Hog, Zombie copy. Report IP [initial point] inbound and in with direction."

[STRIKE] "Hog." "Hog IP Inbound."

In this example, Hog elected to use a combined-sequential-visual attack, meaning the avenue to the target is shared airspace, the timing on target is sequential, and the deconfliction is from visual separation for the flight path and ordnance. FLDs should select the simplest option for coordinated attacks to minimize communication and reduce confusion. Trends in the CAF concerning breakdowns in deconfliction include not clearly establishing lateral deconfliction when executing sector attacks on different targets from the same IP. Likewise, common deconfliction breakdowns include not giving an egress plan during low-altitude combined attacks from the same IP. At a minimum, all pilots need the basic understanding for communication standards and deconfliction outlined in JP 3-09.3, to avoid the problem areas mentioned earlier in this article.

While this attack example proved relatively simple to execute based on the threat disposition and having like aircraft on station, dissimilar assets can be more challenging for FLDs to integrate during coordinated attacks. FLDs tend to become bogged down during execution with dissimilar assets either due to a lack of familiarity with the other asset's capabilities or a lack of techniques for effective integration. The bottom line is the fundamentals of coordinated attacks

> To the maximum extent, pilots should adhere to the communication standards and procedures listed in JP 3-09.3 and avoid colloquialisms or aircraft-specific slang.

An F-16 Fighting Falcon returns to its mission above Afghanistan after receiving fuel from a KC-135 Stratotanker (not pictured) May 8, 2011. (Photo by Master Sgt William Greer, US Air Force)

don't change when working with dissimilar assets. FLDs need an avenue of approach to the target (combined vs. sectored), the timing of weapons on target (sequential vs. simultaneous), and a deconfliction method for flight path and weapons (visual vs. timing). In this tactical problem, had the Hog flight been paired with a flight of F-16CMs, one option would have been to use their Joint Direct Attack Munition (GBU-38/54) on the vehicles via a sectored-sequential—2 minutes off Hog's time on target. Hog could mirror the coordination procedures in the example or, if the strike frequency is not busy, Hog could pass the gameplan via the strike frequency to reduce any follow-on coordination with the JTAC/FAC(A).

Ultimately, it is the responsibility of the OSC is to efficiently integrate other fighters into the coordinated attack gameplan through safe deconfliction and sound tactics. If the tactical situation dictates, JTACs and FAC(A)s should be prepared to utilize their fighters in a coordinated attack(s) to mass firepower, improve survivability and accomplish the GFC intent. The procedural guidelines FLDs, JTACs and FAC(A)s should consider standard are:

• Aircraft egressing have the right of way.

• The JTAC/FAC(A) must approve re-attacks (after coordination with the GFC).

• If in violation of deconfliction, aircraft must notify other players and the JTAC/FAC(A) as well as immediately re-establish deconfliction.

• JTACs/FAC(A)s and aircrew must coordinate munitions that may enter the other flight's sector before the attack.

If FLDs, FAC(A)s and JTACs train to these expectations, they can expect successful results in execution. Attack!

Capt Sabin is the CAS Phase Manager at the 66th Weapons Squadron, Nellis Air Force Base, Nevada.

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BRIEF, STACK, AND MARK: TECHNIQUES FOR JOINT TERMINAL ATTACK CONTROLLERS (JTACS), FORWARD AIR CONTROLLERS (AIRBORNE) (FAC(A)), AND CLOSE AIR SUPPORT (CAS) AIRCREW

US Marine Corps Capt. Jonathan Lewenthal, AV-8B Harrier pilot with Marine Attack Squadron VMA-231, Marine Aircraft Group 14, 3rd Marine Aircraft Wing (Forward), flies over southern Helmand Province, Afghanistan after conducting an aerial refuel on Dec. 6, 2012. VMA-231 deployed to Afghanistan to provide close air support for counter-insurgency operations. (Photo by Cpl Gregory Moore, US Marine Corps).

By Lt Col Robert M. Chavez, Jr., USAF

> While it's fairly common for JTACs to grant Brief, Stack, and Mark to FAC(A)s, it's fairly uncommon for JTACs to confer these duties on a non-TAC qualified CAS aircrew.

There is often confusion during CAS planning and execution among JTACs, FAC(A)s, and a CAS aircrew about proper use and transfer of the FAC(A) duties of Brief, Stack, and Mark. This article focuses on how to properly use and share Brief, Stack, and Mark between, not only the JTAC and FAC(A), but also a non-terminal attack control (TAC) qualified CAS aircrew, to more effectively and efficiently achieve the supported commander's intent during CAS.

CAS aircrew is defined here as bomber flight leads, fighter or helicopter flight/section/division leads, bomber aircraft commanders (for single-ship bomber missions), and unmanned aerial system aircraft commanders. The following are Joint Publication (JP) 3-09.3, *Close Air Support*, definitions of FAC(A) Brief, Stack, and Mark duties. The fourth duty, Control ("the authority to control the maneuver of and grant

weapons release clearance to attacking aircraft") is usually associated with the other three, but is beyond the scope of this article and, therefore, excluded.

• Brief—The FAC(A) will automatically pass information such as operational area updates, available 9-Lines, battle damage assessment, etc. to CAS assets within the operational area as well as copy down CAS asset check-in information. The FAC(A) will keep the JTAC updated of the situation but allow him to focus on other duties.

• Stack—The FAC(A) will deconflict all CAS assets from surface fires within the operational area and provide deconfliction for assets upon check-in. Deconfliction will include holding areas, ingress and egress routings, and target areas. The FAC(A) will keep the JTAC updated of the situation, as required, allowing the JTAC to focus on other duties. The JTAC must keep the FAC(A) updated on any changes with fire support coordination measures/indirect fire operations.

• Mark—The FAC(A) will provide target marks for CAS attacks. It is critical the FAC(A) and JTAC coordinate whether or not the JTAC will issue a clearance via Type 1, 2 or 3 for the FAC(A) to release a kinetic mark. Talk-ons are considered marks for this tasking. The FAC(A) will bring aircraft forward with deconfliction established and threat permitting to provide talk-ons to targets associated with passed 9-Lines/areas of interest.

While it's fairly common for JTACs to grant Brief, Stack, and Mark to FAC(A)s, it's fairly uncommon for JTACs to confer these duties on a non-TAC qualified CAS aircrew. JTACs and fighter flight leads often confuse co-ordinated attack on-scene command (OSC) with Brief, Stack, and Mark; their differences are discussed later. FAC(A)s are prepared to receive Brief, Stack, and Mark responsibilities described in JP 3-09.3. However, JTACs should consider, and a CAS aircrew should prepare for, conferring any or all of these duties upon a CAS aircrew, when appropriate, as a way to further maximize the performance of the CAS team in a fight with high aircraft volume.

JTACs should plan to provide Brief, Stack, and Mark as soon as possible to a FAC(A)/CAS aircrew after check-in to relieve the JTAC of these duties since these can task-saturate a JTAC due to other mission demands such as multiple flights on station, troops-in-contact, and/or mounted or dismounted maneuver. Being ready to rapidly hand-off these duties requires anticipation and preparation from the JTAC, FAC(A), and even more importantly, the CAS aircrew.

Passing the Brief is best completed after all available CAS briefings (9-Lines) are sent from the JTAC to the FAC(A)/CAS aircrew. If the JTAC doesn't have follow-on targets nominated from the ground commander, or 9-Lines built for nominated targets, the Brief can be conferred in a limited way (such as, *"Misty 21, Icebox 23, you have Brief for the Situation update and first 9-Line; Icebox 23 has the Brief for follow-on 9-Lines"*). The JTAC could also limit the Brief to the situation update, if desiring to maintain Brief authority for 9-Lines (for example, *"Panton 11, Icebox 23, you have the Brief for the situation update, I retain the Brief for all 9 Lines"*). Even this lesser exchange of responsibility can help relieve JTAC saturation in a high-task environment and better maximize CAS team efficiency.

The Stack is well suited to the FAC(A)/CAS aircrew since each is typically well acquainted with working aircraft deconfliction. Therefore, JTACs should usually hand off the Stack as early as possible with the expectation that the FAC(A)/CAS aircrew will keep them updated on aircraft on-station and deconfliction, enabling rapid JTAC strike tasking. Also, it's possible for a JTAC to confer only the Stack to a FAC(A)/CAS aircrew while retaining

Brief and Mark and, of course, Control. The FAC(A) or CAS aircrew should request the Stack if the JTAC doesn't pass it at, or shortly after, initial check-in. The Stack includes deconfliction of aircraft from each other or friendly surface fires, and should be seen as executing Step 1, routing/safety of flight, from the CAS Execution Template found in the *Multi-Service Tactics, Techniques, and Procedures for the Joint Application of Firepower* publication. Routing/safety of flight includes briefing surface-to-air threats to CAS aircraft. A mnemonic for passing the critical Stack and routing/safety of flight information is D-A-T: **D**econfliction, **A**rtillery (friendly surface fires), and **T**hreats.

The Mark duty is also well suited to airborne players because almost all CAS aircraft now carry some type of advanced targeting pod (TGP) or other electro-optical/infrared (IR) sensor, and most are capable of providing a laser mark (for acquisition by laser spot trackers), IR pointer (for acquisition under night vision devices), and/or sending a J12.5 target sorting message to other tactical data link equipped players. FAC(A) and a fighter CAS aircrew maintain the capability to mark with airborne weapons (such as rockets and guns), and most CAS aircraft can employ certain types of low explosive/low collateral damage weapons in a marking capacity. Also, using radio voice talk-ons is a tried-and-true method of marking with the added advantage that FAC(A) or CAS aircrew is providing a mark from the same, or similar elevated vantage point as the aircrew to which they are providing the talk-on. This typically aids in quicker target acquisition. Mark should only be passed once the JTAC is certain the FAC(A)/CAS aircrew has acquired the correct target or desired point of impact. Correlation techniques should be used such that a combination of at least two of any of the following are used to confirm target acquisition:

• TGP capture or system presentation

of Category 2 or better target location error coordinates.

• Descriptive confirmers, such as colors, shapes, or known reference dimensions.

• Target reference points, or unambiguous geographical references.

• Visual marks, such as white phosphorous artillery marking rounds.

• A laser mark with a laser spot tracker (and re-confirmation, if possible, from the marking source via its laser spot tracker, if available).

• IR pointer marks and, if possible, matchpoint confirmation.

• Easily acquired aerial or surface fires into or from target positions.

As able, JTACs should monitor the FAC(A), especially a non-TAC qualified CAS aircrew, as they execute Mark, to ensure continued accuracy and friendly ground force safety.

OSC for coordinated attacks carries an implied Stack duty inherent in this JP 3-09.3 statement: "While the OSC directs deconfliction between flights, the JTAC/FAC(A) is still the 'owner' of the target area." Since OSC must be designated to a CAS aircrew by a JTAC/FAC(A) or from a JTAC to a FAC(A), it is reasonable to assume the Stack duty is conferred to the OSC for the purposes of deconflicting the elements of his coordinated attack. JTACs should never assume an OSC designation automatically confers Brief, Stack, and/or Mark duties, but should be ready and willing to pass those duties, along with OSC, if the tactical situation warrants. An example of radio communication for this is, *"Dealer 61, Widow 25, you have on-scene command for coordinated attacks on this target until 2055 Zulu, you also have Brief, Stack, and Mark for this target, Widow 25 has Control."*

Also, JTACs could designate OSC, but retain Brief, Stack, and

Mark should only be passed once the JTAC is certain the FAC(A)/ CAS aircrew has acquired the correct target or desired point of impact.

An F-15E Strike Eagle roars into the sky over Afghanistan Oct. 6, 2011. The F-15s of the 455th Air Expeditionary Wing help provide aerial base defense for Bagram Airfield. (Photo by Tech Sgt Matthew Hecht, US Air Force)

Mark, limiting the OSC to simply coordinating the attack game plan between his aircraft or element and the coordinated attack aircraft or element(s) for a specific JTAC/FAC(A) designated target. However, the latter is discouraged if the CAS aircrew has exhibited sufficient situational awareness because JTAC retention of Brief, Stack, and Mark while designating OSC to a CAS aircrew will likely only complicate execution and the JTAC's task loading. Additionally, it is possible to have a FAC(A) on-station fulfilling Brief, Stack, and Mark duties while strikers execute coordinated attacks. In this instance, the JTAC should designate the FAC(A) as the OSC or the FAC(A) should request and receive OSC for coordinated attacks from the JTAC to expedite coordination and maximize firepower in support of the ground/surface commander's desired effects.

Lt Col Chavez is the Deputy Commander, 57th Operations Group, Nellis Air Force Base, Nevada

As able, JTACs should monitor the FAC(A), especially a non-TAC qualified CAS aircrew, as they execute Mark, to ensure continued accuracy and friendly ground force safety.

DIGITALLY-AIDED CLOSE AIR SUPPORT (DaCAS): THE JOINT TERMINAL ATTACK CONTROLLERS' (JTACS') "EASY BUTTON"

US Air Force Master Sgt Bryan Patton, Air Force Weapons School joint terminal attack controller (JTAC) instructor, uses the digitally aided close air support (DACAS) program during the JTAC Advanced Instructor Course at the Nevada Test and Training Range Jan. 28, 2013. DaCAS provides JTACs a map of the battle space in which they can mark targets and friendly forces. (Photo by Staff Sgt William P. Coleman, US Air Force)

By 1st Lt Dennis Seay, USAF

DO YOU KNOW YOUR CAPABILITIES?

The current impression of DaCAS does not bode well for an optimistic stance on the suitability and effectiveness of the system. This article will show that DaCAS is under-used in many air support operations squadrons and air support operations centers (ASOCs). With the fielded equipment already on hand, the average joint terminal attack controller (JTAC), at every echelon (i.e., corps through company) can send and receive free text messages, joint tactical air requests (JTARs), 9-Lines, situation reports, aircraft on-station reports, departing initial point messages, and countless other messages that can be used to make the JTAC faster, more efficient, and more lethal. The problem is, DaCAS is not being used.

The lack of training, familiarity, motivation, and reliable equipment are major limiting factors in the employment of DaCAS. JTACs are not well trained on the software and hardware they are expected to use during deployments. Currently, JTACs are not well trained on the overall process or tactics, techniques, and procedures (TTPs) that guide them on how to use DaCAS to their advantage. These obstacles tend to force the JTACs to do what they do best: use the map, com-

> The lack of training, familiarity, motivation, and reliable equipment are major limiting factors in the employment of DaCAS.

pass, radio, and handset. The DaCAS tools specifically built for the JTAC are collecting dust under desks in operations centers throughout the world. The few JTACs within the tactical air control party (TACP) career field that are employing DaCAS correctly, inevitably, have a story of how the system can make them more productive. This is an attempt to ignite renewed interest in DaCAS.

DaCAS IN ALL PHASES OF CAS OPERATIONS

• Pre-Mission

Mission planning is where the majority of work is accomplished. Today, email and the Internet are relied upon heavily. The immediate JTAR is emailed up the chain, from desk to desk, until it is received at the ASOC. That method is no longer an option in an operational environment that is not wired for the Internet. Would it not be more efficient to fill out a JTAR, push transmit (Tx) and watch the screen tell you all echelons received your request, including the ASOC? Consider the ma-

jor combat operations environment. Usually, there isn't an option for Internet in a large scale, fluid battlefield scenario. The radio will be a JTAC's only reliable means of communication for weeks at a time. Two options for the JTAC would be voice or DaCAS. With the amount of JTARs expected, the voice option will become troublesome.

Consider building the situational awareness of an aircrew, or multiple flights of aircraft, prior to arrival on station. DaCAS provides the capability to input multiple points of reference on a map and make them visible for all aircraft in the area. All scenarios call for "secondary confirmers" to ensure the JTAC and aircrew are in agreement about any type of situation. The JTAC can put a point on his map to depict a possible target. The aircrew can target that point and it will be displayed in one of two ways. Either there will be a line drawn from the aircraft to the target track, or the target icon will change to signify the aircraft is targeting that specific track; consider that a "secondary confirmer." All this can happen pri-

The DaCAS tools specifically built for the JTAC are collecting dust under desks in operations centers throughout the world.

Staff Sgt Clark Collins, a joint terminal air controller (JTAC) with the 118th Air Support Operations Squadron, North Carolina Air National Guard, conducts close air support (CAS) training with F-16 fighter pilots from the 157th Fighter Squadron at McEntire Joint National Guard Base, S.C. (not pictured), Feb. 29, 2012. The CAS training was conducted to familiarize McEntire's pilots with working with JTACs and providing CAS to troops on the ground. (Photo by Tech Sgt Caycee Watson, South Carolina National Guard)

or to the aircraft arriving on station.

The next level of situational awareness is the ability to reference multiple track numbers and move from point to point quickly and efficiently. The JTAC can build situational awareness on the DaCAS screen, transmit it, and all players will be synchronized. Some options available are: threats, friendlies, no-fire areas, obstacles, suspects, and targets. In a multiple target environment, with collateral damage concerns and multiple friendly locations, the overall coordination would be extensive if the JTAC depends solely on voice communications. One example of how well it works comes from the OPERATION ENDURING FREEDOM ASOC in 2011. A troops-in-contact was called and triggered a ground launch. Prior to takeoff, an F-15E had the locations of the JTAC and target, and the area of operations (AO) update for the mission. This should be normal practice with DaCAS assets available.

• **Execution**

The aircraft is depicted on the JTAC's screen, the first target is confirmed, and the closest friendly unit is depicted on everyone's screen. The fighter-to-forward air controller briefing, if not already accomplished, can be sent in a single burst transmission. The subsequent 9-Lines can be built, saved, and ready to be sent. The AO update and battle damage assessment (BDA) report can be pre-filled in a free text message, then sent upon request.

This scenario can graduate to multiple sets of aircraft, target sets, and JTACs. For example, pending airspace deconfliction, two A-10s, two F/A-18s, and an armed unmanned aircraft system (UAS) can attack five targets simultaneously. The screen for all players would have an aircraft icon attached to a line or sensor point of interest line that leads directly to the assigned target, or the icon on the target would be able to show details of which aircraft is attacking the selected target. Either way, it is clear to all entities which target each aircraft will attack. The coordination time and effort for the same attack without the help of DaCAS will be exponentially greater. Currently, the main hindrance to JTACs executing DaCAS missions is lack of training and familiarity.

One key advantage to DaCAS is, as the digital messages flow back and forth, the pilot no longer is responsible for writing down the critical pieces of information required for CAS execution. The system is receiving the grids, positions, or targets and processes and displays them automatically, allowing the pilot/aircrew to concentrate on flying the aircraft. In a high-threat environment, DaCAS enhances aircraft survivability and reduces the margin for error in transcribing.

• **Post Mission**

This phase is either a completion of the mission for all involved, or the transition from one set of aircraft to another. If the mission is complete, the BDA can be sent with the push of a button and eliminates manual input as the aircraft departs the target area. The ability to hand-off targets or pass a large amount of target information in a very short amount of time makes DaCAS worth it. If the scenario is properly developed, a follow-on aircraft will be able to see the target and JTAC position prior to takeoff en route to the target area.

An often overlooked portion of a mission is the debrief. The ability to review the entire mission on the aircraft recording provides a next-level of tactics review and improvement. The screen depiction, recorded in the aircraft when DaCAS is used to its potential, outlines the mission with more fidelity and accuracy than depending on the notes and scribble from a JTAC's map. The parties involved are able to see what the JTAC put on the screen, what and when the aircraft was attacking, when the messages were received, and what the messages looked like. This is an invaluable tool for shorten-

ing the kill chain and ensuring timely and accurate fires to defeat the enemy.

Coming Soon

The future of DaCAS looks bright. Today, it would be difficult to find a combat community that is not placing a great amount of effort in developing TTPs or equipment procurement that takes advantage of the many benefits of DaCAS. The Marines primarily use StrikeLink, the Air Force has the TACP-CAS System, and there are other dismounted JTAC options being employed by the special operations community. The bottom line is DaCAS value is gaining recognition in the warfighter community. The ability to point at a target with a laser marker and have it populate on the JTAC and aircraft map, "wear" a computer that is DaCAS capable, set up a network of CAS players, and do all of these from any position (i.e., tactical operations center or vehicle mounted and dismounted) is quickly becoming a reality.

The main hurdles in this race are training; familiarization; equipment; and, most importantly, motivation. Getting to know what DaCAS can do for you is the first step; becoming proficient is the next step. Only then, is the warfighter in a position to decide whether or not to use it.

The following illustrations are examples of DaCAS mission flow. The first depicts DaCAS mission flow between JTAC and an A-10 aircraft. It shows data messages supplementing the voice transmissions. Using

Getting to know what DaCAS can do for you is the first step; becoming proficient is the next step. Only then, is the warfighter in a position to decide whether or not to use it.
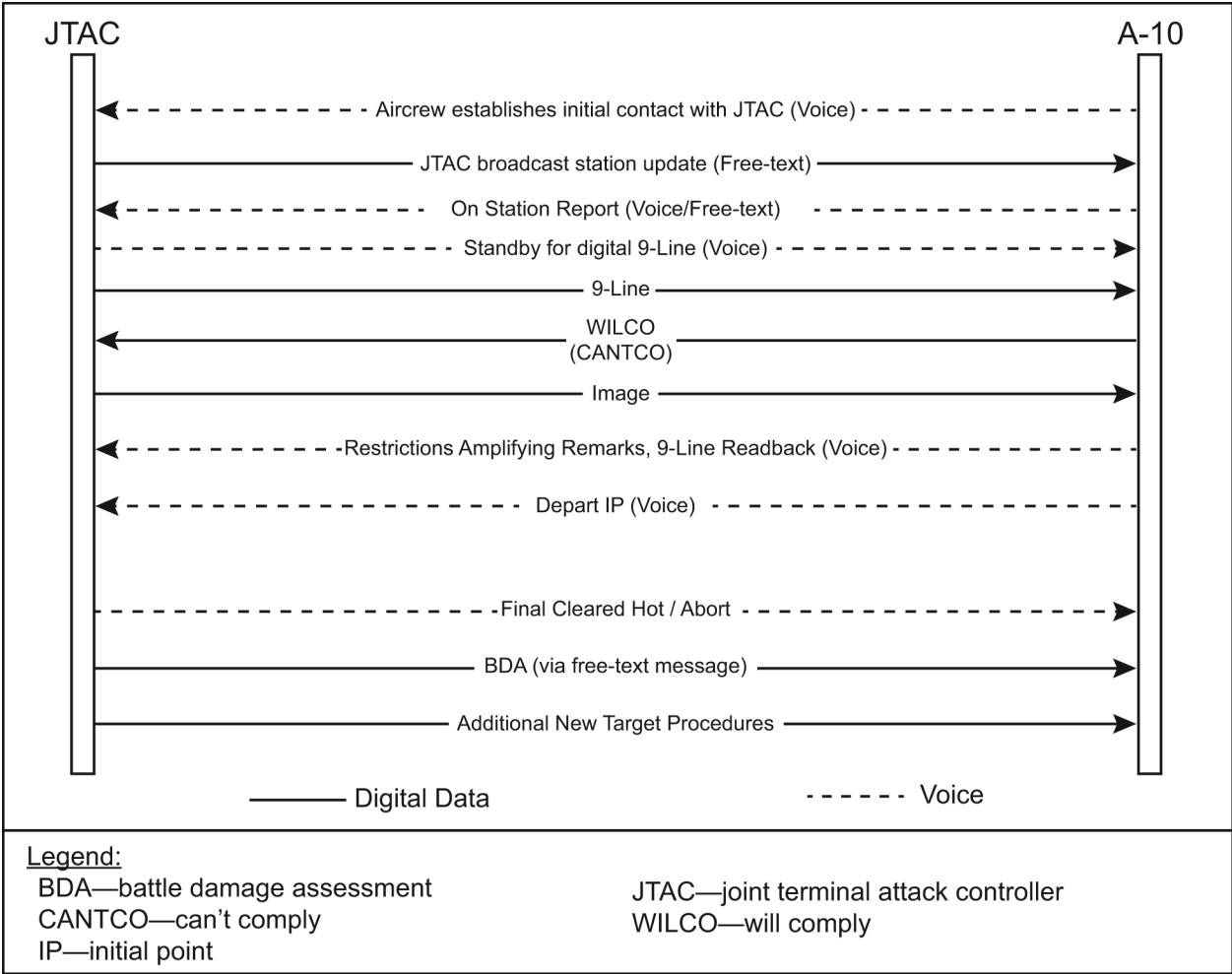
An Example of DaCAS Mission Flow between JTAC and an A-10 Aircraft

voice and data together maximizes the JTAC's capability. The second is an example of a DaCAS mission from pre- to post-mission using an F/A-18 aircraft. This provides a sample message flow to display the ability to send data in the place of lengthy voice messages (such as the fighter-to-FAC, 9-Line, or BDA). The margin of error is dramatically reduced when using the machine-to-machine interface, instead of the JTAC transmitting a grid, the pilot writing it down and pilot manually inputting it into the system, and then reading it back to all involved.

1st Lt Seay is the, 13L, JTAC-I/SEE TACP Flight 605 Test and Evaluation Squadron Hurlburt Fld, Florida

The margin of error is dramatically reduced when using the machine-to-machine interface ...

An Example of a DaCAS Mission from Pre- to Post-mission using an F/A-18.

JTAC   F/A-18

- Aircrew establishes initial contact with JTAC (Voice)
- JTAC broadcast station update (Free-text)
- On Station Report (Voice/Free-text)
- Standby for digital 9-Line (Voice)
- 9-Line
- WILCO (CANTCO)
- Restrictions Amplifying Remarks, 9-Line Readback (Voice)
- Image
- Depart IP (Voice)
- Request Aircraft Status
- Final Cleared Hot / Abort
- BDA (via free-text message)
- Additional New Target Procedures

——— Digital Data   - - - - - - Voice

Legend:
BDA—battle damage assessment
CANTCO—can't comply
IP—initial point

JTAC—joint terminal attack controller
WILCO—will comply

VARIATIONS ON THE KEYHOLE TEMPLATE

US Navy Lt. Matt Reed, assigned to Strike Fighter Squadron (VFA-83) embarked aboard the aircraft carrier USS Dwight D. Eisenhower (CVN 69), pilots an F/A-18C Hornet aircraft over Afghanistan Oct. 7, 2012. The Dwight D. Eisenhower was deployed to the US 5th Fleet area of responsibility to conduct maritime security operations and theater security cooperation efforts and support missions for Operation ENDURING FREEDOM. (Photo by LT Greg Linderman, US Navy)

By Lt Col Robert M. Chavez, Jr., USAF

The Keyhole Template presented in Air Land Sea Application Center publication *JFIRE Multi-Service Tactics, Techniques, and Procedures (MTTP) for the Joint Application of Firepower* (JFIRE), is a flexible way to rapidly establish holding and initial points (IPs) for strike aircraft in a close air support (CAS) environment without pre-planned or predetermined tactical waypoints. However, many CAS players find the Keyhole Template concept unacceptable because it is too target-centric and does not adequately account for moving targets, weather, or surface-to-air threats. This article presents alternative approaches to the Keyhole Template that addresses these concerns while maintaining the inherent flexibility of the concept.

The JFIRE MTTP publication offers the following definition:

"A method for establishing hasty IPs is the Keyhole Template. When CAS aircraft are passed to a joint terminal attack controller (JTAC) from a contact point, the JTAC should immediately pass the coordinates for an anchor point, known as Point Echo, to those CAS players, and then anchor their hold point off Point Echo with direction, distance, and altitude. *Point Echo should be the target, if one has been established; otherwise it may be a common reference point.* Each cardinal direction is labeled with a letter: Alpha – North, Bravo – East, Charlie – South, Delta – West, and Echo – center anchor point. Distance is given in nautical miles. Distances from point Echo are "no closer than" distances for aircraft holding. In all cases, consideration must be given to altitudes, turn direction, and orbit locations."

Note the Italicized sentence in the Keyhole Template definition. The idea the Echo Point *should* be the target is the issue many practitioners have with the Keyhole Template. The con-

> ... many CAS players find the Keyhole Template concept unacceptable because it is too target-centric ...

cept was conceived during permissive stability and support to counterinsurgency air operations over the past decade where the target was often a fixed objective like a building or the center of a village or town. Such targets or objectives were often in a non-linear battle space where air and ground forces could marshal and assemble around the target without concern for threats to air operations or offsetting laterally from the fire support coordination line or forward line of own troops. These issues, combined with the possibility of restrictive weather conditions limiting or forbidding holds or orbits around the target, plus the need to train to higher threat environments, lead many to dismiss the Keyhole Template altogether.

The alternative to the Keyhole Template is the more traditional set of predetermined navigational waypoints (IPs, contact points, hold points) established by theater special instructions. Problems with this method are numerous. Not all players in a particular tactical scenario will be knowledgeable of some or all the waypoints; the points might not lend themselves to the target, threat, and weather requirements of the tactical problem; and, developing and maintaining the points are massive efforts for theater planning staffs. There are easy fixes to the Keyhole Template that make it more flexible

> There are easy fixes to the Keyhole Template that make it more flexible and address concerns about its use ...
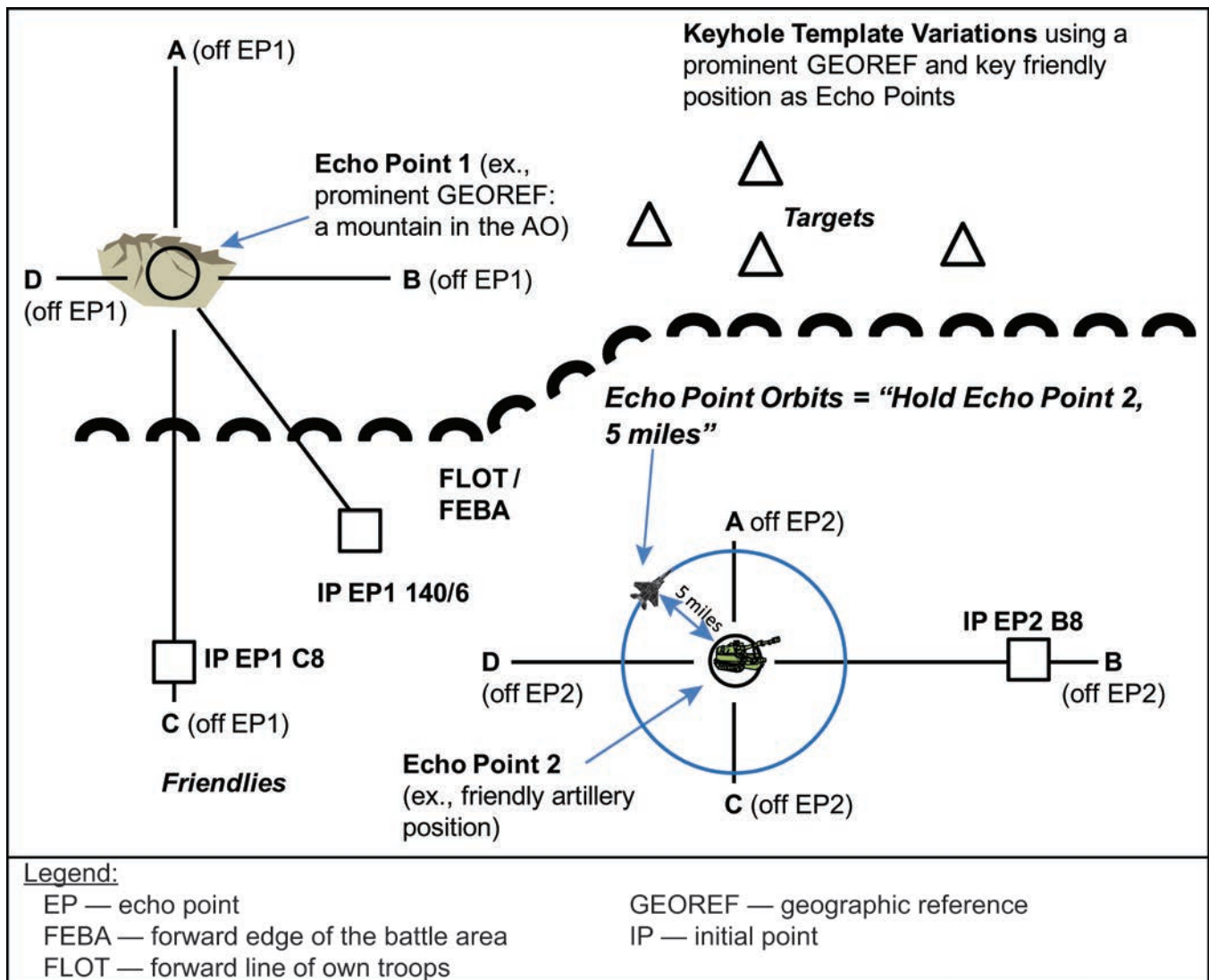
Keyhole Template Variations

and address concerns about its use, while relieving operators and planners of the burdensome pre-planned waypoint approach.

One of the key fixes to all the issues with the Keyhole Template is that the Echo Point does not have to be the target or objective. As noted in the definition, it also can be a *common reference point*, which is the key idea to improving use of the Keyhole Template. Most CAS operators use the target as the Echo Point, but threats, weather, and moving targets make this approach untenable. A better use of the Echo Point is to pass it as an easily distinguishable geographic reference or key friendly position (the JTAC's position or factor artillery position, for example). The Echo Point would still be passed as a set of military grid reference System (MGRS) coordinates and elevation, but the JTAC would describe for the aircrew what the Echo Point is (geographical reference, friendly location, etc.) vice the almost assumed notion now that the Echo Point is always the target. The Keyhole Template is executed thereafter exactly as presented in JFIRE. This variation allows JTACs to plan tactical operations in the target area with deconfliction, fires integration, situational awareness (SA) enhancement, threats, and weather as the focus, not the arbitrary application of pre-planned waypoints that may not assist with, and might actually exacerbate, these concerns.

An additional variation for added flexibility for complex target areas or operations is to develop and pass multiple Echo Points, labeled in order as Echo Points One, Two, Three, etc. This allows even greater utility along a large linear front (say 20 nautical miles or more) where points established off a single Echo Point might become too cumbersome to plan or execute, or might reduce SA due to their distances from the established Echo Point. The only caveat to this variation is JTACs need to be explicit in their holding instructions for orbits around, or establishing holds over an Echo Point when multiple Echo Points have been established. Thus, instead of directing the aircrew to "Hold Echo 5," when multiple Echo Points have been established, JTACs would need to distinguish the Echo Point from which they want the aircrew to hold 5 nautical miles, for example: "Hold 5 miles from Echo Point Three."

Utilizing the Keyhole Template variations of establishing an Echo Point as a common reference point (other than the target) and developing and labeling multiple Echo Points should address the valid concerns with the concept. Training to these variations should develop proficiency among CAS operators, alleviating the burdensome requirement for developing and maintaining a library of theater waypoints while allowing JTACs and the CAS aircrew the tactical flexibility to deal with moving targets, threats, weather, deconfliction and fires integration.

Lt Col Chavez is the Deputy Commander of the 57th Operations Group, Nellis Air Force Base, Nevada

A better use of the Echo Point is to pass it as an easily distinguishable geographic reference or key friendly position …

JOINT CLOSE AIR SUPPORT (CAS) AND UNITED STATES (US) ARMY CLOSE COMBAT ATTACK

US Army CPT Troy Peterson directs an AH-64 Apache attack helicopter strike on a target at the close combat attack lane during the US Army Europe Best Junior Officer Competition at the US Army Garrison Grafenwoehr in Germany on Nov. 15, 2011. (Photo by Master Sgt Robert Hyatt, US Army)

**By Lt Col James R. (Snuffy)
McGlone, USAF**

INTRODUCTION

The Army Technical Publication (ATP) 3-09.32, *JFIRE Multi-Service Tactics, Techniques, and Procedures for the Joint Application of Firepower* states:

"CCA [close combat attack] is not synonymous with CAS [close air support]. The Army does not consider its attack helicopters and organic, armed UAS [unmanned aircraft system], a CAS system. Although some Army aircrews may be proficient in CAS TTP [tactics, techniques, and procedures], JTACs [joint terminal attack controllers] should not expect Army attack aviation assets to perform CAS TTP without further coordination and training since they are normally employed utilizing CCA as the standard attack method."

The purpose of this article is to make a distinction between CAS and CCA as well as advocate for increased Army aviation training in the realm of Joint Fires than might better serve combatant commanders. This should not serve as a source for how to do either of these types of engagements.

The article will begin with definitions and a background discussion followed by a look at the commander's tactical risk assessment and will summarize with some advocacy for future education in these areas.

DISCUSSION POINTS

• "Within their areas of operations

> "CCA [close combat attack] is not synonymous with CAS [close air support]."

(AOs), commanders integrate and synchronize maneuver, fires, and interdiction. To facilitate this integration and synchronization, commanders have the authority to designate targeting priorities and timing of fires." (Army doctrine publication (ADP) 3-0, *Unified Land Operations*)

• "Direct fire and close combat are inherent in maneuver." (Army doctrine reference publication (ADRP) 3-90, *Offense and Defense*)

• "Close combat is warfare carried out on land in a direct-fire fight, supported by direct and indirect fires and other assets." (ADRP 3-0, *Unified Land Operations*)

• "US Army CCA is defined as a coordinated attack by Army aircraft against targets that are in close proximity to friendly forces. Once the aircrews receive the situation update brief from the ground commander/observer, they develop a plan to engage the enemy force, while maintaining freedom to maneuver. Due to capabilities of the aircraft and the enhanced SA [situational awareness] of the aircrews, terminal attack control from ground units or controllers is not required.

"Army aviation units are organic, assigned, or attached to corps, divisions, and regiments and perform missions as part of a combined arms team. Army aviation assets normally receive mission-type orders and execute as an integral unit/maneuver element. Special situations may arise where attack aviation assets are employed in smaller units. The doctrinal employment method is as an integral unit, operating under the control of a maneuver commander executing mission-type orders. As part of the maneuver force, clearance of fires is not required. Army attack aviation elements conduct direct fire engagements IAW [in accordance with] the commander's intent and ROE [rules of engagement]." (Army techniques publication (ATP) 3-09.32, *JFIRE*)

• "Close Air Support (CAS) is air action by FW [fixed wing] and RW [rotary wing] aircraft against hostile targets that are in close proximity to friendly forces, and requires detailed integration of each air mission with the fire and movement of those forces. Planning and executing safe and effective CAS should include a terminal attack controller who is specifically trained and qualified to conduct terminal attack control, achieve the ground commander's intent, maximize and integrate fires on the battlefield, and mitigate fratricide." (ATP 3.09.32 *JFIRE*)

KEY DIFFERENCES

The CCA briefing is observer-centric and is designed to cue the attacking aircraft onto a target for an engagement which does not require terminal control. In short, if we give a 5-Line CCA brief to an asset, we can expect the asset to begin engaging the enemy without any further clearance or restrictions. To quote ATP 3-09.32, "Transmission of the 5-Line CCA Brief is clearance to fire (unless danger close)."

Conversely, CAS briefings and engagements in their various forms are generally target-centric. For example, target coordinates may be used; however, the location of friendly troops is not usually given in the form of coordinates (for safety reasons). Also, these engagements require terminal control by a trained and qualified observer. If we give a CAS brief to an asset, we can expect that asset to follow some sort of clearance or abort protocol in conducting the engagement. In addition, CAS engagements are included in the spectrum of direct-fire versus in-direct fire and, therefore, cannot be categorized as simply one or the other.

Finally, in other than rare cases where an Army aviation commander serves as a maneuver commander, Army aviation CCA engagements are usually in support of another (non-aviation) commander. For the purpose of this discussion, we will use the term

"Transmission of the 5-Line CCA Brief is clearance to fire (unless danger close)."

"ground AO-owning commander" (instead of maneuver commander) for clarity.

BACKGROUND

Soldiers, manning various weapons, are tasked by their ground AO-owning commanders to perform engagements from fighting positions or in the course of maneuver. As Soldiers' weapons were mounted on an attack helicopter, they were traditionally given much the same restriction and control, all deriving from the same source: a ground AO-owning commander. As time progressed, later generations of Soldiers in Army attack helicopters became engaged in widely distributed, counterinsurgency support missions and began performing more de-centralized operations as part of a combat aviation brigade. Confusion began to emerge between the concept of a simple engagement in support of a habitually aligned ground/AO-owning commander and engagements per-

> A ground AO-owning commander is in control of various forms of fires and; therefore, at least retains his ability to have some control over the effects of air-to-surface engagements in his AO.

formed by other commanders within the ground owning commander's AO. This required the concept of a CCA engagement to be clarified as seen in the preceding definitions.

COMMANDERS AND TACTICAL RISK ASSESSMENTS

A ground AO-owning commander is in control of various forms of fires and; therefore, at least retains his ability to have some control over the effects of air-to-surface engagements in his AO. Except in some very rare ROE-based situations, this control by the ground AO-owning commander must be maintained.

In a similar way, all commanders are given the responsibility of making continuous tactical risk assessments. Current doctrine is replete with guidance to commanders in the realm of risk mitigation but; suffice it to say, decisions and control of fires with respect to tactical risk to friendly forces

Soldiers from 1st Battalion, 2nd Aviation Regiment fire 30-mm bullets from an AH-64D Apache helicopter Oct. 13, 2011, during gunnery exercises at Fort Carson, Colorado. (Photo by Dustin Senger)

go hand-in-hand with the ground AO-owning commander's responsibilities. It is important aviators and advisors to these commanders keep them educated and informed about the risks these engagements entail, regardless of their TTP (CAS or CCA).

In the case of CCA, according to ATP 3-09.32, "The air mission commander (AMC) or flight lead must have direct communication with the ground commander/observer on the scene to provide direct fire support."

Also, it is important that the AMC or aircrew involved understand who the observer is and know that he is indeed supporting the commander of the AO in which the engagement terminates or affects (see ADRP 3-90 Para 2-31).

IN THE JOINT AND/OR COMBINED ENVIRONMENT

Through the development of rigorous CAS training requirements, the joint community has established the standards required to ensure the AO-owning commander maintains control of priority, effects and timing during these attacks. However a search for CCA provides limited information, confined to Army doctrine. This is because Army CCA engagements are designed to be conducted within the Army's combined arms system, as cited in the CCA definition in the opening paragraph of this article.

With this in mind, it is important to understand there are various TTPs and two different 5-line briefs. One is for RW CAS and the other is for the Army's CCA engagements. Notice the similarities between the Marine Corps 5-Line Rotary Wing CAS Brief and the Army's CCA 5-Line Attack Brief found in the JFIRE publication. Similarly, without some sort of appropriate joint CAS (JCAS) participation and training (such as exists within the special operations forces community), Army aviation assets should not normally perform CAS engagements. Neither should they perform CCA engagements (except in rare ROE-based situations) in support of any force that is not their "organic" combined arms, Army team. These restrictions become even more apparent if one considers the emerging capability of the Gray Eagle UAS.

SUMMARY AND ADVOCACY FOR JFIRE EDUCATION

The previous paragraphs highlight a restriction on the flexibility and overall joint force usefulness of Army aviation assets. With this in mind, it is this author's opinion that while leaders

... Army CCA engagements are designed to be conducted within the Army's combined arms system ...

JFIRE Rotary Wing CAS and CCA Briefs

may choose to only train their attack and scout aviators to this Army-only TTP, they are denying the joint force a flexibility and responsiveness inherent in airpower by doing so. In contrast, "signing up" as a full participant in the JCAS community comes with a high cost in terms of training, education , and flying hours (for another overview and perspective on this, see Army Chief Warrant Officer Michael Boyle's article in the Air Land Sea Bulletin 2010-2 titled, Joint Fires Observer (JFO) for US Army Attack and Reconnaissance Aviators, located at **http://www.alsa. mil/library/alsb/ALSB%202010-2. pdf**).

> ... Army aviation may be unnecessarily forced to avoid CAS TTP to retain an identity within the Army as a maneuver force ...

In addition, Army aviation may be unnecessarily forced to avoid CAS TTP to retain an identity within the Army as a maneuver force (in this context, performing direct-fire and close combat engagements only) versus that of a supporting force. However, having operated in both systems and performed both types of engagements in RW and FW aircraft as a ground and air forward air controller, this author believes there is a tremendous cross-domain synergy to be gained by training to JCAS standards. In a time of a decreasing Department of Defense budget, adding this training to an Army aviator's overall "bag of tricks" will provide a return on investment that far outweighs the associated costs.

Lt Col Jim McGlone is the Director of the US Air Force Curtis E. LeMay Doctrine Center, Joint Integration Directorate's operations at Fort Rucker, Alabama. He has flown combat missions in the AH-1F, A/OA-10, EA-6B, and F-117 RW and FW aircraft, respectively, during operations ranging from DESERT STORM to IRAQI FREEDOM. Also, he has served as a Battalion Air Liaison Officer and an Air Support Operations Center Director of Operations.

An OH-58 Kiowa helicopter with 25th Infantry Division provides aerial support for potential CCA Feb. 28, 2012 for Soldiers with 14th Cavalry Regiment, who are conducting a partnered patrol with Afghan National Army soldiers with the 4th Kandak in the vincinity of Moslem Zai, Zabul province, Afghanistan. (Photo by SGT Christopher McCullough, US Army)

JOINT TERMINAL ATTACK CONTROLLER (JTAC) DEBRIEFING GUIDE

Tech Sgt Nick Corona leads a joint terminal attack controller (JTAC) post-mission, close air support debrief at the 66th Weapons Squadron at Nellis Air Force Base, Nevada on Feb. 13, 2013. From the air operations board he reviews the mission objective pertaining to the JTAC and aircrews. (Photo by Capt Michael D. Smith, US Air Force)

By Capt Michael D. Smith, USAF

DEBRIEFING CLOSE AIR SUPPORT (CAS) MISSIONS

JTACs have longed for a standardized debrief format tailored to their needs. Without a standard format, many debriefs are hastily prepared and learning points are missed. Historically, debrief scope and quality have varied from one JTAC-instructor (JTAC-I) to another. In addition, there is usually a direct link between the success or failure of young JTACs and the quality of instruction they receive during their JTAC upgrade process.

This guide attempts to standardize the CAS debriefing by providing JTACs with sound techniques to structure debriefs, capture lessons learned, and incorporate those lessons into future operations. The CAS debrief consists of three distinct parts: the mass debrief, ground team debrief, and instructional fix. This is the minimum standard.

DEBRIEF PREPARATION

The key to successful CAS execution is detailed mission planning and pre-mission briefing. An effective debrief requires the same detailed planning and rehearsal. When executing CAS, JTACs must remember they play the critical role in mission execution. JTACs are the link between the

> The CAS debrief consists of three distinct parts: the mass debrief, ground team debrief, and instructional fix.

battlespace owner and strike aircraft. To affect the ground commander's scheme of maneuver, all CAS players must have specific and measurable objectives to accurately gauge mission success. To evaluate their objectives, JTACs must also inform the players of the items they should bring to the debrief. JTACs should bring CAS coordination cards, applicable operation orders (OPORDs)/FRAGOs (fragmentary orders), ground commander's intent (GCI) and his priority of fires, battle damage assessment (BDA) data, and any questions about or known breakdowns with the briefed attack plan. The JTAC requires these data points to accurately recreate what happened during mission execution to provide an analytical look at the successes and failures based on his objectives. Examples of objectives that a JTAC might have for a CAS mission are:

• Ensure 9-Lines and calls for fire are transmitted clearly, concisely, and correctly.

• Efficiently coordinate simultaneous air and surface fires on the ground commander's priority targets.

• Effectively employ air and surface fires on geographically separated target sets using a forward air controller (airborne) and/or joint fires observer.

JTACs leading the CAS debrief must direct the players toward evaluating their performance against the objectives in order to compile lessons learned. The lessons learned should apply to air and ground operators; but, depending on what happened, lessons learned may be more relevant to a specific asset rather than everyone in the room. The mass debrief is not the forum to analyze issues such as why the JTAC made an equipment error or to determine ways he can better integrate with an Army staff. These topics should be saved for the ground team debrief where the specific maneuver-force objectives are evaluated. Examples of JTAC/ground team objectives are:

> JTACs leading the CAS debrief must direct the players toward evaluating their performance against the objectives in order to compile lessons learned.

• One hundred percent positive identification/weaponeering against the ground commander's priority targets.

• One hundred percent implementation of CAS triggers.

• Timely and effective employment of surface fires/suppression of enemy air defenses/destruction of enemy air defenses.

The JTAC, or individual leading the debrief, should task other JTACs to bring specific information to the debrief to assist in truth data and trend identification. These items include:

• Mission objectives.

• CAS coordination card.

• Observed safety busts.

• Any ground team alibis/limiting factors (LIMFACs).

• OPORDs/FRAGOs/concept of operations (CONOPS)/concept of fires (COF) slides.

• Mission maps/imagery/gridded reference graphics (GRGs).

• Artillery/other timelines.

• Coordinated attack plans.

• Video/audio from helmet-mounted cameras (cue first 9-Line, fast forward as appropriate).

The last step in debrief preparation is to create a format that summarizes the events of the CAS mission and allows for evaluation of the objectives. Three dry-erase boards work well when divided into the following areas: ground operations, maps and imagery, and air operations. The boards break down the CAS mission into specific attacks and allow JTACs to define tactical problems, present observed outcomes, and identify lessons learned. The tactical problem is defined by the target, required weapons effects, and the 3-dimensional picture of the airspace (surface-to-air threats, artillery employment, other aircraft, and any

Tech Sgt Nick Corona leads a joint terminal attack controller (JTAC) post-mission, close air support debrief at the 66th Weapons Squadron at Nellis Air Force Base, Nevada on Feb. 13, 2013. Pictured from left to right are the air board, digital map, and ground board. (Photo by Capt Michael D. Smith, US Air Force)

active airspace coordination areas/ measures. The observed outcome is the JTAC's attack plan, including the ordnance/weaponeering he employed to achieve GCI. In addition, the outcome is broken into the 9-Line elements, their parameters, and the sequence in which they occurred. The outcome will be amplified by BDA. Next, any amplifying information or areas for discussion should be placed on the air/ground operations board as required.

Note: Contact the 66th Weapons Squadron, JTAC Advanced Instructor Course at Nellis Air Force Base, NV for standardized CAS coordination cards and board templates.

For the mass debrief, complete the boards with a listing of mission objectives that pertain to JTACs and the aircrew. Since both JTACs and strike aircraft must adhere to GCI, JTACs will seldom need to alter the mission objective list to meet a specific aircrew objective. After the mass debrief is accomplished, JTACs should prepare for the ground team debrief by adding any additional objectives that are specific to the ground team. The three boards present CAS objectives in an easy-to-read format and allow all players to see if each of the attacks met the stated mission objectives. Before the debrief begins, at least two of the boards should be filled in with specific targeting data, BDA results, and any issues/questions that must be addressed with all players. The unknown information will be filled in by the JTAC as the debrief progresses.

DEBRIEFING FORMATS

Begin the mass debrief with a review of the mission objectives so all players understand the CAS team will

The three boards present CAS objectives in an easy-to-read format and allow all players to see if each of the attacks met the stated mission objectives.

be evaluated on meeting those specific objectives. Organize the debrief to address administrative items then reconstruct the mission by chronological events (e.g., ground commander and Army staff inputs, 9-Line transmissions) to analyze attacks and compile lessons learned. During the administrative portion of the debrief, identify issues that impacted execution, but were outside the control of the players involved. These issues should be broken down into two areas: alibis and LIMFACs. An alibi is something affecting a specific player or the player's systems (e.g., broken equipment, aircraft cancelled, or any issue that affected what gear the JTAC brought to the fight). A LIMFAC is an imposed restriction affecting the overall mission and is outside the control of the CAS team (e.g., weather, airspace or munitions restrictions and other artificial roadblocks). It's important to identify these issues early in the debrief so JTACs can tell whether or not they will impact the mass debrief. This also prevents rehashing extraneous information in the latter stages of the debrief.

JTACs should conclude the administrative review portion of the debrief with any training rule or safety violations on the boards. Then, the JTAC should review the overall scenario and reconstruct what was seen by the CAS team and compare it to what was expected. A combination of maps, GRGs, and CONOPS slides have proven effective for reconstruction.

After building the picture, JTACs should briefly review the tactical problem, executed solution, and result. The important point to remember is this is a review of the these three elements, only. The majority of time in the debrief should not be spent on what happened, but be directed toward evaluating the mission objectives, and analyzing errors and how to fix them. There will be occasions when no objective or execution related errors occur. In these instances, JTACs must focus on ways to execute quicker, with more

efficiency and effectiveness. Therefore, an important part of the mass debrief is focusing on learning points that affect the entire CAS team. Always query other players (i.e., aircrew, fellow JTACs) for their observations as another asset's perspective may be entirely different than that of the controlling JTAC's. Once the mission objectives and issues pertaining to the entire group have been addressed, summarize the debrief by reviewing the objectives. Also, identify trend areas for future consideration, and examine the list of lessons learned. From the list, identify the top three and reinforce those as instructional points.

GROUND TEAM DEBRIEF CONSIDERATIONS

After completion of the mass debrief, evaluate the maneuver-force objectives during the ground team debrief. At this point, there should be very few questions for identifying what happened and instructor efforts can be directed toward creating lessons learned that directly affect the JTAC alone. The ground team debrief shouldn't mirror the mass debrief in flow and content. Ground team truth data can differ significantly from what's been identified in the mass debrief. JTACs should discuss inter-team communication contracts, personal or vehicle-mounted radio and kit configurations, digital CAS strategy, etc. The aircrew doesn't attend the ground team debrief; only the controlling JTAC, JTAC-I, and any other members of the ground team for that specific mission. All three boards are utilized and the debrief is led by the controlling JTAC. The JTAC should offer fixes for himself and the team based on the mass debrief inputs. After the JTAC completes the ground team debrief, the JTAC-I offers instructional fixes and overall lessons learned.

EVALUATING OBJECTIVES AND CREATING LESSONS LEARNED

After the mission events are identified, the JTAC must use the mass and ground-team debriefs to address

anything that had a negative impact on achieving mission objectives/GCI. With mission data on hand, the next step is to evaluate the attack against the objectives. The mission data on the boards allows for evaluation of the mission objectives. An easy method is to write a plus sign (+) to represent achieving the objective), a minus sign (-) meaning failed the objective, or a push symbol (o) meaning did not fully meet the objective, next to the mission objective being addressed. Any unmet or partially met objective becomes a debriefing focus point (DFP) and must be addressed on either the ground or air operations board, depending on how or when the error occurred.

The JTAC is ready to develop lessons learned once errors and areas for discussion are identified through DFP development. This is the most critical and difficult part of the CAS debrief. The steps for compiling lessons learned include identifying errors, finding the cause of errors, and developing a tailored solution to prevent the errors in the future. Ultimately, the lessons learned need to address how to fix execution errors.

The critical aspect of determining why an error occurred is finding the root cause. The root causes of errors made during execution fall into three categories: lack of data or false information, errors in planning and/or decision making, or errors in execution. JTAC-Is must capture these lessons and build concrete instructional statements/techniques that will benefit anyone in the debriefing. Lessons learned are not compiled exclusively from errors made during the mission or from unachieved mission objectives. Also, JTAC-Is can use the boards to identify trends and propose instructional fixes. By identifying trends, JTACs can prevent informational, planning, decision making, or execution errors in the future.

INCORPORATING LESSONS LEARNED

Great effort goes into reconstructing mission events, finding root causes of errors and compiling lessons learned. JTAC-Is must ensure these lessons carry forward into future training events by building a methodology so lessons learned become a permanent record for future reference. This includes using JTAC grade sheets with detailed narratives capturing the scenario, GCI, attack information, instructor fixes, and key lessons learned. A permanent record will allow JTAC-Is to modify their mission briefs and verbal contracts to incorporate learning points from previous to future missions for individual JTACs.

FINAL CHARGE

Considerable time is spent preparing for CAS missions with the ultimate goal being excellent execution. Dedicate comparable time to prepare the debrief because this is where the majority of learning occurs. JTAC-Is must take time to analyze pre-mission planning and CAS execution for good and bad tactics, techniques, and procedures. Most important, JTAC-Is must store compiled lessons learned to prevent repetitive errors. The JTAC community depends on JTAC-Is to ensure lessons learned maximize training effectiveness, especially with fewer CAS sorties available.

Capt Smith is a Flight Commander at the 66th Weapons Squadron, USAF Weapons School, Nellis Air Force Base, Nevada.

Ultimately, the lessons learned need to address how to fix execution errors.

CURRENT ALSA MTTP PUBLICATIONS

AIR BRANCH – POC alsaa@langley.af.mil

TITLE	DATE	PUB #	DESCRIPTION/STATUS
AIRSPACE CONTROL *Multi-Service Tactics, Techniques, and Procedures for Airspace Control* **Distribution Restricted**	22 MAY 09	FM 3-52.1 AFTTP 3-2.78	Description: This MTTP publication is a tactical level document which will synchronize and integrate airspace command and control functions and serve as a single source reference for planners and commanders at all levels **Status: Revision**
ATCARS *Multi-Service Tactics, Techniques, and Procedures for the Airborne Target Coordination and Attack Radar Systems* **Distribution Restricted**	22 OCT 12	ATP 3-55.6 MCRP 2-24A NTTP 3-55.13 AFTTP 3-2.2	Description: Contributes to Service interoperability by providing the JTF and subordinate commanders, their staffs, and SEAD operators a single, consolidated reference. **Status: Current**
AVIATION URBAN OPERATIONS *Multi-Service Tactics, Techniques, and Procedures for Aviation Urban Operations* **Distribution Restricted**	19 APR 13	ATP 3-06.1 MCRP 3-35.3A NTTP 3-01.04 AFTTP 3-2.29	Description: Provides MTTP for tactical-level planning and execution of fixed- and rotary-wing aviation urban operations. **Status: Current**
DYNAMIC TARGETING *Multi-Service Tactics, Techniques, and Procedures for Dynamic Targeting* **Distribution Restricted**	7 MAY 2012	ATP 3-60.1 MCRP 3-16D NTTP 3-60.1 AFTTP 3-2.3	Description: Provides the JFC, the operational staff, and components MTTP to coordinate, de-conflict, synchronize, and prosecute DTs within any AOR. Includes lessons learned, multinational and other government agency considerations. **Status: Current**
IADS *Multi-Service Tactics, Techniques, and Procedures for an Integrated Air Defense System* **Distribution Restricted**	1 MAY 09	FM 3-01.15 MCRP 3-25E NTTP 3-01.8 AFTTP 3-2.31	Description: Provides joint planners with a consolidated reference on Service air defense systems, processes, and structures to include integration procedures. **Status: Revision**
JFIRE *Multi-Service Procedures for the Joint Application of Firepower* **Distribution Restricted**	30 NOV 12	ATP 3-09.32 MCRP 3-16.6A NTTP 3-09.2 AFTTP 3-2.6	Description: Pocket sized guide of procedures for calls for fire, CAS, and naval gunfire. Provides tactics for joint operations between attack helicopters and fixed-wing aircraft performing integrated battlefield operations. **Status: Current**
JSEAD/ARM-J *Multi-Service Tactics, Techniques, and Procedures for the Suppression of Enemy Air Defenses in a Joint Environment* **Classified SECRET**	28 MAY 04	FM 3-01.4 MCRP 3-22.2A NTTP 3-01.42 AFTTP 3-2.28	Description: Contributes to Service interoperability by providing the JTF and subordinate commanders, their staffs, and SEAD operators a single, consolidated reference. **Status: Revision**
KILL BOX *Multi-Service Tactics, Techniques, and Procedures for Kill Box Employment* **Distribution Restricted**	4 AUG 09	FM 3-09.34 MCRP 3-25H NTTP 3-09.2.1 AFTTP 3-2.59	Description: Assists the Services and JFCs in developing, establishing, and executing Kill Box procedures to allow rapid target engagement. Describes timely, effective multi-Service solutions to FSCMs, ACMs, and maneuver control measures with respect to Kill Box operations. **Status: Revision**
SCAR *Multi-Service Tactics, Techniques, and Procedures for Strike Coordination and Reconnaissance* **Distribution Restricted**	26 NOV 08	FM 3-60.2 MCRP 3-23C NTTP 3-03.4.3 AFTTP 3-2.72	Description: This publication provides strike coordination and reconnaissance MTTP to the military Services for the conduct of air interdiction against targets of opportunity. **Status: Revision**
SURVIVAL, EVASION, AND RECOVERY *Multi-Service Procedures for Survival, Evasion, and Recovery* **Distribution Restricted**	11 SEP 12	ATP 3-50.3 MCRP 3-02H NTTP 3-50.3 AFTTP 3-2.26	Description: Provides a weather-proof, pocket-sized, quick reference guide of basic survival information to assist Service members in a survival situation regardless of geographic location. **Status: Current**
TAGS *Multi-Service Tactics, Techniques, and Procedures for the Theater Air-Ground System* **Distribution Restricted**	10 APR 07	FM 3-52.2 NTTP 3-56.2 AFTTP 3-2.17	Description: Promotes Service awareness regarding the role of airpower in support of the JFC's campaign plan, increases understanding of the air-ground system, and provides planning considerations for the conduct of air-ground ops. **Status: Revision**
UAS *Multi-Service Tactics, Techniques, and Procedures for Tactical Employment of Unmanned Aircraft Systems* **Distribution Restricted**	21 SEP 11	ATTP 3-04.15 MCRP 3-42.1A NTTP 3-55.14 AFTTP 3-2.64	Description: Establishes MTTP for UAS addressing tactical and operational considerations, system capabilities, payloads, mission planning, logistics, and most importantly, multi-Service execution. **Status: Assessment**

LAND AND SEA BRANCH – POC alsab@langley.af.mil

TITLE	DATE	PUB #	DESCRIPTION/STATUS
ADVISING *Multi-Service Tactics, Techniques, and Procedures for Advising Foreign Forces* **Distribution Restricted**	10 SEP 09	FM 3-07.10 MCRP 3-33.8A NTTP 3-07.5 AFTTP 3-2.76	Description: This publication serves as a reference to ensure coordinated multi-Service operations for planners and operators preparing for, and conducting, advisor team missions. It is intended to provide units and personnel that are scheduled to advise foreign forces with viable TTP so that they can successfully plan, train for, and carry out their mission. **Status: Revision**
AIRFIELD OPENING *Multi-Service Tactics, Techniques, and Procedures for Airfield Opening* **Distribution Restricted**	15 MAY 07	FM 3-17.2 NTTP 3-02.18 AFTTP 3-2.68	Description: A quick-reference guide to opening an airfield in accordance with MTTP. It contains planning considerations, airfield layout, and logistical requirements. **Status: Revision**
CF/SOF *Multi-Service Tactics, Techniques, and Procedures for Conventional Forces and Special Operations Forces Integration and Interoperability* **Distribution Restricted**	17 MAR 10	FM 6-03.05 MCWP 3-36.1 NTTP 3-05.19 AFTTP 3-2.73 USSOCOM Pub 3-33V.3	Description: This pubication assists in planning and executing operations where CF/SOF occupy the same operational environment. **Status: Revision**
CORDON AND SEARCH *Multi-Service Tactics, Techniques, and Procedures for Cordon and Search Operations* **Distribution Restricted**	25 APR 06	FM 3-06.20 MCRP 3-31.4B NTTP 3-05.8 AFTTP 3-2.62	Description: This publication consolidates the Services' best TTP used in cordon and search operations. Provides MTTP for the planning and execution of cordon and search operations at the tactical level of war. **Status: Revision**
EOD *Multi-Service Tactics, Techniques, and Procedures for Explosive Ordnance Disposal in a Joint Environment* **Approved for Public Release**	20 SEP 11	FM 4-30.16 MCRP 3-17.2C NTTP 3-02.5 AFTTP 3-2.32	Description: This MTTP provides guidance and procedures for the employment of a joint EOD force. It assists commanders and planners in understanding the EOD capabilities of each Service. **Status: Assessment**
IMSO *Multi-Service Tactics, Techniques, and Procedures for Integrated Money Shaping Operations* **Distribution Restricted**	26 APR 13	ATP 3-07.20 MCRP 3-33.1G NTTP 3-57.4 AFTTP 3-2.80	Description: This publication describes how to integrate monetary resources with various types of aid within unified action to shape and influence outcomes throughout the range of military operations. **Status: Current**
Military Diving Operations (MDO) *Multi-Service Service Tactics, Techniques, and Procedures for Military Diving Operations* **Distribution Restricted**	12 JAN 11	ATTP 3-34.84 MCRP 3-35.9A NTTP 3-07.7 AFTTP 3-2.80 CG COMDTINST 3-07.7	Description: This MTTP publication describes US Military dive mission areas the force structure, equipment, and primary missions that each Service could provide to a JTF Commander. **Status: Revision**
MILITARY DECEPTION *Multi-Service Tactics, Techniques, and Procedures for Military Deception* **Classified SECRET**	12 APR 07	MCRP 3-40.4A NTTP 3-58.1 AFTTP 3-2.66	Description: This publication facilitates the integration, synchronization, planning, and execution of MILDEC operations. Servce as a "one stop" reference for service MILDEC planners to plan and execute multi-service MILDEC operations. **Status: Revision**
NLW *Multi-Service Service Tactics, Techniques, and Procedures for the Tactical Employment of Nonlethal Weapons* **Approved for Public Release**	24 OCT 07	FM 3-22.40 MCWP 3-15.8 NTTP 3-07.3.2 AFTTP 3-2.45	Description: This publication provides a single-source, consolidated reference on the tactical employment of NLWs and offers commanders and their staff guidance for NLW employment and planning. Commanders and staffs can use this publication to aid in the tactical employment of NLW during exercises and contingencies. **Status: Revision**
PEACE OPS *Multi-Service Tactics, Techniques, and Procedures for Conducting Peace Operations* **Approved for Public Release**	20 OCT 03 Change 1 incorporated 14 APR 09	FM 3-07.31 MCWP 3-33.8 AFTTP 3-2.40	Description: This MTTP provides tactical-level guidance to the warfighter for conducting peace operations. **Status: Revision**
TACTICAL CONVOY OPERATIONS *Multi-Service Tactics, Techniques, and Procedures for Tactical Convoy Operations* **Distribution Restricted**	13 JAN 09	FM 4-01.45 MCRP 4-11.3H NTTP 4-01.3 AFTTP 3-2.58	Description: Consolidates the Services' best TTP used in convoy operations into a single multi-Service TTP. It provides a quick reference guide for convoy commanders and subordinates on how to plan, train, and conduct tactical convoy operations in the contemporary operating environment. **Status: Revision**
TECHINT *Multi-Service Tactics, Techniques, and Procedures for Technical Intelligence Operations* **Approved for Public Release**	9 JUN 06	FM 2-22.401 NTTP 2-01.4 AFTTP 3-2.63	Description: This publication provides a common set of MTTP for technical intelligence operations. Serves as a reference for Service technical intelligence planners and operators. **Status: Revision**
UXO *Multi-Service Tactics, Techniques, and Procedures for Unexploded Explosive Ordnance Operations* **Distribution Restricted**	20 SEP 11	FM 3-100.38 MCRP 3-17.2B NTTP 3-02.4.1 AFTTP 3-2.12	Description: Describes hazards of UXO submunitions to land operations, addresses UXO planning considerations, and describes the architecture for reporting and tracking UXO during combat and post conflict. **Status: Assessment**

COMMAND AND CONTROL (C2) BRANCH - POC: alsac2@langley.af.mil

TITLE	DATE	PUB #	DESCRIPTION/STATUS
AOMSW *Multi-Service Tactics, Techniques, and Procedures for Air Operations in Maritime Surface Warfare* **Distribution Restricted**	17 NOV 08	NTTP 3-20.8 AFTTP 3-2.74	Description: This publication consolidates Service doctrine, TTP, and lessons-learned from current operations and exercises to maximize the effectiveness of "air attacks on enemy surface vessels". **Status: Revision**
BREVITY *Multi-Service Brevity Codes* **Distribution Restricted**	20 SEP 12	ATP 1-02.1 MCRP 3-25B NTTP 6-02.1 AFTTP 3-2.5	Description: This publication defines multi-Service brevity which standardizes air-to-air, air-to-surface, surface-to-air, and surface-to-surface brevity code words in multi-Service operations. **Status: Assessment**
COMCAM *Multi-Service Tactics, Techniques, and Procedures for Joint Combat Camera Operations* **Approved for Public Release**	19 APR 13	ATP 3-55.12 MCRP 3-33.7A NTTP 3-61.2 AFTTP 3-2.41	Description: This MTTP fills the void that exists regarding combat camera doctrine and assists JTF commanders in structuring and employing combat camera assets as effective operational planning tools. **Status: Current**
DEFENSE SUPPORT OF CIVIL AUTHORITIES (DSCA) *Multi-Service Tactics, Techniques, and Procedures for Civil Support Operations* **Distribution Restricted**	11 FEB 13	ATP3-28.1 MCWP 3-36.2 NTTP 3-57.2 AFTTP 3-2.67	Description: DSCA sets forth MTTP at the tactical level to assist the military planner, commander, and individual Service forces in the employment of military resources in response to domestic emergencies in accordance with US law. **Status: Current**
HAVE QUICK *Multi-Service Tactics, Techniques, and Procedures for HAVE QUICK Radios* **Distribution Restricted**	7 MAY 04	FM 6-02.771 MCRP 3-40.3F NTTP 6-02.7 AFTTP 3-2.49	Description: This MTTP simplifies planning and coordination of HAVE QUICK radio procedures. It provides operators information on multi-Service HAVE QUICK communication systems while conducting home station training or in preparation for interoperability training. **Status: Revision**
HF-ALE *Multi-Service Tactics, Techniques, and Procedures for the High Frequency-Automatic Link Establishment (HF-ALE) Radios* **Distribution Restricted**	20 NOV 07	FM 6-02.74 MCRP 3-40.3E NTTP 6-02.6 AFTTP 3-2.48	Description: This publication standardizes high and low-power HF-ALE operations across the Services and enables joint forces to use HF radio as a supplement/alternative to overburdened SATCOM systems for over-the-horizon communications. **Status: Revision**
JATC *Multi-Service Procedures for Joint Air Traffic Control* **Distribution Restricted**	23 JUL 09	FM 3-52.3 MCRP 3-25A NTTP 3-56.3 AFTTP 3-2.23	Description: This MTTP provides guidance on ATC responsibilities, procedures, and employment in a joint environment. It discusses JATC employment and Service relationships for initial, transition, and sustained ATC operations across the spectrum of joint operations within the theater or AOR. **Status: Revision**
EW REPROGRAMMING *Multi-Service Tactics, Techniques, and Procedures for the Reprogramming of Electronic Warfare and Target Sensing Systems* **Distribution Restricted**	01 FEB 11	FM 3-13.10 (FM 3-51.1) NTTP 3-51.2 AFTTP 3-2.7	Description: This publication supports the JTF staff in planning, coordinating, and executing reprogramming of electronic warfare and target sensing systems as part of joint force command and control warfare operations. **Status: Revision**
TACTICAL CHAT *Multi-Service Tactics, Techniques, and Procedures for Internet Tactical Chat in Support of Operations* **Distribution Restricted**	07 JUL 09	FM 6-02.73 MCRP 3-40.2B NTTP 6-02.8 AFTTP 3-2.77	Description: This publication provides MTTP to standardize and describe the use of Internet tactical chat (TC) in support of operations. It provides commanders and their units with guidelines to facilitate coordination and integration of TC when conducting multi-Service and joint force operations. **Status: Revision**
TACTICAL RADIOS *Multi-Service Communications Procedures for Tactical Radios in a Joint Environment* **Approved for Public Release**	14 JUN 02	FM 6-02.72 MCRP 3-40.3A NTTP 6-02.2 AFTTP 3-2.18	Description: This MTTP standardizes joint operational procedures for SINCGARS and provides an overview of the multi-Service applications of EPLRS. **Status: Revision**
UHF TACSAT/DAMA *Multi-Service Tactics, Techniques, and Procedures Package for Ultra High Frequency Tactical Satellite and Demand Assigned Multiple Access Operations* **Approved for Public Release**	31 AUG 04	FM 6-02.90 MCRP 3-40.3G NTTP 6-02.9 AFTTP 3-2.53	Description: This publication documents TTP that will improve efficiency at the planner and user levels. (Recent operations at JTF level have demonstrated difficulties in managing a limited number of UHF TACSAT frequencies.) **Status: Revision**

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There is no better resource for information than the people doing the jobs. Personal experiences, studies, and individual research lead to inspirational and educational articles. Therefore, we invite our readers to share their experiences and possibly have them published in an upcoming ALSB.

We want to take your lessons learned from recent operations or any other multi-Service or multi-nation missions in which you have been involved, and spread that knowledge to others. Get published by sharing your experiences and expertise.

The September 2013 ALSB is an open forum on warfighter topics of your choosing. Please be advised, this is an excellent opportunity for you to share your insights, regardless of specialty, and to enhance the professional development of all United States warfighters. You may have had experiences which are not addressed in doctrine, but you think they should be considered. These may be experiences that address an operational gap that highlights emerging needs for supporting multi-Service publications. We want to know about these. So, tell us what you think.

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Open Warfighter Forum

Submissions must:

- Be 1,500 words or less
- Be releasable to the public
- Be double spaced
- Be in MS Word format
- Include the author's name, unit address, telephone numbers, and email address
- Include current, high-resolution (300 dpi minimum), original photographs and graphics

Article submissions and photos are due no later than 1 June 2013 for publication in the September 2013 issue.

Early submissions are highly encouraged.

Contact ALSA's Land/Sea branch at
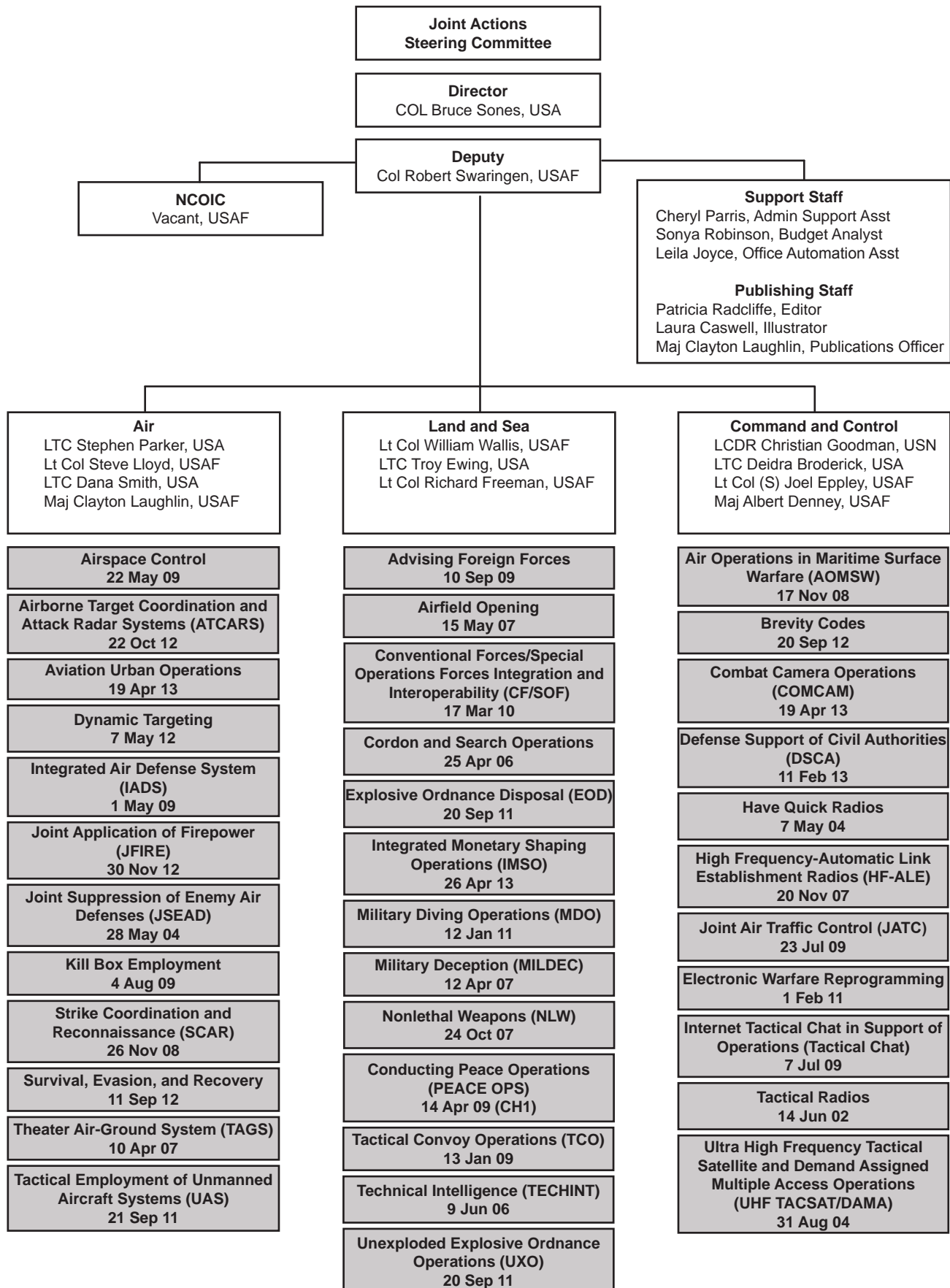
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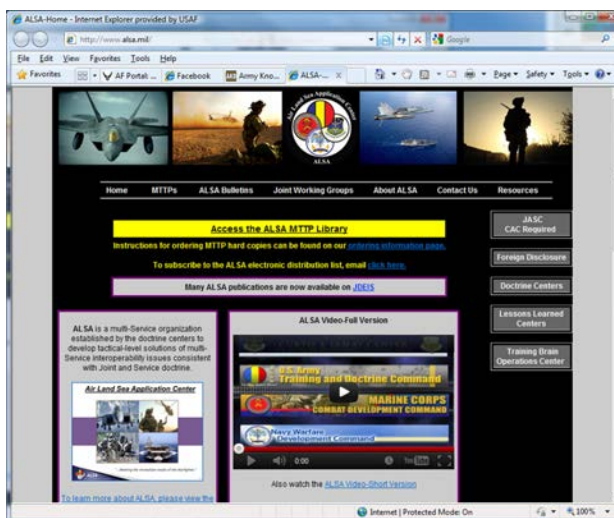
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